

CROP-MARKED ENCLOSURES IN SOUTH CEREDIGION AND NORTH PEMBROKESHIRE 2005: GEOPHYSICAL SURVEY



THE UNIVERSITY *of York*



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CROP-MARKED ENCLOSURES IN SOUTH CEREDIGION AND NORTH PEMBROKESHIRE

Gan / By

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SUMMARY

Over 55 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 site, rectangular and non-rectangular, were surveyed in 2005. This work confirmed that only rarely did any surface evidence for the enclosures exist, and where present it was very slight. Geophysics, 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 round-houses, 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.

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. Evidence for Romano-British settlement in south Ceredigion is 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 by aerial archaeologists that the terrain was conducive for crop-mark archaeology, has resulted in the recording of over 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, between about 3m - 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 area in which the rectangular 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.

AIMS AND OBJECTIVES

In 1996, Cambria Archaeology were grant-aided by the RCAHMW 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 RCAHMW staff. Thus, although over 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 METHODOLOGY AND RESULTS

In total it was possible to conduct geophysical and topographic surveys on five enclosures: Nantycroy, Ty Gwyn, Ffynnonwen, Waunlle and Berry Hill (Fig. 1). In addition, data from a previously surveyed enclosure, Penpedwast has been incorporated into the project (but not included in this report). K Murphy of Cambria Archaeology was responsible for the overall management of the project and the final reporting. H Wilson of Cambria Archaeology conducted the topographic survey. The geophysical survey was directed by H Mytum and carried out by R Carver with the assistance students on the Castell Henllys Field School. Aerial photographs and plotted data were supplied by the RCAHMW.

ACKNOWLEDGEMENTS

Several institutions and individuals have contributed to the success of this project. Toby Driver and Tom Pert of the RCAHMW assisted in providing data and aerial photographs. The fieldwork headquarters was based at the Castell Henllys site in Pembrokeshire, and we are grateful to the Pembrokeshire Coast National Park for allowing us to use their facilities. We are also extremely grateful to all the landowners who allowed us to conduct the surveys and assisted in many ways.

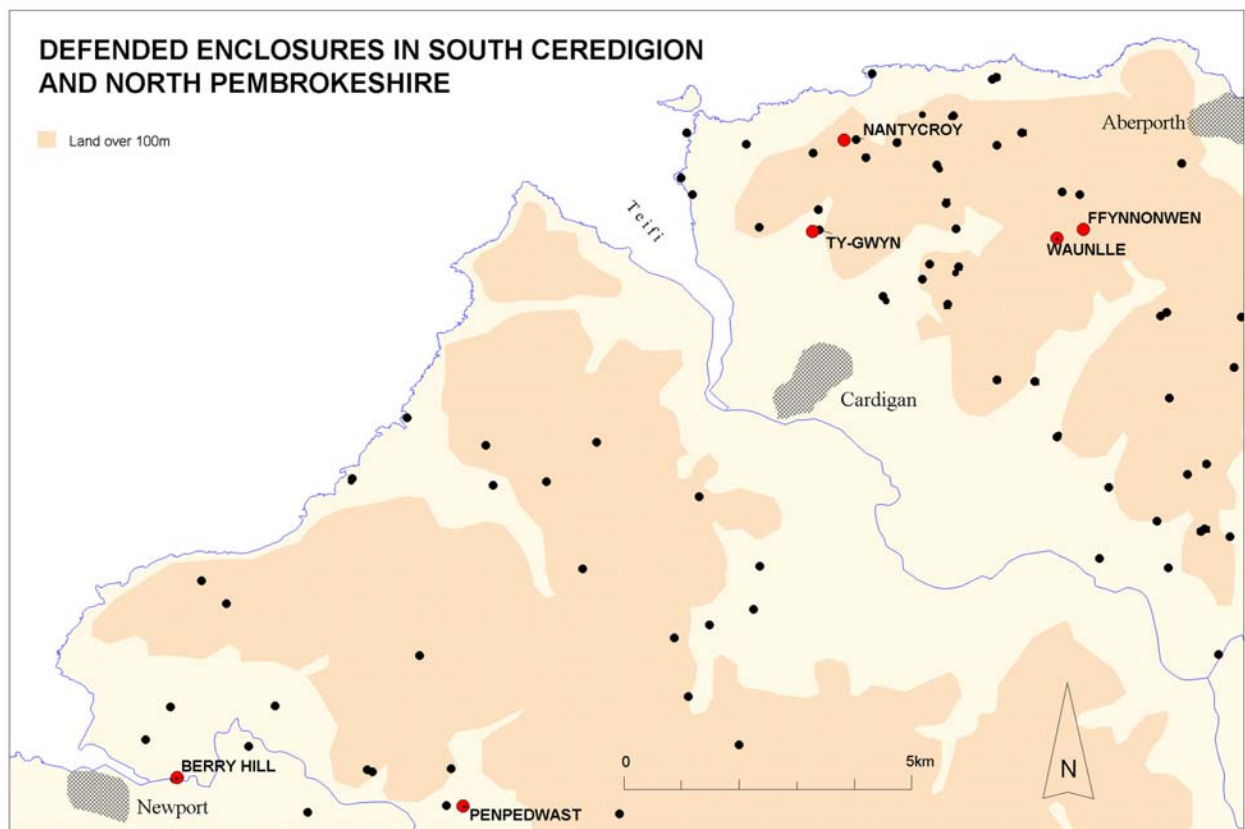


Figure 1. Location map with survey sites named.

NANTYCROY

Geophysics surveyors: Rebecca Carver
Lloyd Bosworth

Topographic surveyors: Hubert Wilson
Lloyd Bosworth

Site name: Nantycroy

Primary Record No. 35713

Grid reference: SN 18795086

Date of survey: 22/07/05 – 25/07/05

Owner's name: Lloyd Williams

Location and description from aerial photographs: This site is located just off the highest point of a flat hilltop at 150m above sea level. Wide-ranging views are obtained from the site in all directions except to the south - the direction of the highest point - with particularly good views over Cardigan Bay and Cardigan Island. Aerial photographs show a roughly circular cropmark ditched enclosure approximately 60m diameter internally, with possible opposing entrances to the southwest and northeast. On the ground the site is marked by a slight saucer-shaped depression approximately 20m across. A hedge-bank that ran through the centre of the site has been removed.

Gradiometer survey: A grid 80m by 80m was established over the site of the cropmark enclosure. Survey was undertaken with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m in fifteen 20m x 20m squares. Conditions for survey varied, but overall were good.

Gradiometer survey interpretation: The survey showed that the enclosure was sub-circular, rather than circular. On the west side the enclosure is interrupted or cut across by a more rectilinear ditch at the entrance. Other anomalies hint at a complex entrance on this side. A slighter ditch approaches the entrance from the northwest. A simple gap marks the entrance on the east side. There is a trace of a concentric ditch on the south side of the enclosure, closely set to the main ditch. A signal from the removed hedge-bank masks detail in the interior. Nevertheless, anomalies indicate internal divisions, pits and possible structures.

