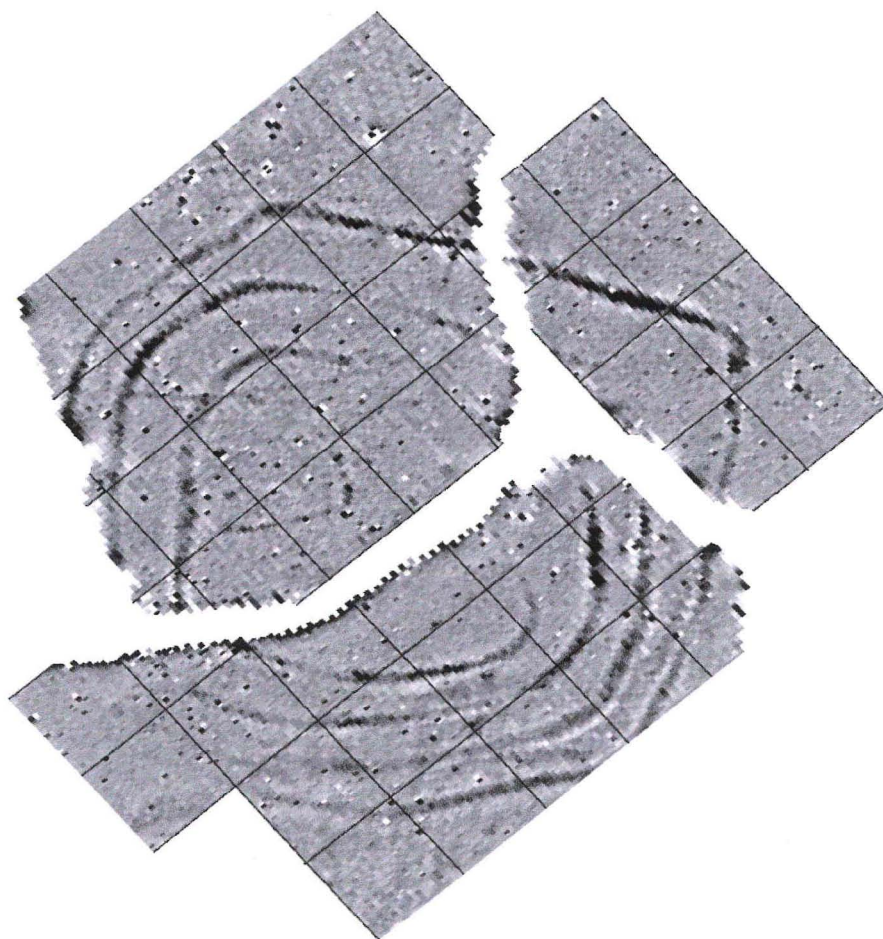


THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

Defended Enclosures in Montgomeryshire



CPAT Report No 824

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Project Report

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Report for Cadw: Welsh Historic Monuments

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Montgomeryshire Defended Enclosures – the current situation

1 Introduction

- 1.1 The current financial year sees the continuation of the pan-Wales defended enclosures project extended under three headings in that part of eastern and north-eastern Wales covered by the Clwyd-Powys Archaeological Trust. The study of the defended enclosures of Breconshire (alternatively Brecknock) will be covered in a separate report. The survey of what were then called small enclosures in Montgomeryshire, undertaken in the early 1990s and in many ways the precursor of the present pan-Wales programme, is in need of reassessment because of changes both to the approach and the needs of the present study. And thirdly the notable success of geophysical survey on cropmark sites in south-west Wales has encouraged us to use the technique on a small number of defended enclosures in the Montgomeryshire region to establish its viability in a different part of the country. These last two elements are considered in the present report.

2 Montgomeryshire defended enclosures- the available information

- 2.1 Over the last fifteen years CPAT has completed studies of small and defended enclosures believed to date from the prehistoric through to the early medieval periods in Montgomeryshire (Silvester and Britnell 1993), the former county of Clwyd (Frost 1995; Jones 1999), and Radnorshire (Hankinson and Silvester 2005) and during the present year is completing the study of southern Powys with the examination of Brecknock. All these studies have assessed the resource, examined varying numbers of sites in the field, produced measured surveys of selected sites and generated detailed assessments on those sites which met the criteria for statutory protection. However, unlike their predecessors, the more recent studies – for Radnorshire and Brecknock – have worked to a more precise and detailed set of requirements initiated by the onset of the pan-Wales programme on defended enclosures which commenced with a scoping survey in Gwynedd in 2003 (Smith 2003).
- 2.2 The feasibility of enhancing the data for Montgomeryshire, and probably Clwyd (Denbighshire, Flintshire and eastern Conwy), to a level compatible with the other counties was recognised as something that needed to be examined, not only to allow comparability with other areas being studied in the pan-Wales initiative, but also, importantly to take forward the publication of the earlier work that was completed in the 1990s. It was agreed that a limited amount of time could therefore be spent in the financial year, 2006/07, establishing whether an enhancement programme can be done economically.
- 2.3 In terms of the quantity of such sites and indeed the clarity of the images that they provided, Montgomeryshire is amongst the richest county in Wales, and the archaeological potential had already flagged up through the work of Dr Rowan Whimster on the aerial photographic discoveries made by Professor J K St Joseph, Chris Musson and others across the whole of the Middle Severn plain in both Montgomeryshire and Shropshire (Whimster 1989).
- 2.4 Over 230 enclosures were identified in Montgomeryshire, though the larger hillforts and enclosures were not included in the study. A summary report was complemented by a full gazetteer which included new aerial photograph plots at a consistent scale of 1:2500 wherever these were available to add to those that had already been produced by Whimster whose source notes were made available to the Trust. A small amount of evaluation was conducted on selected sites, and a number of the newer discoveries were recommended for scheduling.

3 Montgomeryshire defended enclosures- methodology

- 3.1 A new dataset of defended enclosures in the old county of Montgomeryshire was obtained from the Historic Environment Record, using a wider range of 'type' criteria than had been employed in the 1990s' study, which *inter alia* had not extended to the larger hillforts in the region, these falling outside the definition of what might legitimately be termed 'small enclosures'. These were systematically worked through and all sites which could reasonably be attributed to other period were removed, as were sites where the supporting evidence was best described as of dubious or equivocal value. The initial database comprised 675 records which was cut down to 408 records after the above process was followed.
- 3.2 A further stage in the procedure entered data against the various fields listed in the new recording sheets used by all the Welsh Archaeological Trusts for this project. Based on the earlier visits it was possible to identify 265 of the 408 records where some data could be added. These data included topography, land use, vegetation, altitude, site shape, phasing, entrance type, defensive potential and the like. The existing data did not permit entries on the scale, type, likely duration and significance of threats to the defences or interior, nor specific issues such as the sort of material used for the entrances. Inevitably the evaluation scoring system designed for the present pan-Wales project could not be brought into play, but although no specific analysis has been attempted of defended enclosure sites which have been scheduled as a result of the 1991-93 programme, it is clear from the scheduling list that in all probability thirteen sites were scheduled as a result of that project.
- 3.3 The residue of 143 sites in Montgomeryshire which were not examined in 1991-93 may appear to be a concern, but is not really surprising. The original survey as noted above omitted the larger hillforts, typical examples being Beacon Ring above Welshpool, Cefn Carnedd near Llandinam and Gaer Fawr above Guilsfield, all of them long scheduled. Inevitably, too, further defended enclosures, some of them probably no more than cropmarks have been photographed from the air for the first time in the thirteen years since 1993. Then again a few more enclosure have been added to the list by the systematic assessment of aerial photography for Montgomeryshire which was undertaken by the Trust on behalf of the Royal Commission in the mid-1990s.
- 3.4 Of the 143 37 are classed as hillforts or possible hillforts, the rest as enclosures and defended enclosures with greater or lesser certainty. A further twelve can be dismissed because they are duplicate records, have been mis-sited in the wrong county, or are at best dubious or non-proven.
- 3.5 Of the 143, only 17 are scheduled, and significantly 23 sites classified as hillforts in the HER are not scheduled. It can be argued therefore that of the 143 sites, 114 sites require some further work, to bring the data up to a level appropriate with the other pan-Wales studies, but not all of these will necessarily require prolonged site visits.

4 Montgomeryshire defended enclosures - assessment of the existing data

- 4.1 While the omission of certain classes of data from the 265 sites in the 1991-3 study means that broader pan-Wales comparisons for such aspects as threat-related issues will not be feasible from the information currently available, much of the data needed for an assessment of the archaeology and its settings is available, even though it has to be acknowledged that some of it might be refined by further analysis.
- 4.2 From this it is recommended that the return from re-working these sites, including a further round of field visits, would not be justified in terms of the time and resources that would be required and that it is to those sites referred to in para 3.5 where further resources should be channelled.

Geophysics surveys of defended enclosures in Montgomeryshire

5 Introduction

- 5.1 This section of the report on work on the defended enclosures in the historic county of Montgomeryshire details a programme of geophysical survey carried out by the Clwyd-Powys Archaeological Trust on five defended enclosures during 2006 (Fig. 2). The work represented one component of the Cadw-funded pan-Wales study of defended enclosures, and was intended to enhance the present state of knowledge of those sites examined, which had previously been identified only from various aerial photographic sources.
- 5.2 The survey used a fluxgate gradiometer and the methodology employed was that previously used by CPAT in the pan-Wales study of Roman Fort environs (see for instance (Hankinson and Silvester 2005) which in turn was developed from that used by the Gwynedd Archaeological Trust for similar projects (Silvester, Hopewell and Grant 2005).

6 Methodology

- 6.1 Fluxgate gradiometer survey provides a rapid, non-invasive, method of examining large areas for magnetic anomalies. It has proved to be particularly effective in the context of this study, having added significant amounts of new detail to known sites and caused the re-evaluation of a further site which had been considered, on the basis of aerial photography, to be of prehistoric ritual origin.

6.2 *Instrumentation and background*

- 6.2.1 The geophysical work was carried out using a Geoscan FM36 fluxgate gradiometer, which detects variations in the earth's magnetic field resulting from the presence of iron minerals in the soil. These minerals are generally the weakly magnetised iron oxides that are normally found in topsoil. Features cut into the subsoil can be detected by the instrument when topsoil has formed part of their fill, whether directly or by silting.
- 6.2.2 There are a variety of other processes which may result in detectable anomalies, such as the presence of iron objects in the soil, which yield high readings. The potential to detect areas of burning is perhaps of potentially even more interest, as it can identify hearths and kilns where the fired clay has acquired a thermo-remnant magnetic field upon cooling.
- 6.2.3 Unfortunately, not all soils are conducive to the use of this method, particularly in cases where the topsoil and subsoil have similar magnetic properties. Occasionally, high or random levels of magnetic material within the soil can effectively mask the results and prevent detection of artificial features. The lack of detectable anomalies cannot be taken to mean that there is no surviving archaeology in a locality.
- 6.2.4 The Geoscan FM36 is a hand-held instrument which allows readings to be taken automatically as the operator walks at a constant speed along a series of fixed-length traverses. The sensor consists of two vertically-aligned fluxgates, set 500mm apart, whose Mumetal cores are driven in and out of magnetic saturation by a 1,000Hz AC current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them, producing an electrical pulse proportional to the field strength in a sensor coil (Clark 1990, referred to in Hopewell 2004).
- 6.2.5 Magnetic fields and variations are measured in nanoTeslas (nT). The earth's magnetic field is approximately 48,000nT, but archaeological features generally produce instrument readings of less than 15nT. Areas of burning and iron objects produce higher readings, perhaps up to several hundred nT. The gradiometer can detect changes as low as 0.1nT.

6.3 Data collection

6.3.1 The gradiometer has an on-board data logging device which enables readings to be taken at specific time intervals. These readings can then be correlated with geographical locations. Readings in these surveys were taken along parallel traverses on a 20m by 20m grid, with intervals between the traverses of one metre. The speed of each traverse was controlled such that readings were taken every 0.5m, thereby giving a total number of 800 readings per full grid.

