
Field boundaries pilot project - interim report



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Ymddiriedolaeth Archaeolegol Gwynedd
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1 Introduction

1.1 Organisational framework

- 1.1.1 **Cadw: Welsh Historic Monuments** is an executive agency reporting to the National Assembly for Wales responsible for carrying out statutory responsibilities to record, protect and help conserve historic buildings and ancient monuments throughout Wales. To this end it compiles and maintains a Schedule of Ancient Monuments of national importance and controls work to these monuments through scheduled monument consent procedures. It also provides grants and enters into management agreements to assist with the long-term preservation of these sites and funds programmes of archaeological work (generally through the four Welsh Archaeological Trusts) to record archaeological sites under threat and to provide advice to local planning authorities. Cadw also has the responsibility for the conservation, preservation and marketing of historic sites directly in the care of the National Assembly.
- 1.1.2 **The Countryside Council for Wales** is the Government's statutory advisor on wildlife, countryside and maritime conservation matters in Wales. It is the executive authority for the conservation of habitats and wildlife. Through partners it promotes the protection of the landscape, opportunities for enjoyment, and the support of those who live and work in, and manage, the countryside. It enables these partners, including local authorities, voluntary organisations and interested individuals to pursue countryside management projects through grant-aid. The Countryside Council for Wales is accountable to the National Assembly for Wales who appoints it and provides its annual grant-aid.
- 1.1.3 **The Gwynedd Archaeological Trust** was formed in 1974. It is one of four Trusts which operate across Wales. It is an educational charity as well as a limited company, governed by a board of Trustees who delegate the daily running of the Trust to a Director. The aim of the Trust is to advance the education of the public in archaeology. Using both its heritage management and consultancy services, the Trust offers information, advice and support to both public and private sectors, including local and regional government, schools and the public, as well as public utilities, developers and other consultants and environmental bodies. In particular, over recent years, it has built up an enviable reputation in Welsh archaeology and heritage management, notably in landscape, countryside and cultural matters. It also has experience of interpreting, presenting and promoting both its work and archaeological sites in the landscape to a wide public audience.

1.2 Background

- 1.2.1 Historic landscape characterisation has confirmed anecdotal evidence that there is a wealth of variation in field boundaries across Wales, in both pattern and construction. This variation is both regional and chronological in origin and forms a key component of the distinctiveness of the Welsh landscape (for example, Gwyn and Thompson, 2000 & 2001).
- 1.2.2 The importance of field boundaries as an essential component of the landscape is also confirmed by the emphasis placed on the renewal and upkeep of 'traditional boundaries' within agri-environment schemes, including Tir Gofal. Their historic and wildlife value has been recognised in the recent Hedgerow Legislation, and there has recently been consultation from CCW over the production of a list of 'regional hedgerow types'.

Despite this acknowledged importance, however, field boundaries represent a much-neglected field of historical and archaeological study and investigation, especially in Wales.

- 1.2.3 In order to reinforce positive perceptions of historic field boundaries, and to help guide best practice in their future management, a clear understanding of the history of boundaries is essential. This should identify and explain the variety in boundary type and form across the country, establish locally traditional boundary building styles and management practices, as well as assessing the historic value of the boundaries.

1.3 Aims of the project

- 1.3.1 This pilot study has been jointly funded by grant-aid from Cadw: Welsh Historic Monuments, and by the Countryside Council for Wales. The project has been designed to examine two different but complementary aspects of field boundaries - the archaeology of field boundaries (Cadw), and the diverse nature of boundaries across Wales (CCW). The different scales of investigation involved in the two strands compliment and inform one another and it was therefore felt that the initial results of the first phase of each strand should be combined as a single report. Where sections of the report relate predominantly to either the Cadw or CCW aspects of the study, this has been indicated at the head of the section.
- 1.3.2 The project is concerned with developing a methodological approach which would look at three aspects of boundaries in particular -
 - (a) the archaeological potential of boundaries, including the identification of 'period' types as well as a methodology for survey and detailed recording;
 - (b) the compilation of an atlas and inventory of 'regional types' of boundaries, chiefly for use within historic landscape characterisation projects and LANDMAP; and
 - (c) the need for detailed boundary studies to inform management initiatives such as Tir Gofal.
- 1.3.3 This report is a summary of the results of the first year of what has been intended as two-year project, and many of the findings are provisional upon further work being undertaken during the coming year. This is therefore intended as an interim statement of where the project has reached at its half-way stage. It is intended that the methodologies produced will be suitable for application more widely across Wales as a whole.

1.4 Acknowledgements

- 1.4.1 The Trust wishes to acknowledge the financial support received from Cadw and CCW for this project.
- 1.4.2 The work has been carried out, and the report compiled, by John Roberts, Jeff Spencer and David Thompson. Kate Geary kindly provided the data and map of sites in the sites and monuments record.

2 Definitions [Cadw and CCW]

2.1 What constitutes a boundary?

2.1.1 Boundaries take a great variety of forms. At the most general level, they can be defined as any linear physical barrier of inorganic (particularly stone) or organic materials (or combination of these) which have been deliberately constructed, for example to restrict movement, delineate property divisions or provide shelter, frequently in an agricultural context.

2.1.2 All boundaries were originally established for one (or more) of a number of reasons:

- (a) to demarcate property;
- (b) to demarcate different strips in an open-field system (although it is probable that 'strip fields' which survive today are simply open strips which have been fossilised below later boundaries which were built when either use or ownership changed);
- (c) to contain livestock for husbandry;
- (d) to exclude livestock from enclosures containing arable crops;
- (e) to provide shelter which improves the climate of the field surrounded by the boundary which in turn encourages the growth of crops, and is healthier for stock;
- (f) to provide drainage, as many have ditches on either one or both of their sides;
- (g) to act as a boundary between cropping units;
- (h) to act as parish or township boundaries;
- (i) to act as a boundary alongside a right of way;
- (j) to act as status symbols (either as physical barriers or to convey status). Boundaries are also often highly symbolic; and / or
- (k) through the process of field clearance (e.g. consumption walls)

2.1.3 This project has concentrated on field boundaries as a particular and specific form of land division.

2.1.4 Boundaries can vary in type according to use, location and local styles. The local geology might dictate whether boundaries are earthen banks (for example low-lying areas on Penllyn) or stone walls (most upland areas in north-west Wales, where stone is plentiful and easily-available. Boundaries built as perimeters around estates or farms (*i.e.* to be seen by the outside world), tend to be grander or better-built than internal boundaries (an example is to be found at Bwlch, near Pistyll, Llyn (see 5.2.9), where the farm boundary at the time of the 1802 estate survey (Caernarfon Record Office – Vaynol 4214), a massive dry-stone wall, is apparently newly-built, taller and with coping stones, unlike many of the internal boundaries which, now, at least, are mainly low banks). Some areas have distinctive styles and traditions of construction (for example the characteristic slate fences of the Bethesda area).

2.1.5 Examples from elsewhere in Wales might include Pembrokeshire *cloddiau*, the hedges of Ceredigion and the drainage ditches from the Gwent levels which also act as land divisions.

2.1.6 Thus a broad definition of 'boundary' has been used which includes dry-stone walls, *cloddiau* (earthen banks), living hedgerows and even post-and-wire fences, as all are of historic and landscape importance in that they contribute to broader landscape character.

- 2.1.7 The project has also considered boundaries which are 'in use' and 'relict', as (a) both are important from an archaeological point of view, (b) both can contribute to the character and appearance of an area; and (c) both have (differing) particular management requirements.

2.2 Importance of boundaries

- 2.2.1 Boundaries are of considerable historic and landscape importance for a number of reasons including:

- as historical structures with valuable internal chronologies, they are capable of revealing complex land- use histories:
- as features sealing extensive and varied buried soils containing important palaeo-ecological evidence for past environments and land-use:
- as components in patterns of boundaries forming field systems of various types and periods, some with considerable chronological depth (palimpsests):
- as supporters of vegetation, notably hedgerow species and trees, which are revealing of historic land use:
- as important habitats in their own right, often included in Biodiversity Action Plans (BAPs) for biodiversity value; boundaries are often of key nature conservation concern as havens for wildlife and as corridors for movement between fragmented habitats:
- as key elements of the historic landscape character of the countryside:
- as features maintained by traditional husbandry practices they are important to local cultural landscapes.

3 Chronological review of boundaries in Gwynedd [Cadw]

- 3.1 While most of Gwynedd's field boundaries were probably constructed during the later medieval and post-medieval process of enclosing open fields, some are undoubtedly much older.
- 3.2 During excavations at Bush Farm in 1995, an enclosure wall leading off the wall of the main hut circle, which was dated to the 1st/2nd centuries AD, could clearly be seen to form the base of a stone-built field wall which was still in use (Longley, Johnstone and Evans, 1998, 201).
- 3.3 The uplands of Ardudwy have often been described as one of the most visually-impressive ancient farmland landscapes in Britain (Cadw/CCW/ICOMOS, 1998, 73). Here, lengths of so-called wandering walls, linked with typically late-prehistoric circular settlement enclosures, stretch for miles. A combination of their robustness and the marginal areas which they occupy means that some of these walls are probably amongst Wales's oldest artefacts still in use.
- 3.4 Examples of this type of boundary, characterised by their curvilinear pattern, their construction often of huge orthostatic stones and their association with hut circle settlements, are to be found in many upland and marginal areas of Gwynedd. Some are now relict and survive as low earth banks or stone walls (for example around the southern slopes of Moel Bronmiod, Llanaelhaearn - SH425455), while others are still in use (for example the areas around Llwyndu-bach, Penygroes (SH480543), and Bod Angharad, Rhostryfan, both south of Caernarfon (SH501583) (see figure 1).
- 3.5 The earliest written references to boundaries come in the Laws of Hywel Dda, although these are of limited use in identifying what might be characteristic of medieval boundaries:-

Boundaries

From whomsoever shall break the boundary between two townlands by ploughing it the King is entitled to the oxen which ploughed it, and the plough-frame and the irons, and the worth of the ploughman's right foot and worth of the caller's left hand, with fourpence to the owner of the land, and the boundary to be restored as it was.

Whosoever ploughs land without permission, let him pay fourpence to him to whom the land belongs, and a penny for every furrow ploughed, with a surreption fee for the King.

If it happens that there is a dispute between two parties about land and earth, and the land is prohibited until it is freed from dispute, and in spite of the prohibition one of the persons makes use of the land (whether by building or ploughing), law says that the punishment for that is the same as for breaking a boundary.

And if it is ploughing that happens, this is the punishment: the eight oxen and the ploughframe and the irons and the worth of the ploughman's right foot and the caller's left hand, and that to the Lord. If it is building or other use that he makes, the building or use which he makes will belong to the Lord, since the land was in the Lord's hand when they were done, and there was no occupier of it save the Lord: with nine score pence camlwrw, and the land of its former status.

Dw.

If it happens that there is fixing of boundaries for land between two men of equal status, and the one sets the boundary there and the other here, and both parties swear, that is one of the three places where law shares in two halves.

Figure 1 - Rhostryfan, prehistoric patterning Centred on NGR SH49695781

Contours at 10m intervals

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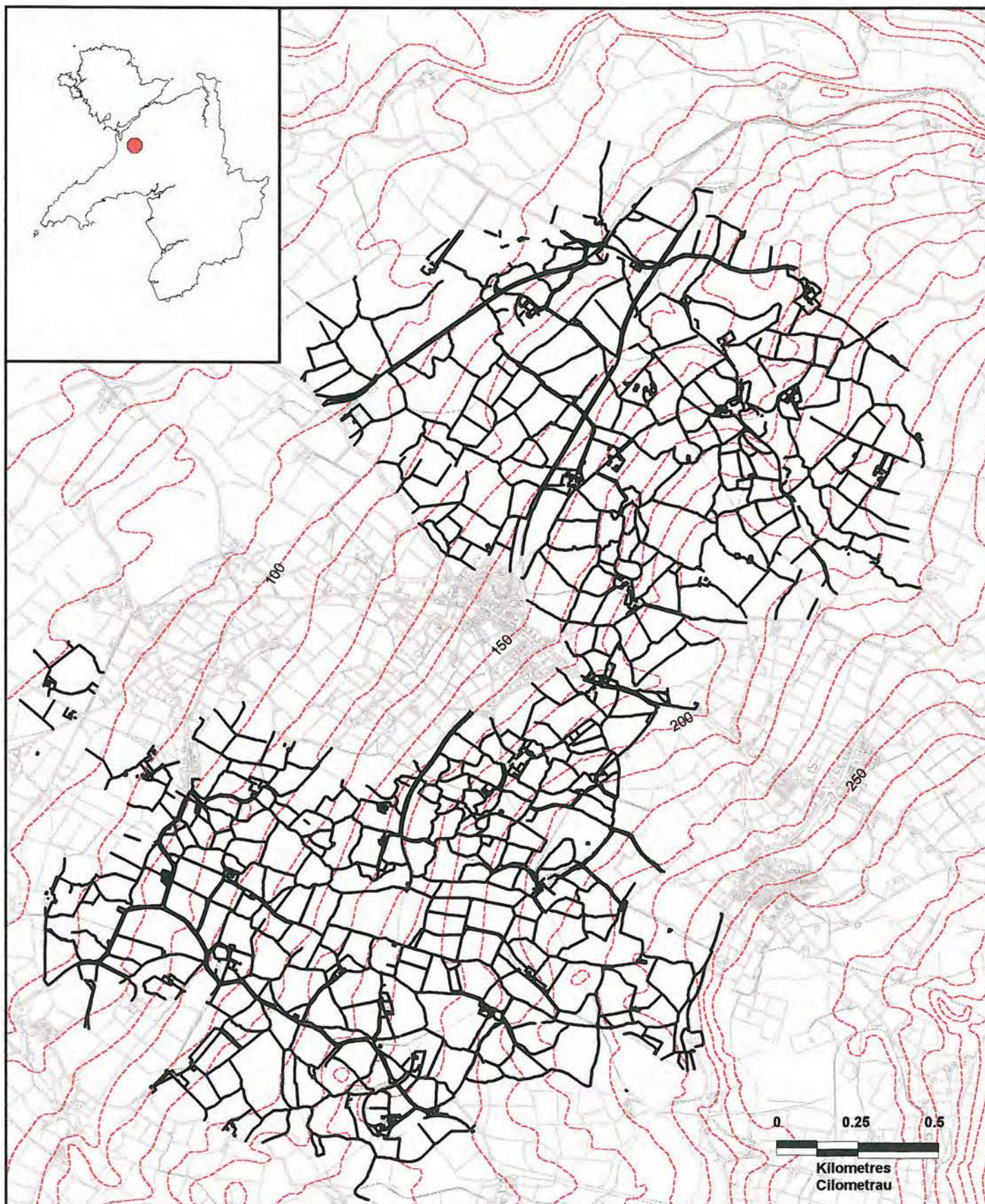


Figure 2 - Morfa Nefyn, strip fields Centred on NGR SH29314023

Contours at 10m intervals

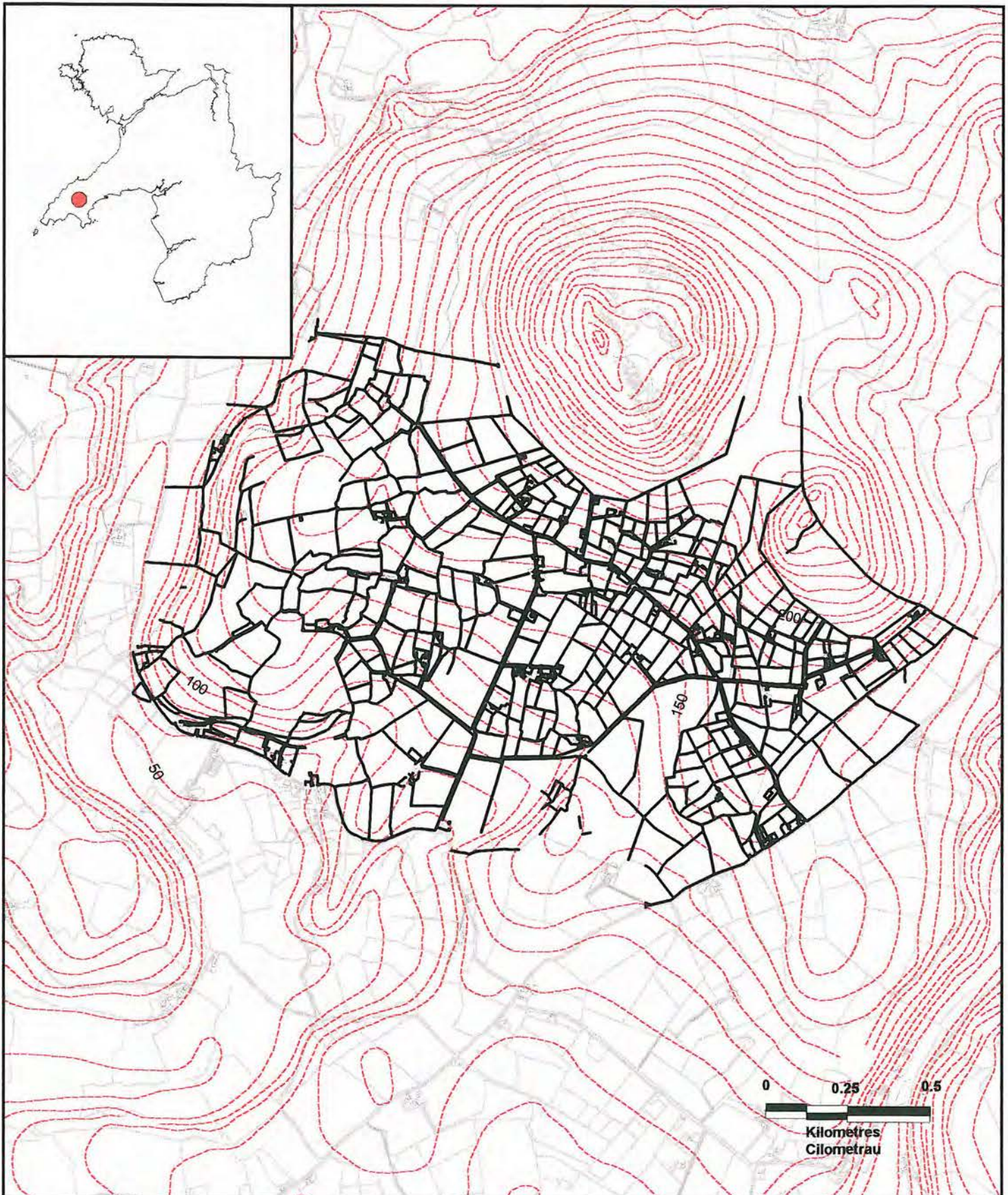
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Figure 3 - Garnfadryn, stone walled gridded pattern Centred on NGR SH28123436

Contours at 10m intervals

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There are three stays of boundary: status and proprietorship and prior occupation. A person whose status is lower than one of these cannot set boundaries against them.

Dw.

If it happens that there is fixing of boundaries between two owners of two maenolydd, whether they are abbots or they are bishops, setting the boundary belongs to the higher in status of them. If they are equally high, setting the boundary belongs to him who has prior occupation of his bishop-land, on his oath by his crozier and the gospel being on the spot when they are sworn by.

Dw.

If it happens that there is fixing of boundaries between two persons, and that the claimant says that he has status to set the boundary, unless the defendant doubts him, let there be law between them for their primary status, and if his status is adjudged to him, let him afterwards show the boundary.

Dw.