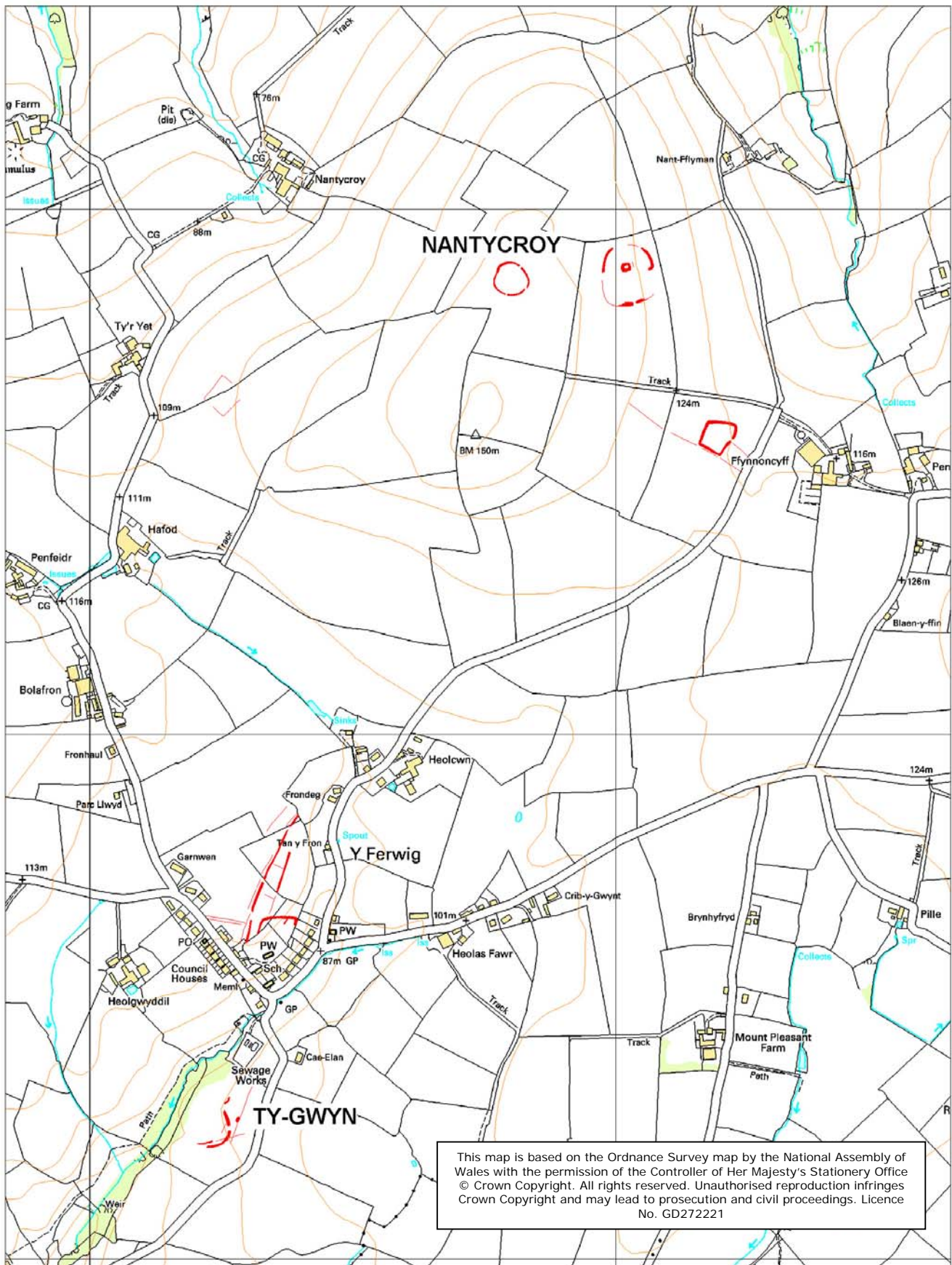


Figure 2. General location of Ty Gwyn and Nantycroy. Scale 1:10,000. Cropmark plots: © Crown Copyright: derived from RCAHMW data.



Figure 3. Aerial photograph of Nantycroy. RCAHMW © Crown Copyright - reference 89-cs-742.

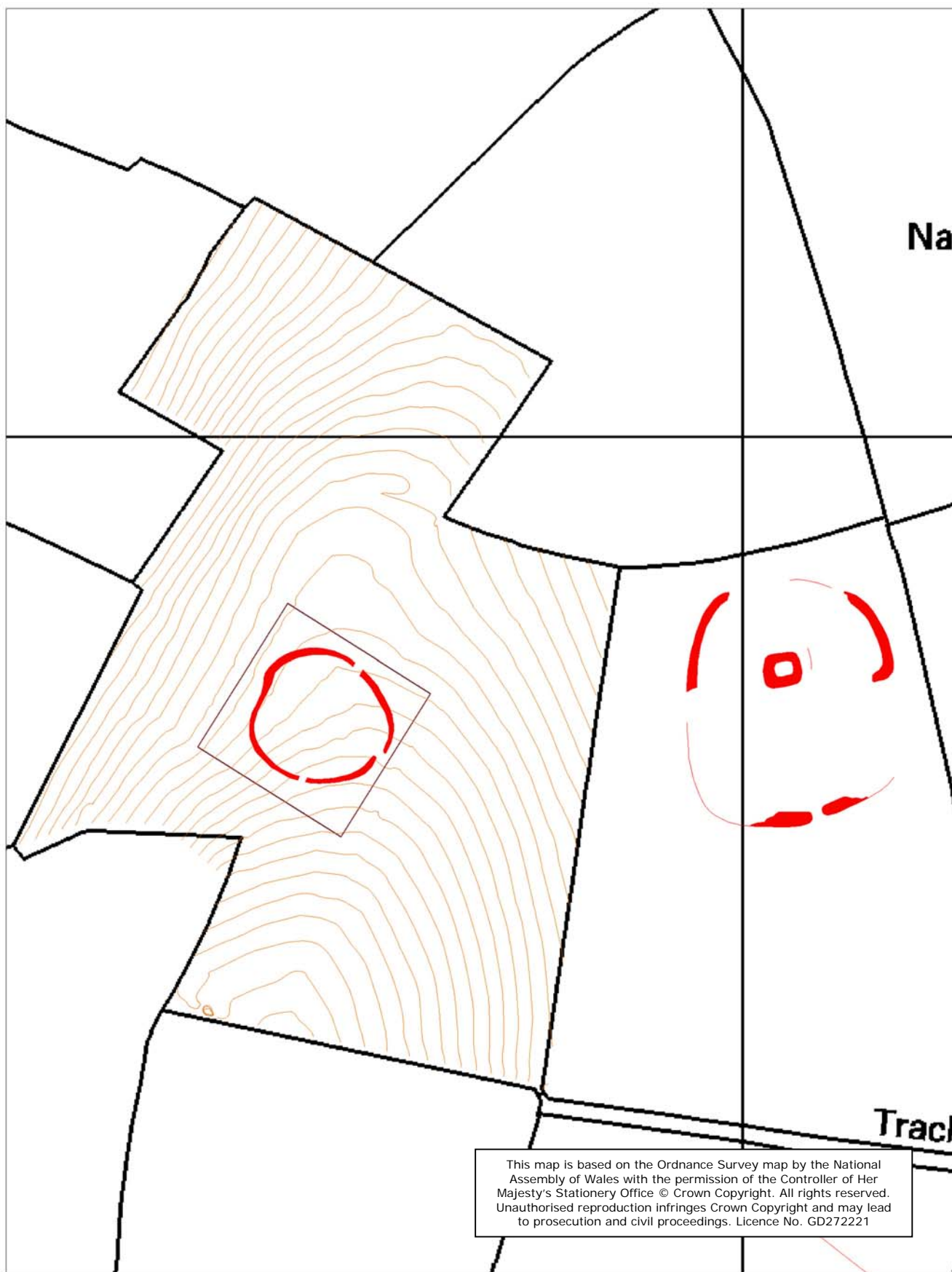


Figure 4. Location of Nantycroy geophysical survey. Scale 1:2500. Cropmark plots: © Crown Copyright: derived from RCAHMW data. Contours at 0.5m intervals.