6.4 Data processing and presentation

6.4.1 The data was transferred from the data logger to a computer, where it was compiled and processed using Geoplot 3.0 software. A minimum of processing was carried out, although compensations were made for instrument drift, gradual changes in the earth's magnetic field, and inconsistencies in data collection.

6.4.2 The results are here presented in greyscale format, along with an interpretation drawing. The greyscale plot produces a plan view of the survey and allows subtle changes in the data to be displayed. Trace plots of the type produced in earlier reports (see for example those for Forden Gaer in Silvester and Hankinson 2006, figs 2-3) have been eschewed because they appeared to add little to the overall impression and understanding of the sites surveyed. It would, however, still be possible to produce such plots from the archived data if these were required at any stage in the future.

6.4.3 Some processing was also carried out to reduce the effect on the grey-scale plot of very high readings caused by iron objects in the soil, although care was taken to examine the results for burnt features which might produce similar results. Other processing which was variably employed included smoothing to help with very noisy or complex sites, interpolation to help reduce the amount of pixellation in the greyscale plot, and low pass filtering to reduce background noise and make anomalies easier to see.

6.5 Grid location and the plotting of the geophysical survey results

6.5.1 Prior to the commencement of each geophysical survey, the survey grids were laid out and then located in relation to nearby field boundaries by topographic survey using an EDM and Penmap software. These results were then related to the Ordnance Survey base mapping using the AutoCAD and Mapinfo programs, which enabled the National Grid co-ordinates of points on the survey grid to be determined.

6.5.2 The greyscale plot of the geophysical survey results was produced using Geoplot 3.0 software and the plot was exported as a Windows Bitmap. This was then rotated to match grid north using Paint Shop Pro software and registered in relation to the Ordnance Survey grid using the co-ordinates derived from the topographical survey. It was then imported into GIS using Mapinfo.

6.5.3 The GIS layer of the greyscale plot could then be compared with a variety of other sources, such as aerial photography, and this enabled a more analytical assessment of the results to be made. It also allows the results of the geophysical survey to be more easily archived and readily available in digital format for any future work at the site in question.

7 Geophysical Survey Results

7.1 Cwm Bach enclosure, Berriew (PRN 7057; Figs 3-6)

- 7.1.1 The small double-ditched enclosure (PRN 7057) in Berriew known from the adjacent farm as Cwm Bach occupies a spur site on the north side of the River Rhiw just before it enters the flood plain of the Severn (SJ 18050142).
- 7.1.2 It was photographed from the air in 1983 (Fig 3) and again in 1984, and visited in April 1991 when it became clear that no surface traces remained, and then plotted as a double-ditched cropmark in 1993 (Fig 4).
- 7.1.3 A single area of approximately 0.46ha was examined, comprising a total of twelve whole or partial grids, which encompassed the known area of the enclosure seen on the aerial photography. One figure (Fig 5) is used to present the greyscale plot, while a second (Fig 6) gives the interpretation of the results in relation to the local topography by depicting the individual and collective geophysical anomalies that were revealed. These anomalies have been given a sequence of numbers, which are mentioned in brackets in the text that follows for descriptive purposes.
- 7.1.4 Marked anomalies were revealed, corresponding with the two concentric ditches of the enclosure, which had a total area of approximately 0.32ha, or some 60m east-north-east/west-south-west by at least 66m. The south-south-east side was not visible as it coincided with a modern fence. The inner ditch (1) of the defences was up to 4.0m wide, with the outer ditch (2), itself up to 3.0m wide, had a variable separation from it of between 3.0m and 8.5m. An entrance gap (3), 3m wide, seemed to be present on the north-north-east side of the enclosure, although this was only visible in the inner ditch as the outer ditch coincided with a second modern fence line at that point.
- 7.1.5 A small number of internal features appeared to be visible in the results, primarily two possible arcs of ditch (4 and 5), both of which were 7.0m long and no more than about 1.5m wide. A discrete anomaly (6) was revealed in the south part of the interior, measuring 4.0m north-east/south-west by 2.3m, which may represent a hearth. A second, similar anomaly (7) measuring 3.0m north-east/south-west by 2.0m, was recorded in the space between the two ditches on the south-west side of the enclosure.
- 7.1.6 The fact that the enclosure is tucked away in the corner of an existing field imposed limitations on the geophysics because of the interference from wire fences on the magnetic readings, and this inhibits a precise comparison between the plots from the geophysics survey and the earlier aerial photo plot. Nevertheless, what is clear is that the shape of the inner enclosure is clearly a little different in the more accurate geophysics survey and that a little more of the outer ditch is visible on the north side. From the aerial photos it was possible to identify internal markings too faint to plot usefully. Similarly, apart from the two magnetic 'hot-spots', there are faint indications in the geophysics but it is uncertain whether these are the same as those seen on the aerial photos.

7.2 Boxtree Farm enclosure, Guilsfield (PRN 5261; Figs 7-10)

- 7.2.1 The sub-rectangular treble-ditched enclosure (PRN 5261) near Boxtree Farm in Guilsfield lies on gently-sloping ground beside a stream (at SJ 21331396). It was plotted by Rowan Whimster in 1982 from high-level, vertical, aerial photographs taken in 1979 (Fig 7) and subsequently published in *The Emerging Past* (Whimster 1989, Fig 28.15). A field visit in 1991 revealed that there were still earthwork traces surviving on three sides, but that the other cropmark plotted by Whimster – a curving ditch or gully intersecting the western corner of the enclosure – was no more than a relict stream course.

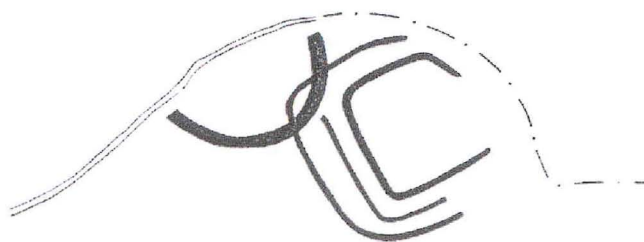


Fig 7. Plot of Boxtree Farm enclosure after Whimster 1989

- 7.2.2 A single area of approximately 1.06ha was examined, comprising a total of twenty-seven whole or partial grids, which encompassed the known area of the enclosure seen on the aerial photography. Figure 8 presents the greyscale plot of the results, while a second (Fig 9) gives the interpretation of the results. As with the previous site, the anomalies have been given a sequence of numbers on Fig 9, which are mentioned in brackets in the text that follows for descriptive purposes.
- 7.2.3 The results of the geophysics were of variable quality, with clear evidence of the north-north-west and south-south-east sides of the enclosure, where the defences were evidently composed of three ditches. With the exception of the inner ditch (3) and a faint linear feature (7), little trace of the ditches was seen on the west-south-west side, despite good evidence from the aerial photographic sources. This could be due to a lack of magnetic response from the soils or as a result of hillwash masking the features. On the east-north-east side of the enclosure, the defences were represented by a single ditch, with a scarp beyond it on which a modern fence sits. The enclosure seems to be of rhomboid shape, covering an area of 0.55ha, or 70m east-north-east/west-south-west by 80m.
- 7.2.4 The outer ditch (1) of the defences was up to 4.0m wide, with a gap of between 3m (on the north-north-west) and 12m (on the south-east) separating it from the medial ditch (2), itself up to 3.5m wide. The inner ditch (3), some 4.5m wide, formed a continuous circuit varying from 2.5m up to 8m inside the medial ditch. No evidence of an entrance gap was found.
- 7.2.5 A small number of internal features were revealed in the results, including traces of what seems to be a rectangular structure defined by a partial ditch (4) covering an area of approximately 16m east-north-east/west-south-west by 11m. A second possible ditch (5) runs south-south-east for 12.5m before turning and running east-north-east for a further 10m. The field to the north-east was also surveyed, but, with the exception of a short length of the outer ditch, the only feature recorded appeared to be a herringbone drainage system (6).
- 7.2.6 The new geophysics survey provides an interesting complement to the aerial photograph. Possibly a reflection of the source material that Whimster was working from, the aerial plot can be seen to have slightly shifted the enclosure from its true position (Fig 10). More of the innermost enclosure is apparent on the east side, but the western ditches on the aerial photograph appear more clearly than on the geophysics. It is, however in the case of the inner ditch and the interior where the recent survey has yielded new evidence.

7.3 Tyn-y-coed enclosure, Berriew (PRN 7516; Figs 11-14)

- 7.3.1 The enclosure near the farm of Tyn-y-coed is set on a narrow spur ridge in the rolling hills immediately to the west of the Severn valley (SO 16809960). As far as can be established it has been photographed from the air only once, by Chris Musson in 1989 (Fig 11). The site was visited in 1991 but no surface traces could be detected. A plot was produced in 1992 (Fig 12).
- 7.3.2 A single area of approximately 0.69ha was examined, comprising a total of twenty whole or partial grids. This was a somewhat larger area than originally envisaged, but became necessary as substantially more of the enclosure was revealed. Slight traces of the bank and ditch which formed the north-east end of the site were observed and these corresponded with the geophysics results. Figure 13 presents the greyscale plot, while Figure 14 gives the interpretation of the results. As with the previous sites, the anomalies have been given a sequence of numbers on Fig 14, which are mentioned in brackets in the text that follows for descriptive purposes.
- 7.3.3 The survey revealed that the site comprised a single-ditched enclosure measuring 72m north-east/south-west by 57m, or 0.34ha. The ditch (1) was up to 4m wide, and there was an entrance (2), 6m wide, on the north-east, which corresponded with the crest of a steep south-east slope. The south-east side of the enclosure traversed this slope at approximately half-height above a natural shelf running north-east from Tyn-y-coed farm. A marked magnetic anomaly (3), measuring 11.5m north-east/south-west by 10m, was seen on the line of the ditch at the north-east, which may represent intense burning or a buried metal object.
- 7.3.4 The only features visible in the interior were two curving sections of possible ditch (4), respectively 9m and 4.5m in length. Together, these may define the location of a circular dwelling. A small anomaly (5), perhaps 3.5m across, was also noted outside the enclosure on its north-west side, but its nature is unclear at present.
- 7.3.5 Tyn-y-coed was specifically selected for geophysics because of the partial parchmarks that distinguished it. The aerial photo plot from 1992 demonstrates clearly that the only elements of the enclosure that are visible are an apparent entrance defined by ditch terminals and a short stretch of ditch on the opposite side of the enclosure, all of these appearing in the parched grassland on the spine of the ridge. The possibility that geophysics might enhance the picture, both confirming that this was indeed an enclosure site, and providing a better idea of its size and morphology was the primary aim, not least because of the implications for the elucidation of other similarly fragmented sites in the region.
- 7.3.6 In the event the use of geophysics was fully justified, and has demonstrated not only the layout of the enclosure but also its unusual positioning.

7.4 Pen-y-gelli enclosure, Kerry (PRN 3649; Figs 15-19)

- 7.4.1 Called a camp in the scheduling record (SAM Mg177) and a hillfort in the Historic Environment Record (PRN 3649), Pen-y-gelli is best described as a multiple-ditched enclosure, situated to the east of Newtown in Kerry community (at SO17629105).
- 7.4.2 It was first photographed from the air by Professor St Joseph in 1979 (CUCAP BUG 79) and subsequently by Chris Musson in both 1979 (Fig 15) and 1986, but no surface traces of the enclosure can be identified on the ground. Rowan Whimster plotted the site in the mid 1980s (Fig 16), publishing the result in *The Emerging Past* in 1989 (Figs 28.9; 32.2). It was this plot that was used in the *Montgomeryshire Small Enclosures Project Summary Report* in 1993. Whimster showed four ditch lines, all but one of them partial, in part of a reflection of the fact that the site is divided between three fields and that a trackway bisects the site. In the interior,

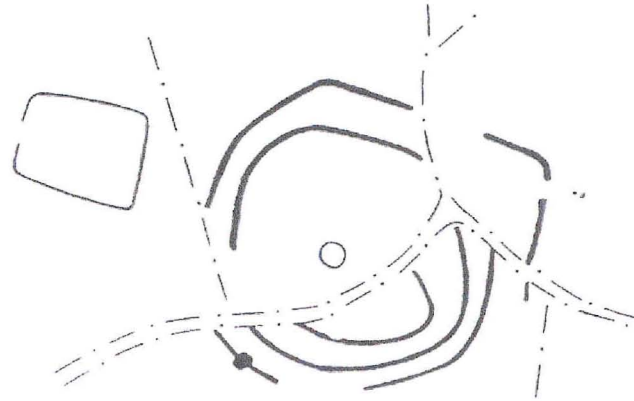


Fig 16. Pen-y-gelli enclosure after Whimster 1989

Whimster plotted a small circular feature, presumed to be a round house. A new plot has been produced by Nigel Jones of CPAT in conjunction with the current programme of work (Fig 17).