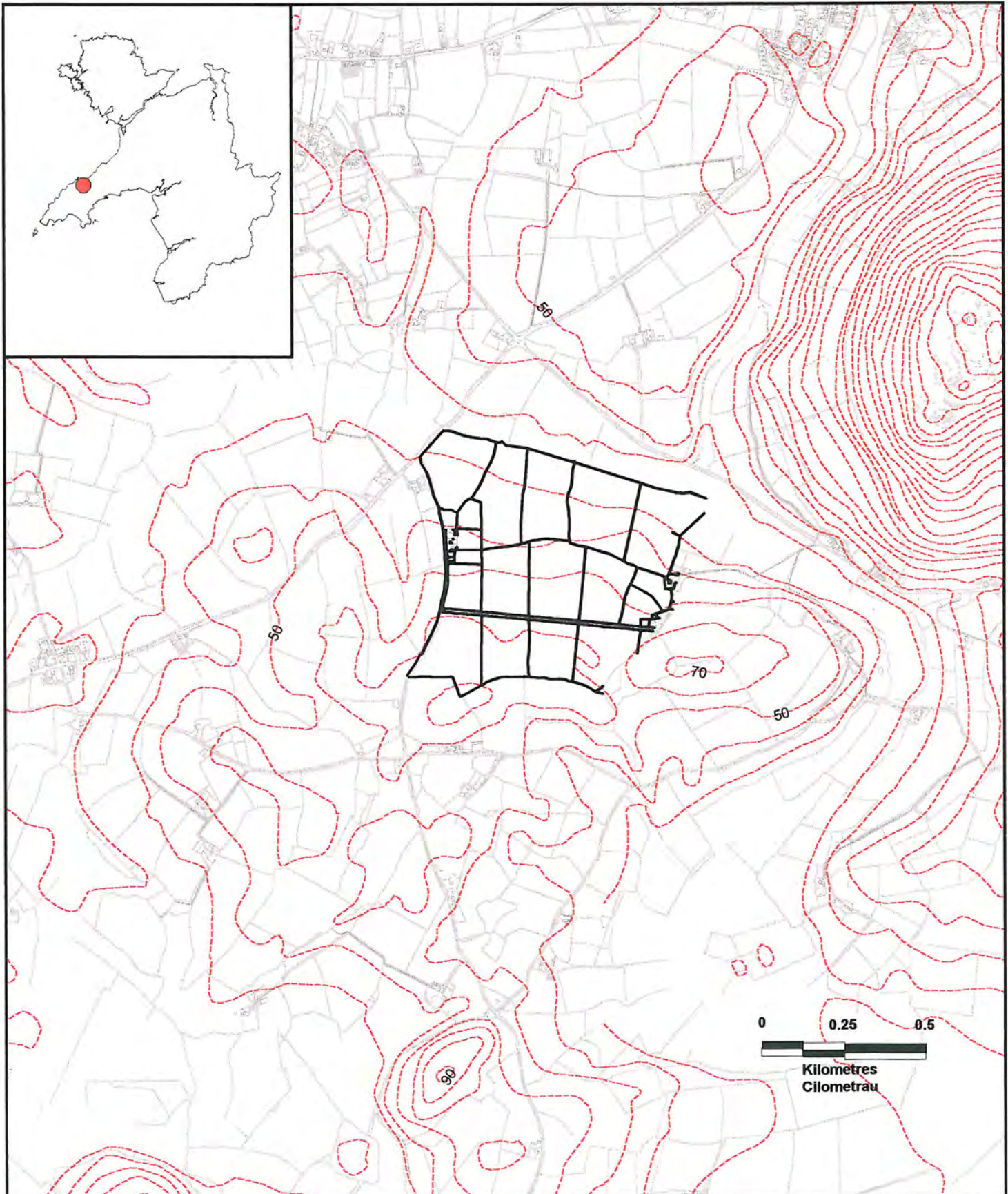
Whosoever moves a boundary stone which is notorious between two townlands, let him pay six score pence to the owner of the land, and a camlwrw to the King; and similarly for a road which marks a boundary alongside the road.

- 3.6 No field boundaries in Gwynedd have yet been dated by excavation to the medieval period, although recent work as part of the deserted rural settlement project have tentatively dated some boundaries near Castell in the Conwy Valley to the sixteenth century (Jones, 1998, 20).
- 3.7 In addition, many Tithe and early maps (*e.g.* Nefyn) clearly demonstrate the existence of 'quilllets' (*i.e.* long, thin 'fields', the remains of dispersed strips which are so characteristic of medieval open field agriculture) well in to the 19th century, especially in the areas surrounding modern farms with medieval (bond) township place-names. There are two areas in particular where these strips can clearly be seen in the modern landscape, fossilised below later boundaries: these are both in Llyn, around Morfa Nefyn (on the north coast - see figure 2) and Uwchmynydd (at the far western end) (Thompson, 1997).
- 3.8 A field pattern and type which can be fairly closely dated are the regular, stone-walled field patterns which date from the enclosure of waste, in both upland and lowland contexts, at the beginning of the 19th century. There are several examples of these in Gwynedd, but amongst the best-preserved are those around the lower slopes of Garn Fadryn (an area which was enclosed between 1805 and 1825 - see figure 3), and Rhoshirwaun, a less regular but nevertheless distinct, pattern (which was enclosed between 1802 and 1812) (Thompson, *ibid.*).
- 3.9 At about the same time, many of the larger estates (for example Glynllifon, Nanhoron and Madryn) were carrying out improvements to their land and buildings, and this is reflected in the geometric patterning of fields which are still clearly visible in the landscape (for example, T P Jones embarked upon large-scale farm improvements when he inherited the Madryn Estate in 1790, and most of the regular, axial fields on former Madryn land date to this period (Thompson, *ibid.* - see figure 4).
- 3.10 The 20th century has seen the creation of fieldscapes of its own. For a number of reasons, mainly economic, hedges and stone walls were taken out and in many places the existing patterns of fields have been replaced by post and wire fences and huge expanses of crops or pasture. The northern coast of Llyn is a good example of an area characterised by such fields.

Figure 4 - Penhyddgan, Nefyn, 1790s estate improvements Centred on NGR SH29853874

Contours at 10m intervals

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4 Atlas of regional boundary types [CCW]

4.1 Consultation procedure

4.1.1 As part of the project, CCW required the production of a preliminary Atlas of Regional Boundary Types covering the whole of Wales. This was to be produced as a paper map at the scale of c. 1:250,000, with broad boundaries showing the limits and distribution of regional types, cross-referenced to a database inventory containing written descriptions.

4.1.2 A consultation procedure was put in place to try to collect information on the types and distribution of different types of boundary in Wales, from as wide a range of sources as possible. This procedure involved

- (a) writing an article for the Bulletin of the Welsh Historic Gardens Trust describing the project and asking for information on regional types from members (see appendix I);
- (b) a field boundary questionnaire which was sent to all Tir Gofal project officers and other relevant organisations and individuals (some fifty people in all), in order to gather a countywide database of information about regional types and their distribution and management (the letter and lists of consultees and respondents are given in appendix II)
- (c) contacting directly other archaeologists working in Wales who have had experience of recording field boundaries.

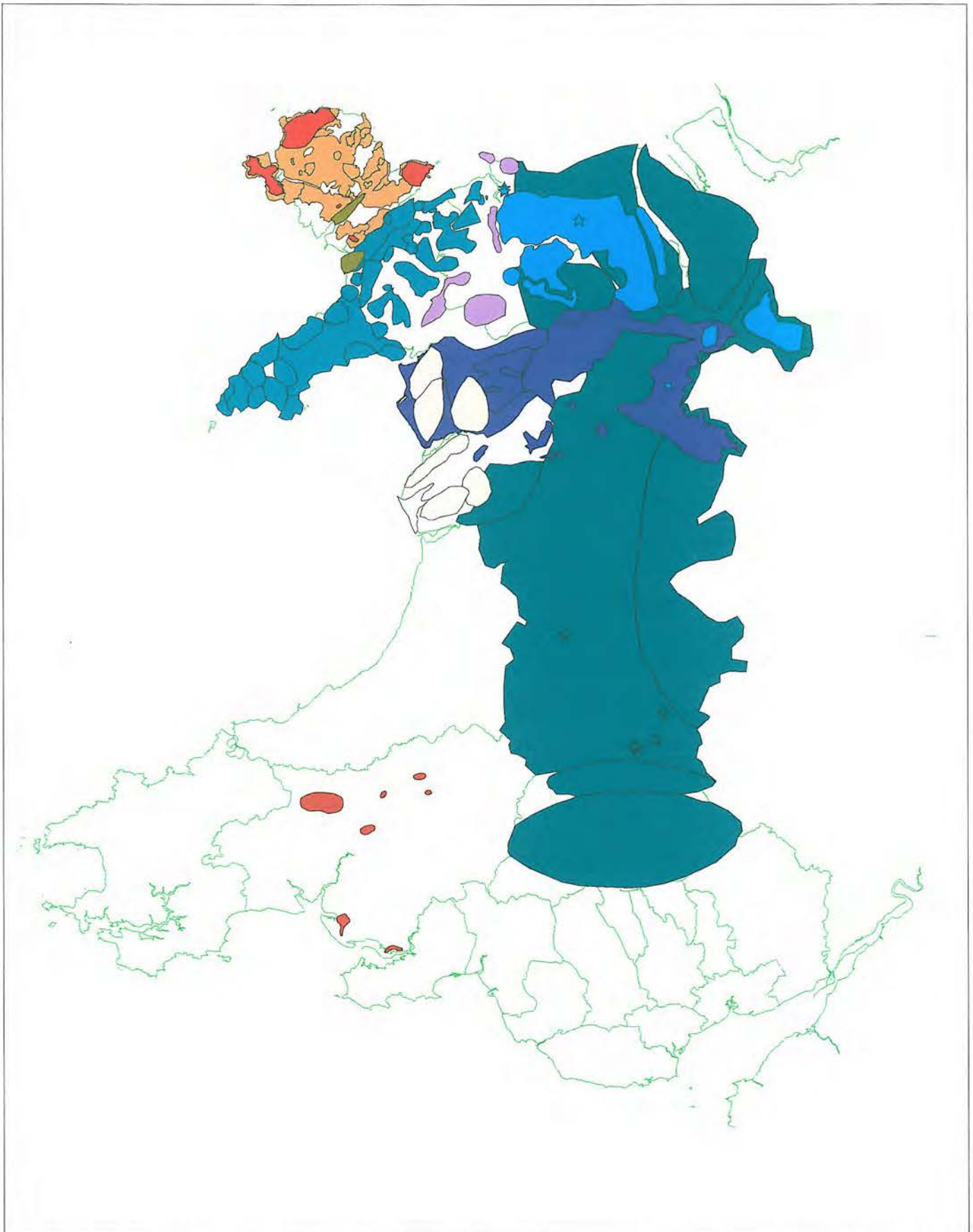
4.2 Consultation results

4.2.1 Unfortunately, despite prompting, there was a poor response to the consultation process, and just twelve responses were received (four from archaeologists, three from Tir Gofal project officers (one of which was a joint reply), two from members of WHGT, two CCW area officers and one from a local authority). In addition, there was a substantial input from four members of GAT who have considerable fieldwork experience of north-west Wales. The geographical spread of respondents was uneven, with ten of the twelve coming from north/mid Wales and only two from the south (see figure 20).

4.2.2 However, the information derived from the consultation did allow a provisional distribution map of characteristic types and of boundary character areas to be drawn up (figure 21, numbers refer to area numbers given in appendix III). This demonstrates the way in which it will be possible to manipulate and present the more extensive corpus of data which will result from the next phase of this project. The areas delineated by consultees on paper maps were digitised against a 1:250,000 base map of Wales using Mapinfo GIS software. Supporting information was entered in summary form into a flat table structure attached to the object data. This consisted of the following fields - area number, type, short description and origin of the information. A more detailed Access database has also been produced mirroring the Mapinfo table but allowing a greater level of detail to be stored. This includes 'memo' fields for lengthier character descriptions, and for management issues arising out of the consultation procedure. It will be updated and maintained during the course of the second phase of the project. The information contained within the MapInfo table is given here as appendix III. Area numbers are cross referenced with figure 21.

- 4.2.3 Information was entered into the 'type' field of the MapInfo table using standard boundary reference terms. This allows the database to be queried on the basis of individual or multiple type criteria. A series of queries were run for 'slate fences', 'hedgerows', 'laburnum hedges', 'drystone walls', 'earth banks' and 'cloddiau' which are given as figures 22 to 27 respectively. Given the limited response from the consultation exercise, these maps only provide a provisional view of the distribution of the various types selected. They do however serve to demonstrate how the extended body of information resulting from the second phase of this project can be interrogated to produce meaningful distribution maps.

Figure20 - Geographical distribution of field boundary related information derived from consultation exercise



Key

■ Sally Ellis, CCW, NW Area Office	■ Rosie Carmichael, Carmarthenshire C.C.	■ GAT - Conwy information
■ CCW Tir Gofal NE- Eleri Wynne	■ Clwyd Powys Archaeological Trust	■ GAT - Llyn / Arfon information
■ CCW Tir Gofal NE- Glenda Thomas	■ GAT - Anglesey information	■ GAT - Meirionnydd information

Figure 21 - Location of boundary character areas derived from consultation exercise (numbers refer to area numbers in appendix III)