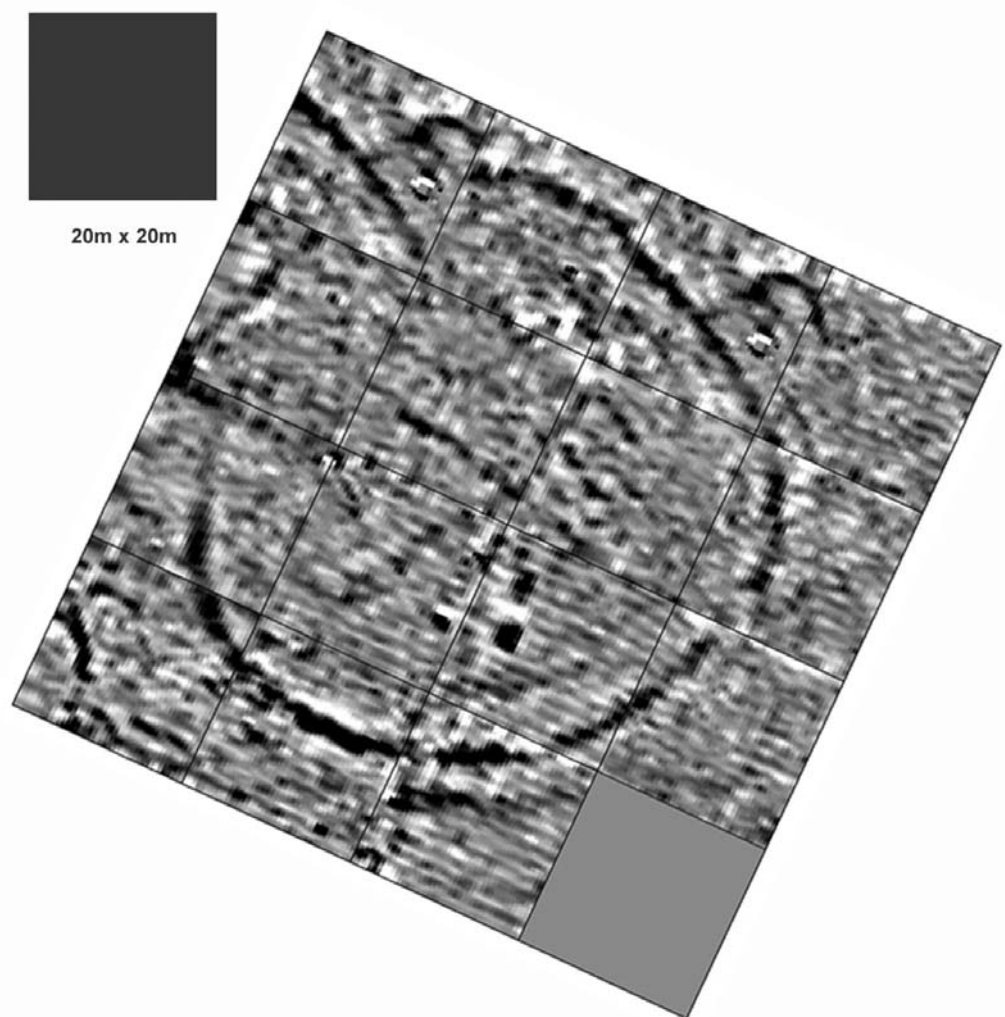


Figure 5. Nantycroy geophysical plot.

TY GWYN

Geophysics surveyors: Rebecca Carver
Lloyd Bosworth

Topographic surveyors: Hubert Wilson
Lloyd Bosworth

Site name: Ty Gwyn

Primary Record No. 35724

Grid reference: SN 18244925

Date of survey: 18/07/05 – 21/07/05

Owner's name: Lyn Jones

Location and description from aerial photographs: This is a cropmark enclosure with no earthwork or other surface evidence. The site lies on a gentle west-facing slope, towards the head of a small valley, at approximately 90m above sea level. To the west the land falls away by 5m - 10m to a stream in the valley floor. The slope is undulating, and the southern side occupies a small subsidiary valley or hollow a few metres deep. The site is overlooked from most sides. Aerial photographs show a curving arc of a cropmark ditch defining the eastern and southeastern sides of an enclosure, with a possible concentric ditch inside on the southeast side and splodges outside the ditch possibly marking the site of pits. However, much of the field is marked by unresponsive vegetation which masks the site.

Gradiometer survey: The enclosure is situated approximately 45m straight into the field from the gate, aligned with the hedge in the fields on the opposite side of the road. This line was the base line, extending 60m from this point, 40m to the southwest and 80m to the northeast. This area of 60m x 120m sought to enclose the entire projected length of the enclosure and other smaller features identified by the aerial photograph.

Survey was undertaken with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m in eighteen 20m x 20m squares. Conditions for survey varied, but overall were good.

Gradiometer survey interpretation: The results of Ty Gwyn were quite surprising in that two enclosures were found instead of one. The outer enclosure is the one identified by the crop mark and the geophysical survey made it possible to locate part of the missing ditches to the north and west. Instead of continuing in a sub-circular manner, the outer enclosure at its most northerly point becomes sub-rectangular, heading southwest to join with the northwestern side of the internal enclosure. The extent of the enclosures to the west is unknown since they extend outside of the grid system, but it is possible to assume that it follows the contour of the slope to join with the southwest corner. The results fade slightly in the southwest corner, but it is possible to see that the ditches to the two enclosures, separate previously, join at this point. Soil samples were taken in two lines near the entranceways to the enclosures (both facing east-northeast) in order to investigate magnetic susceptibility and phosphate levels.



Figure 6. Aerial photograph of Ty Gwyn. RCAHMMW © Crown Copyright - reference 95-cs-1722.