- 7.4.3 An area of approximately 1.75ha was examined, comprising a total of forty-six whole or partial grids. As the site covered a total of three fields, individual grids occasionally had to be recorded in two parts, which were combined later using Geoplot. Figure 18 presents the greyscale plot, while Figure 19 gives the interpretation of the results. As with the previous sites, the anomalies have been given a sequence of numbers on Fig 19, which are mentioned in brackets in the text that follows for descriptive purposes.
- 7.4.4 The survey revealed that the site comprised a complex sub-square enclosure measuring 125m north/south by 125m, or 1.24ha. A total of four concentric ditches (1-4), individually up to 4m wide, were visible on the south side of the enclosure, but there were only three ditches on the north side. In fact, the curious arrangement of the ditches almost gives the appearance that they are actually a single, spiral ditch with an external terminal on the south-west and an internal terminal on the east, but this would need further proof. A possible entrance (9), 4.0m wide, was seen in the external ditch to the east.
- 7.4.5 It had been expected that a circular hut would be present in the interior, as this had been plotted from an aerial photograph, but no evidence of a circular feature was found. In approximately the correct position a ditch (5) was located which ran east-north-east for 25m before turning north-north-west and running for a further 12m before terminating. A possible pair of parallel ditches (6), approximately 20m long and 3m apart, were also revealed just to the north of feature 5.
- 7.4.6 Two curving sections of ditch (7 and 8) were recorded beyond the outer ditch on the north-east side of the enclosure, measuring respectively 35m long by 1.5m wide and 20m long by 1.5m wide. The function of these features is uncertain, but perhaps they may have formed some type of outworks in relation to the entrance (9), which is in close proximity.
- 7.4.7 The only remaining features to be discussed are two narrow ditches which cut across the enclosure ditches. In the case of ditch (10), this is approximately 1.5m wide and runs for 110m in the northern part of the enclosure, where it can be plainly seen to cut across each of the three ditches that are present. Two sections of ditch (11), respectively 12m and 8m long, were also

recorded, and these may form part of ditch (10) although there is no direct connection. Given the alignment of both of these features, which are evidently later elements of the landscape than the main enclosure, it is tempting to suggest that they are related to a second enclosure (PRN 5126), which lies only some 20m to 30m distant on the west side of this enclosure.

7.4.8 Pen-y-gelli was chosen for geophysics because of the several unanswered questions that existed. The presence of four ditch lines was incontrovertible and the general impression of the enclosure clear, but the overall pattern of those ditches was far from obvious with two many lacunae in the circuits. The entrance through the ditches was also uncertain, with only that through the outermost ditch apparent. And thirdly, the round hut in the inner enclosure rested in isolation from all other features, but whether a fuller pattern of internal activity remained to be identified needed to be established.

7.4.9 As a practical exercise the site was re-plotted using the available aerial photography but more sophisticated computer software than was available in the 1980s. The result is also shown here.

7.5 Dol-las enclosure, Berriew (Figs 21-23)

7.5.1 Our fifth site is somewhat different. Originally known as the Dol-lâs cropmark it lies on the west bank of the River Severn in the parish of Berriew about 6km to the south of Welshpool (at SO 0774 0106). It was originally photographed from the air as a pair of parallel ditches with an apparent terminal where the ditches rounded to join each other. Photographs of it were taken by both Chris Musson (2005/5056-51-54) and by Toby Driver of the Royal Commission (2005_1149; Fig 20) in July 2005, and the general consensus appears to have been that with the proximity of other prehistoric monuments in the immediate area including the Dyffryn Lane henge and the standing stone known as Maen Beuno, this could well represent a part of another cursus to match the better known example a little further to the north at Sarn-y-bryn-caled outside Welshpool.

7.5.2 The Trust's involvement with the University of Bradford in the examination of the Dyffryn Lane henge monument in 2006 with a considerable financial input from Cadw included various pieces of work which provided a context for the henge. Amongst these, the further study of the Dol-lâs cropmark ranked high and an obvious next step prior to any excavation was a geophysical survey. In October 2006, the geophysics contractor, Stratascan based in Worcestershire, were invited to conduct a resistivity survey of the site. Whether the period of extremely wet weather in which they undertook their survey had a fundamental effect on the performance of their equipment cannot be gauged, but the results were disappointing and it was difficult to distinguish on the geophysics plot even the two parallel ditches that showed reasonably clearly on the aerial photographs (Fig 21).

7.5.3 It was at this time that the period of loan of GAT's magnetometer which CPAT had used for both the Roman military *vici* survey and the defended enclosures programme was coming to an end, but it was felt that there was nothing to be lost by trying magnetometry on the Dol-lâs site where resistivity had been unsuccessful. Our magnetometry survey was carried out eight days after the resistivity survey, and as the following section reveals the results were spectacular. The interpretation of Dol-lâs as a cursus can now be dismissed and in its place there is an extremely clear double-ditched enclosure with much visible within its interior (Fig 22). There are also interesting methodological issues: the site has admittedly been photographed from the air only in one season – 2005 – but the difference in the visibility of the enclosure from the aerial and terrestrial approaches is perhaps more marked here than in any of the other defended enclosures examined during the current programme, yet the nature of the on-site soils as displayed in the growing crop provides no clues as to why this should be the case. And secondly, the success of one geophysics technique as opposed to another appears to turn on its head the belief amongst at least some professional geophysicists that resistivity is a more viable approach on riverine deposits. To these can be added, a third, rather more interpretational point: the enclosure lies extremely close to the Severn in an area which is largely devoid of indicators of late prehistoric

and Romano-British farming and settlement. The presence of the Dol-lâs enclosure implies that we may need to re-assess this valley floor topography and that the proximity of the river may not have been the deterrent that we had assumed.

- 7.5.4 An area of approximately 1.68ha was examined, comprising a total of forty-three whole or partial grids. Figure 22 presents the greyscale plot, while Figure 00 gives the interpretation of the results. As with the previous sites, the anomalies have been given a sequence of numbers on Fig 23, which are mentioned in brackets in the text that follows, for descriptive purposes.
- 7.5.5 The survey revealed that the site comprised a complex sub-square enclosure measuring 128m north/south by 118m, or 1.35ha. The enclosure was defined by two main ditches (1 and 2), each approximately 4m in width, with a main entrance (3) through both on the south side and a possible second entrance (4) on the east side. The gap for the main entrance in the outer ditch was 10m in width, while that in the inner ditch was 7m, the gaps for the second entrance were respectively 7m in the outer and 5m in the inner ditch. The ditches ran parallel to each other on the west, north and east sides of the enclosure but took divergent courses on the south side, perhaps due to the presence of the main entrance. On this side, the inner ditch took a west-north-west/east-south-east alignment, while the outer ditch was generally aligned east-west but with an unusual inward curve at the south-west corner. A third ditch (5), only 1m wide and external to the main defences, was identified on the north side. This ran parallel to the outer ditch for nearly 50m, from its junction with the outer ditch at the north-east corner of the enclosure, to the point where a modern fence prevented readings being taken.
- 7.5.6 A number of features and anomalies were seen both within and between the two main ditches. On the north side, the west end of the inner ditch appeared to be braided (6), perhaps reflecting a re-cut of the ditch or the collapse of some of its internal face into the base of the ditch. Two marked magnetic anomalies were revealed on the east side, one (7), some 5m in diameter, was superimposed on the outer ditch and the second (8), approximately 6m in diameter, in the space between the ditches. Another, less intense, anomaly (9) was revealed between the ditches on the west side of the enclosure, perhaps representing a pit measuring 4m by 2.5m. At least four short ditches were revealed in the space between ditches 2 and 3 at the main entrance on the south side, which might together suggest that this area was either one of complex defensive features or had a subsidiary role in the penning of domestic animals. A further two parallel ditches (10) run south-west from the entrance for up to 20m, probably representing features flanking an approach from that direction.
- 7.5.7 The most marked feature of the interior is an oval enclosure (10), measuring 50m N/S by 44m, in the south-west corner and comprising an inner ditch which abuts the inner (2) of the main enclosure ditches. A second ditch runs parallel to the first from the north-east side of enclosure (10) until it also abuts the main enclosure ditch. The ditches are interrupted by an entrance (11), 3.5m wide, on the south-east side of enclosure (10) and there seems to be an avenue, 25m long, which runs north-westward towards its centre. Some evidence of a possible circular feature of approximate diameter 15m can be seen at the inner end of the avenue and there are two anomalies (12 and 13), each measuring roughly 5m by 3.5m, which may represent pits in the interior.
- 7.5.8 Another possible pit (14), 3m in diameter, lies immediately on the internal side of ditch (2) near the north-west corner of the main enclosure, and there appear to be a number of ditches in the area to the east (15), forming sub-rectangular enclosures. Further to the east, a curved ditch (16) appears to define an ovoid enclosure in the interior, perhaps 45m east/west by 30m, and this cuts or is cut by a relatively straight ditch (17), 38m long and 1.5m wide. An anomaly (18), measuring 3.5m north-south by 2.4m, may represent a pit within the hypothetical ovoid enclosure.
- 7.5.9 The central area of the main enclosure contains a complex of poorly-defined curving ditches (19), one of which also seems to cut or be cut by ditch (17). To the east of this area there are further ditches (21), most of which are poorly-defined with the exception of one (20), 25m long

and 1.5m wide, with a slight curve which crosses the line of the inner ditch (2) of the main enclosure and terminates at the possible eastern entrance (4). In the eastern corner of the enclosure are three discrete anomalies (23), covering an area of 10m north-east/south-west by 4m, which could represent areas of burning adjacent to the ditch, or could be related to what seems to be a curving ditch (22), 14m long, some 8m to the north-west.

- 7.5.10 The brief description given above is unlikely to provide a comprehensive statement of the features that are present in the interior of the enclosure rather it concentrates on those which are more pronounced. It also appears that at least two phases of activity may be present, and perhaps some of the features pre- or post-date the main enclosure, but this is only likely to be resolved by further investigation. At any event, it is readily apparent that the results for the interior of the enclosure demonstrate remarkable complexity in comparison to those obtained at the other enclosures examined.

8 Conclusions

- 8.1 It is not necessary to compile a long concluding section to this report as the results from the five sites referenced above speak for themselves. Without exception the geophysics has revealed new evidence which was not discernible from the aerial photography that was available, and in the case of the Tyn-y-coed and particularly the Dol-lâs cropmark, spectacularly so. Furthermore the precision achieved in laying out the grids for the geophysics surveys enables us to locate the positions of the enclosures with a much greater degree of accuracy than before, as the Boxtree Farm enclosure clearly demonstrates.