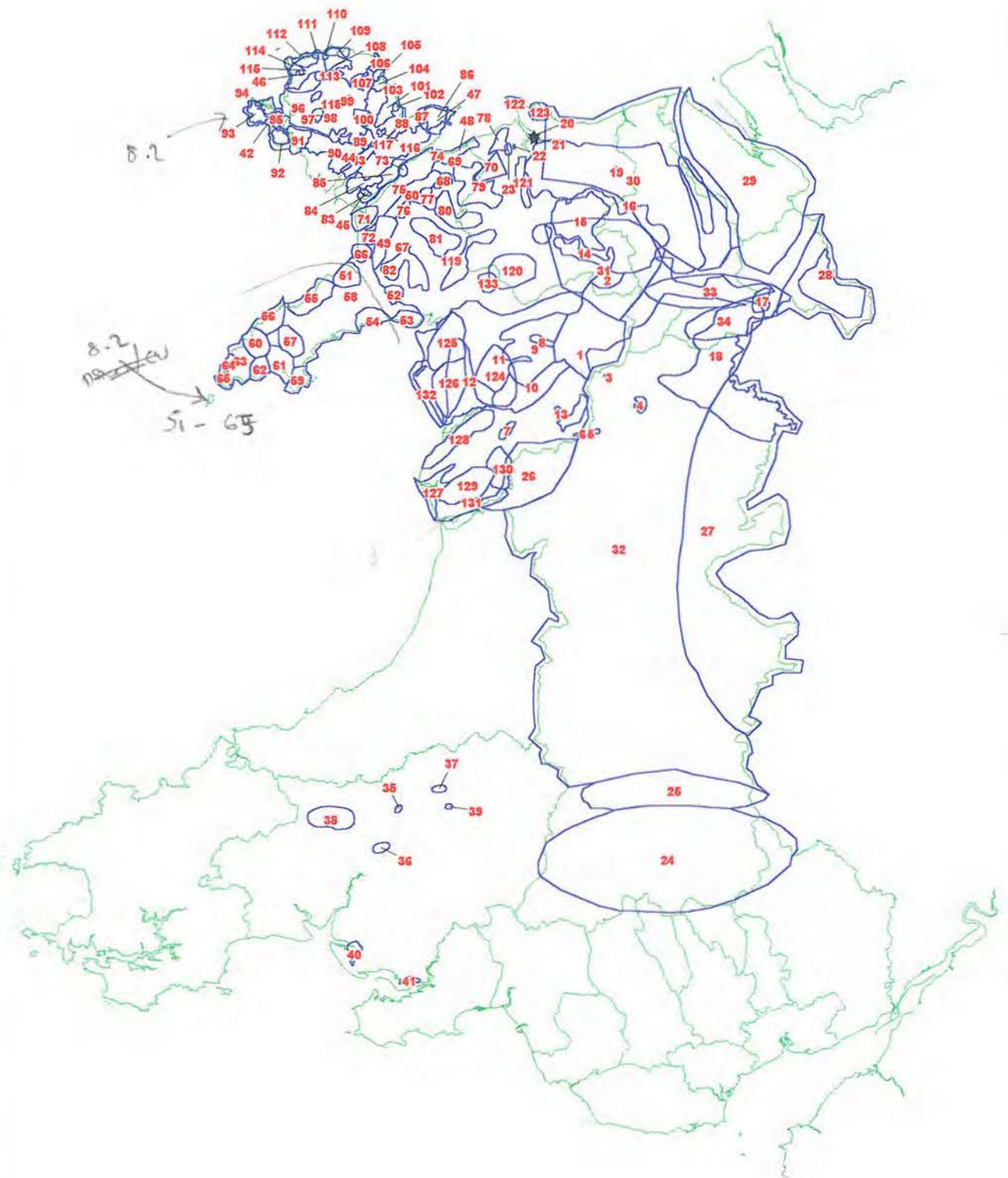


Figure 23 - provisional map of the distribution of HEDGEROWS



Figure 24 - provisional map of the distribution of LABURNUM HEDGES

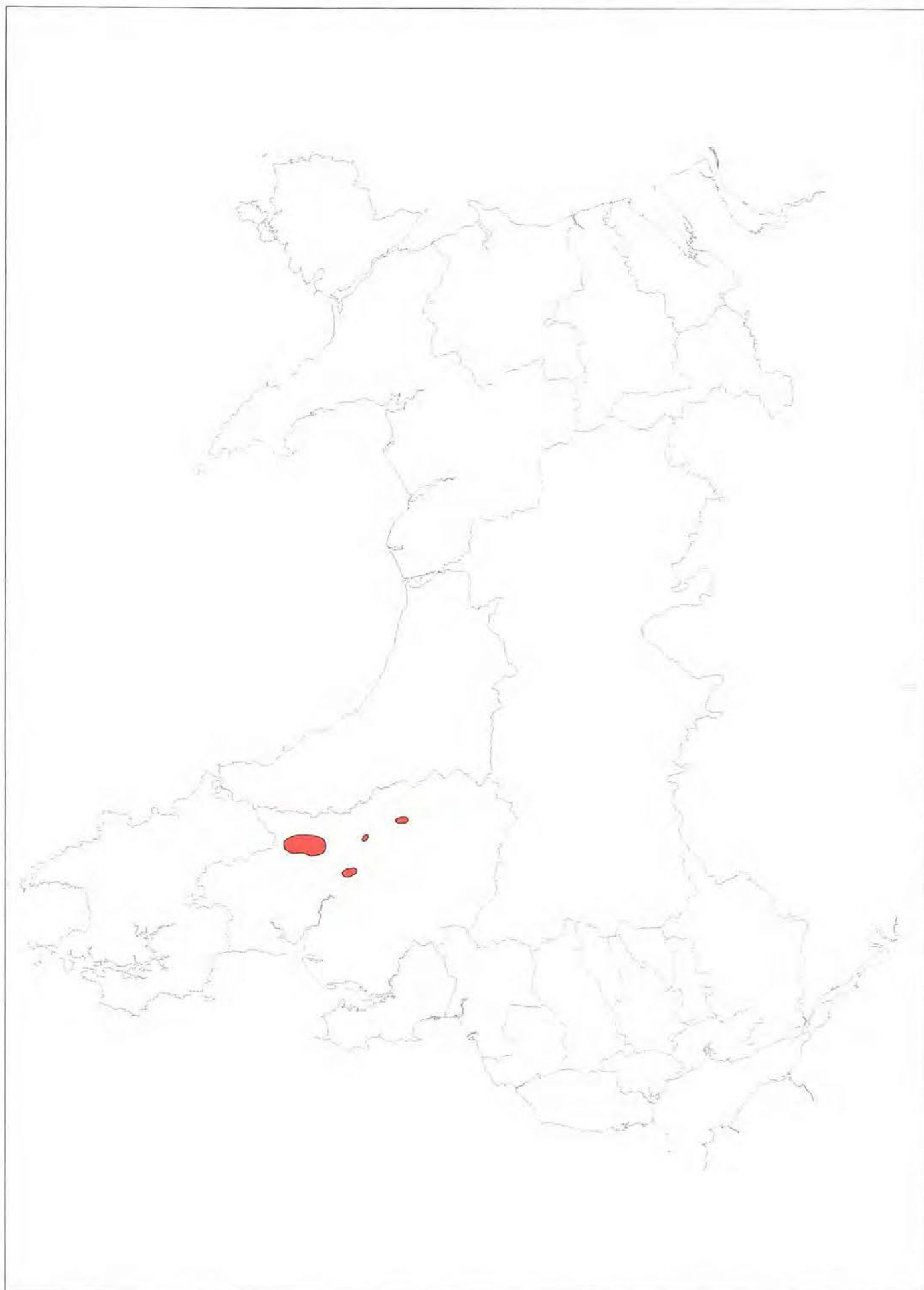


Figure 25 - provisional map of the distribution of DRYSTONE WALLS



Figure 26 - provisional map of the distribution of EARTH BANKS

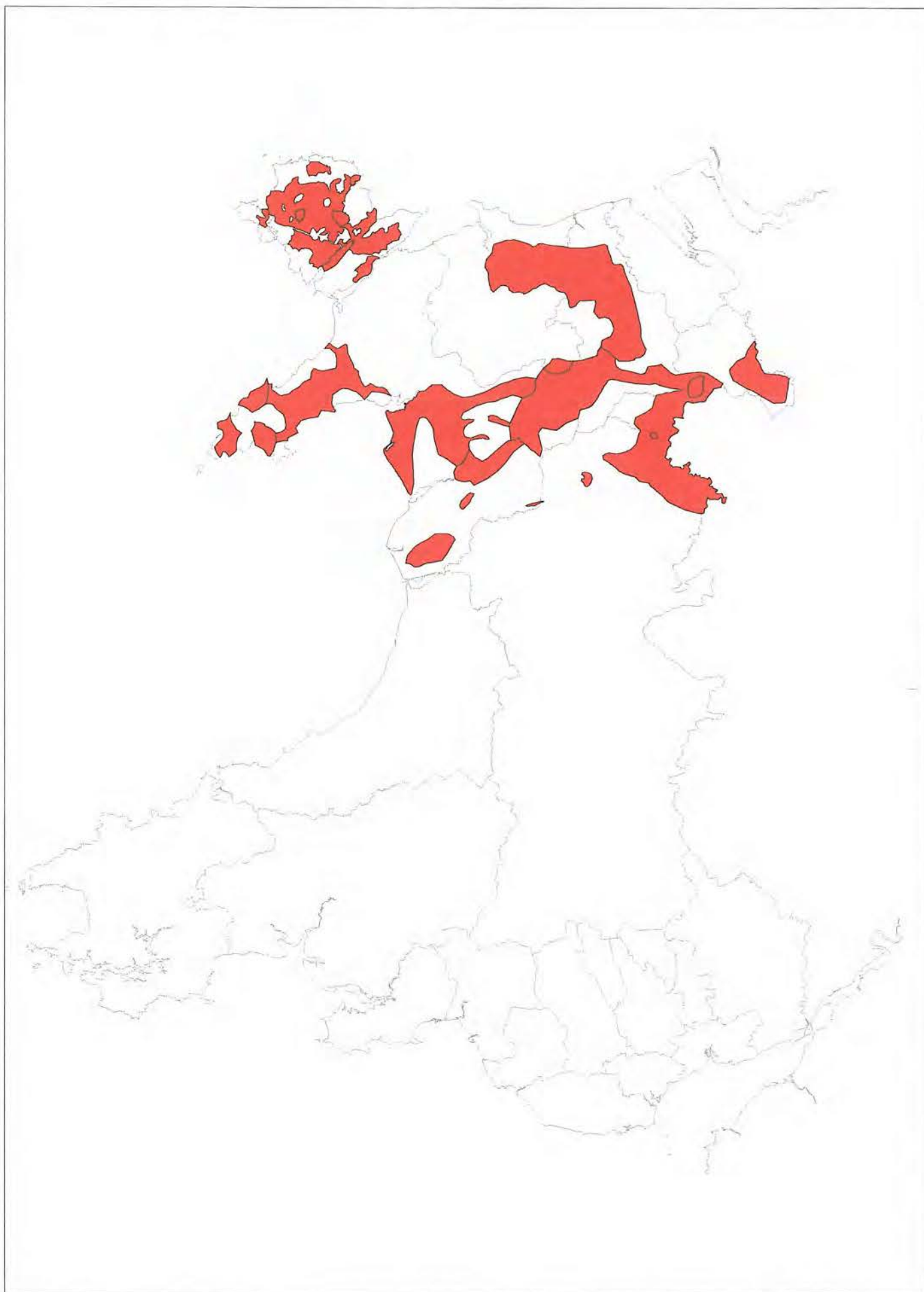
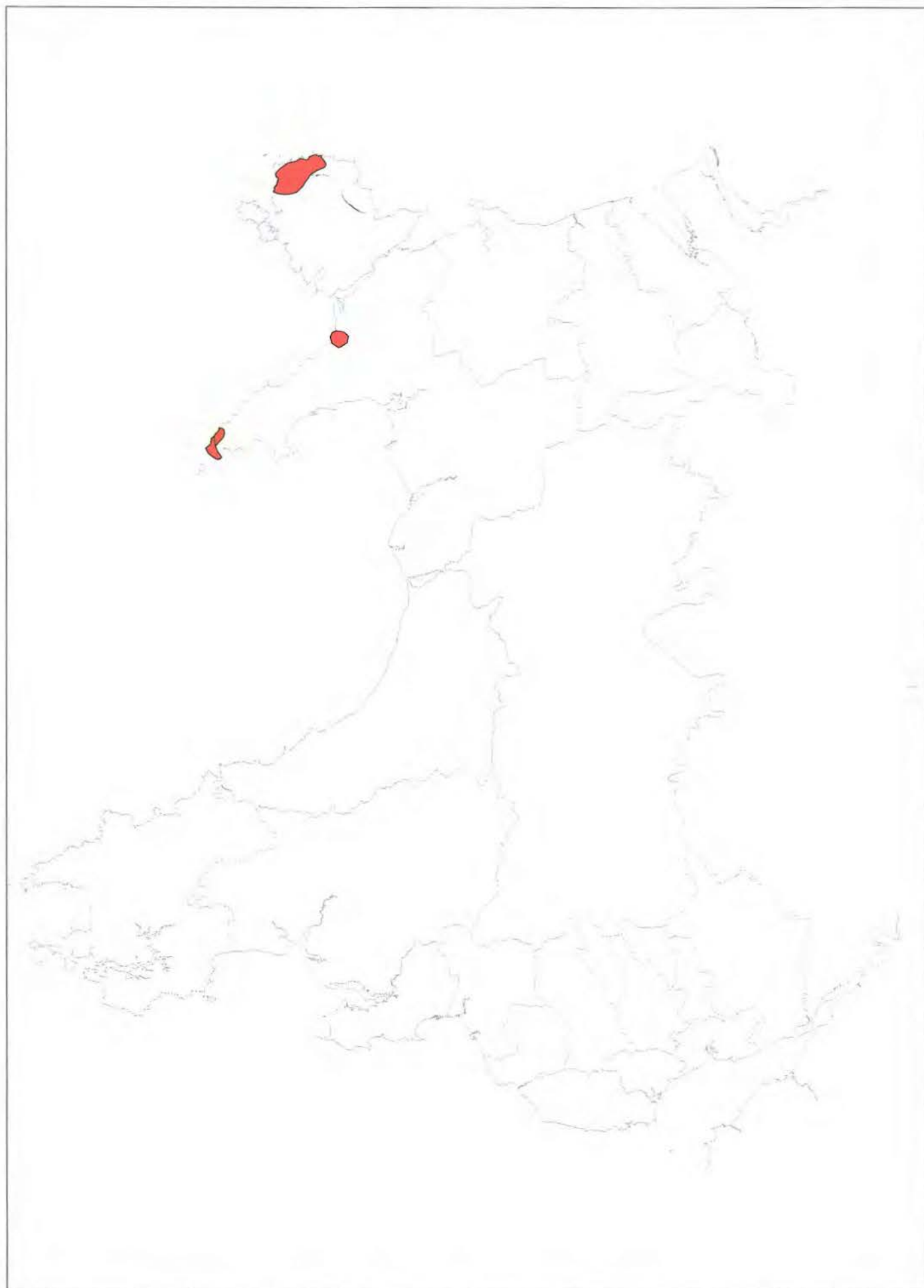


Figure 27 - provisional map of the distribution of CLODDIAU



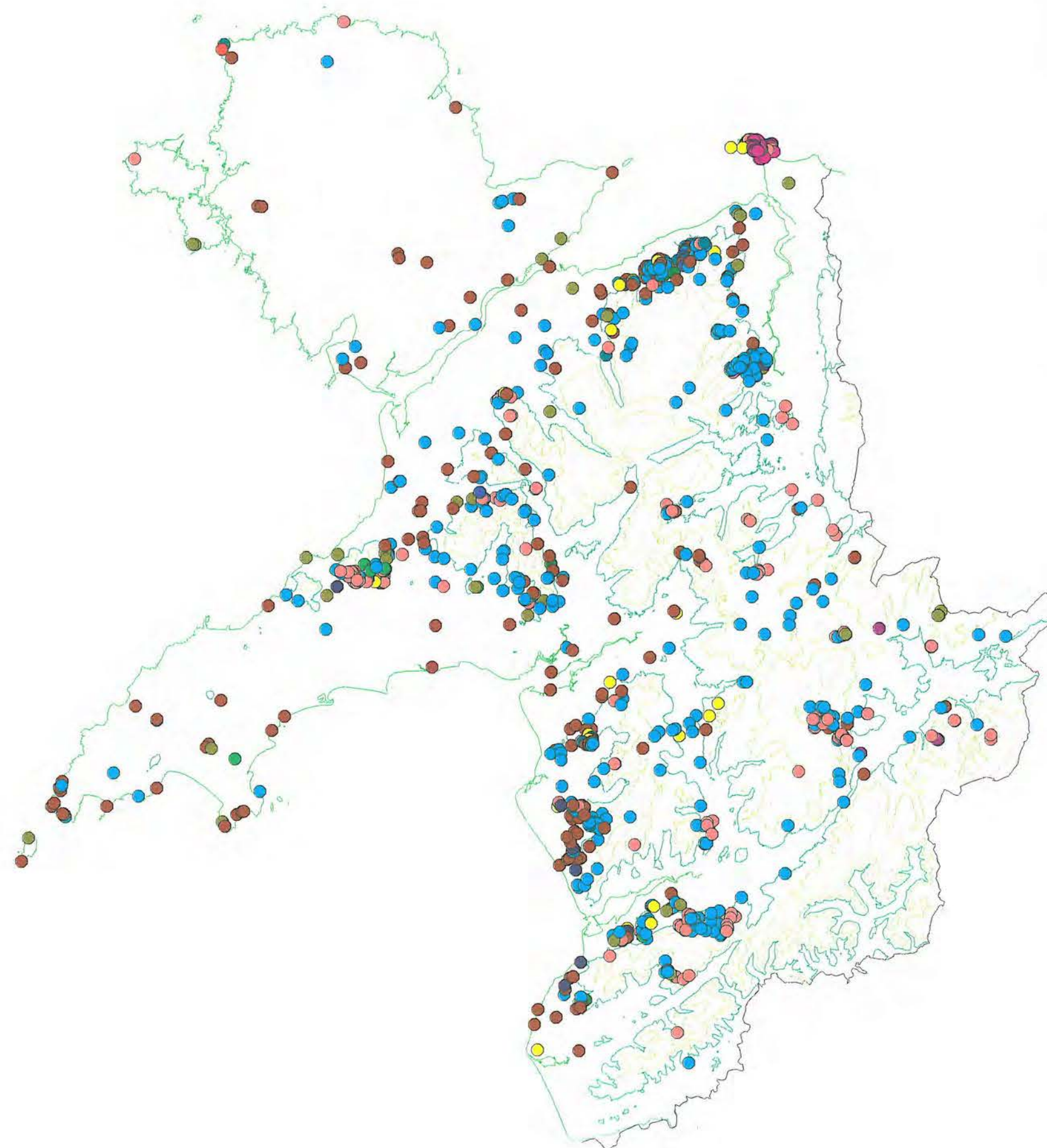
5 Fieldwork pilot areas [Cadw]

5.1 General

- 5.1.1 A substantial part of the project was intended to look at different aspects of boundaries in two distinct areas of Gwynedd, namely western Meirionnydd (where there is good evidence for prehistoric settlement and early map evidence), and the north coast of the Llyn Peninsula (where characterisation work had already been undertaken, and where early map evidence was readily available within the Trust) (figure 5).
- 5.1.2 It was originally intended to use the sites and monuments record (SMR) to help define these pilot areas, where detailed map work and fieldwork would be undertaken, more closely. Figure 6 shows a map of sites recorded within the SMR which might be connected with field boundaries or systems. Thirteen different 'types' were established, and these have been sorted and mapped against contours (which are at 100m intervals up to 1000m).
- 5.1.3 A number of interesting points arise from this map. The first and most obvious is that entries connected with field boundaries and systems are heavily biased towards areas where upland survey and aerial mapping have taken place. For example, the area with the densest concentration of sites is along the coastal uplands of north Arllechwedd around Abergwyngregyn, where the Trust undertook two years of aerial mapping. Areas of upland survey which have recorded boundaries and field systems include Cefn Cyfarwydd (Conwy Valley), Moel Bronmiod (Llyn), north and south Ardudwy, Trawscoed and Cadair Idris (all Meirionnydd).
- 5.1.4 The most common type by far is 'enclosure' (422 entries), and these are spread across the area, again with concentrations in former project areas. Unfortunately what the maps does not show is the inconsistency in the ways in which these sites have been recorded, and enclosures are a prime example. While some of these sites are undoubtedly part of field systems, others are probably settlement sites.
- 5.1.5 As part of a pan-Wales move towards establishing a standardised glossary for SMRs, the SMD, the NMR and ENDEX, Cambria Archaeology has been looking specifically at site types recorded in the broad class 'agriculture and subsistence'. It was determined, therefore, not to do any work on sorting out these sites in the Gwynedd SMR until the subject has been discussed at a national level. However, it does clearly demonstrate the need for consistency in recording if we are to achieve a national or even regional overview. Neither were the data particularly useful in providing more detail for the pilot areas.
- 5.1.7 Unfortunately, the fieldwork programme was hampered by the restrictions caused by the outbreak of Foot and Mouth Disease. Limited fieldwork was carried out in Llyn, but the fieldwork intended for Ardudwy had to be abandoned and a different area (and approach) was chosen (see below). The work in the pilot areas concentrated on developing recording techniques, both in the field and as part of a GIS.

Figure 5 - Distribution of study areas





Agri by Sitetype	
BANK, RIDGE AND FURROW	(1)
BOUNDARY BANK	(8)
CULTIVATION RIDGE	(5)
CULTIVATION RIDGES	(82)
CULTIVATION TERRACE	(26)
ENCLOSURE	(422)
FIELD SYSTEM	(196)
LINEAR EARTHWORK	(10)
LYNCHET	(21)
PADDOCK	(12)
RIDGE AND FURROW	(37)
TERRACE	(8)
WALL	(175)

Fig. 6 Field Systems recorded on the Sites and Monuments Record

5.2 Northern Llyn

Background

- 5.2.1 Following an initial assessment of early map coverage and availability, it was decided to focus on an area on the north coast of Llyn around Pistyll, Llithfaen and Nant Gwrtheyrn (based approximately on SH350430). A number of former holdings in this area had been included on an 1802 survey of the Bodfel estate (CRO - Vaynol 4212), one of the earliest sets of maps for Caernarfonshire which shows actual boundaries.
- 5.2.2 The areas of ten holdings which formed part of the estate (Pistyll farm, Ciliau Canol, Ciliau Isa, Bwlch, Nant Gwrtheyrn, Cae'r Cribin, Gwag y Noe and Blaen Mynydd (divided into three parts) were digitised: the location and extent of the holdings are shown on figure 7.
- 5.2.3 Within these holdings, all the field boundaries shown on the estate maps were also digitised and laid over the modern OS landline data on a GIS (figure 8). A short database entry was attached to each of the enclosure polygons (*i.e.* farm fields) that were digitised which recorded the agricultural use of that field in 1802 (for example, meadow, pasture, arable - see list in figure 9).
- 5.2.4 It was decided that recording the farm field use (in 1802) in the GIS at the same time as the boundaries were digitised would probably be beneficial in the long run. If we are to continue to record early map information in this way systematically across the country, not only will this save time in the long run, but the data will be useful when looking at long-term agricultural change in Wales and it will also allow us to analyse historic land-use patterning at a landscape level. Figure 10 shows, as an example of how the data can be used, the fields which were recorded in 1802 as being either 'arable' (green) or 'wetland' (blue).
- 5.2.5 For the purposes of the field boundaries project, this enables differences in boundary type and construction to be readily compared to historic land-use. For example, it would be interesting to compare the character of boundaries associated with meadows, arable plots, upland grazing, wetlands and so on. The validity of this approach will have to be gauged against field observations once FMD restrictions are lifted.
- 5.2.6 This information will also be invaluable when offering management advice as part of the Tir Gofal scheme, as it will be possible to comment on historic land-use at the level of individual farms and even farm fields, and offer advice as to whether proposed management (for example reversion to pasture) is appropriate in historical terms.