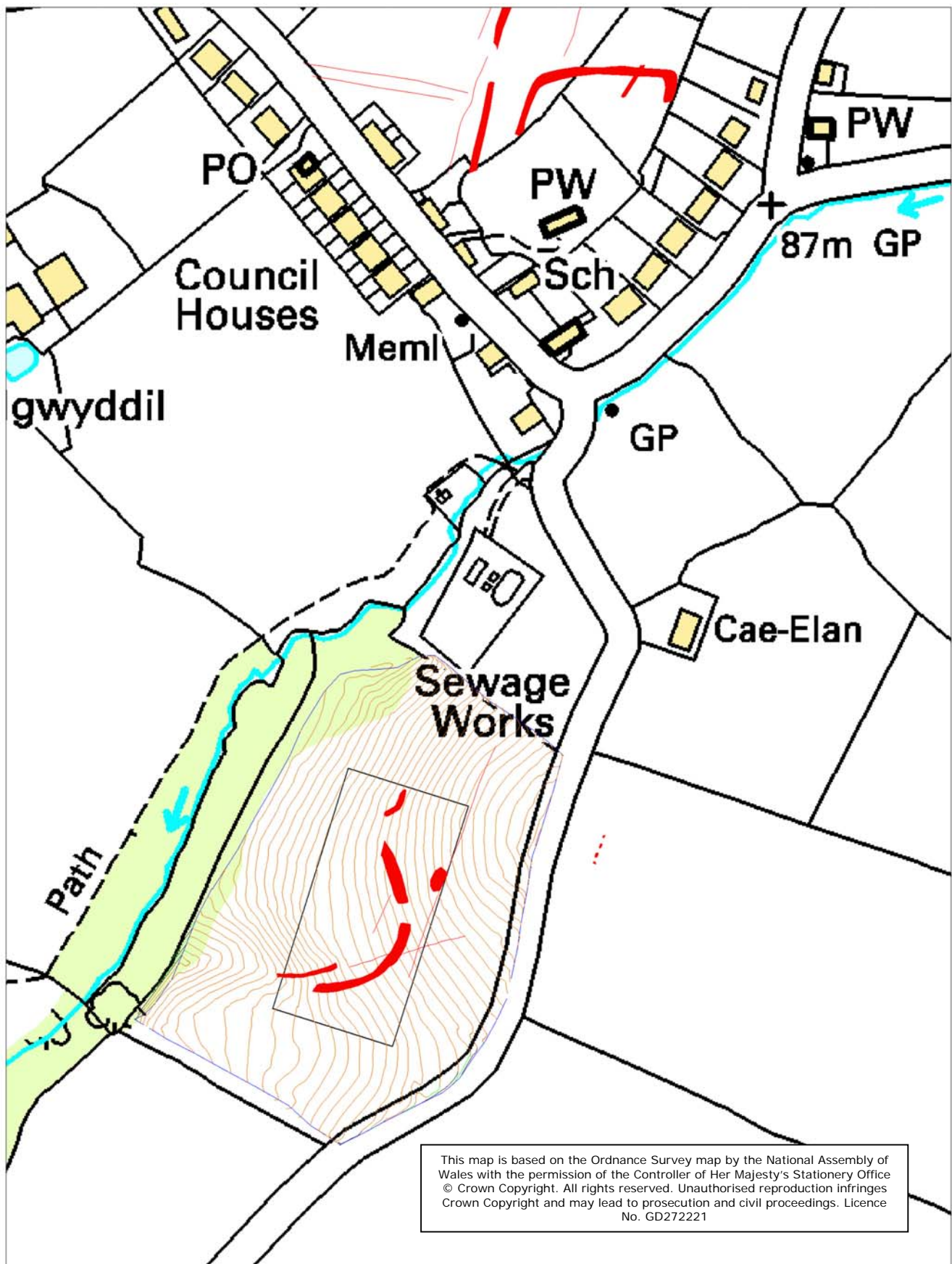


Figure 7. Location of Ty Gwyn geophysical survey. Cropmark plots: © Crown Copyright: derived from RCAHMW data. Scale 1:2500. Contours at 0.5m intervals.

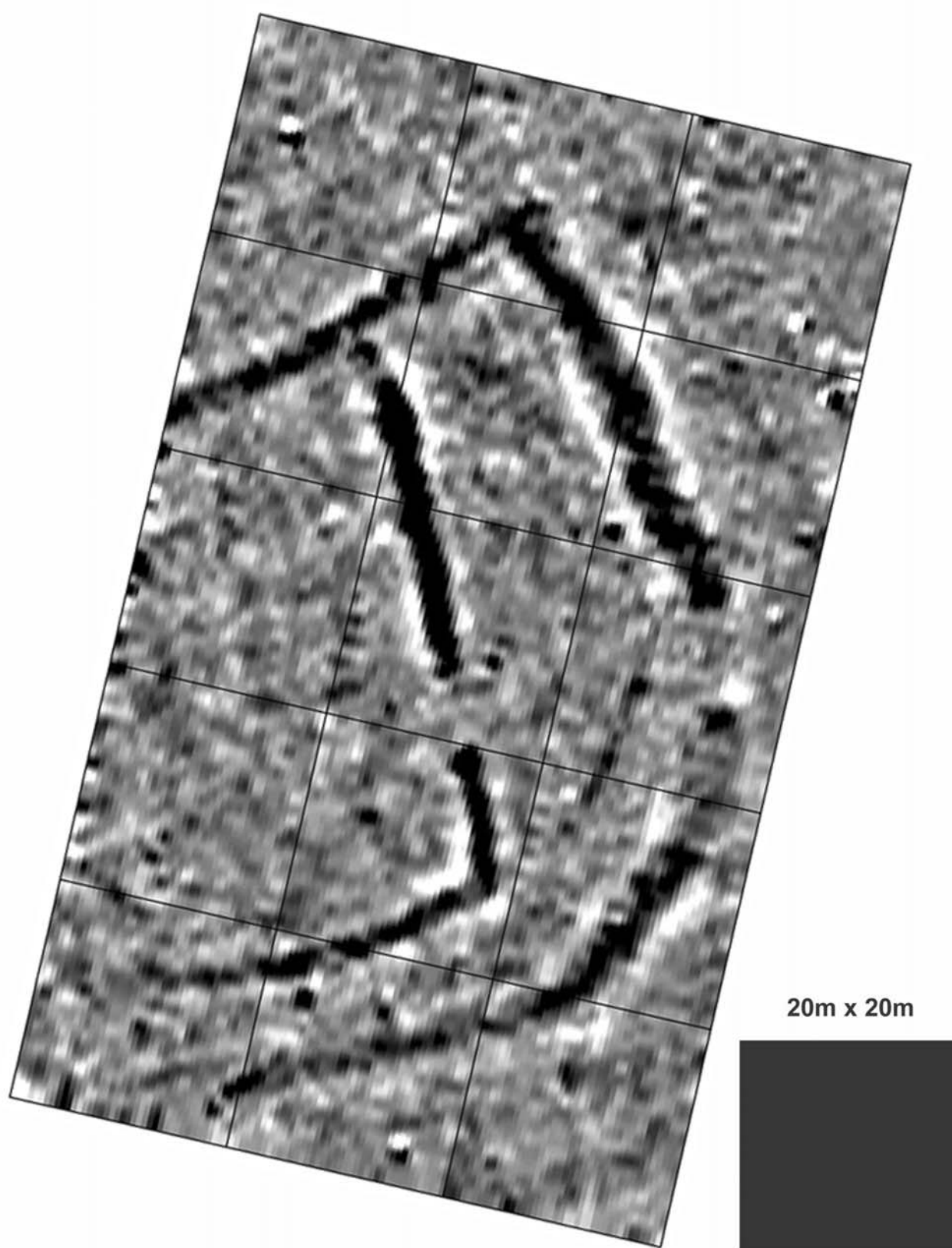


Figure 8. Ty Gwyn geophysical plot.