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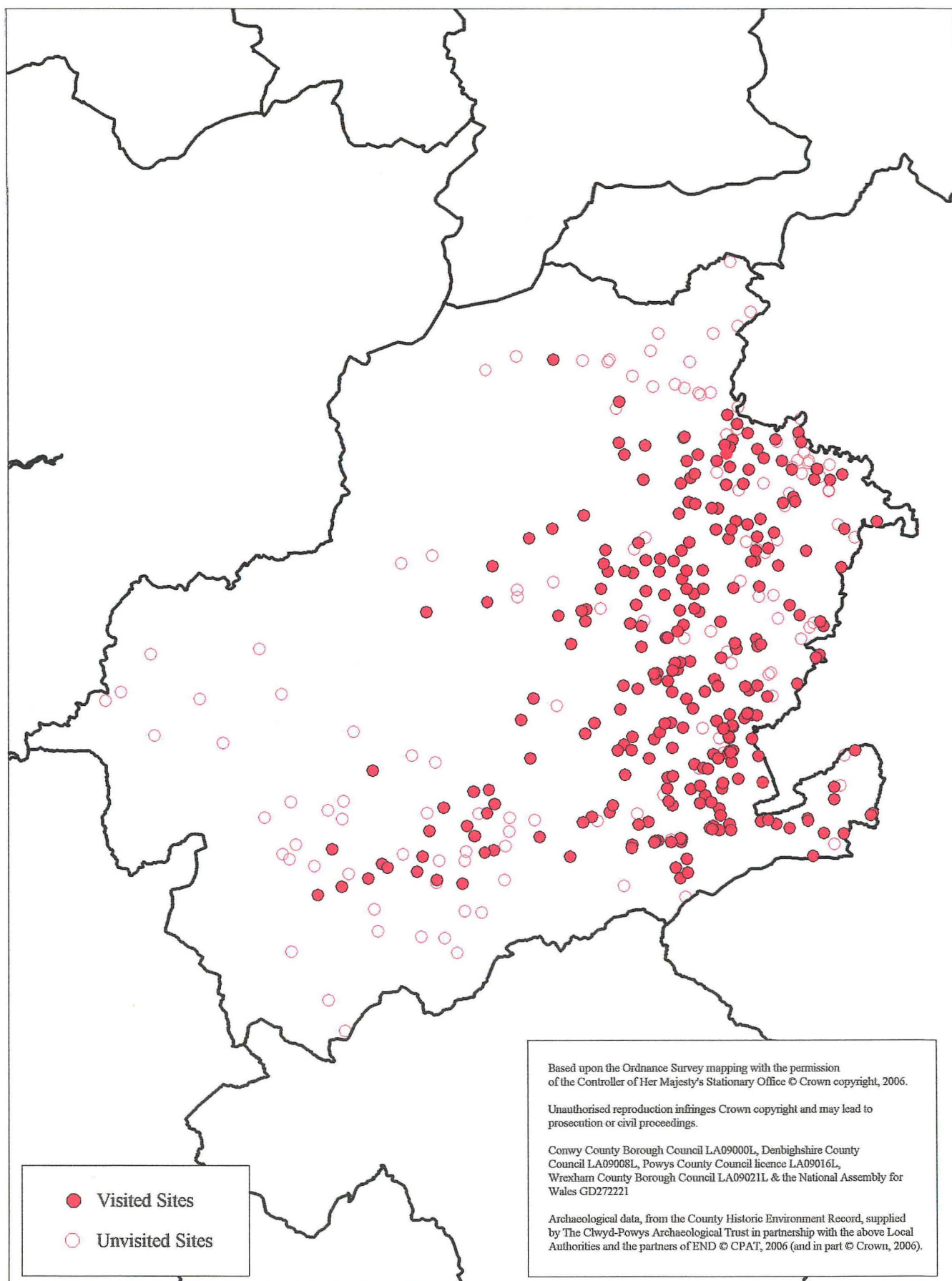


Fig 1 Distribution of all defended enclosures in Montgomeryshire. Scale 1:400,000

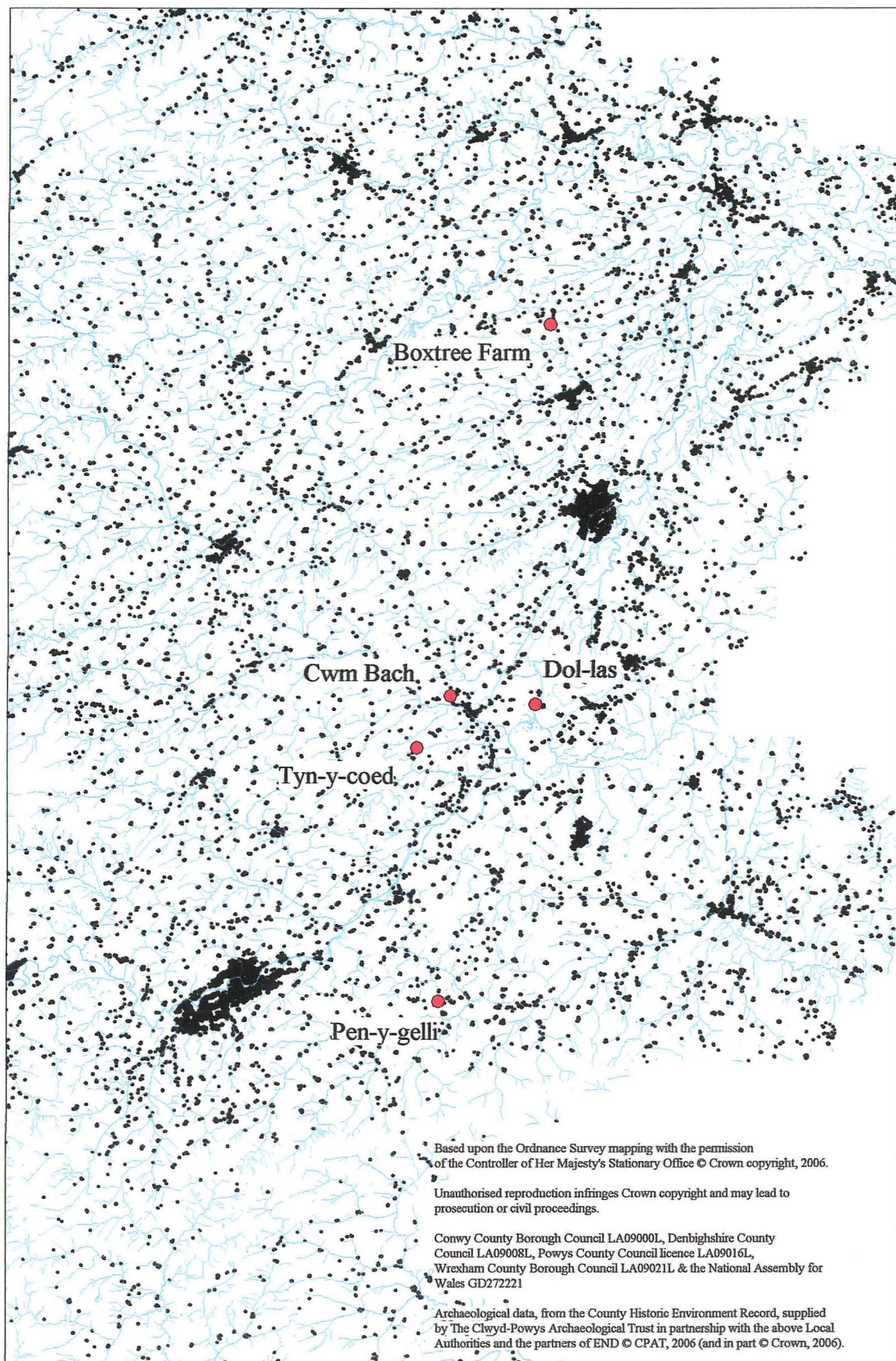


Fig 2 Location of geophysics surveys on enclosures in Montgomeryshire

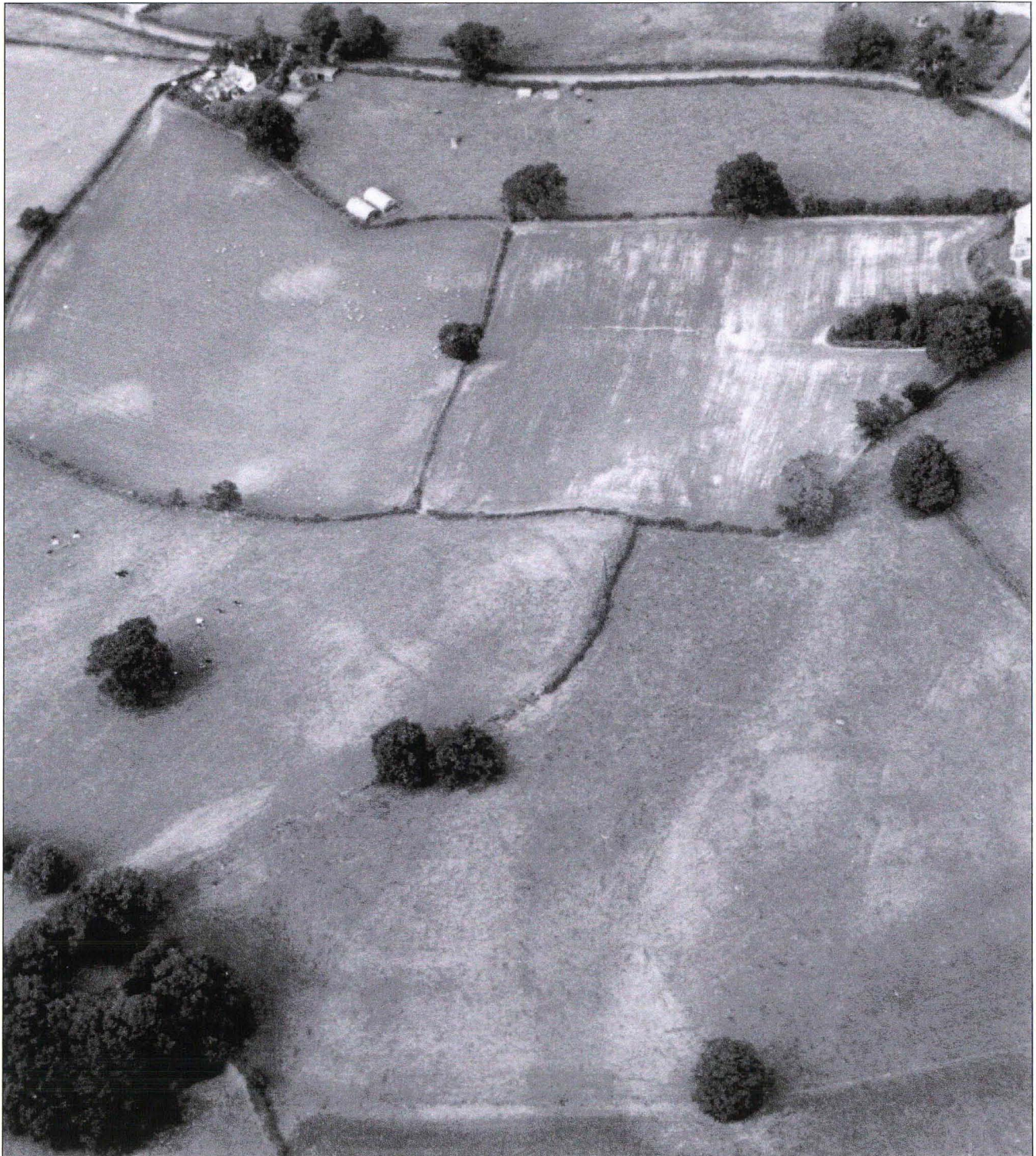


Fig 3 CPAT AP 83-12-24 of the Cwm Bach Enclosure (PRN 7057)