Fieldwork

- 5.2.6 Given the time constraints of this scoping study, fieldwork concentrated on a single farm (Bwlch), although Pistyll and Cae'r Cribin were also examined (figure 7).
- 5.2.7 Fieldwork was carried out over three man days, unfortunately hampered by appalling weather. However, a surprisingly wide variety of boundary types was recorded, from simple, degraded earth banks, through massive stone-faced banks with ditches to various types of drystone walls. A further half day was spent examining 1993 vertical colour aerial photographs in CCW's collection.
- 5.2.8 Boundary changes between the date of the survey (1802) and the present day (current OS Landline map) (*i.e.* those which have been added and those which have been

Figure 7 - Llithfaen study area - holdings

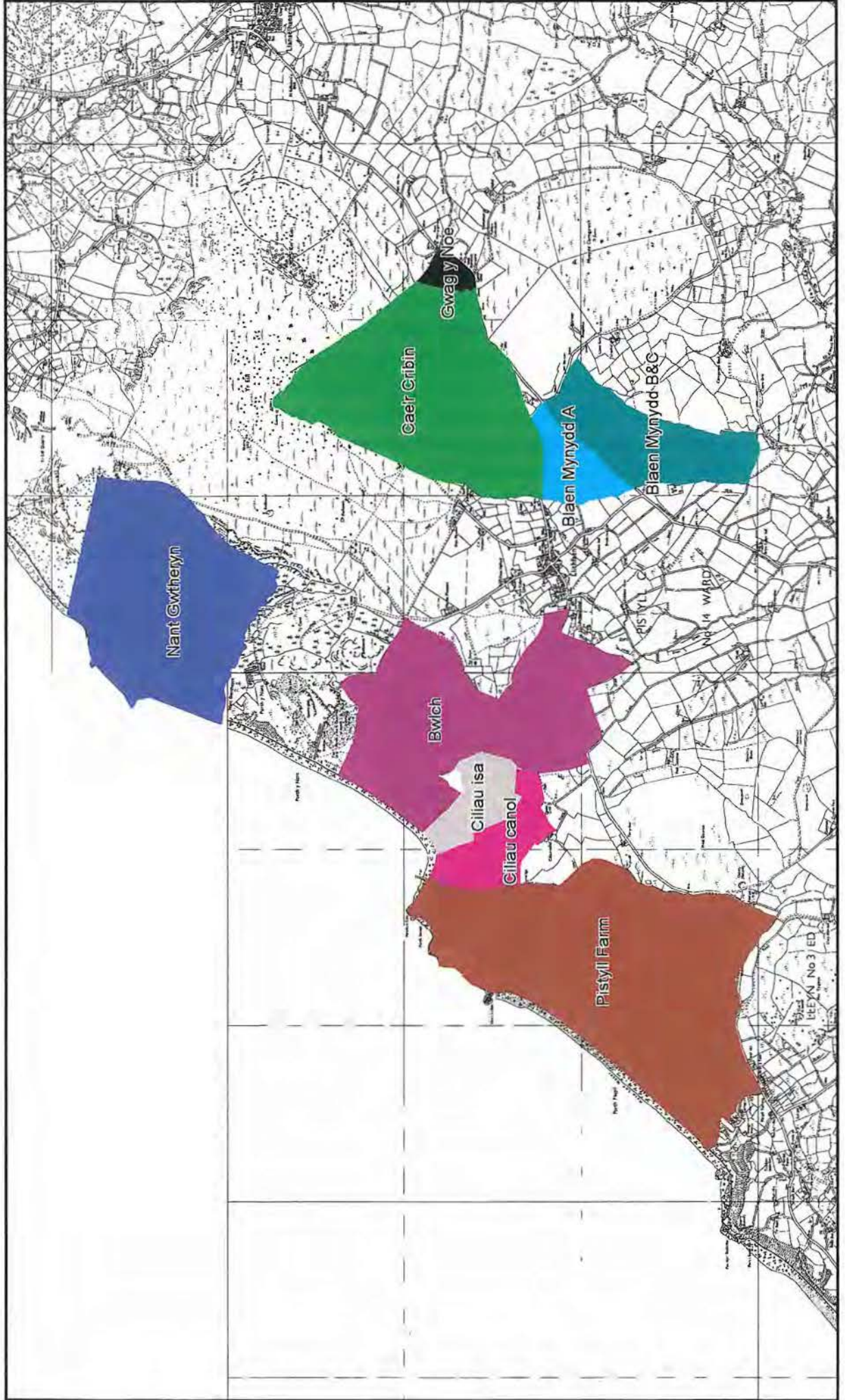


Figure 8 - Llithfaen study area, Bodfel Survey, Glynllifon Estate Papers c.1800 - boundary layout and plot numbers

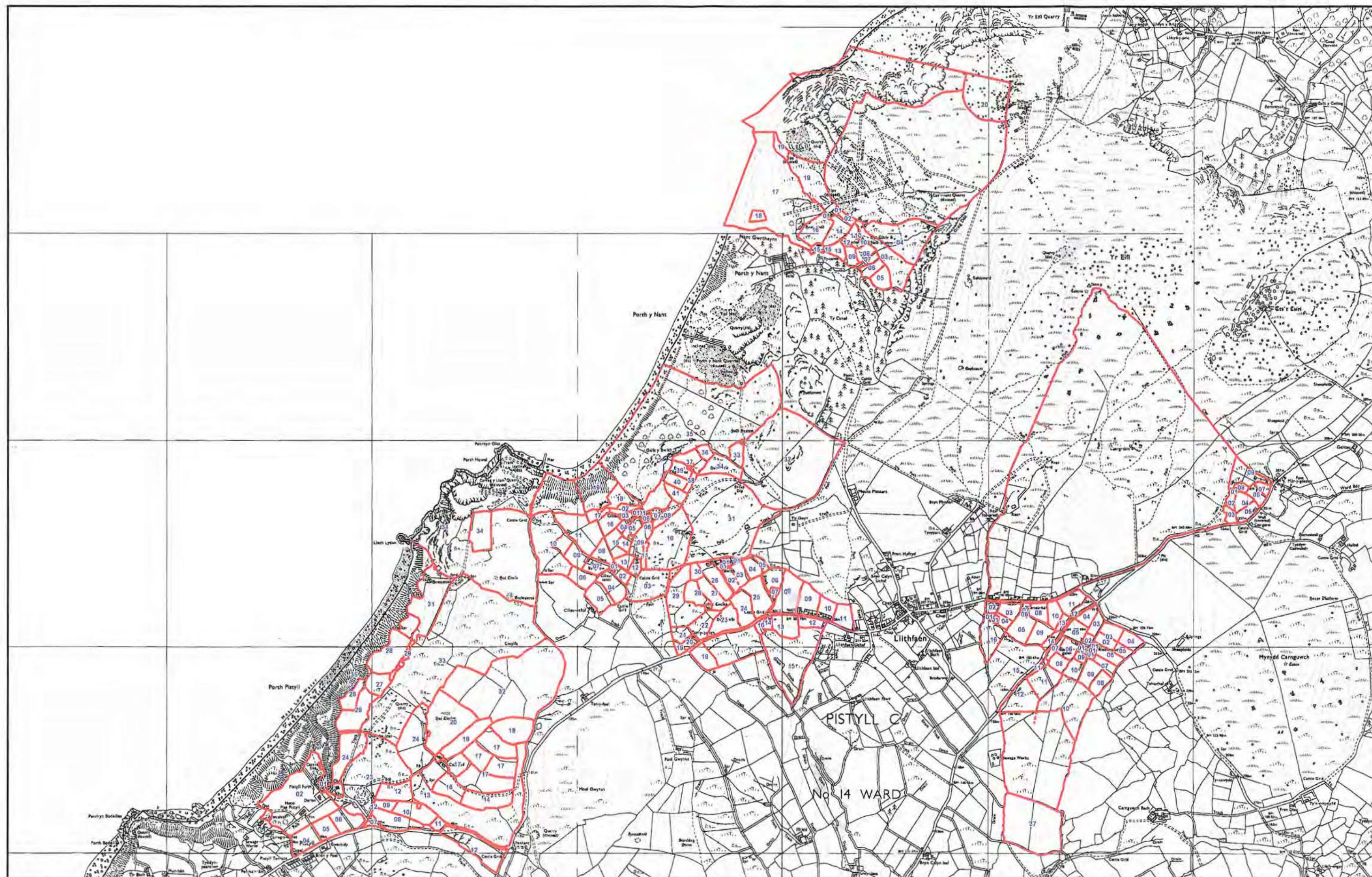


Figure 9: Land-use type abbreviations

h	house
hg	house & garden
c	cottage
cg	cottage & garden
b	other building
m	meadow
p	pasture
a	arable
r	rough
rh	rhos
rr	rough & rocky
s	stony
rp	rough pasture
t	turbary
w	wetland
sw	sheep walk

removed) were identified and mapped by a combination of fieldwork and reference to vertical aerial photographs. The changes were subsequently easily identified by manipulating the 'stacking' of the sequence of layers of digital information on the GIS, and reproduced as a series of colour-coded maps (figures 12a and 12b).

- 5.2.9 Briefly, it was noted that most of the 1802 boundaries are still extant. Interestingly, it was almost certain that some boundaries which are extant (although 'relict') today were not recorded by the 19th century estate surveyors (these were mainly low earth banks or robbed-out stone-built structures). It was concluded that these had gone out of use by 1802, and thus were not shown on the estate survey. This does not prove how old the boundaries area (they may have been in use only briefly), but the 1802 map does perhaps provide a *terminus ante quem* for them.
- 5.2.10 There are the remains of an undoubted late prehistoric system just north of the main road which runs across the southern edge of the Bwlch holding (figure 8, around plots 23, 24, 25, 6, 8, 9, 26, 27, 2, 3, 4, 5). It is characterised by a direct relationship with adjacent hut circles, the distinctive plan of the boundaries which have irregular curves, the spread and 'decayed' appearance of the stone in the lower levels of the current boundaries, and the heavy lyncheting which means that the upper field is often two or three feet higher than the lower one. These are characteristics which can be seen in field boundaries in many of the more marginal parts of Gwynedd, and undoubtedly date back to the (late) prehistoric period (see above, paragraph 3.4, and Smith, *passim*).
- 5.2.11 To the east, a 19th century series of small, stone-walled fields representing enclosure of the former common land is clearly visible in the southern end of the holding of Cae'r Cribin, north of the road (figure 8). These fields are not included on the 1802 map, and we know that much of this area was enclosed between 1812 and 1821 (Thompson, 1997). Interestingly, though, the field pattern south of the road, which is very similar, was already established by 1802. Again these are typical of many areas which were on the fringe of the common land in the 19th century, and are characteristic of many upland, marginal areas.

Conclusions

- 5.2.12 Again due to time constraints, fieldwork was conducted from public footpaths, bridleways and highways. Although it was sufficient for this project, the results of this work, when compared with previous fieldwork the Trust has carried out (for example farm visits in connection with Tir Cymen and Tir Gofal scheme), clearly demonstrate that this is not an effective way in which to carry out a detailed boundary survey.
- 5.2.13 For this to be done, it is necessary to walk the whole length of a boundary in order to record it properly, and therefore surveys need to be carried out on a farm by farm basis, where access is not a problem.
- 5.2.14 Detailed boundary surveys are time-consuming (and thus expensive), and therefore they should only be undertaken where adequate resources are available and where the results will add significantly to either a management or academic initiative (as, for example, in the case of many of the National Trust properties (Taylor, 1998 and Taylor, nd). Tir Gofal farm agreements represent an excellent need and opportunity for such studies, and it is recommended that boundary surveys are carried out in future in connection with these farm schemes. However, the issue of funding extra time to record boundary details will need to be addressed. The second phase of this pilot project will attempt to address this further.

Figure 10 - Llithfaen study area. Bodfel Estate Survey 1802: landuse recorded as arable or wetland

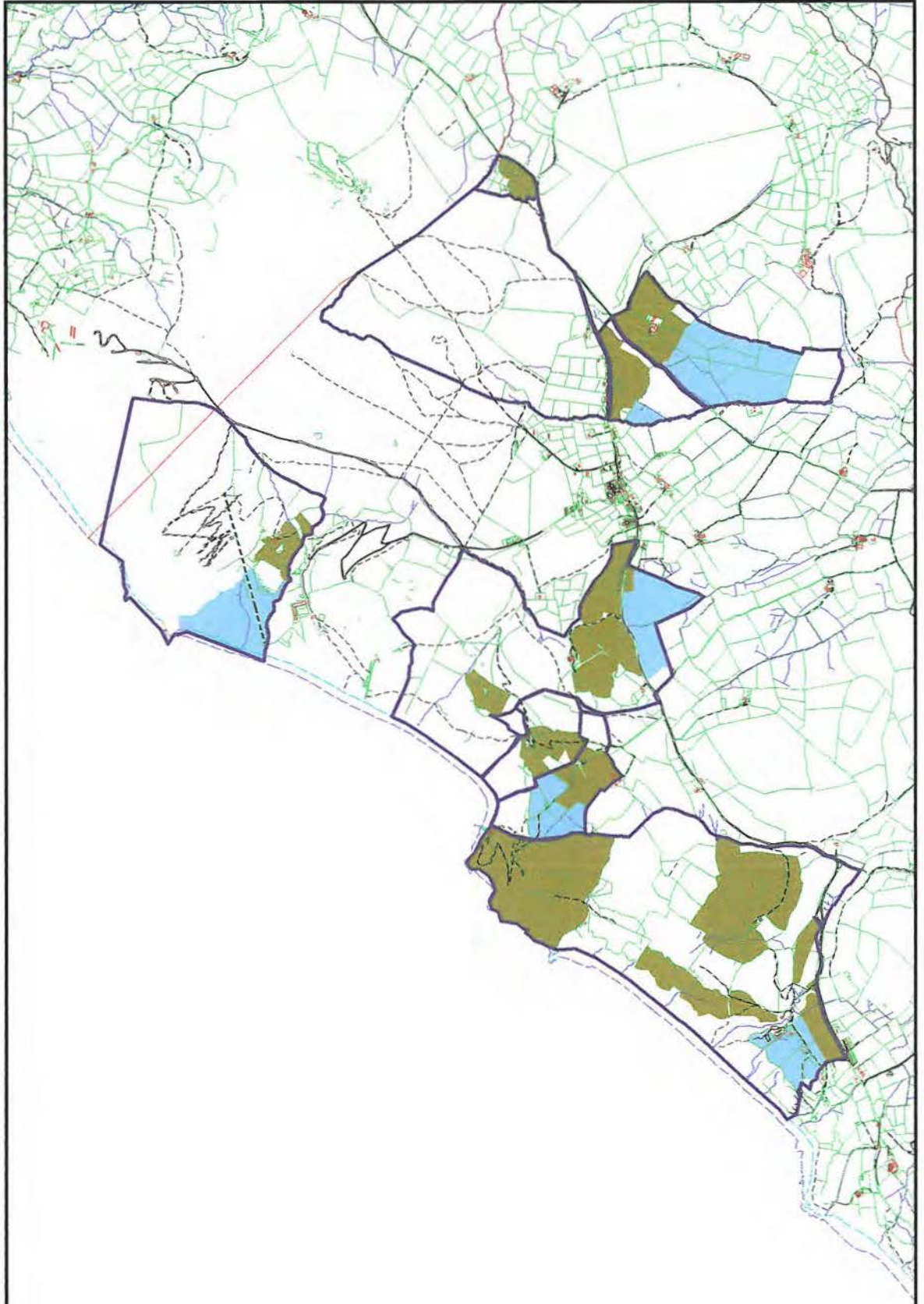


Figure 11. Llithfaen study area, Llyn - Field plots and landuse (1802 survey)

Holding name	Plot number	Field name	Landuse	Notes
Blaen y Mynydd A	01		hg	
Blaen y Mynydd A	01		hg	
Blaen y Mynydd A	02		a	
Blaen y Mynydd A	03		a	
Blaen y Mynydd A	04		a	
Blaen y Mynydd A	05		a	
Blaen y Mynydd A	06		a	
Blaen y Mynydd A	07		a	
Blaen y Mynydd A	08		a	
Blaen y Mynydd A	09		a	
Blaen y Mynydd A	10		a	
Blaen y Mynydd A	11		a	
Blaen y Mynydd A	12		r	
Blaen y Mynydd A	13		r	
Blaen y Mynydd A	14		r	
Blaen y Mynydd A	15		rh	Should be inclosed from road
Blaen y Mynydd A	16		w	Should be drained and floated
Blaen y Mynydd B	01		hg	Probable garden
Blaen y Mynydd B	01		hg	Probable garden
Blaen y Mynydd B	01		hg	Probable garden
Blaen y Mynydd B	02		a	
Blaen y Mynydd B	03		a	
Blaen y Mynydd B	05		a	
Blaen y Mynydd B	06		a	
Blaen y Mynydd B	07		a	
Blaen y Mynydd B	08			Taken from the road
Blaen y Mynydd B	09		a	
Blaen y Mynydd B	10		w	Should be drained
Blaen y Mynydd B & C			w	Undivided, but half is plot 11B, the other 13C. Should be drained
Blaen y Mynydd C	01			Unnamed enclosure
Blaen y Mynydd C	01			Unnamed enclosure
Blaen y Mynydd C	02		a	
Blaen y Mynydd C	03		a	
Blaen y Mynydd C	04		a	
Blaen y Mynydd C	04		a	
Blaen y Mynydd C	05		a	
Blaen y Mynydd C	06		a	
Blaen y Mynydd C	07		a	
Blaen y Mynydd C	08		a	
Blaen y Mynydd C	09		a	
Blaen y Mynydd C	10		a	
Blaen y Mynydd C	11		w	Wants draining
Blaen y Mynydd C	11		w	Wants draining
Blaen y Mynydd C	12		w	Wants draining
Bwlch			g	Garden & Clwt (?)
Bwlch				Unnamed enclosure, containing round huts

Bwlch				Unnamed enclosure, sheepfold?
Bwlch	01			Houses, gardens & outlets (?)
Bwlch	01			Houses, gardens & outlets (?)
Bwlch	01			Houses, garden and outlet (?)
Bwlch	02		a	Eastern boundary dotted on map, pos. a fence?
Bwlch	03		a	Western boundary dotted on map, pos. a fence?
Bwlch	04		a	
Bwlch	05		rp	
Bwlch	06		a	
Bwlch	07		a	
Bwlch	08		a	
Bwlch	09		a	
Bwlch	10		a	
Bwlch	11		a	
Bwlch	12		a	
Bwlch	13		w	Wants draining
Bwlch	14		w	Wants draining
Bwlch	15		w	Wants draining & flooding
Bwlch	16		w	Wants draining & flooding
Bwlch	17		w	Wants draining
Bwlch	18		am	Arable & meadow
Bwlch	19		c	
Bwlch	20		cg	Cottage and garden
Bwlch	21		p	
Bwlch	22		ap	Part arable & part pasture
Bwlch	23		a	
Bwlch	24		a	
Bwlch	25		a	Called Field of the White stone, standing stone nearby?
Bwlch	26		a	May be flooded
Bwlch	27		a	Arable, may be flooded
Bwlch	28		a	May be flooded
Bwlch	29		rp	
Bwlch	30		a	
Bwlch	31		rr	Rocky & rough pasture
Bwlch	32		rp	Rocky & rough pasture
Bwlch	33		r	
Bwlch	34		r	
Bwlch	35		rr	Rocky & rough
Bwlch	36		a	
Bwlch	37		a	
Bwlch	38		a	
Bwlch	39		a	
Bwlch	40		a	
Bwlch	41		p	
Cae'r Cribin	A			
Ciliau canol	01		hg	
Ciliau canol	02		a	
Ciliau canol	03		rp	Stony pasture
Ciliau canol	04		a	

Ciliau canol	05		a	
Ciliau canol	06		a	
Ciliau canol	07		a	
Ciliau canol	08		a	
Ciliau canol	09		a	Wet arable
Ciliau canol	10		w	Wants draining. Unsure whether boundary is as digitised or the stream.
Ciliau canol	11		w	Wants draining
Ciliau canol	12		rr	Rough & dangerous
Ciliau isa	01		hg	Houses & garden
Ciliau isa	01		hg	House & garden
Ciliau isa	02		a	
Ciliau isa	03		a	
Ciliau isa	04		a	
Ciliau isa	05		a	
Ciliau isa	06		a	
Ciliau isa	06		a	
Ciliau isa	07		rp	Rough stoney pasture
Ciliau isa	08		rp	Rough stoney pasture
Ciliau isa	09		a	
Ciliau isa	10		rp	Rough and stoney pasture
Ciliau isa	11		a	
Ciliau isa	12		a	
Ciliau isa	13		a	
Ciliau isa	14		a	
Ciliau isa	15		r	Rough arable
Ciliau isa	16		a	
Ciliau isa	17		p	
Ciliau isa	18		rr	Rough & dangerous
Ciliau isa	19		rr	Rough & dangerous
Gwag y Noe	01		hg	
Gwag y Noe	02		a	Am assuming this is plot 2, no number is clear
Gwag y Noe	03		a	
Gwag y Noe	04		a	
Gwag y Noe	05		a	
Gwag y Noe	06		a	
Gwag y Noe	07		a	
Gwag y Noe	08		r	
Gwag y Noe	09		r	
Nant Gwtheryn				No note on map, unnamed enclosure
Nant Gwtheryn	01		hg	
Nant Gwtheryn	01		hg	May be that irregular boundaries are the correct ones.
Nant Gwtheryn	02		rp	Short western bdy added to complete polygon, not marked on map
Nant Gwtheryn	03		rp	Not happy with S-E end of field
Nant Gwtheryn	04		rp	
Nant Gwtheryn	05		r	
Nant Gwtheryn	06		a	
Nant Gwtheryn	07		rr	
Nant Gwtheryn	08		a	
Nant Gwtheryn	09		a	