WAUNLLE

Geophysical surveyors: Rebecca Carver
Adam Jenkins
Laura Proctor
Oliver Wilson
James Clarke

Topographic surveyors: Hubert Wilson
Natasha Reynolds

Site name: Waunlle

Primary Record No. 5838

Grid reference: SN22574912

Date of survey: 27/07/05 – 31/07/05

Owner's name: John and Helen Thomas

Site location and description from aerial photographst: Lying towards the southern end of a rounded hilltop at approximately 170m, Waunlle is a well-defined cropmark defended enclosure. Land falls gently away from the site of the enclosure except to the north where it is fairly level.

Aerial photographs show a very distinct site with a circular cropmark ditch approximately 44m diameter lying with 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. There is no earthwork or other surface evidence for the outer enclosure, but a platform of just 10cm - 20cm seems to correspond with the location of the inner enclosure.

Gradiometer survey: The outer enclosure is transected by the eastern hedge bank 25m from the southeast corner of the field. This hedge bank was used as guide for the baseline, which stretches along it for 100m. The grid was set out to the west 70m, making the area of survey 100m x 70m.

Survey was undertaken using a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m in twenty 20m x 20m squares. Conditions for survey were changeable.

Gradiometer survey interpretation: The ditches of both enclosures are very clear with part of an extra enclosure abutting the main enclosure to the south. It is possible to see this in the aerial photograph; although without the gradiometer results it would be difficult to interpret this as archaeological rather than geological. Despite the clearness of the ditches on the results plot it is still quite difficult to locate the entranceway to the inner enclosure. It could either be to the west-northwest, or the northeast. Within the inner enclosure it is possible to see several circles, perhaps indicative of an extended period of occupation, though no other inner divisions can be seen. The entrance to the outer enclosure can be seen in the same location as indicated by the aerial photograph. Immediately east, inside the enclosure, a series of features have been located. Their form and purpose are not entirely certain, perhaps to control the movement of livestock and people. It is not clear if these features are contemporary with the enclosures, or even if they are archaeological in nature.

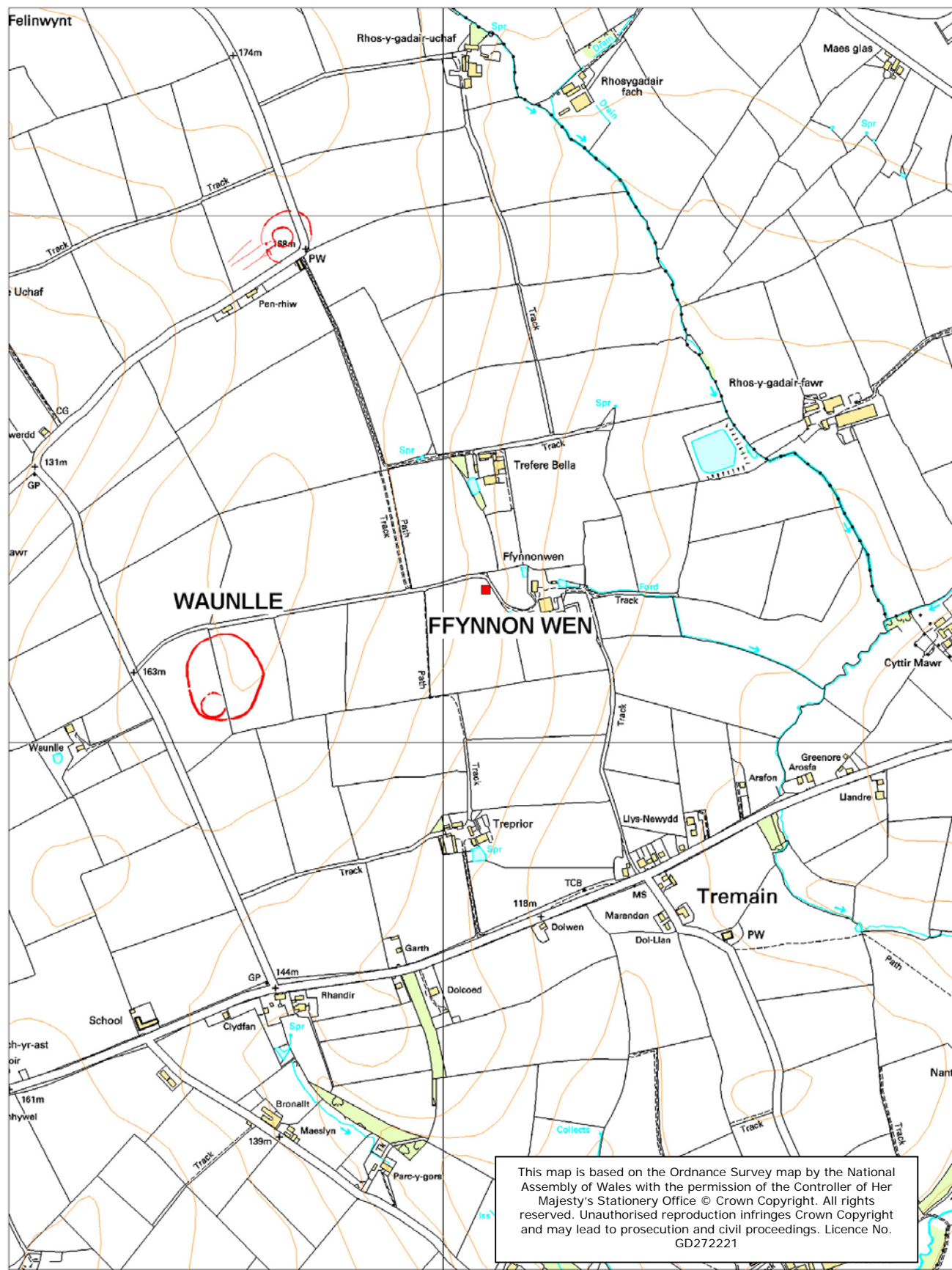


Figure 9. General location of Waunlle and Ffynnonwen. Scale 1:10,000. Cropmark plots: © Crown Copyright: derived from RCAHMMW data.



Figure 10. Aerial photograph of Waunlle. RCAHMW © Crown Copyright - reference 96-cs-0997.



Figure 12. Waunlle geophysical plot.

FFYNNONWEN

Geophysical surveyors: Rebecca Carver
Stephanie Corrigan
Kate Davis
Erika Palmer

Topographic surveyors: Hubert Wilson
Dominic Sharrock

Site name: Ffynnonwen

Primary Record No. 8388

Grid reference: SN230844929

Date of survey: 01/08/05 – 02/08/05

Owner's name: John and Helen Thomas

Location and description from aerial photographs: An aerial photograph shows part of a strongly rectangular cropmark enclosure lying on a fairly steep east-facing slope. The enclosure measures approximately 40m across with a south-southwest facing entrance (the uphill side). An unusual feature of the enclosure is the slightly overlapping ditches at its corners. There is no earthwork or other surface evidence for the enclosure. The site is cut across by a farm track.

Gradiometer survey: Due to the fact that this small enclosure spans two fields, the grid was split. The majority of the enclosure is situated in the western field, where a grid system of 40m x 60m was set up. In the field across the road the grid was continued on the same alignment, 20m x 51m.