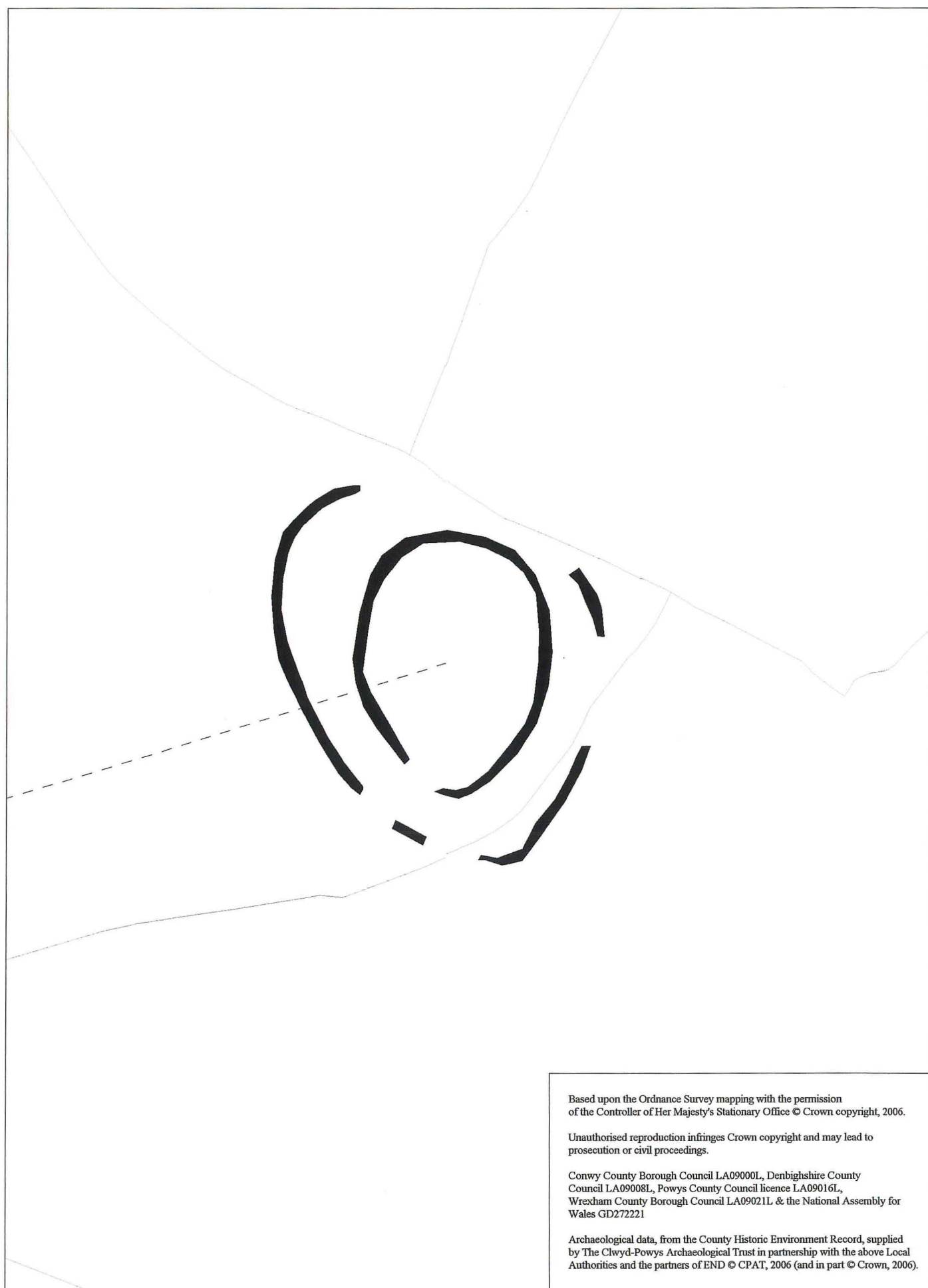


Fig 4 CPAT plot of the Cwm Bach Enclosure from AP sources, compiled in 1993 Scale 1:1,000

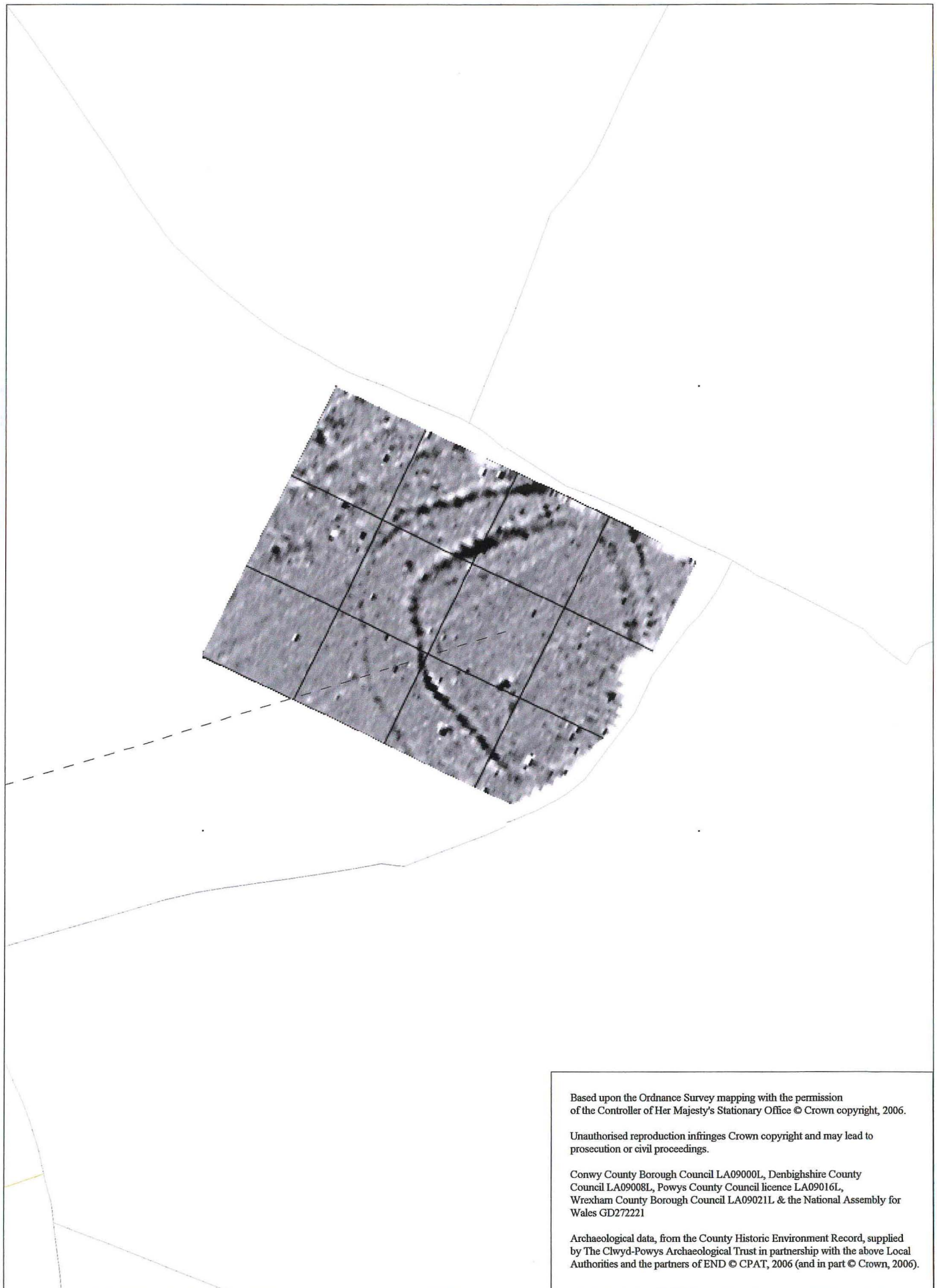


Fig 5 Greyscale plot of the geophysics results at the Cwm Bach Enclosure (PRN 7057) Scale 1:1,000



Fig 6 Interpretation of the geophysics results at the Cwm Bach Enclosure (PRN 7057) Scale 1:1,000

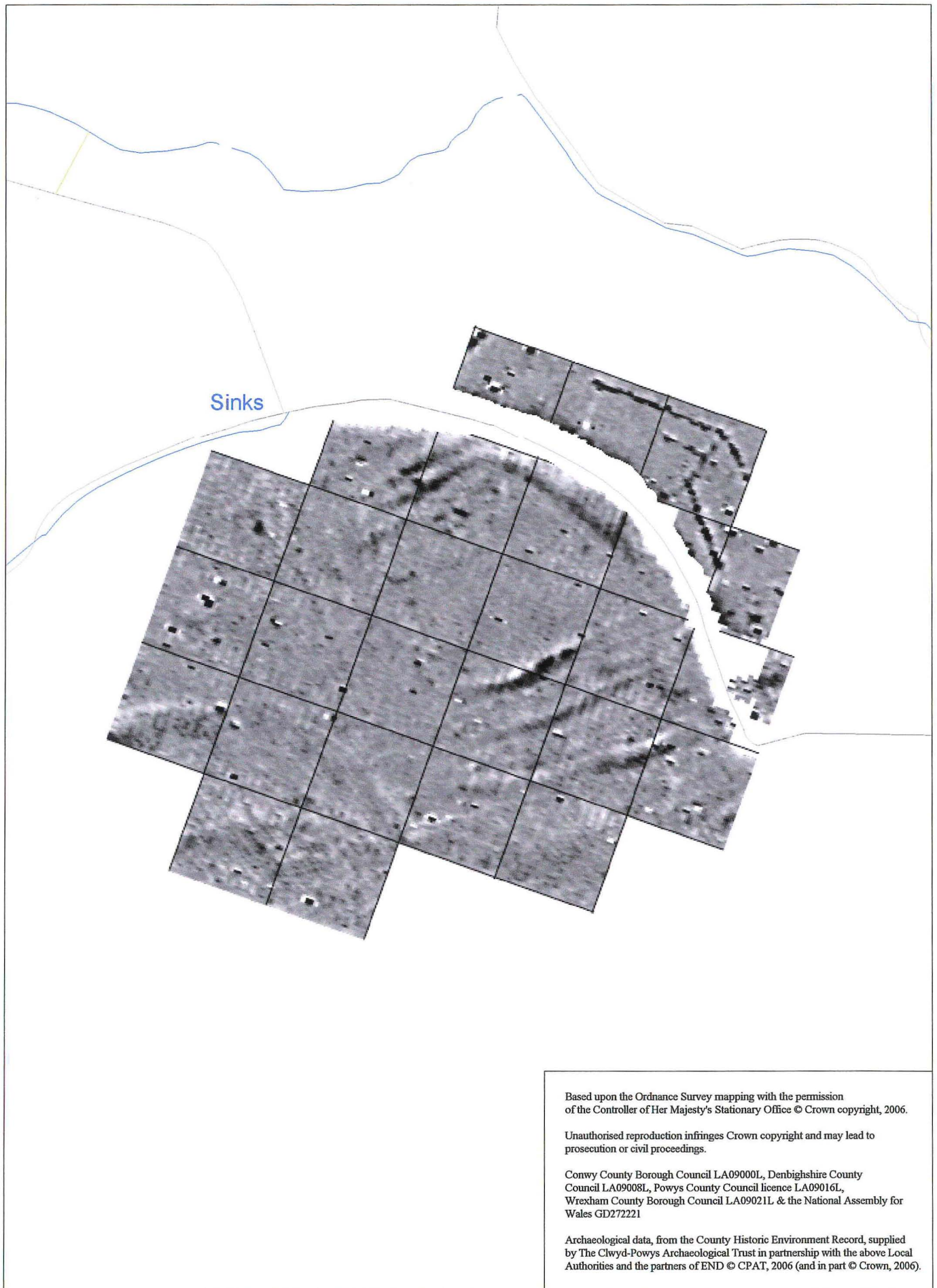


Fig 8 Greyscale plot of the geophysics results at the Boxtree Farm Enclosure (PRN 5261) Scale 1:1,000