Nant Gwtheryn	10			Enclosure containing Barn, Cowhouse &c
Nant Gwtheryn	10			Enclosure containing Barn, Cowhouse &c
Nant Gwtheryn	11		a	
Nant Gwtheryn	12		r	
Nant Gwtheryn	13		a	
Nant Gwtheryn	14		a	
Nant Gwtheryn	15		a	Western plot bdy open on map but closed to produce polygon
Nant Gwtheryn	15		a	
Nant Gwtheryn	16		rp	
Nant Gwtheryn	17		w	Mixture of wet & dry, should be drained by open gutters
Nant Gwtheryn	18		w	Mixture of wet & dry, should be drained by open gutters
Nant Gwtheryn	19		rr	
Nant Gwtheryn	19		rr	
Nant Gwtheryn	20		t	
Nant Gwtheryn	20		t	
Nant Gwtheryn	21		rr	South-western boundary added to complete polygon, not marked on map
Pistyll Farm	-			Un-numbered plot. Seems to enclose part of rocky outcrop but position a bit ambiguous.
Pistyll Farm	01		b	Much change since map produced - difficult to recognise boundaries and built
Pistyll Farm	02		w	Not possible to establish position of W boundary with certainty
Pistyll Farm	04		a	
Pistyll Farm	05		a	
Pistyll Farm	06		a	
Pistyll Farm	07	Llain y delyn	a	'In Tillage'
Pistyll Farm	08	Llyn y felin	m	Water meadow? ('Meadow may be flooded'). Mill site (field name)
Pistyll Farm	09		a	
Pistyll Farm	10		a	
Pistyll Farm	11		a	
Pistyll Farm	12			1 of 3: ?water meadow ('fine 'Meadow may be flooded')
Pistyll Farm	12			1 of 3: ?water meadow ('fine 'Meadow may be flooded')
Pistyll Farm	12		m	1 of 3: ?water meadow ('fine 'Meadow may be flooded')
Pistyll Farm	13		p	
Pistyll Farm	14		a	
Pistyll Farm	16		a	
Pistyll Farm	17		a	Seemingly 6 divisions to plot 17 - possible quillets?
Pistyll Farm	17		a	Seemingly 6 divisions to plot 17 - possible quillets?
Pistyll Farm	17		a	Seemingly 6 divisions to plot 17 - possible quillets?
Pistyll Farm	17		a	Seemingly 6 divisions to plot 17 - possible quillets?
Pistyll Farm	17		a	Seemingly 6 divisions to plot 17 - possible quillets?
Pistyll Farm	18		a	
Pistyll Farm	19		a	Rough arable
Pistyll Farm	20		a	
Pistyll Farm	23		rp	
Pistyll Farm	24		a	
Pistyll Farm	24		a	
Pistyll Farm	26		a	'part arable and part meadow': field divided along stream line (meadow area
Pistyll Farm	26		a	'part arable and part meadow': field divided along stream line (meadow?)
Pistyll Farm	27		a	
Pistyll Farm	28	Caean'r beudy	a	
Pistyll Farm	29		a	Landuse arable, but field name 'Yards etc' ? Look like pens

Pistyll Farm	31		rp	'rough pasture may be improved'
Pistyll Farm	32		rp	'Rough gorsy pasture'
Pistyll Farm	33		rp	rough gorsy pasture
Pistyll Farm	34		a	Arable part of 'part arable part pasture'
Pistyll Farm	34		a	pasture part of 'part arable part pasture'
Pistyll Farm	35		-	'fallen ground by the constant washing of the sea'
Pistyll Farm and Blaen Mynydd B&C	37	Pistill Meadow		Unsure to which farm this holding belongs

Figure 12a - Bwlch, Llithfaen. Field Boundary Changes.
Boundaries showing blue
have been removed since 1802.
Blue = 1802 boundary
Orange = Current boundary

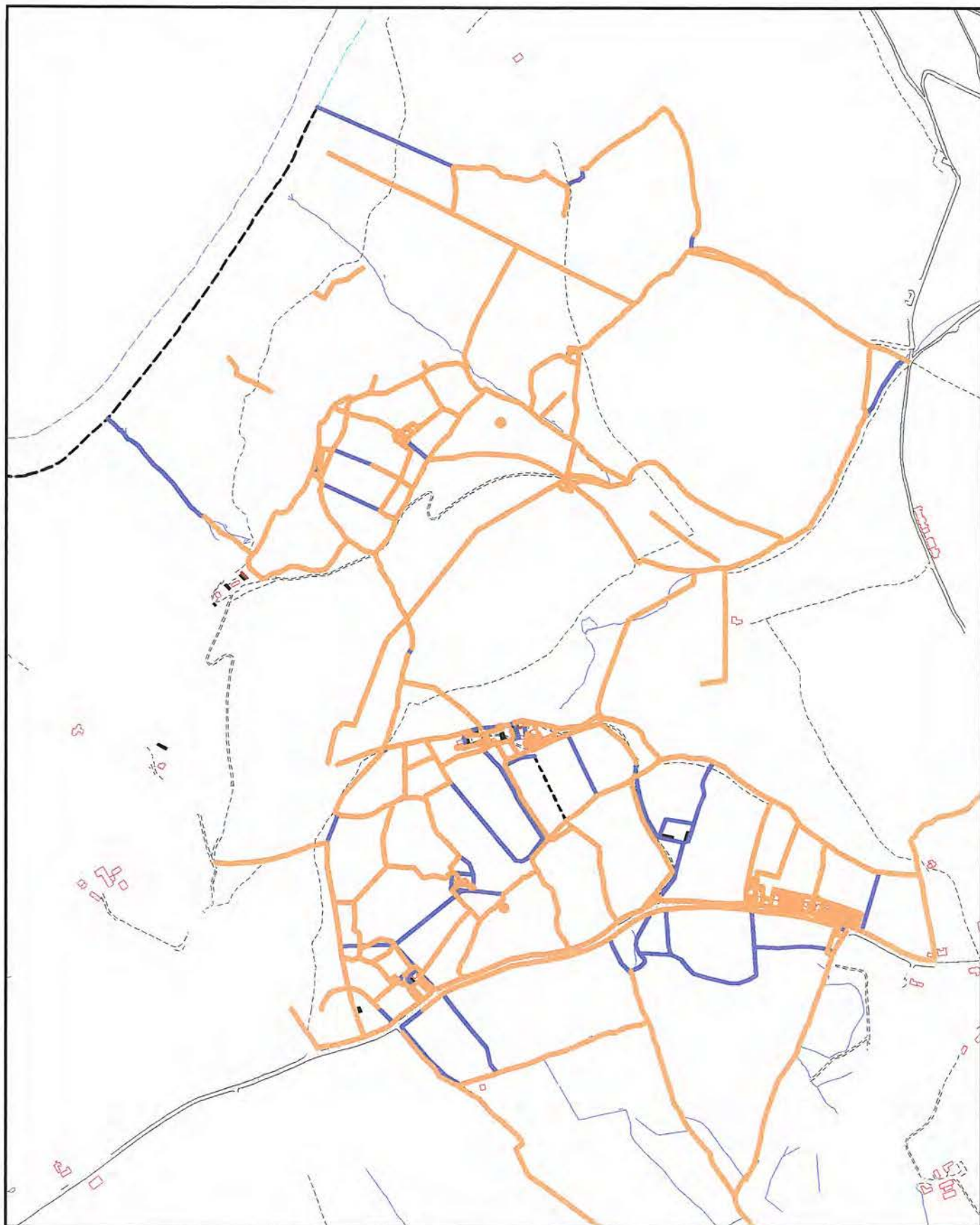
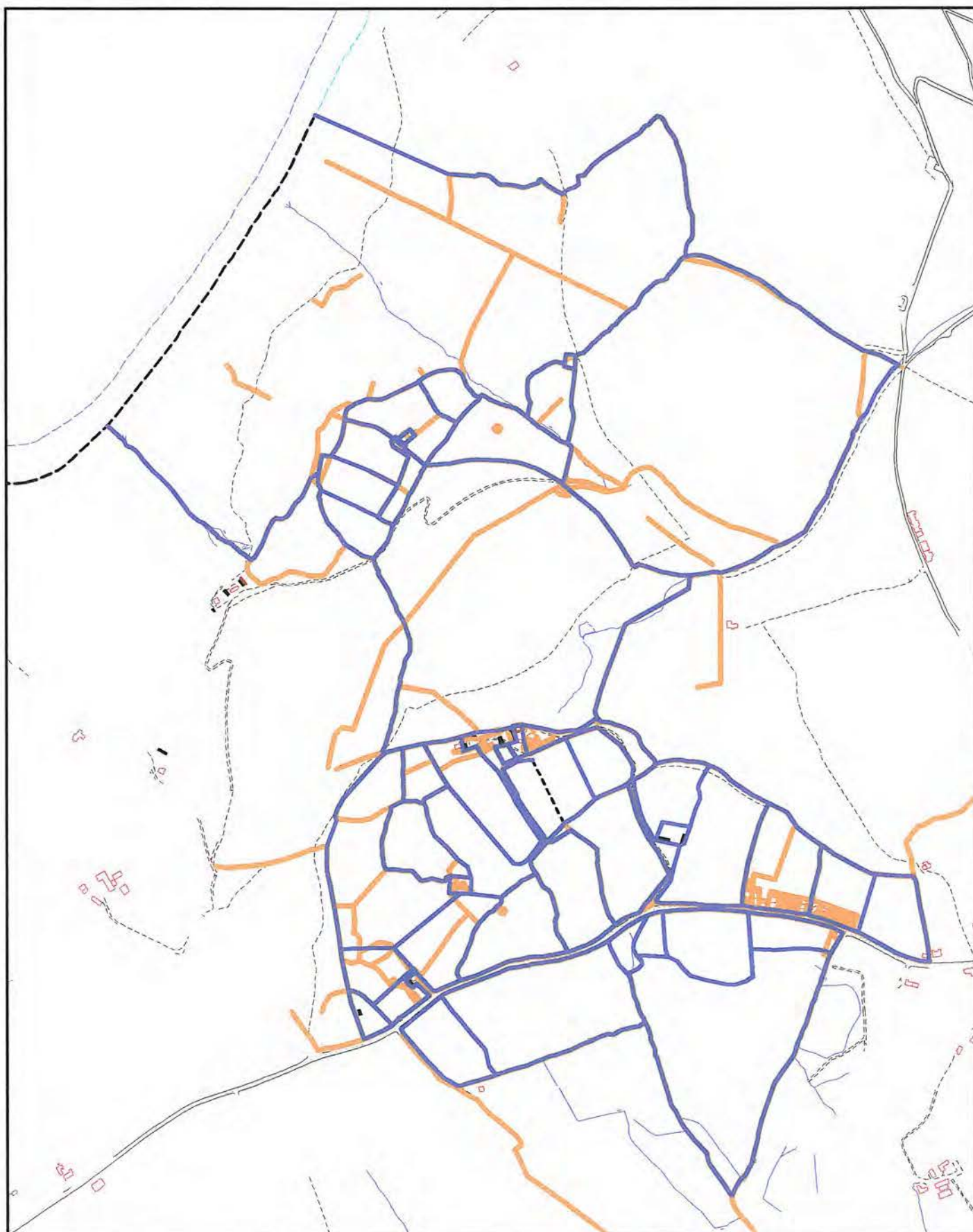


Figure 12b - Bwlch, Llithfaen. Field Boundary Changes.

Boundaries showing orange
have either been added since
1802, or were relict in 1802
and not mapped.

Blue = 1802 boundary

Orange = Current boundary



- 5.2.15 Recording forms (see figure 13) and fieldwork maps (based on figure 8) were used during fieldwork. These are time-consuming to use in a practical situation (especially in wet and windy weather conditions), and again it is suggested that this method of recording be reserved for a detailed farm survey, rather than rapid survey. Rapid survey, if required, would be best carried out simply using a series of pre-defined symbols representing boundary types as per a number of surveys carried out by the Cornwall Archaeological Unit, and the National Trust in Wales (Taylor, 1998 - see also figure 14).
- 5.2.16 Stratigraphic relationships are often difficult to establish (and all-but-impossible for earthen banks), but some field systems (*i.e.* boundaries which are homogenous in appearance and are presumably contemporaneous) can be identified relatively easily (e.g. the prehistoric and 19th century ones noted above). These need to be recorded at a level above that of individual boundary, and it is perhaps at this level that field systems (rather than individual boundaries) should be recorded on the 'traditional' regional SMR. However, with GIS mapping techniques, areas of detailed boundary survey can be recorded as a separate layer within the SMR.
- 5.2.17 Surveys of the boundaries of a single farm, especially where there is a wide variety of form and type as here, tell us very little about typical regional boundary types. These can only be established following a more broadly-based programme of boundary surveys (and subsequent analysis). However, they are essential to inform boundary management of individual farms, especially where grants are available to rebuild 'traditional' boundaries and where management recommendations need to be made at the level of individual boundaries which need subsequently to be monitored.
- 5.2.18 The value of identifying the possible early boundaries (see 5.2.9 above) is that it shows how fieldwork can augment desk-top (map-based) analysis, and how a combination of the two approaches can be used to identify possible sites for further assessment. For example, a programme of assessment might include small-scale excavation and sections across features, backed up with environmental sampling. This might help date features, inform our knowledge of land-use contemporary with the establishment of the boundary feature, and lead to broader environmental reconstruction.
- 5.2.19 These farms, being upland holdings, are probably not entirely representative of the full range of changes in field boundaries that have occurred over the past two hundred years in Gwynedd. However, the main aim of this work was to assess the potential value of GIS techniques in the assessment of field boundaries as part of an integrated desk-top and fieldwork study.

5.3 Meirionnydd

Background

- 5.3.1 The selection of the Meirionnydd pilot area proved more difficult. As has been stated above, the original plan to examine some of the postulated prehistoric field boundaries in the Ardudwy area had to be cancelled due to the outbreak of Foot and Mouth Disease. However, it is intended that this fieldwork will be carried out as part of next year's programme (restrictions permitting), to aid the development of a different approach to recording and analysing boundaries.
- 5.3.2 The focus of this pilot area then switched to a series of farms to the south west of Dolgellau which have been the focus of many years research by Mrs Sue Passmore. Her extensive archive of material is now lodged in the Dolgellau Record Office (DRO), and

Gwynedd Archaeological Trust FIELD BOUNDARY RECORD									
PROJECT			AREA			NUMBER			
TYPE Dry-stone wall Hedge only Hedge with trees Clawdd with hedge Clawdd without hedge Post - wire fence Clawdd with p-w fence Earth bank									
SIDE DITCHES 0 / 1 / 2			PLAN Straight / curvilinear / winding						
DSW Random Coursed Slate Large stone Small stone Vertical cap Orthostats Bank below									
CONDITION A B C D E F									
FEATURES Gate Stile Footpath crossing Sheep creep									
STYLE TYPE Stone squeeze stile step-stile step-over stile rung stile Wood ladder stile traditional stile squeeze stile gate									
GATE TYPE Iron - original (plain) Iron - original (decorated) Iron - re-used Galvanised Wooden									
LAND USE A (side) B (side)									
RELATIONSHIP (1) Earlier / Later / Same as / adjacent wall									
RELATIONSHIP (2) Overlies archaeological site Y / N (PRN)									
ALTITUDE (central)		NGR (central)		DEGREE OF SLOPE 0-10° / 10-30° / 30-60° / 60°+					
LENGTH (m)		HEIGHT (m)		original / n/a		ACTIVE/ INACTIVE		REPLACED Y / N	
WELL-PRESERVED GAPS TUMBLED PART-TUMBLED RELICT FOOTINGS									
QUALITY OF CONSTRUCTION Good Reasonable Poor									
PART OF PATTERN / SYSTEM Y / N			ISOLATED Y / N			EVIDENCE OF LYNCHETTING Y / N			
COMMENTS									
NAME					DATE				

BOUNDARY SURVEY 01 Property Treginnis
RECORD CARD

02 Date 04.08.98

03 Feature No 8353102

Figure 14

04 Item National Grid Reference

Stony bank SM 7293 2462

05 Survey Method Scale Photo / Sketch No.

Photo	1m	1 ; 2
Sketch	-	-

06 Condition & Visibility

Damage [1-5] 1 = undisturbed	2
Vegetation [1-5] 1 = unobscured	3

07 Land around boundary

unimproved pasture / improved pasture / arable
moorland / corn / coastal furze /

08 Dimensions

Height (m)	0.9
Width (m)	1.8
Length (m)	3
Alignment	NNW-SSE

09 Relationships [with feature no.]

Joins [8353]	101, (103)
Repair to	
Blocks gap in	
Respects	

10 Structure, [Materials size (m diam.)], Fence

Unknown, [0.5+], BWSN

11 Lynchets

Position (with regard to boundary)	-
Height (m)	-

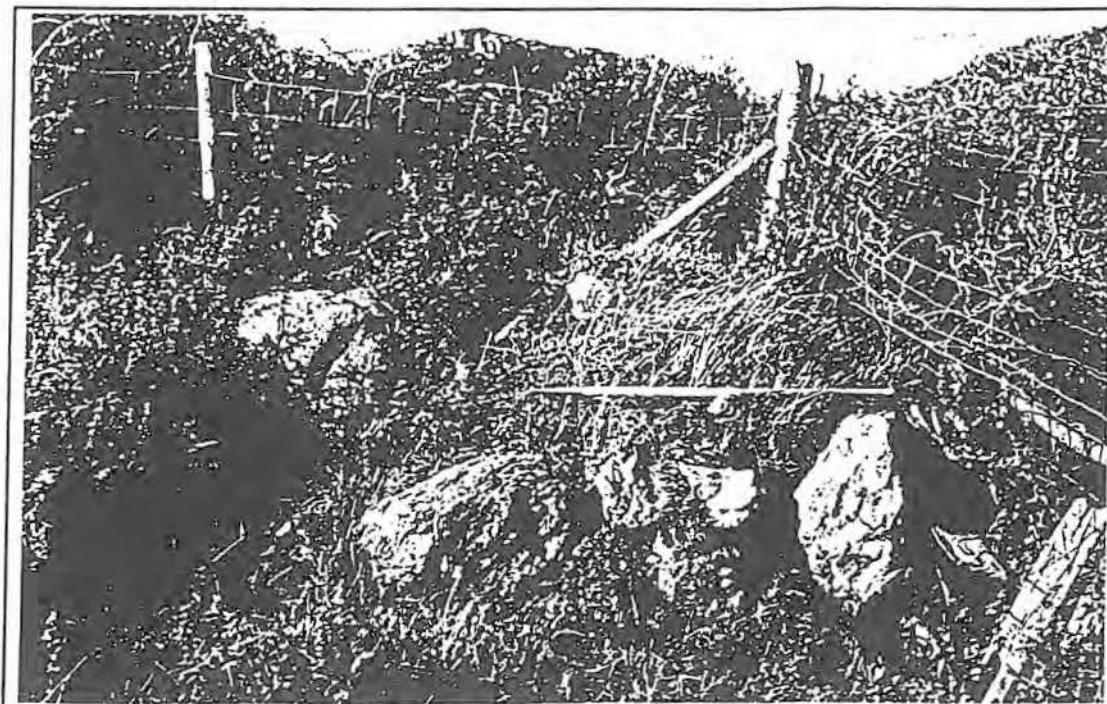
12 Maps & Aerial Photographs

Boundary present on:	1838 Tithe Map	1887 OS 1st ed.	1908 OS 2nd ed.
	1946 RAF photo	1974 OS 1:2500	

13 Description / Comment

This short section of stony bank juts out 3m from 8353101. It appears to be roughly faced where it forms a gateway opposite 835103, whose structure it does not in the least resemble. It is unclear whether this difference in apparent structure is due to different construction times and/or methods or simply the result of field clearance being heaped on top of this corner section. On balance this section does appear to be much older than both 835103 and 835101 and may be a relic of the same field system as 835104.