Survey was undertaken with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m in eight 20m x 20m squares and one 20m x 11m square in a field to the northeast. Conditions for survey were very good. The survey data for in the field to the northeast did not reveal any archaeology and is not shown here.

Gradiometer survey interpretation: The data was processed using zero mean grid, despiking and interpolation. The ditches are very clear and angular, with the entrance off centre. The geophysics did not reveal much more than a dark smudge about 10m into the enclosure, which can also be seen on the aerial photograph. This could be a house platform cut into the slope. There are a few shadows near the entrance that could imply the presence of features, though these would need further investigation for definite verification.

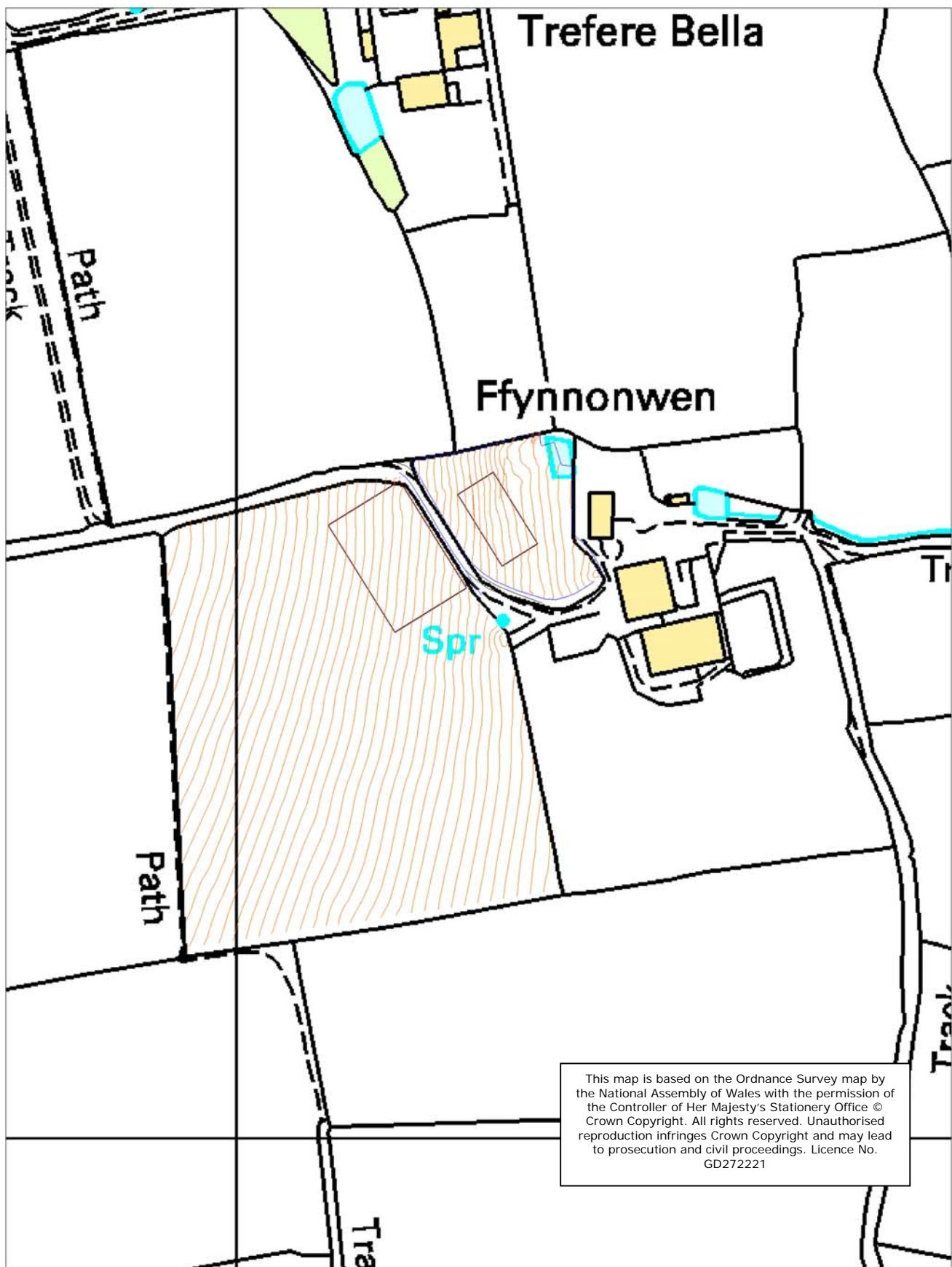


Figure 13. Location of Ffynnonwen geophysical survey. Scale 1:2500.