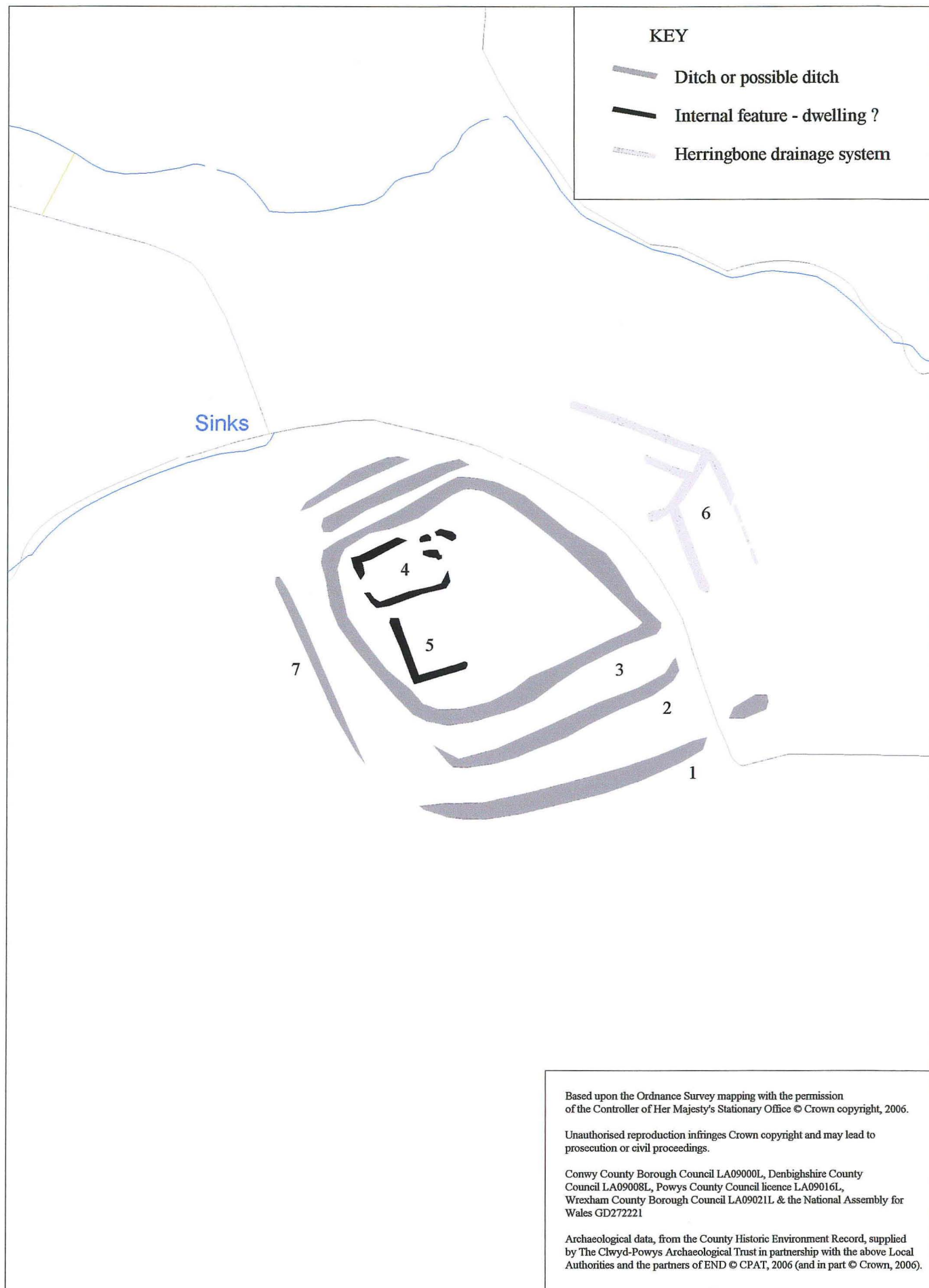


Fig 9 Interpretation of the geophysics results at the Boxtree Farm Enclosure (PRN 5261) Scale 1:1,000



Fig 10 Comparative plots of the AP sources and geophysics results at the Boxtree Farm Enclosure (PRN 5261) Scale 1:1,000



Fig 11 CPAT AP 89-MB-455 of the Tyn-y-coed Enclosure (PRN 7516)

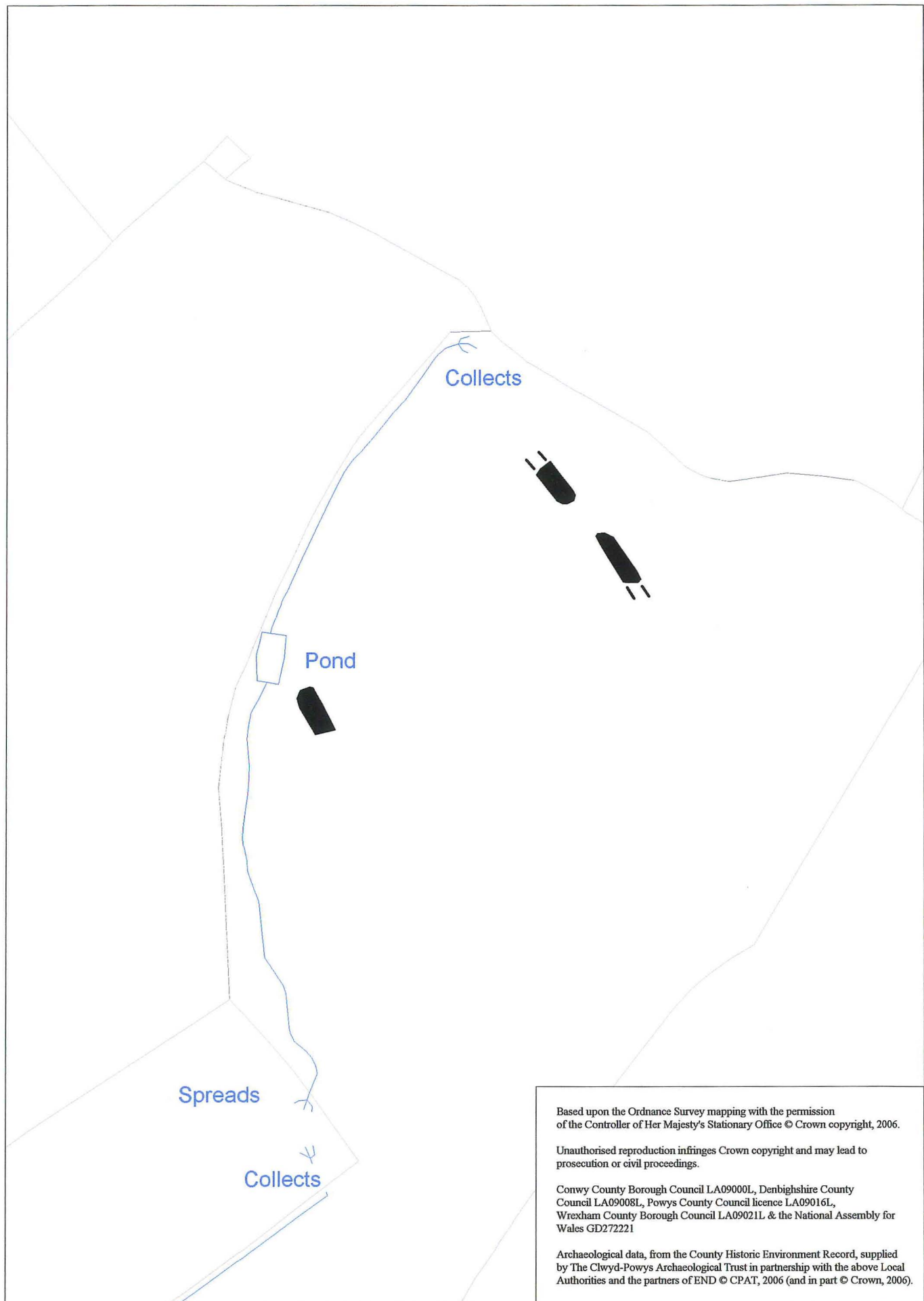


Fig 12 CPAT plot of the Tyn-y-coed Enclosure from AP sources, compiled in 1992 Scale 1:1,000



Fig 13 Greyscale plot of the geophysics results at the Tyn-y-coed Enclosure (PRN 7516) Scale 1:1,000



Fig 14 Interpretation of the geophysics results at the Tyn-y-coed Enclosure (PRN 7516) Scale 1:1,000