14 B & W Photograph



preliminary analysis showed that there was considerable overlap between the farms included in her research and farms entering Tir Gofal, which is why this area was targeted (figure 15).

- 5.3.4 Unfortunately, whilst Mrs Passmore has amassed a great quantity of material, her aim seems to have been focussed primarily on changing patterns of landownership, rather than on landscape development and change. Detailed consultation of the archive at DRO revealed that it did not contain as much information as had been hoped on the subject of land use or on boundaries specifically. There is no synthesis of her material, and little cartographic information of the kind need to build up a chronological picture of boundary change. Furthermore, the archive is yet to be catalogue by the Record Office, and so is currently very difficult to use particularly as the information is not ordered by farm, but through an idiosyncratic system of cross referencing to numerous boxes and folders.
- 5.3.5 It was therefore felt that an alternative approach should be adopted. Two sources of information were identified at the DRO as being of potential interest.
- 5.3.6 The first was a book of high quality survey plans of holdings within the Llwyn estate, which held property around Meirionnydd, dating to 1820 (DRO - M/1/86), which are amongst the earliest cartographic sources readily available for the area and were therefore chosen as a comparison with the Pistyll study area. Several of the holdings clustered together near Dinas Mawddwy, Mallwyd, were digitised in the same way as those on northern Llyn had been (Ty'n y Fron, Llwyn y Grug and Ty Du and Y Fachell - figure 16), although it has not been possible to fieldwalk the areas.
- 5.3.7 Initial comparison with the modern OS Landline data suggests a similar picture of a stable situation within the more marginal parts of the holdings (i.e. few if any boundaries have been removed), while there has been some loss (and gain) in the low-lying valley bottom (see figure 17). It is intended that this will be confirmed (or otherwise) by fieldwork during next year's project.
- 5.3.8 Again, the land-use was recorded at the same time (where it was given) so that information on the land-use history and boundary types on the farm is available for management and academic purposes (see 5.2.4 above) (figure 18).
- 5.3.9 The second source of information identified was the Caergoronwy / Bennar Fawr Collection of deeds and documents relating to property lying mainly in the Hirgwm Valley to the north west of Bontddu (SH666198) and dating from 1637 – 1726 (DRO Z/DZ/1-7) (see figure 19).
- 5.3.10 Hirgwm has the added benefit of being within Llanaber Parish, an area which has been formerly researched by Della Hooke (Hooke, 1975). Her published work on the area provides a solid historical context against which to look at the dating of periods of boundary change. Numerous early documents (including wills, leases, bonds and sales) in the Caergoronwy / Bennar Fawr provide details of field names and the farms to which they belong. Around 30 of these, spanning 1589 to 1745 have been assessed for field names. The tithe commutation award of 1839 provides field names for each parcel of land in Llanaber parish, and comparison of these with names appearing in the Caergoronwy / Bennar Fawr documents provides a *terminus pre quem* for the antiquity of the fields, and presumably also for the boundaries which surround it (although of course, the rebuilding of boundaries along existing lines has to be taken into consideration).

Figure 15 - Farms around Dolgellau entering Tir Gofal and in S Passmore collection

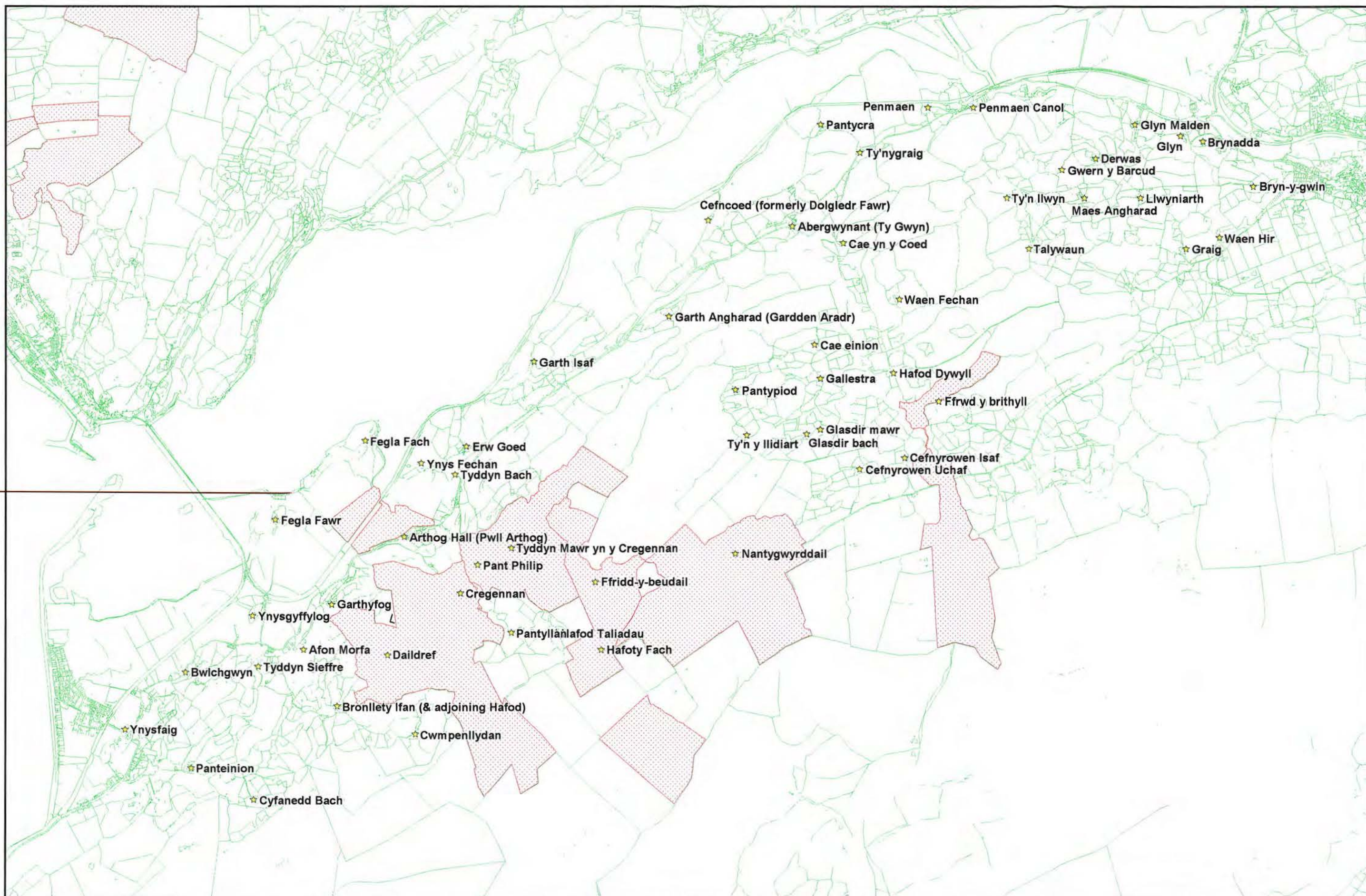


Figure 16 - Mallwyd study area - holdings

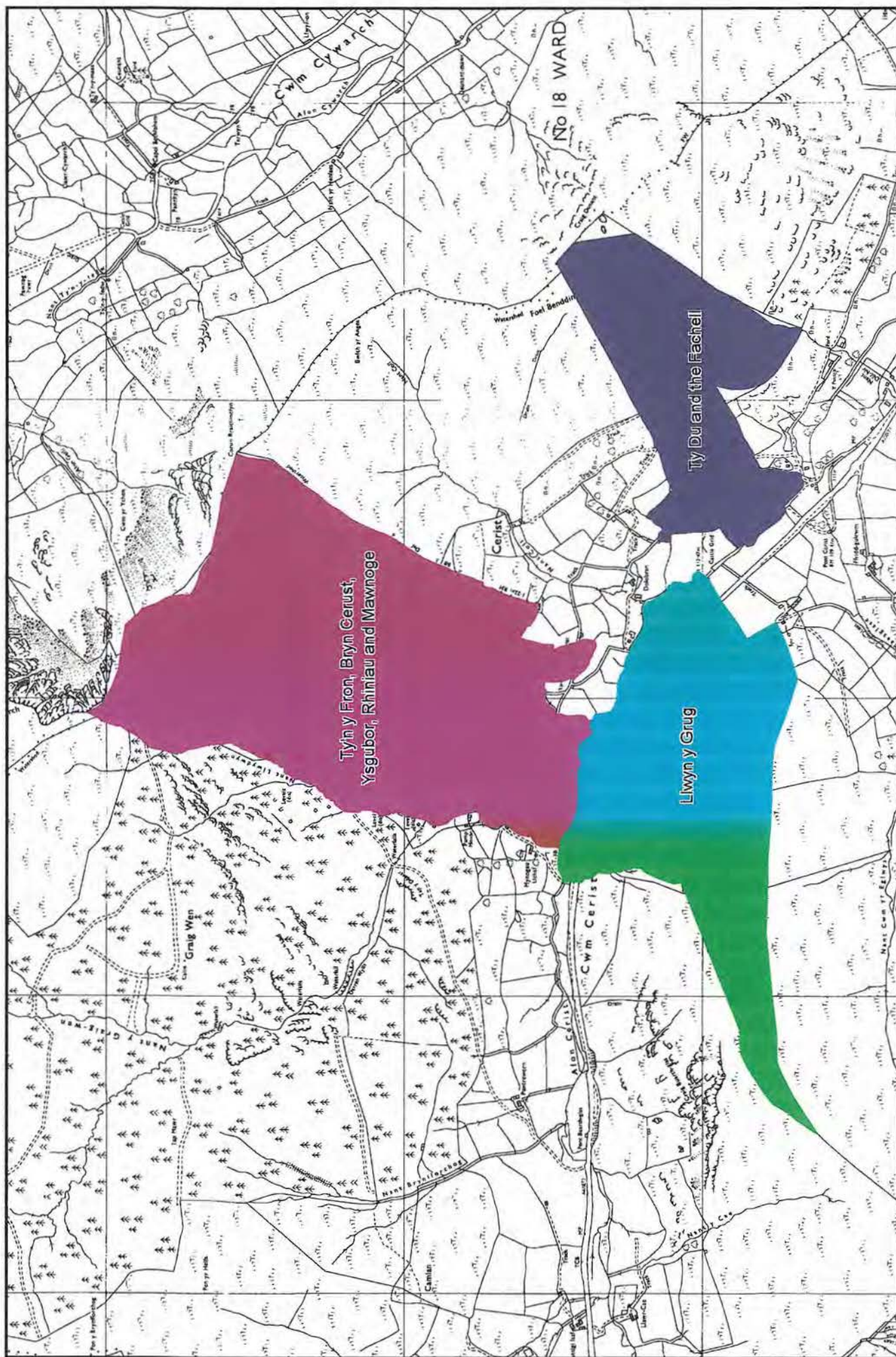


Figure 17 - Mallwyd Study Area - boundary layout and plot numbers

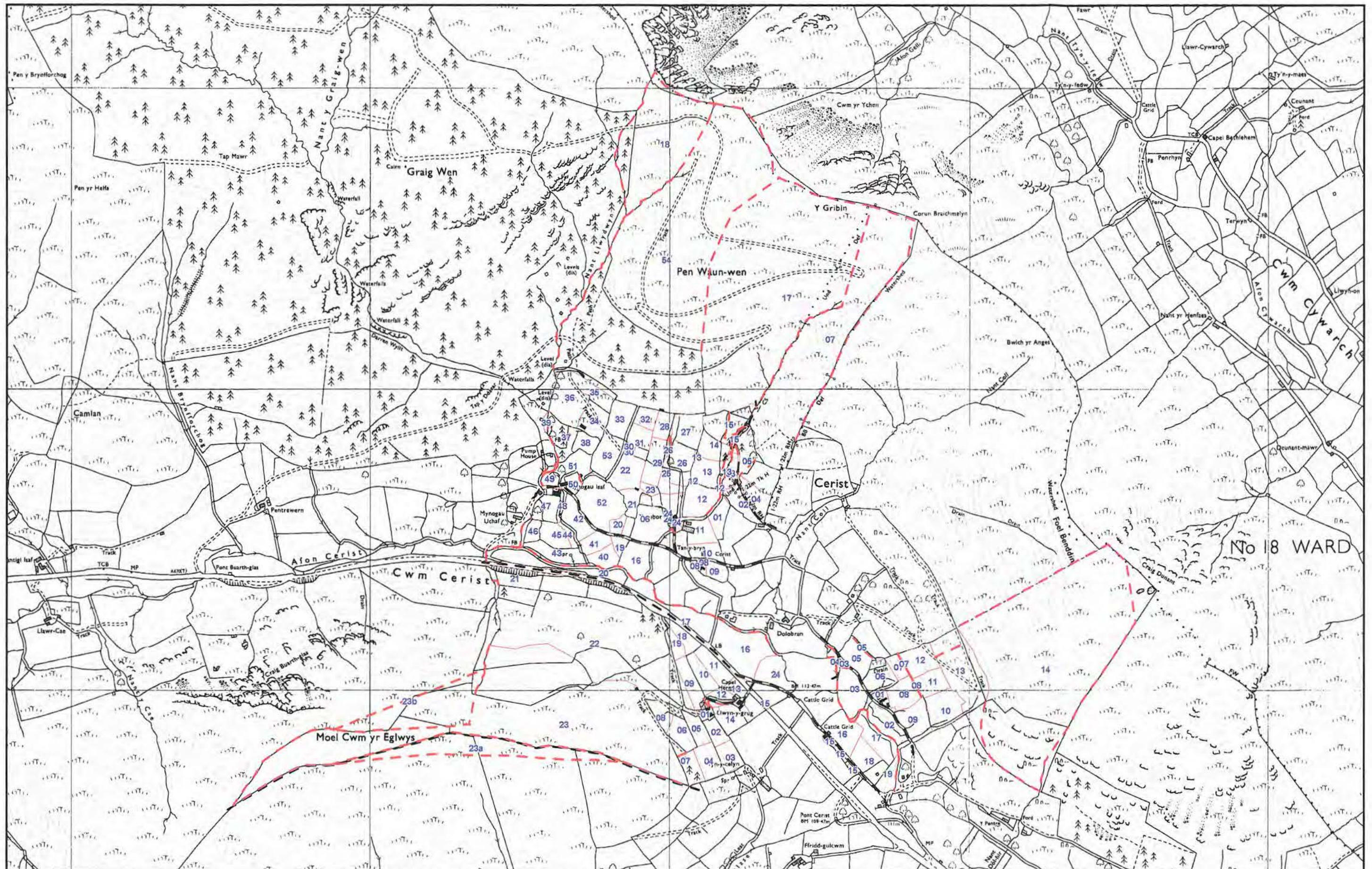


Figure 18. Mallwyd study area: Field plots and landuse (1820)

Holding name	Plot number	Field name	Landuse	Notes
Bryn Cerist	08		hg	"Bryn Cerist house buildings fold garden &c"
Bryn Cerist	08		hg	"Bryn Cerust house buildings fold garden &c"
Bryn Cerist	09			
Bryn Cerist	10			
Bryn Cerist	11			
Bryn Cerist	12			Rough in 12
Bryn Cerist	12			
Bryn Cerist	12			Rough in 12
Bryn Cerist	13			Rough in 13
Bryn Cerist	13			Rough in 13
Bryn Cerist	13			
Bryn Cerist	14			
Bryn Cerist	15			Rough and road in 15
Bryn Cerist	15			
Bryn Cerist	16		w	"Werglodd" = Weirglodd
Bryn Cerist	17			
Bryn Cerist	18			
Fachell				Unnumbered plot. Possibly a track.
Fachell	15		g	Fachell house buildings & gardens
Fachell	15		hg	Fachell house buildings & gardens
Fachell	15		g	Fachell house buildings & gardens
Fachell	16			
Fachell	17		p	Includes areas of gravel and rough
Fachell	18			
Fachell	19		w	"Corse" = Gors
Llwyn y Grug				Probable yard
Llwyn y Grug				Probable yard
Llwyn y Grug				Unnumbered possible enclosure
Llwyn y Grug				Unnumbered enclosure
Llwyn y Grug	01		hg	"Llwyn y Grug house buildings fold garden and lane"
Llwyn y Grug	02			
Llwyn y Grug	03			
Llwyn y Grug	04		r	Ffridd
Llwyn y Grug	05		r	Ffridd
Llwyn y Grug	06		r	Ffridd
Llwyn y Grug	07		r	Ffridd
Llwyn y Grug	08		r	Ffridd
Llwyn y Grug	09			
Llwyn y Grug	10			
Llwyn y Grug	11			
Llwyn y Grug	12		w	Probable "Cors"
Llwyn y Grug	13		w	Probable "Cors"
Llwyn y Grug	14			
Llwyn y Grug	15			
Llwyn y Grug	16			
Llwyn y Grug	17			
Llwyn y Grug	18		p	Probable pasture (Cae Glas)

Llwyn y Grug	19		p	Probable pasture (Cae Glas)
Llwyn y Grug	20		w	Probable wet, rough grazing ("Gwerglodd" = Weirglodd)
Llwyn y Grug	21		w	Probable wet, rough grazing ("Gwerglodd" = Weirglodd)
Llwyn y Grug	22		r	Ffridd Fawr
Llwyn y Grug	23		sw	
Llwyn y Grug	23a		sw	"doubtful whether it belongs to the sheepwalk or not"
Llwyn y Grug	23b		sw	"doubtful whether it belongs to the sheepwalk or not"
Llwyn y Grug	24			
Mawnoge				Unnumbered enclosure
Mawnoge				Unnumbered enclosure, possible yard
Mawnoge				Unnumbered enclosure
Mawnoge	40			
Mawnoge	41			
Mawnoge	42			
Mawnoge	43		w	"Gwerglodd Cae Cerrig" = Weirglodd ?
Mawnoge	44			
Mawnoge	45			
Mawnoge	46			
Mawnoge	47			
Mawnoge	48			"Building and Lane"
Mawnoge	49			
Mawnoge	50			
Mawnoge	51		h	"Mawnoge House and Rhos Fach"
Mawnoge	52			
Mawnoge	53			
Mawnoge	54			
Rhiniau	30			"Rhiniau house & garden"
Rhiniau	30		hg	"Rhiniau house & garden"
Rhiniau	31			
Rhiniau	32			
Rhiniau	33			
Rhiniau	34			
Rhiniau	35			
Rhiniau	36			
Rhiniau	37			
Rhiniau	38			
Rhiniau	39		r	
Ty Du				Unnumbered enclosure. Possibly the fold or garden included in 1
Ty Du				Unnumbered enclosure. Possibly the fold or garden included in 1
Ty Du	01		hg	"Ty Du house buildings fold & gardens"
Ty Du	02			
Ty Du	03		r	"Rough in 3"
Ty Du	03			
Ty Du	04		r	"Open waste"
Ty Du	05			
Ty Du	05		r	"Rough in 5"
Ty Du	06			
Ty Du	07			
Ty Du	07		r	"Rough in 7"

Ty Du	08		r	"Rough in 8"
Ty Du	08			
Ty Du	09			
Ty Du	10		r	Ffridd
Ty Du	11		r	Ffridd
Ty Du	12		r	Ffridd
Ty Du	13		r	Ffridd
Ty Du	14		sw	
Ty'n y Fron				Un-numbered enclosure
Ty'n y Fron	01			
Ty'n y Fron	02			
Ty'n y Fron	03			
Ty'n y Fron	04			
Ty'n y Fron	05			
Ty'n y Fron	06			
Ty'n y Fron	07		sw	
Ysgubor	19			
Ysgubor	20			
Ysgubor	21			
Ysgubor	22			
Ysgubor	23			
Ysgubor	24		hg	"Cae Bach & the Ysgubor, house buildings & garden"
Ysgubor	24		hg	Probable garden
Ysgubor	24		hg	Probable yard or garden
Ysgubor	25			
Ysgubor	26			Rough in 26
Ysgubor	26			
Ysgubor	27			
Ysgubor	28			
Ysgubor	29			



Figure 19 Hir Gym study area - location of field plots named in both the Caerogronwy papers and the Llanaber Tithe Schedule

- 5.3.11 The table below shows the results of these analyses. A total of 37 field plots, all of which are still recognisably present in the bounded landscape of Hir Gwm today, were identified as present at both the time of the Tithe survey and within the Caergoronwy records. Figure 19 is a copy of the Tithe Award map showing the location of field plots referred to in the comparison table (below) highlighted.
- 5.3.12 An initial field visit was made to Hirgwm to assess the potential of this technique as a possible means of ascribing dates to different types of boundaries. Boundaries in the area predominantly take the form of drystone walls. There are noticeable differences between the boundaries identified through combination of the early documents and the tithe award, and boundaries dating to the late eighteenth and nineteenth century. As the visit was a preliminary attempt to establish the validity of the technique, observations were made from the roadside and from public rights of way passing through the area. It is intended to seek permission from landowners in the area to conduct a more extensive assessment of the boundaries. Part of this work would include the production of elevation and section drawings detailing different boundary types.
- 5.3.13 Unfortunately, Foot and Mouth restrictions prevented further work on the field work aspects of this case study. However it is hoped to resume as part of next year's casework once restrictions have eased.