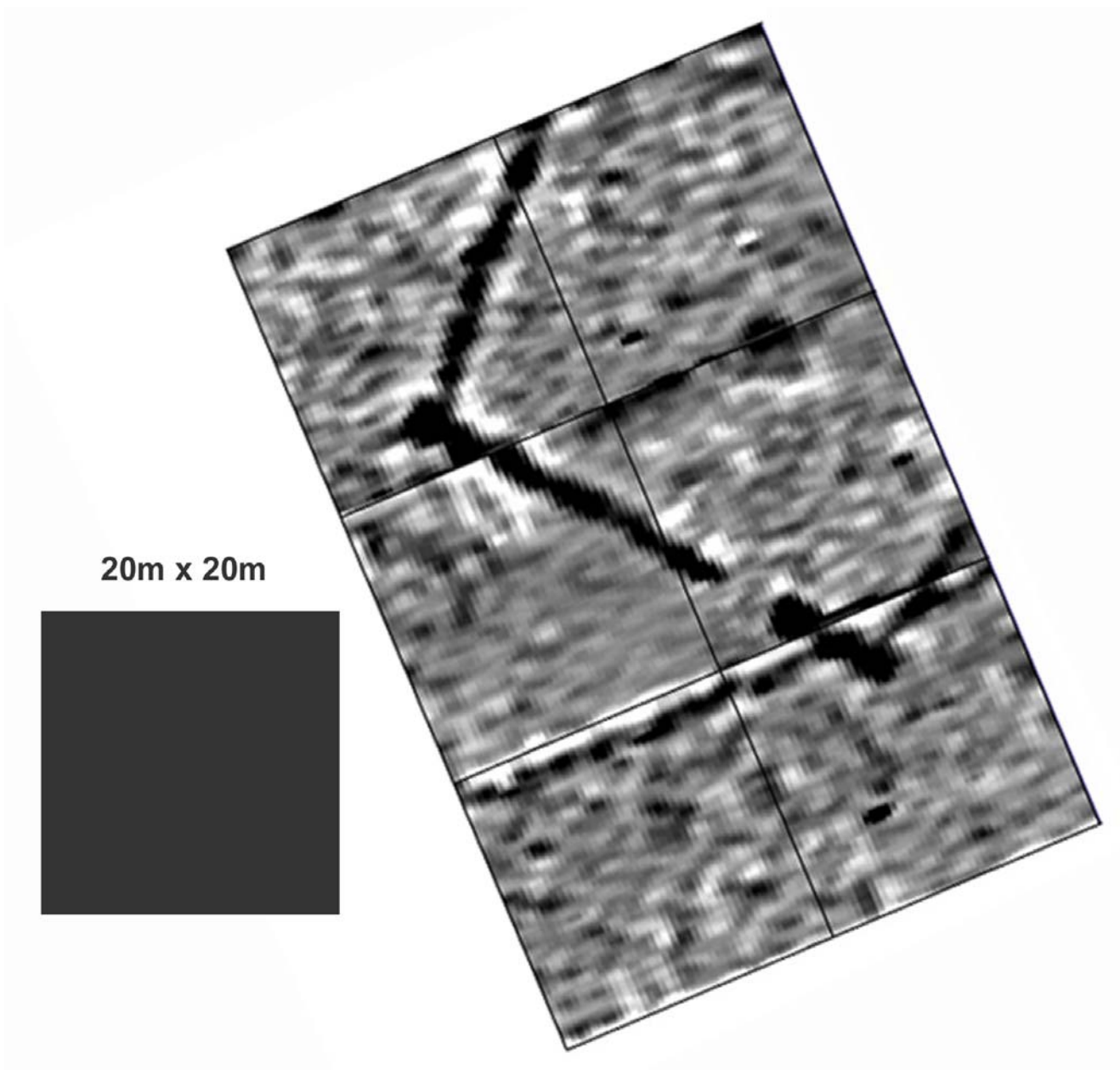


Figure 14. Ffynnonwen geophysical plot.

BERRY HILL

Geophysical surveyors: Rebecca Carver
Stephanie Corrigan
Kate Davis
Erika Palmer

Topographic surveyors: Hubert Wilson
Kate Davis

Site name: Berry Hill

Primary Record No. 14342

Grid reference: SN06883952

Date of survey: 02/08/05 – 03/08/05

Aerial photograph and plot: The aerial photograph shows a wide ditch encompassing a large area above the escarpment facing Carn Ingli to the south and the Nevern Estuary to the west. The entranceway can be seen facing the west.

Topographic setting: The area encloses the highest part of the hill above the escarpment. 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 escarpment.

Visible earthwork features: The defensive bank is visible, although slighted, leading up to the circular plateau which rises above the rest of the field. This is most evident from the west as the site is approached from the east it is more difficult to make out.

Gradiometer survey: Survey was undertaken along a baseline erected along the line of the escarpment running east west. This stretched east-west for 140m and north-south 80m.

Survey was conducted with a Geoscan Fluxgate Gradiometer FM36, with traverse intervals of 1m and sample intervals of 0.25m in twenty-eight 20m x 20m squares. Conditions for survey appeared good at first, but it quickly became apparent that the machine was having difficulty settling, which made it nearly impossible to calibrate and zero. Some survey was conducted, but it was of very poor quality. This could be due to a number of factors: changeable weather conditions, high magnetic background geology, poor choice of zeroing position, or the machine itself.

Gradiometer survey interpretation: As only four squares were surveyed with any amount of success, interpretation is rather difficult, as we know as much from the crop mark. The survey picked up the ditch but little else, and the overall texture is very grainy and processing could not make the image much clearer. This should prove a very interesting site, if its size and location are taken into account, should a more successful survey be carried out.

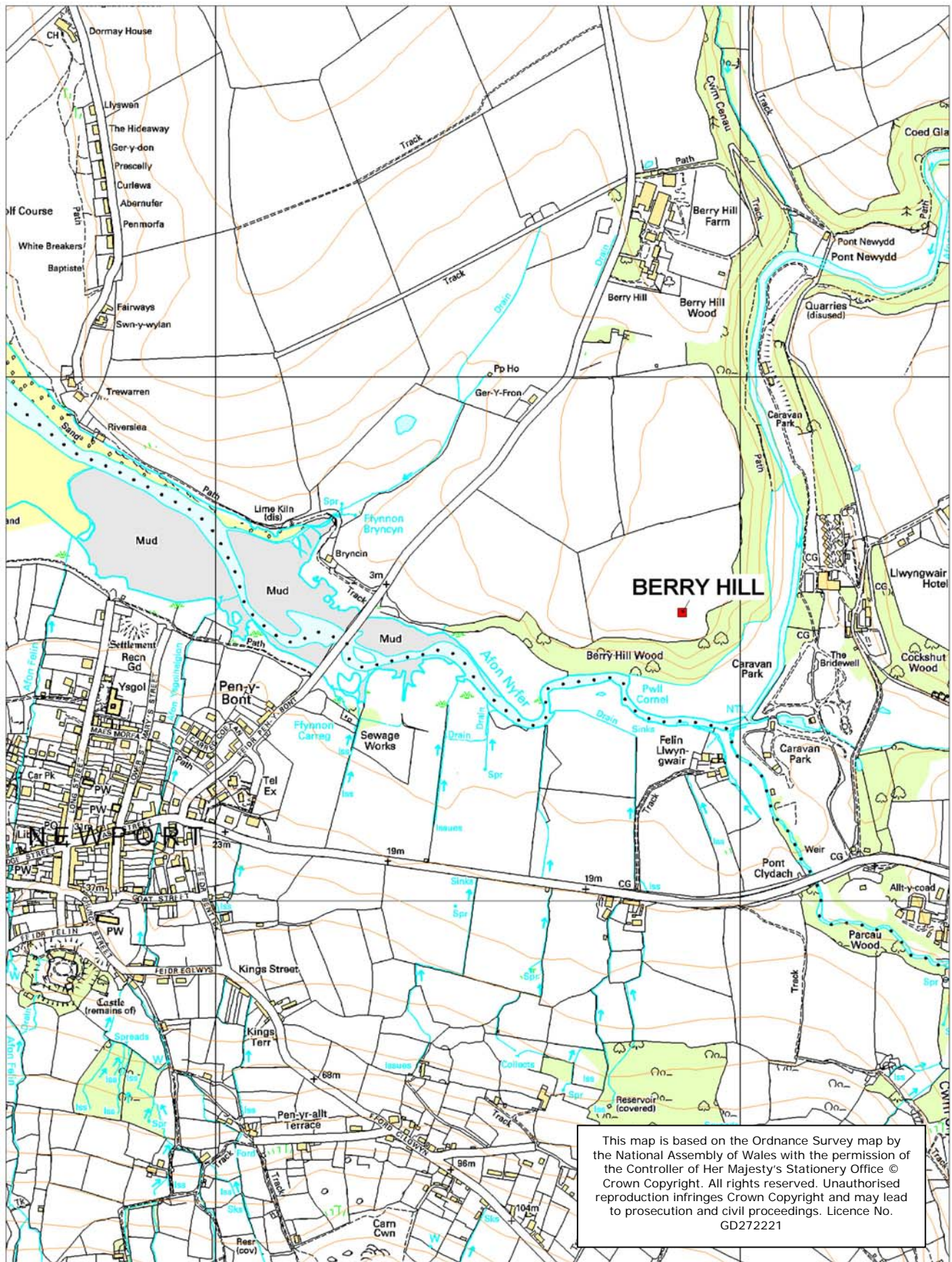


Figure 15. General location of Berry Hill. Scale 1:10,000. Cropmark plots: © Crown Copyright: derived from RCAHMW data.



Figure 16. Aerial photograph of Berry Hill. Cambria Archaeology reference DAT AP89-178.36.