Fig 15 CPAT AP 79-CW-17 of the Pen-y-gelli Enclosure



Fig 17 CPAT AP plot of the Pen-y-gelli Enclosure compiled in 2006 Scale 1:1,000

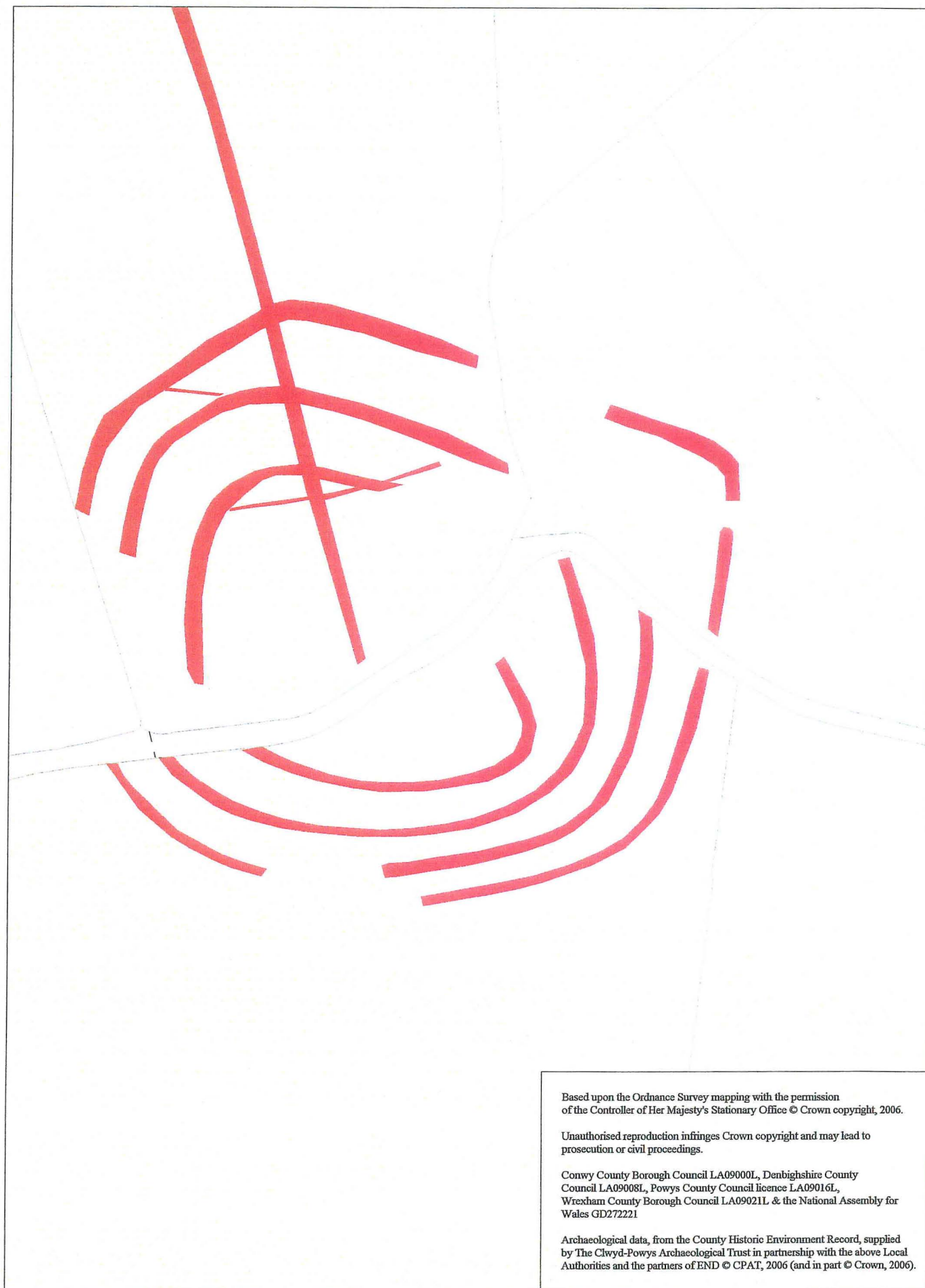


Fig 17 CPAT AP plot of the Pen-y-gelli Enclosure compiled in 2006 Scale 1:1,000

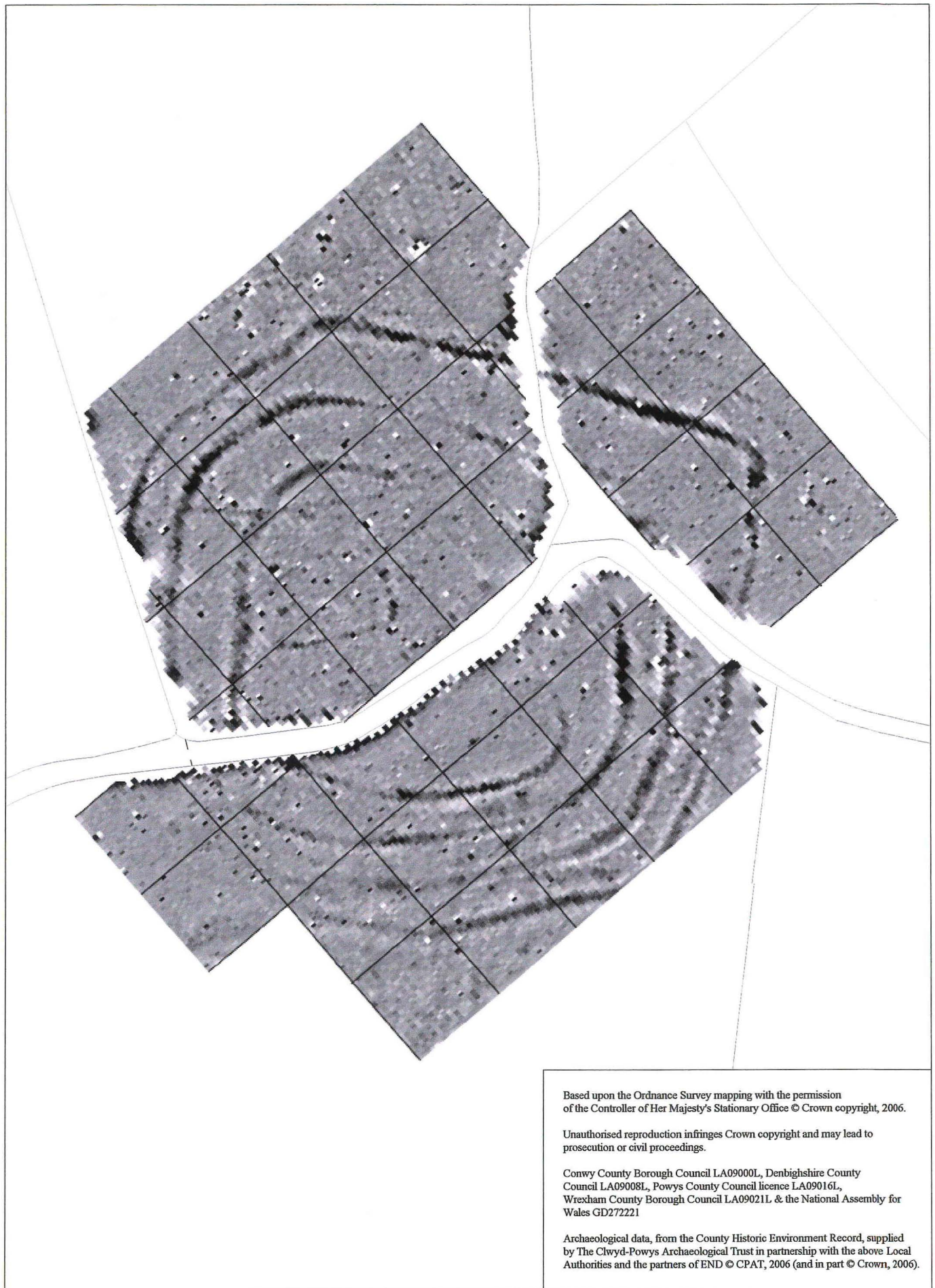


Fig 18 Greyscale plot of the geophysics results at the Pen-y-gelli Enclosure (PRN 3649) Scale 1:1,000

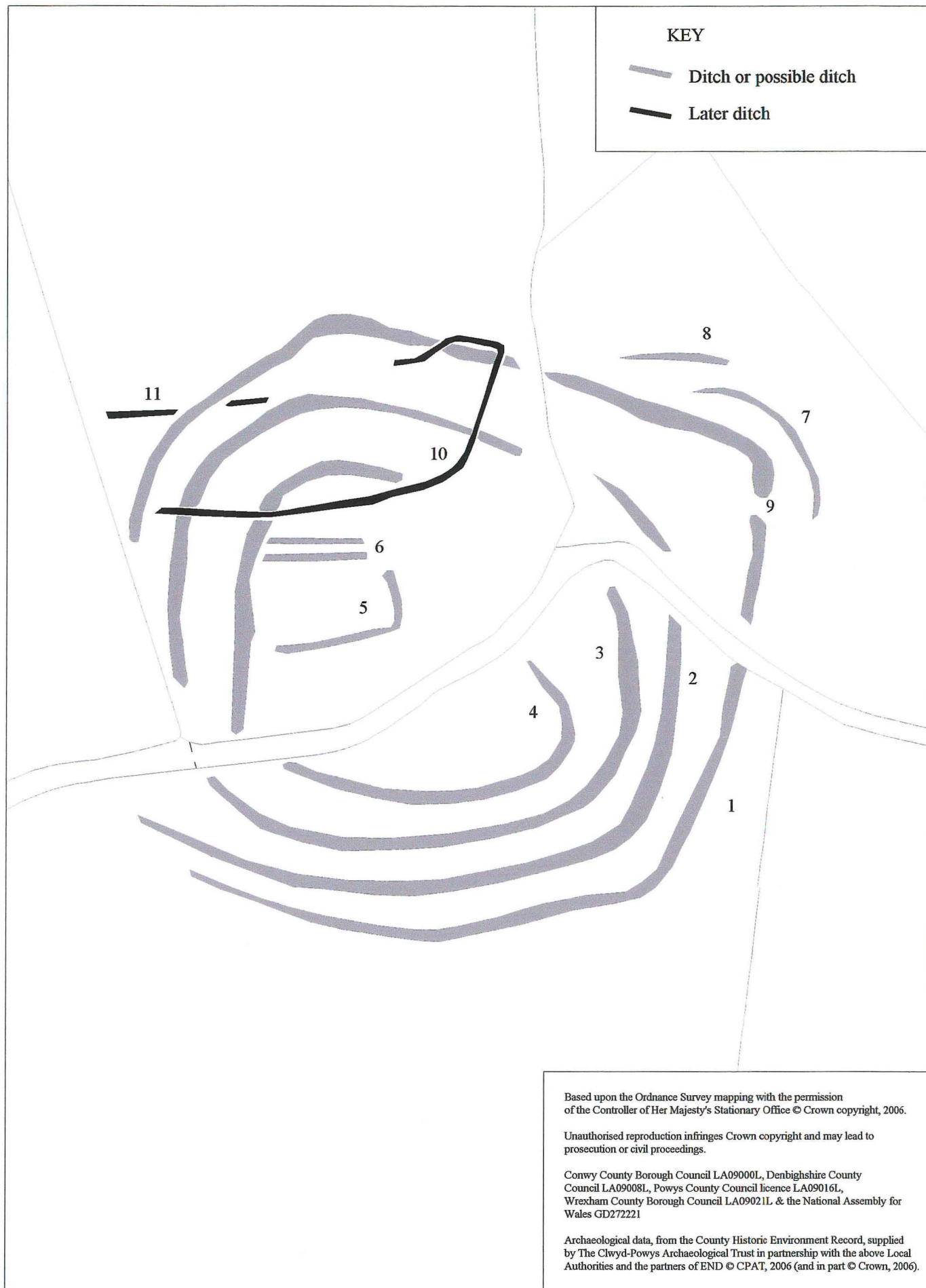


Fig 19 Interpretation of the geophysics results at the Pen-y-gelli Enclosure (PRN 3649) Scale 1:1,000

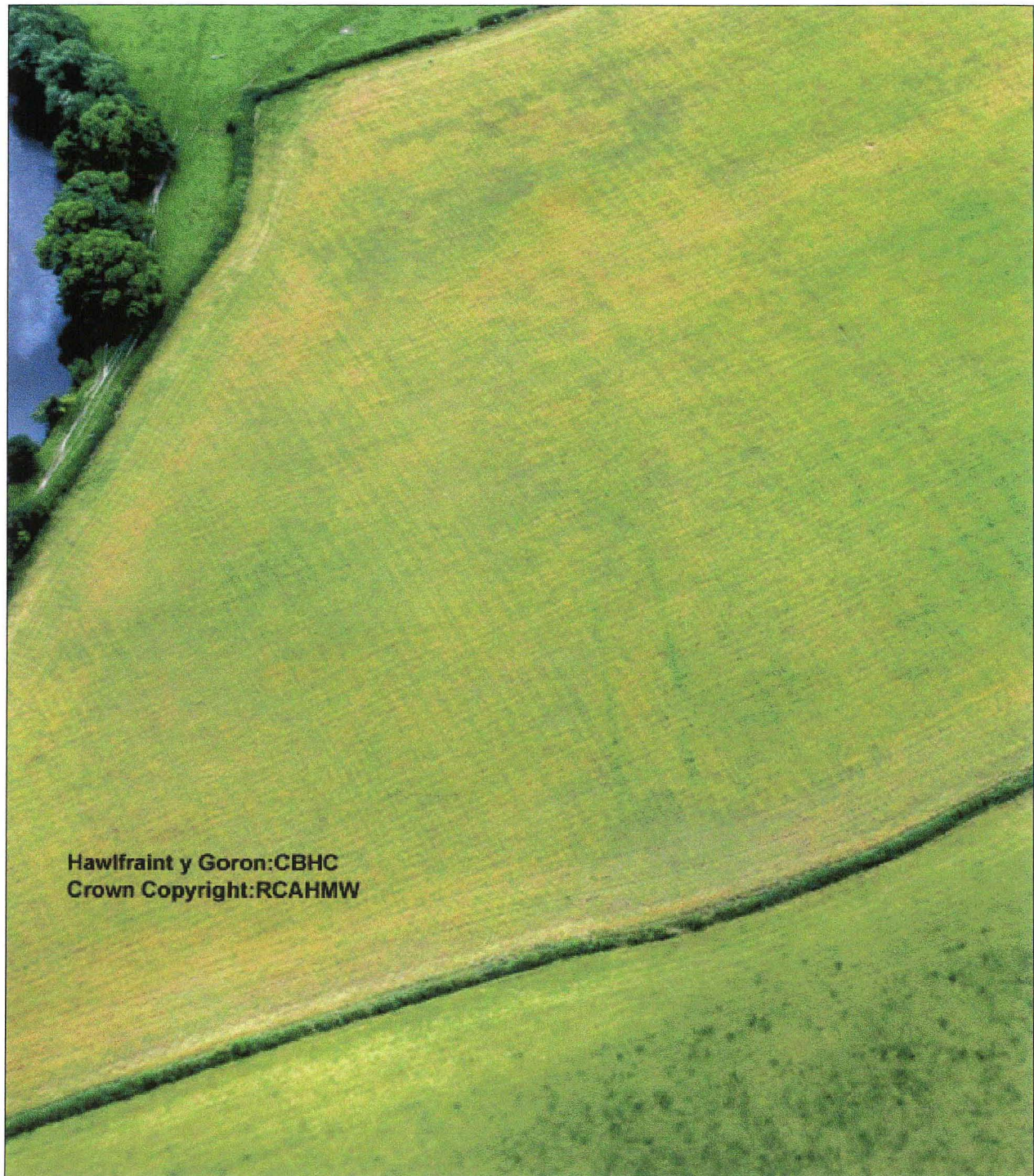


Fig 20 RCAHMW AP (2005_1149) of July 2005 showing the putative cursus (Crown Copyright)