Table 1: Hir Gwm study area - Concordance of field names appearing on dated records within the Caergoronwy collection against those with those given on the Llanaber Tithe Schedule

Field number on Tithe map	Field name on Tithe map	Field name in the Caergoronwy / Bennar Fawr Collection	Document ref. no. in the Caergoronwy / Bennar Fawr Collection	Document date in the Caergoronwy / Bennar Fawr Collection	Degree of confidence
1603	Gwndwn bach	Y Kae Gundun	1	May 19 th 1658	Possible match
1413	Cae canol	Y Kay Canol	1	May 19 th 1658	Confident match
1595	Cae newydd	Y Kay Newydd Ucha	1	May 19 th 1658	Confident match
1597	B??? cae newydd	Kay Newydd Isa	4	June 6 th 1583	Possible match
1380	Tal y sarn	Kae Tall y Sarn	15	June 20 th 1620	Possible match
1378	Ffridd Tal y Sarn	Rhos Tall y Sarn	15	June 20 th 1620	Possible match
1382	Cae ysgybor	Yr Yskyber Newidd	21	May 14 th 1648	Possible match
1384	Buarth newydd	Y Buarth Newydd	21	May 14 th 1648	Confident match
1388	Cae gwyndwn	Y Kae Gundwn	21	May 14 th 1648	Possible match
1390	Cae newydd	Y Kae Newydd Ucha	21	May 14 th 1648	Confident match
1392 & 1394	Wern tan ty & Wern y pistyll	Y Wern	21	May 14 th 1648	Possible match
1380	Tal y sarn	Kae Talysarn	21	May 14 th 1648	Confident match
1396	Cae gwyn	Y Kae gwyn	21	May 14 th 1648	Confident match
1399	Ffridd pant	Y Ffrith Pant	21	May 14 th 1648	Confident match
1398	Cae cuich	Kae Keirch	21	May 14 th 1648	Possible match
1603	Gwndwn bach	Kae Gwndwn	23	Feb 3 rd 1671	Possible match
1410	Wern	Y Wern ganol	24	Aug 18 th 1674	Possible match
1409	Cae y'r afon	Cae ynglan yr afon	26	Feb 15 th 1678	Possible match
1384	Buarth newydd	Buarthe y tu newydd	26	Feb 15 th 1678	Possible match
1388	Cae gwyndwn	Y Cae Gwndwn	26	Feb 15 th 1678	Possible match

1400	Ffridd newydd	Y Ffrith Newydd	26	Feb 15 th 1678	Possible match
1604	Ddol	Cae yr Ddol	26	Feb 15 th 1678	Possible match
1400	Ffridd newydd	Y Ffrydd Newydd	27	Feb 15 th 1677	Possible match
1405	Cae tan y ffordd	Kae tan y ffordd	28	Dec 16 th 1680	Confident match
1411	Cae ceirig	Kae yr Tu Cerrig	29	May 1 st 1682	Possible match
1413	Cae canol	Y Cae Canol	32	Feb 2 nd 1687	Confident match
1595	Cae newydd	Cae Newydd	32	Feb 2 nd 1687	Possible match
1389	Cae grapa	Y Groppa	34	Feb 2 nd 1695	Confident match
1507	House, garden & Cae tan y ty	Car tan y tu	34	Feb 2 nd 1695	Possible match
1384	Buarth newydd	Buarth newydd	34	Feb 2 nd 1695	Confident match
1386	Garnedd	Y Garnedd newydd	34	Feb 2 nd 1695	Confident match
1396	Cae gwyn	Y Cae gwyn	34	Feb 2 nd 1695	Confident match
1398	Cae cuich	Y Cae Ceirch	34	Feb 2 nd 1695	Possible match
1388	Cae gwyndwn	Cae gwndwn	34	Feb 2 nd 1695	Confident match
1403	Cae yr adyn	Cae'r adyn	34	Feb 2 nd 1695	Confident match
1380	Tal y sarn	Cae Tal y Sarn	34	Feb 2 nd 1695	Confident match
1411	Cae ceirig	Kae yr Tu kerrig	35	Jan 2 nd 1696	Possible match

6 Towards a classification of boundary types [CCW]

6.1 General

- 6.1.1 The work carried out in the two pilot areas, as well as the responses to the consultation, have confirmed that boundary types and forms vary considerably throughout the country. This is due to a number of factors, including the underlying geology which dictates which materials are found locally, changes in building over centuries (some of which will have been dictated by economic need), and probably partly due to social and cultural differences, local traditions of working and the extent to which distinctive styles were developed to convey symbolic meanings (for example by landed estates as statements of their status).
- 6.1.2 Any meaningful classification or typology must await further detailed and systematic work on a pan-Wales basis. However, an attempt has been in this section to provide a working classification of types and associated features (gates, fields, footpaths etc) based on a provisional series of categories and sub-categories.

6.2 Previous work

- 6.2.1 Although a number of detailed boundary surveys have been carried out in Wales, mainly by the National Trust for management purposes, there appears to have been no systematic attempt to develop a classification for general use. One reason why boundaries have been overlooked is that up until now they have not been seen as being of sufficient importance for them to be a recording priority. Instead, archaeologists have concentrated on 'key' discrete sites, and little attention has been paid to these and other features which are integral and fundamental components of the broader landscape.
- 6.2.2 They have formed an under-explored part of the hut circle and deserted rural settlement projects (which have tended to concentrate on the settlements themselves - see above), and are under-represented on the schedule of monuments of national importance (although precise numbers for the latter are not available).
- 6.2.3 Upland Surveys carried out by the Trusts and other bodies in recent years have not had a standardised classification to which to refer, and the Tir Gofal farm visits have similarly been variable in recording and referring to boundaries. However, it can be easily argued that boundary surveys are very time-consuming, and that most projects, unless they are set up specifically to record them, will not be able to cope with the level of extra work involved. This is one of the major reasons why boundaries have tended to be under-represented, or else overlooked, in fieldwork projects.
- 6.2.4 However, it is possible to pick out various trends in the types of boundary which have been recorded in a number of projects which have looked specifically at the subject.
- 6.2.5 The National Trust survey of Erddig, for example identified and recorded a number of different boundary types including hedge, wire fence, metal fence, wooden fence, wall, domestic boundary, bank with hedge, bank with fence, ditch, embankment, removed boundary and property boundary (J Latham, *pers comm*).
- 6.2.6 Work has also been undertaken in south-west England on trying to establish categories of boundary types. Fleming and Ralph (1982) felt that it was possible to discern six clear morphological boundary types on Holne Moor, Dartmoor. These were

- 1 *Wall* usually dry stone wall, here dated mainly to the 18th and 19th centuries:
- 2 *Wall bank* typically a stone-faced earth or stone wall, always over 1m wide and 1.5 - 2.5m high, for which a late medieval or post medieval date is suggested:
- 3 *Hedge bank* usually ditched on one or both sides and less than 1 m high, faced with walls or turf, again late medieval in date:
- 4 *Corn ditch* typically a stone-faced bank, 2-3m wide and only 1m high, for which an early 16th century date is suggested:
- 5 *Block walls* which were fairly rare, consisting of boulders in a line, and probably of an early medieval date:
- 6 *Clearance walls* which are usually simply piles of boulders, often not enclosing any land.

6.2.5 In 1986, a classification of the boundary types found on Brown Willy, Bodmin Moor, compiled by Peter Herring (Herring, 1986), suggested a typology including 10 types

- | | |
|---|------------------------|
| A | Drystone wall |
| B | Stone-faced stone wall |
| C | Stone-faced earth wall |
| D | Stone-faced bank |
| E | Revetted lynchet |
| F | Earth bank, no faces |
| G | Stone bank |
| H | Single wall |
| I | Single-stone wall |
| J | Low bank |

6.2.6 Although this classification offered a more detailed approach, it only applied to a geographically-restricted, upland area with particular characteristics.

6.2.7 A more-recent classification of boundary types was undertaken by Johnson and Rose as part of the Bodmin Moor Archaeological Survey (Johnson & Rose, 1994). This was again looking at a relatively small area, but does provide a more widely-applicable basis for a boundary type classification:

- | | |
|-------------------|---|
| Single stone wall | Boulder wall
Bookshelf wall
Orthostatic wall
Slab wall
Dry-stone wall |
| Wall | Stone-faced wall
Stone-faced stone wall
Stone-faced earth wall (Cornish hedge)
Turf wall |
| Stone-faced bank | Stone faced bank
Stone faced stone bank
Stone-faced earth bank |
| Bank | Bank
Stone bank
Stony bank
Stone-cored bank
Earth bank |

Hedge	Hedge
Ditch	Hollow-way Ditch
Lynchet	Lynchet Stony lynchet Revetted lynchet

- 6.2.8 Other surveys which have examined boundaries in greater detail include the Roystone Grange survey, Derbyshire (Hodges, 1991), where walls dating as far back as the neolithic have been identified.

6.3 Draft typology

- 6.3.1 The following draft typology, based on a combination of the National Trust surveys, the Cornwall work, work by one of the authors (JGR) in Derbyshire and our own fieldwork, has been established. This is to be revised in the light of further responses to the consultation procedure which will be carried out in the next year. Work has begun on compiling a list of sub-types to aid in recording and management: at the moment this is in draft stage and it is intended to work this up into a final format during the next stage of the project.

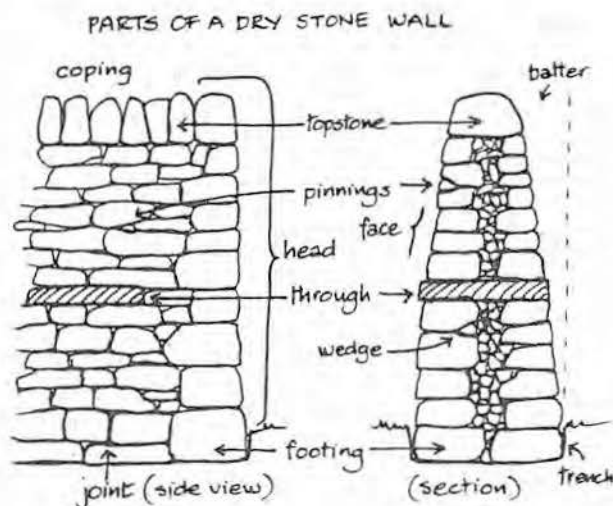
- 6.3.2 The following is a classification of broad types. Boundaries frequently appear in combinations of these types, for example hedgebanks, ditched walls, cloddiau with hedges and so on. A number of the type classes also have sub-types, so that for example drystone are found with a variety of capping or coping types from horizontal slabs to upright blocks. Variations may occur according to the availability and nature of local materials, such as geological differences, as well as through environmental differences (for example the range of colonising species found within a hedgerow). Cultural and aesthetic factors have played an integral part in the development of locally distinctive boundary types and features, including local traditions of hedge maintenance such as laying, and the planting of exotic species hedgerows such as privet and laburnum. The presence of drystone walls constructed of milled slate blocks are a characteristic feature of the slate quarrying areas of north west Wales for example. Further work on the typology to reflect sub-type refinements is proposed as a component of the next phase of this project. A provisional glossary of boundary types, sub-types and classifications which may form the basis for future recording at a variety of levels of detail (from the pan-Wales atlas of types to farm-scale field work) is provided here as Appendix IV, for further discussion.

- 6.3.3 Type descriptions and indicative sketches:

Hedge	Hedges (H) consist entirely of vegetation (sometimes including trees), sometimes planted on a small linear mound and sometimes with one or two side ditches. <i>(These appear in many different regional forms.)</i>
	Hedgebanks (HB): Hedges can also be planted on top of the banks and walls described above. <i>(These also appear in many different regional forms.)</i>

Drystone wall

A drystone wall (DW) is constructed entirely of stone, and may be one-stone in width in part, with other parts (usually the base) two stones or more wide. *(These appear in many different regional forms.)*



Mortared wall

Commonly found as demesne or estate boundary walls (MW).

Single wall

The single wall (SW) is constructed entirely of stone and all parts of the boundary are only one stone wide. *(These appear in many different regional forms.)*



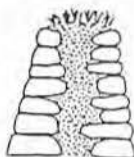
Boulder wall

The boulder wall (BW) is a boundary consisting of large stones placed in a line with little or no superstructure now in evidence. Boulders are usually massive in size and may be orthostatic.



Stone-faced earth wall

The stone faced stone wall (SFEW), or *clawdd*, consists of two stone faces with an earthen core. *(The faces can appear in different patterns, including herringbone, which may be regional.)*



Stone-faced stone wall

The stone faced stone wall (SFSW), sometime also referred to as a *clawdd*, consists of two stone faces with a stone core. It may be impossible, during a survey, to distinguish this from the SFEW.



Consumption / clearance wall

Wall derived from or substantially enlarged through stone from field clearance (CW).

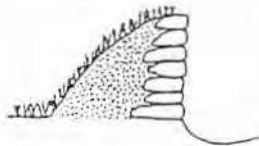
Earth / turf bank

The earth or turf bank (E/TB) is made entirely of earth or turf. It may have one or two side ditches. Many of these appear now as very denuded and low features.



Stone-faced earth bank

The stone-faced earth bank (SFEB) is an earthen bank with stone facing on one side. It may also have a ditch on the facing side.



Stone-faced stone bank

The stone faced stone bank (SFSB) is a stone bank with stone facing on one side. It too may have a ditch on one side.



Post and wire fence

This boundary (PWF), essentially modern, may appear on its own or in combination with another boundary type.

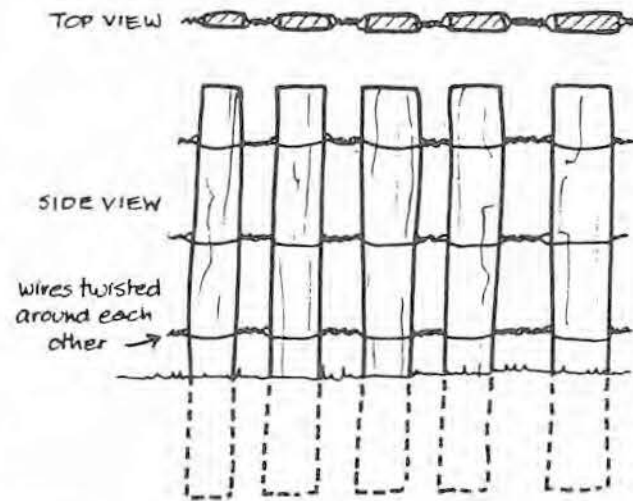
Wooden fence

Many traditional boundary forms use hard wood as a major constituent (WF).

Slate pillar fence

Upright slate pillars dug into the ground by about 600mm and normally wired together. The spacing between the slates varies from a few inches to up to

several yards; for close spacings the wire may be looped around the slate or put through holes drilled in it, while for greater spacings drilling is usual and the wire may be strained (SPF).

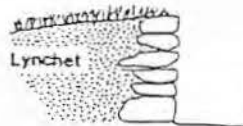


Lynchet

A lynchet (L) is a scarp produced by ploughing, which has a former boundary at its core. It may also be associated with another (later) boundary type built over it.

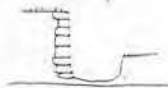
Revetted lynchet

As above, but with a stone face or revetting (RL).



Ha-ha

The ha-ha (HA) is a feature associated with 18th and 19th century parklands: it consists of a ditch dug around the garden area of the estate with a vertical face against the garden side to exclude livestock and retain the view.



Iron railings

For example as present alongside many of the former Denbighshire County Council roads (Richard Kelly pers. comm.) (IR).

Ditches / reens

Common on the Gwent Levels and other low-lying coastal and estuarine areas of Wales, as well as in the flood-plains of the larger rivers (D).

6.3.4 Comments on the above are invited from any interested parties.

7 Management [Cadw and CCW]

7.1 General

7.1.1 It is already quite clear that boundary repairs, wall building and hedgerow planting will form a major component of the farm works implemented through the new Tir Gofal scheme. At present, there is no suitable source of information to which Tir Gofal project officers can turn when making decisions about the management of traditional boundaries on farms entering the scheme.

7.1.2 There is anecdotal evidence from other areas of Britain that the input of money for boundary repair and renovation which has not been supported by historical information of field boundaries has often produced unfavourable results. It tends to result in a reduction in the variety of boundary types and features characteristic of particular areas, and their replacement with forms that do not respect local traditions of working or building. Similar concerns were expressed by one of the consultees to the current project, a Tir Gofal Project Officer:

‘The areas that are ‘renovated’ under Tir Cymen and Tir Gofal schemes tend to lose much of their original character. Contractors in particular are keen to straighten out walls, rebuilding them to a standard height. They are required, under the schemes, to keep historical features such as sheep tunnels, stone gateposts and stiles, but these are often not repaired as part of the job’ (extract from consultation exercise response letter).

7.1.3 Good information is particularly important for field boundaries as, apart from ensuring the survival of those boundaries on farms signing up to schemes, they also raise the positive image of the historic environment in general among the farming communities who are best placed to care for them.

7.1.4 Boundaries are important for nature conservation and are often rich habitats in their own right. ‘Boundary and linear features’ are included as one of the broad habitat plans defined by the UK Biodiversity Steering Group (Jackson 2000), and ‘Ancient and/or species-rich hedgerows’ is one of the UK priority habitats (UK Biodiversity Steering Group 1995, 243). The draft versions of the Local Biodiversity Action Plans for Anglesey and Gwynedd acknowledge the importance of historic field boundaries in terms of both their contributions to the cultural landscape, and as havens for wildlife. Ancient hedgerows and *cloddiau* are subject, within the BAPs, to individual action plans. It is important therefore that the form and character of the resource is better understood before the guidance contained within these plans is acted upon.

7.1.5 In June 1997 the Hedgerow Regulations came into force, the aim of which is ‘to protect important hedgerows in the countryside by controlling their removal through a system of notification’ (MAFF, 1997). This system is triggered when a landowner wishing to remove a hedgerow notifies their local planning authority. If they are satisfied that the boundary is a hedge within the definitions of the Regulations, the planning authority then assesses the hedgerow, and decides whether it is important and should be retained.