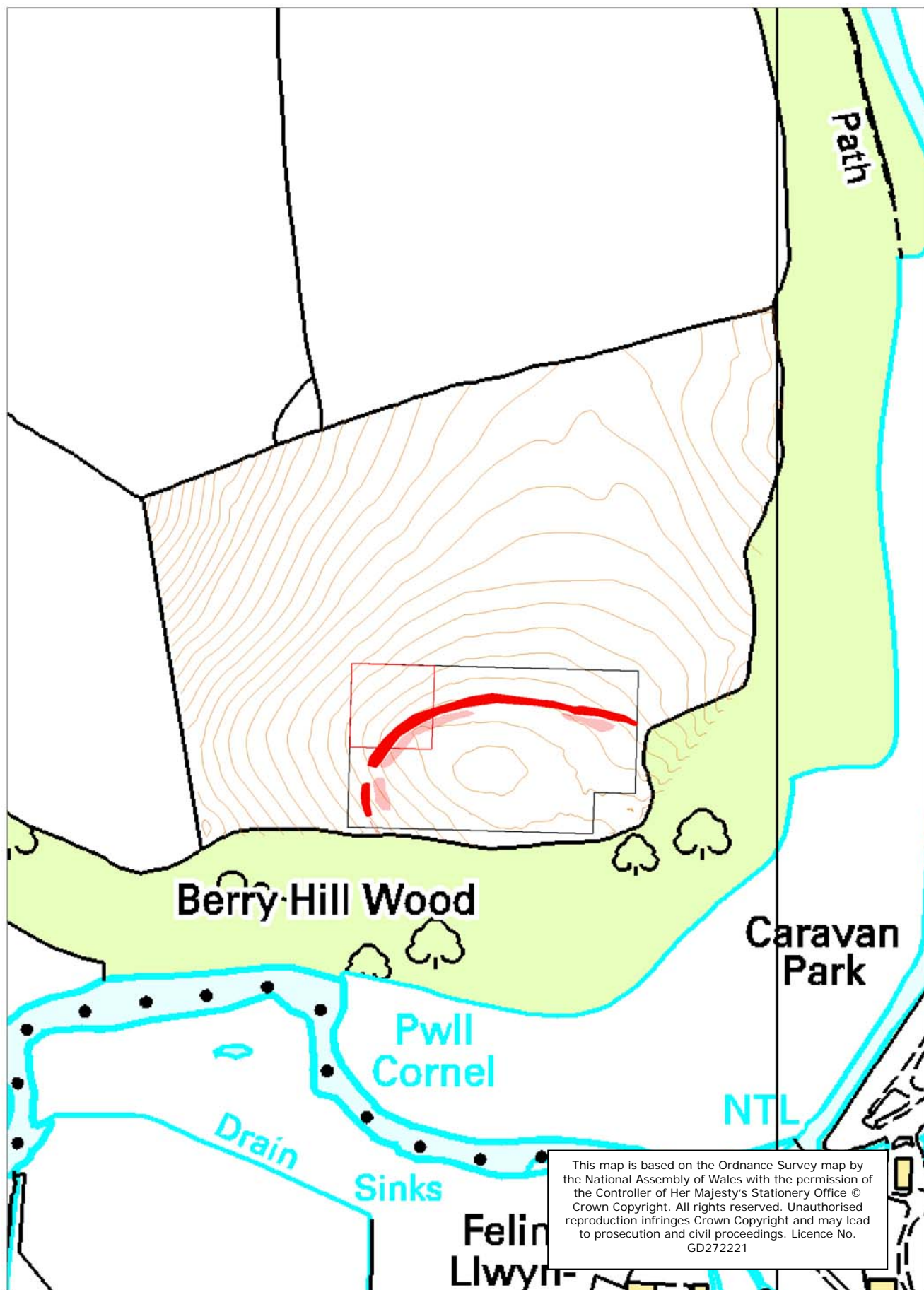


Figure 17. Location of Berry Hill geophysical survey, showing proposed survey area (black) and actual (red). Scale 1:2500. Contours at 0.5m intervals.

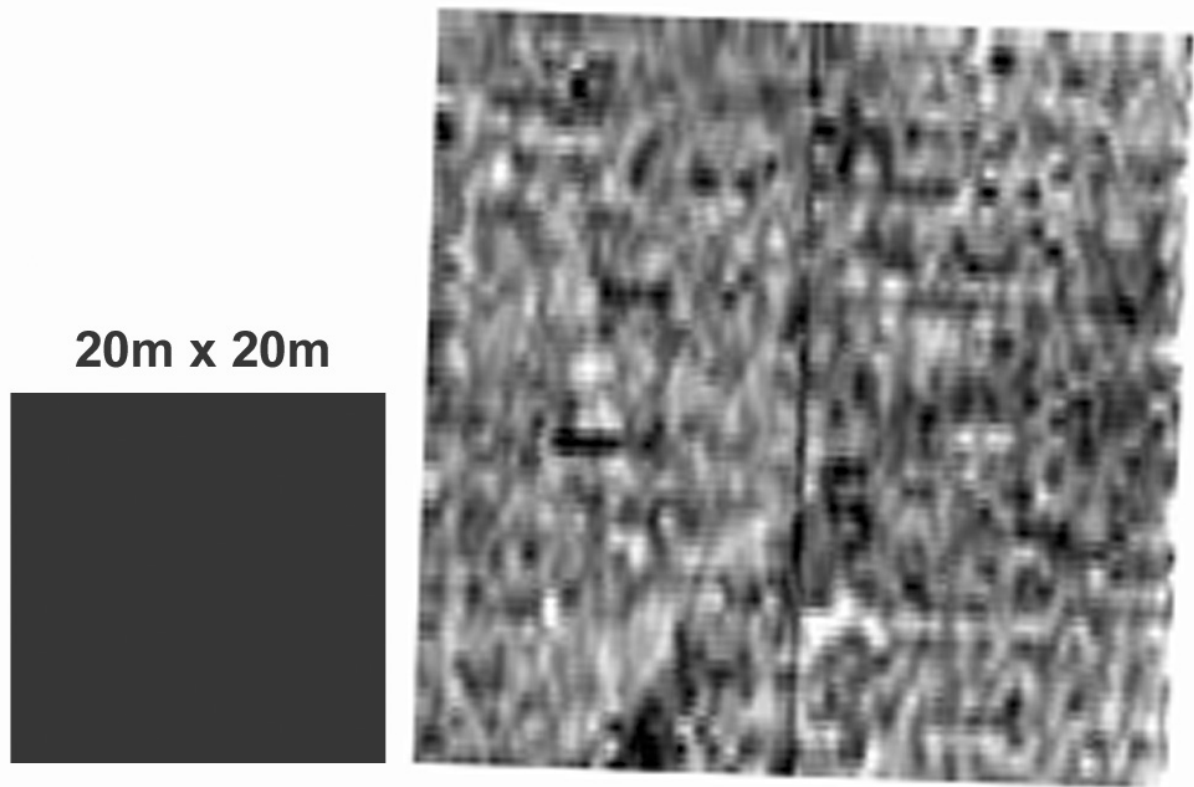


Figure 18. Berry Hill geophysical plot.

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RHIF YR ADRODDIAD / REPORT NUMBER 2006/7

**Ionawr 2006
January 2006**

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

Swydd / Position: Principal Archaeologist - Field Services

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

Gwilym 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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comments you may have on the content or presentation of this report