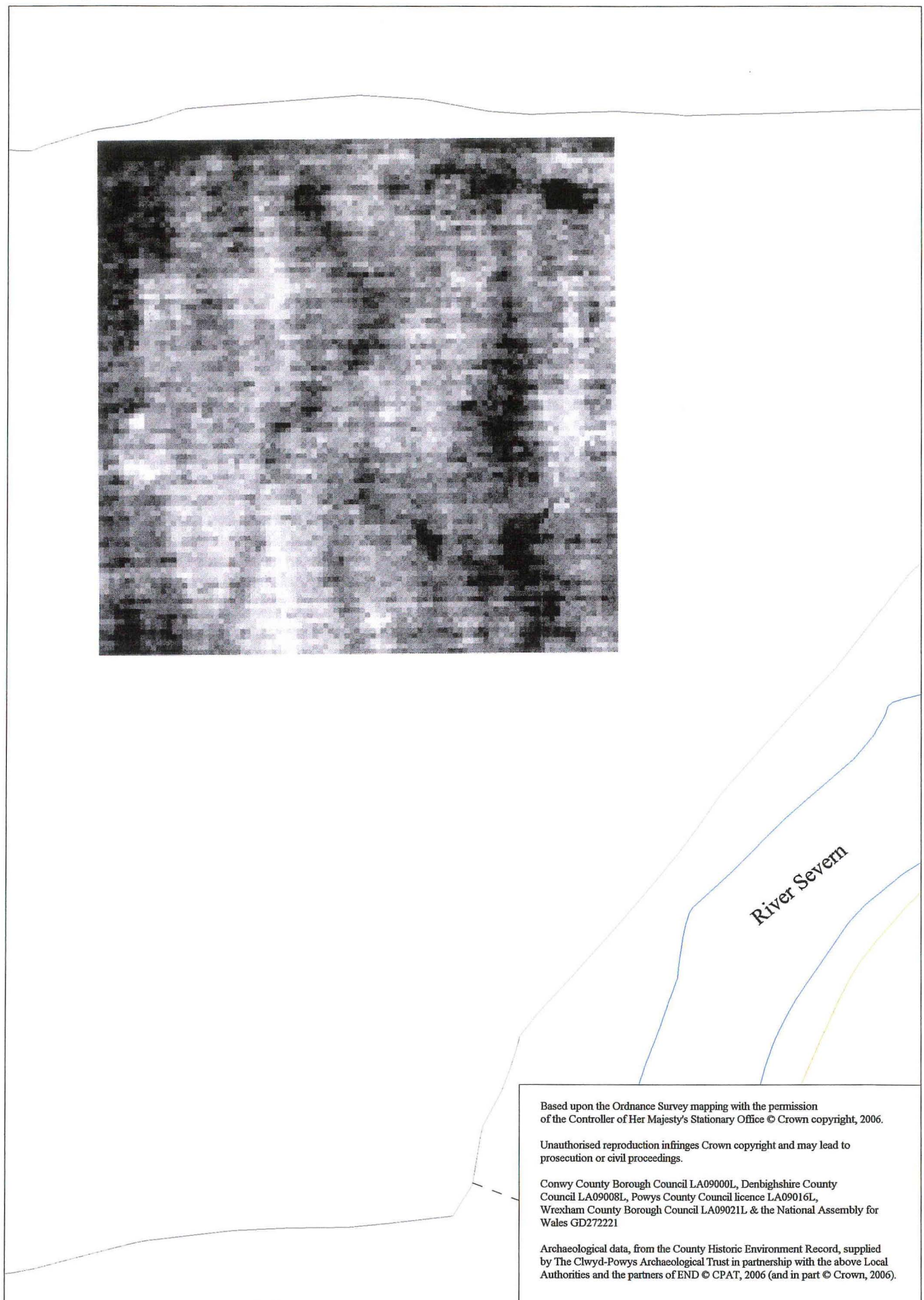


Fig 21 Greyscale plot of the raw resistivity survey data produced by Stratascan at Dol-las Scale 1:1,000

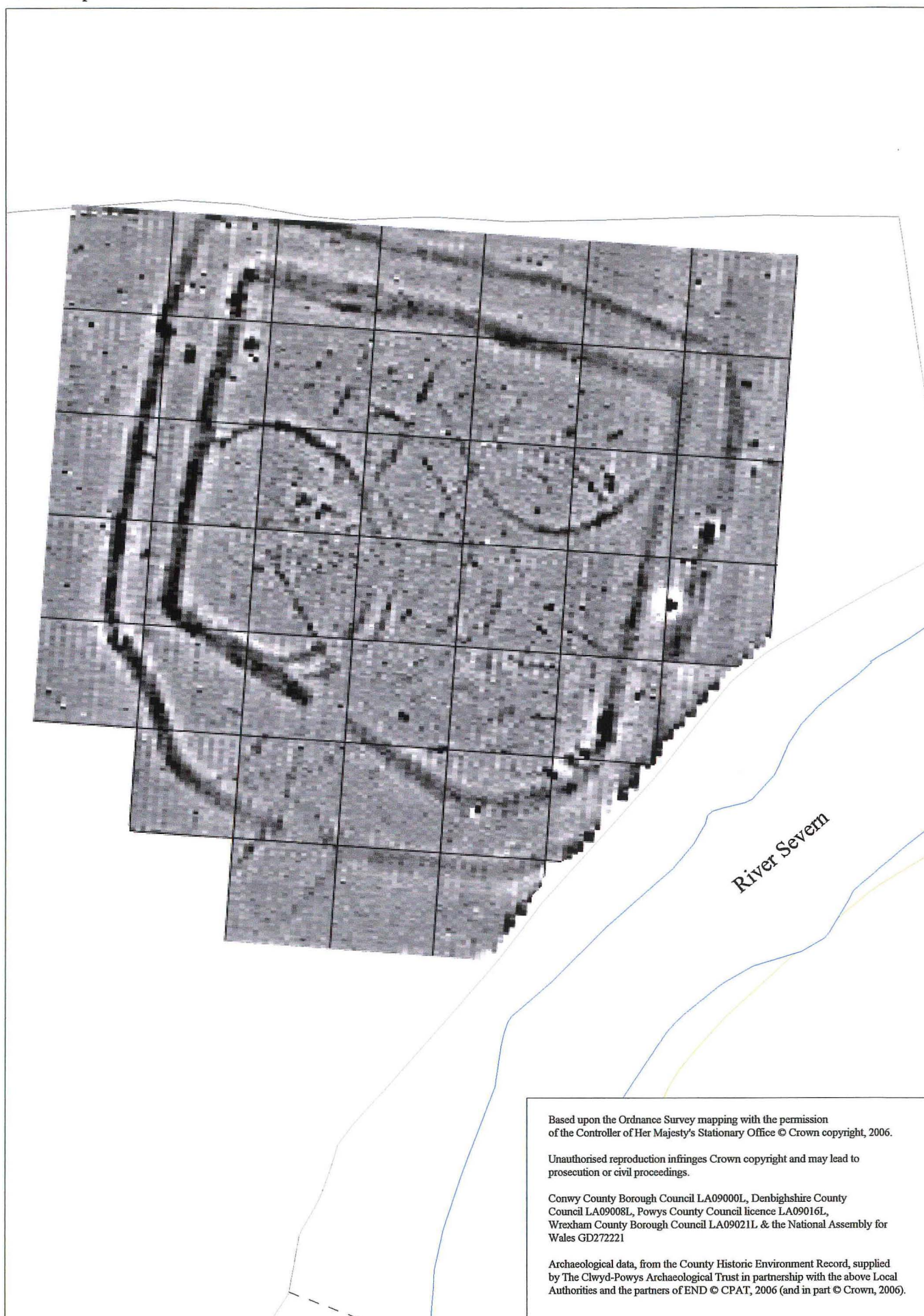


Fig 22 Greyscale plot of the CPAT geophysics results at the Dol-las Enclosure Scale 1:1,000

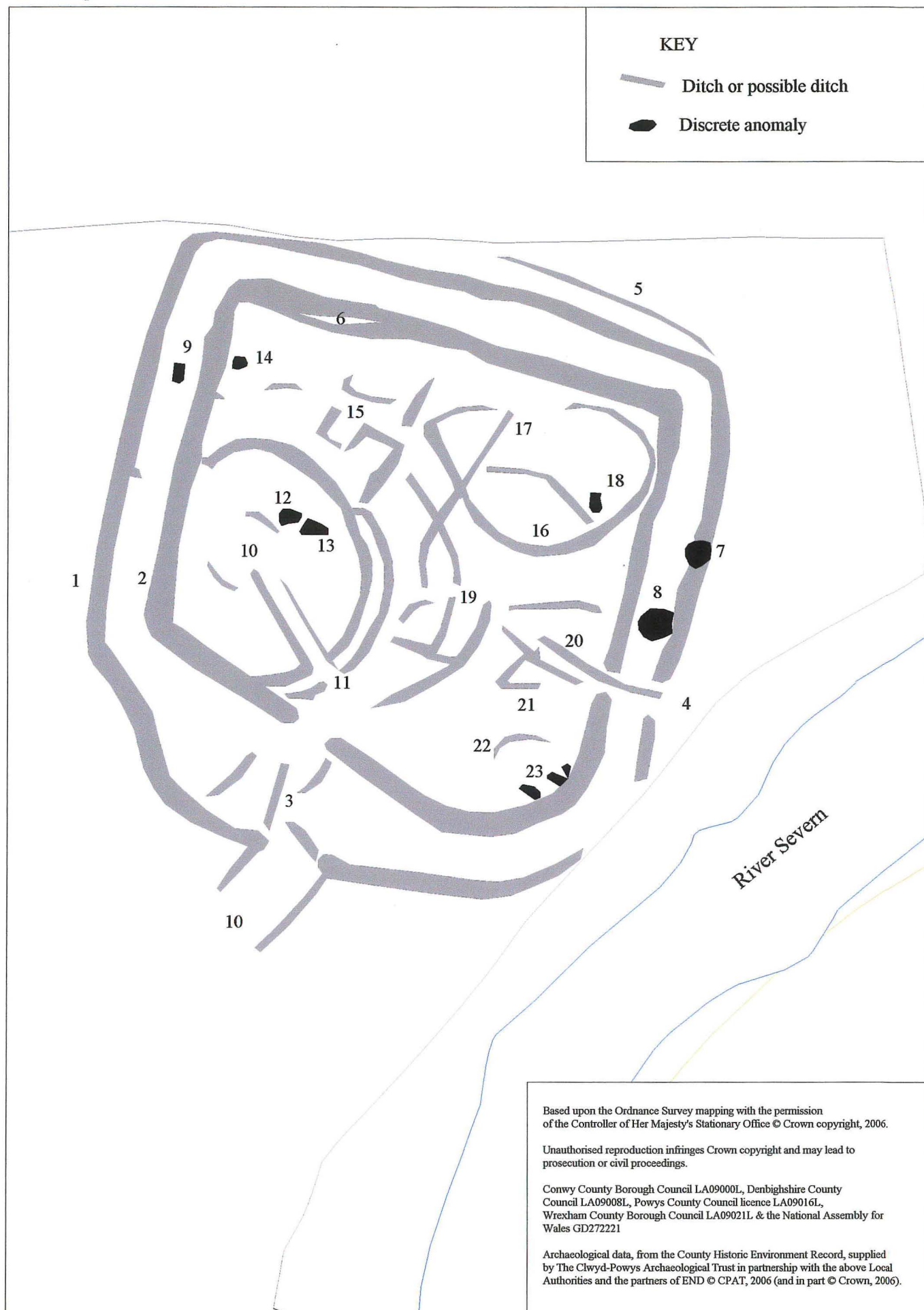


Fig 23 Interpretation of the CPAT geophysics results at the Dol-las Enclosure Scale 1:1,000