7.1.6 In commenting on these Regulations, many archaeologists drew attention to the fact that hedgerows represent a relatively small percentage of boundaries which are of historic and archaeological (and landscape) importance. They have pointed out that stone walls, earth banks and other forms are equally as important, and recommended that the

Regulations be re-drafted to include all boundary types (unpublished ALGAO Countryside Committee submission to review of Hedgerow Regulations).

- 7.1.7 Whilst the current legislation does not reflect these concerns, it is hoped that future versions will include a broader definition of what they can cover. It is important, therefore, that information on the types and distribution of boundaries is available to inform any such new Regulations.

7.2 Initial thoughts on general management responses

- 7.2.1 This section offers some initial advice on the broad management needs of boundaries. It is hoped that more detailed management responses can be drawn up next year following further consultation.
- 7.2.2 The basic aim of the management of boundaries is that, in order to be effective, they must be maintained against any erosion caused by livestock, and general wear and tear. Different boundary types are required for different livestock: for example, cattle need only a relatively low boundary, whereas sheep (particularly agile sheep such as Welsh mountains) need much taller (and stronger) ones.
- 7.2.3 Where drystone walls are concerned, extra height and 'deterrence' value is sometimes gained by coping stones. These come in a variety of forms and help bond the wall together as well as deterring livestock from climbing on top of the wall. Sometimes, drystone walls are built with small gaps which allow the light through: this prevents sheep from attempting to climb them (this is probably a psychological deterrent as the sheep don't trust the wall not to collapse!).
- 7.2.4 More prosaically, another more modern technique for maintaining effective boundaries (earthen banks as well as dry-stone walls) is to add a post and wire fence (either on top or to either or both sides).
- 7.2.5 Boundaries which include an element of vegetation (hedges, for example) require management of both the hedge and the 'built structure': for example, a hedge may be laid by hand or coppiced (traditional practices aimed at producing timber for fuel *etc*), or it could be flailed (*i.e.* cut indiscriminately by machine). The choice of which strategy is adopted is important for both the diversity aspect of the boundary (traditional techniques tend to support a greater variety of wildlife) and the visual/aesthetic aspects of the feature as an element of the rural landscape.

7.3 Possible criteria for scheduling

- 7.3.1 Other recent Cadw-funded projects, notably the condition surveys of prehistoric and deserted (medieval) rural settlement (e.g. Jones and Thompson, 1996) have picked up on the fact that many of these abandoned, early settlement sites, which would have been primarily agricultural in function, are associated with evidence for their contemporary (and presumably related) field systems.
- 7.3.2 The actual boundaries of these systems are preserved either because they form the base for later walls or hedges or, particularly in marginal areas, as relict features in pasture, woodland or moorland. One of the principal criteria considered when proposing these settlement sites for statutory protection has been their 'landscape context', or the presence of associated features. Field system remains have thus already begun to play a role in the scheduling programme: however, despite this, a preliminary overview of the schedule indicates that the (often extensive) systems of features into which settlement sites are embedded are frequently under-represented or 'truncated' by the boundary of the designated area.
- 7.3.3 It is appropriate that due consideration is now given to the relative importance of field boundaries (and, more importantly, systems) as the providers of a context for settlement and other remains (see Foster and Hingley, 1994).

- 7.3.4 This aspect will be addressed by next year's continuation of the project which will examine possible criteria by which field systems of national importance could be identified.

8 Archaeological approaches to recording boundaries [Cadw]

8.1 Background

- 8.1.1 One of the principal concerns leading to this project was that insufficient attention is being paid to the archaeological importance of field boundaries when assessing developments (particularly linear developments such as pipelines and highways - although some organisations (for example, Cambria Archaeology) are now requiring evaluation of boundaries as part of pipeline schemes) in the countryside, and advising on farm and other management plans.
- 8.1.2 The opportunity to recover archaeological data by recording sections cut through boundaries that are disturbed or removed during various forms of development is being lost, mainly because there is no framework through which the value of this work can be established and reviewed.

8.2 Environmental sampling

- 8.2.1 As part of the current project discussions were held with Astrid Castledine, environmental archaeologist based at the University of Wales, Lampeter. No focussed environmental sampling is known to have taken place on boundary features in Wales to date. The following notes are intended as preliminary comments on the possible value and methodology of environmental sampling. They will need to be developed during the course of the second phase of the project.
- 8.2.2 The most productive type of palaeo-environmental work which could be carried out on samples from ancient / historic field boundaries is likely to be palynology, although in some areas (for example areas of calcareous geology) it is possible that molluscs may be recovered.
- 8.2.3 The potential of environmental sampling will vary according to the type of boundary, being greater for features with a high soil or organic component such as banks, lynchets, *cloddiau* etc. As a minimum requirement, a secure palaeo-ground surface must be sealed beneath the feature. The most productive boundaries for research will be those which demonstrate phases of rebuilding in which a number of construction horizons are stratified within the boundary. In such instances, it might be expected that sampling could reveal information about the chronology of the boundary itself, as well as about the landuse regime and environment of the period preceding the boundary's construction (ground surface buried beneath basal layer).
- 8.2.4 Ideally samples should be in the form of a small column, but where this is not possible, for example in shallow soils, a bulk sample should be taken. Columns are taken with monolith tins or other suitable container with recommended dimensions of 10cm by 10cm cross section and 20-30cm height minimum (preferable greater, depending on depth of deposit available). In stony soils it may not be possible to take an adequate single column. Here, samples should be taken as 2cm depth contiguous samples or at intervals with a 1cm gap between, and stored in small plastic bags clearly marked with the relative depth of the sample.
- 8.2.5 Further research into boundaries overlain by peat would be desirable as C¹⁴ dating of peat is possible and would provide dates relating to abandonment. Pollen samples from the peat could help to tie this into the broader processes in the contemporary landscape.

- 8.2.6 The potential of soil micromorphology for boundary research needs to be explored but was felt to be of high potential value.
- 8.2.7 A review of the value of environmental work on field boundaries in Cornwall is given in Bull and Herring (1999, 22-23). Their findings are summarised here. It was concluded that sampling should be considered as an important aspect of the recording of boundaries, although there were thought to be a number of problems associated with it. Firstly, the boundary which is being studied has to seal a buried soil for the work to be of value, and this is impossible to establish before excavation starts. Secondly, even if suitable buried soils are present, they may not be suitable for sampling: this can be due to biological activity such as root disturbance or worm activity; both of these processes churn up the soil, so that it is not possible to decipher the sequence of deposition of pollen over time. The third problem is the cost involved in the analysis (the specialist's time).
- 8.2.8 Given suitable conditions however, it was shown that the results can be very valuable, providing information about local landscape history, and particularly about the agricultural and ecological / environmental conditions prevailing in the area just prior to the construction of the boundary.
- 8.2.9 Certain conditions appear to lead to the best results. Firstly, if the boundary has a stone facing, then the effects of bioturbation can be limited. Secondly, waterlogged buried soils are an important resource as anaerobic conditions are conducive to the preservation of organic material including pollen grains and plant macro-fossils.

8.3 Guidelines for future recording

- 8.3.1 In any given project (for example a new highway), on the whole the more boundaries that are recorded, both as field monuments (morphology) and by excavation (which will reveal a cross section, and possibly dating and environmental evidence) the better. This allows for a more complete picture to be built up of what might comprise definable field systems, to add detail to perceived differences in boundary types and patterns across different historic landscape character areas, and to establish a chronology for different types. Recent work on the A55 across Anglesey (Richards, Moorhead and Laing Ltd. 2000, 50-55; Davidson, *pers comm*) is an example of how this might work.
- 8.3.2 If total recording of every boundary (for example as part of a highways project) is not possible, then a purposeful sampling strategy needs to be set out before work begins. Awareness of the historic landscape character areas (if this work has been undertaken) and the positions of boundaries within field systems is needed in order to set out clear sampling and recording strategies and objectives of study. Work should be carried out on types considered both characteristic and non-characteristic of the area, and preferably on examples of all the different types represented. A characterisation exercise will need to precede, and direct, any more detailed recording work, such as excavation.
- 8.3.3 Boundary features and furniture should also be recorded, particularly where whole boundaries are to be destroyed (this could include any gates, stiles, gate posts, fencing *etc.*). The details of the boundary type and construction, as well as its condition and any other relevant information, should also be recorded. The location of the boundary should be recorded on an OS map, preferably as part of GIS within the SMR.
- 8.3.4 Even if excavation is part of a longer-term, landscape-wide archaeological project, it is probably only going to be possible to excavate a single section across any particular

boundary. Due to practical considerations, excavation of boundaries usually comprises simply the drawing of a section of a trench across the boundary which has already been removed by a mechanical digger (or similar).

- 8.3.5 It is desirable to record boundary sections in a consistent manner to allow comparisons between boundaries (and thus between systems and between areas) to be made.
- 8.3.6 Excavation should follow standard archaeological practice. Firstly, it is advisable to check that either bedrock or natural has been reached. The section should then be cleaned and recorded as per usual. Recording at a scale of 1:20 is usually sufficient to include the relevant details. Photographs (including black and white prints and colour slides, or digital images) with a scale should be taken (colour slides record vegetation cover and stratigraphy better than black and white prints) as usual. Environmental samples should be taken from any buried surfaces which are noted. The locations of the section should be noted, preferably within a GIS as part of the SMR.

9 Conclusions and further work

- 9.1 The recommendations of further work contained within this conclusion are summarised below as two bullet-pointed lists concerning recommendations for phase II of the project and recommendations for work which is beyond the scope of this project, sections 10 and 11 respectively.
- 9.2 This pilot study has been set up as a two-year project, jointly funded by Cadw and CCW, and this report should therefore be viewed as an interim one. It will be expanded by the second year's work programme. However, it is already clear that it is potentially a very fruitful area of work that can add considerably to our knowledge of the development of the landscape as well as informing patterns of change.
- 9.3 The project has demonstrated that it is already possible to start characterising boundary types and field patterns geographically and according to approximate date. Further work to carry the subject forward in these two areas in particular is therefore regarded as a priority.
- 9.4 There is a need to continue to collate data on general boundary types (including documentary references and original fieldwork so that it they can be used effectively for characterisation, LANDMAP, Tir Gofal and other purposes. It is recommended that a procedure (and means of funding) is established for this, and that a single organisation within Wales is charged with ensuring this exchange, which will result in reference material for use by landscape managers across Wales.
- 9.5 There is a lot of information already published or in manuscript form about field boundaries. Numerous bibliographical references have been collected during the course of the background research for this project. These are listed in the 'References and sources' section (11) of this report although it has been beyond the scope of this project to carry out a detailed literature review. This should form a component of the next phase of the project, and should include reviews of antiquarian and historical agricultural writings, which initial investigations have demonstrated to be a rich source of information on the range of boundary types prevalent in Wales, as well as on their dating. The results will be used to inform and refine the development of the glossary of boundary types.
- 9.6 The atlas of regional types should continue to be compiled. To date, limited information has been received, and that mainly from north Wales. It is recommended that the preliminary results are circulated to the original consultees (and others whose names have been suggested since), to elicit their views on what has been compiled to date, and to try to get further information for southern areas of the country. Comments received will be incorporated in the final report.
- 9.7 However, due to the poor response from south Wales, it is recommended that some original fieldwork will probably be needed in the area, probably in the form of a windscreen survey which can be informed by further discussion with WAT and CCW staff. Much useful boundary related information is contained within the historic landscape characterisation reports produced by the WATs. A full review of this information was beyond the scope of the current project, but could be usefully pursued as a component of the next phase.
- 9.8 The responses received as part of the atlas consultations were very varied in terms of the scale, level of detail and the scope of information provided. This may have been partly due to the generalised nature of the consultation letter sent out. An initial attempt

has been made to establish a more extensive glossary of boundary types, sub-types and associated criteria (appendix IV). It is hoped to develop this gazetteer as part of phase II of the project, to provide a base line of consistent terms against which information from further consultations can be recorded.

- 9.9 Many of the consultation responses focussed on boundary character areas rather than on types per se. For example a useful response received from Cambria Archaeology (Dyfed Archaeological Trust) was in letter form and was not accompanied by a map showing type or character areas. This was partly owing to concerns over the time such an exercise would take for it to be meaningful, but also because of fears that tying down boundary types to specific areas would provide a misleading picture of the diversity and variation of boundaries in the Welsh landscape. It was felt by Cambria Archaeology that any atlas devised on this basis could potentially be detrimental to, rather than encourage, the preservation of boundary character as it may be used in future to influence decisions over legitimate types in particular areas at the expense of the complex intermixing of types found on the ground in many areas. However, the aim of this project is not to produce an immutable and categorical map of boundary types. It is to provide an indicative atlas as well as a resource of material highlighting the diversity of boundaries throughout Wales, and acting as a broadly based source of information on the historical development of boundaries and their conservation.
- 9.10 It is suggested that the final atlas product should not be a map of the distribution of exclusive boundary type areas, but should aim to show generalised character areas which will draw on the variety of types contributing to the distinctive bounded landscapes present throughout Wales. It will be possible to query this information through GIS to produce indicative maps of individual types which can be updated as research and fieldwork continues. Focussing on character areas may allay some of the concerns expressed by Cambria Archaeology, and may also provide an easier way for consultees to provide information. It is suggested that work on boundary patterns and areas is developed as part of phase II of this project. It is hoped that further information on character areas will be derived from the proposed 'windscreen' survey and through discussion with members of the Welsh Archaeological Trusts.
- 9.11 Detailed boundary surveys are time-consuming. They should, therefore, only be undertaken when resources allow and a practical benefit demonstrated. It is suggested that the optimum time to undertake a detailed boundary study is as part of a Tir Gofal farm survey. However, such surveys are beyond the scope of the two types of farm surveys currently being carried out (i.e. by Tir Gofal project officers, and by the Trusts) and they would have to be the subject of new funding arrangements.
- 9.12 Approaches to field boundaries within the development control process need to be reviewed. Development control staff at Cambria Archaeology (Dyfed Archaeological Trust) request recording work on all boundaries affected by pipeline and other linear development schemes, for example, although this is not currently a standard approach throughout Wales. A programme of boundary recording was carried out in advance of the construction of the new section of the A55 across Anglesey (Richards, Moorehead and Laing Ltd. 2000, 50-55 and Appendix A). It is recommended that detailed field boundary recording should also accompany all large-scale developments (such as new road schemes, large housing estates, industrial estates and other infra-structure projects), and the results made widely-available. Initial comments on recording procedures are given above (section 8.3), but these need to be developed and refined as an extension of this project. This work should include the production of boundary related development control guidelines.

- 9.13 Criteria for scheduling and the identification of key field system scheduling proposals should also be developed.
- 9.14 Due to Foot and Mouth Disease, part of this year's project (namely fieldwork in the Ardudwy area to examine possible prehistoric boundaries in greater detail) has had to be postponed. It is intended to carry out this work during the second phase of the project, alongside the two further pilot areas suggested in the project design.
- 9.15 Whilst legislation and planning procedures are an important measure, the majority of boundaries fall beyond their remit. Preservation of these features relies upon the interest and goodwill of farmers and landowners. Raising the profile of the importance of boundaries is seen as a priority. Guidance information and support and encouragement for boundary conservation and maintenance could be provided in the form of a booklet in the Cadw 'Caring for...' series, which could be distributed to farmers through Tir Gofal Project Officers and through the national farming unions.
- 9.16 Initial comments on environmental sampling and boundary interpretation are given above (section 8.2). Very little work of this kind has been carried out in Wales to date, but is thought to have great potential for providing information on boundary chronology and past landuse (Castledine pers. comm.). The recovery of environmental samples (for pollen, plant macro-fossil and soil micromorphology) from suitable deposits within boundaries should be considered for all such features threatened by development schemes. Further assessment of the palaeo-environmental value of field boundaries can not be made until more sampling and processing work has been undertaken. Such an initiative is beyond the scope of the current project, but could be carried forward in conjunction with a broader research based project such as the proposed Ardudwy Early Landscapes project (Johnson and Roberts 2001). Any such work should aim to identify criteria through which boundaries with high palaeo-environmental research value can be identified.
- 9.17 The sketch illustrations presented in section 6 of this report (draft typology of boundary types) are preliminary and are representative of very broad boundary categories only. The illustrations need to be redrafted and standardised before they can be used to accompany a more comprehensive glossary of types for distribution to land managers, Tir Gofal project officers and others. New drawings will need to be produced to illustrate those categories of boundaries for which illustrations are not given in this report, as well as to illustrate regional variations (for example in material, coping styles, facing, construction type). Recording of characteristic boundaries types and features (photographic record and sketches of elevation as well as section and plan where possible) should be carried out in tandem with the windscreen-survey of boundary character areas proposed above. Boundary furniture features (such as regional stile, gateway, sheep creeps (twillau defaid)) should also be recorded.

10 Summary of recommendations for phase II of the field boundaries project

- Completion of the field work element of the Cadw strand which was curtailed by foot and mouth restrictions during phase I (Cadw)
- Development of criteria for scheduling and the identification of key field systems as scheduling proposals.
- Circulate copy of initial findings of phase I to original consultees for comment and refinement, and in the hope of gathering further data for south Wales particularly (CCW)
- Meetings with WAT and CCW staff to augment information towards the boundaries atlas (CCW)
- Review of historic landscape characterisation reports from all WATs for material and information that may be fed into the development of the atlas (CCW).
- ‘Windscreen’ survey – vehicle based rapid survey of boundary character areas (particularly of those regions for which no information was derived from the initial consultation process) (CCW).
- Refinement of thumbnail sketches to accompany boundary typology. Requires re-drafting and standardisation of illustrations along with some new recording work. Boundary types requiring illustrations are to be recorded in the field (possibly in conjunction with windscreen survey). Recording work is to include elevations as well as sections and plans where possible (CCW and Cadw).
- Section on boundary furniture and construction type (to include sketches – may require some new recording work, which could be carried out in conjunction with the windscreen survey) (CCW).
- Literature review. Extension of phase I literature search and synthesis of material relating to: previous archaeological and historical studies of boundaries; management and conservation; antiquarian writings and historic accounts of agriculture in Wales (Cadw and CCW).
- Development of provisional boundary glossary (appendix IV) as a standardised reference for recording work at a variety of scales (Cadw).
- Development of the boundary atlas on the basis of information derived from the above sources. It is not felt that it is either possible or necessary to reduce the diversity of boundary types found across Wales to a series of discrete geographical parcels shown on a single map. Rather, an overview map of boundary character areas will be produced from information compiled on GIS. It will be possible to query this information according to type and sub-type combinations to produce a series of supporting maps showing the indicative boundary distributions (CCW)

11 Summary of recommendations for further work beyond the scope of the current project

- Establish procedures for ongoing collection of boundary-related information and collation into central resource. Requires nomination of a lead organisation with responsibilities for collation and dissemination of information.
- Raise the profile of the historic and archaeological importance of field boundaries and encourage / support positive conservation practice by farmers and landholders. A first step would be the production of a booklet on boundaries in the Cadw 'Caring for...' series for distribution to farmers and land managers.
- Further investigation into the environmental archaeological value of boundaries. Establish criteria through which boundaries of high research potential can be identified. Conduct trial sampling and processing of material from a variety of different potentially productive different boundary types.

12 Glossaries

12.1 General terms

Batter	The face of the slope of a boundary.
Bioturbation	The mixing of soils by animals which live in it, such as earth worms.
Bridle/hunting gate	A narrow gate, usually with a latch at the top to allow people on horse-back to open and close the gate without dismounting.
Coping stones	Stones which project upwards from the top of a wall which act as a barrier stock (these appear in many local variations).
Coppicing	Where trees within a boundary (usually a hedge) have been cut back to their base and allowed to re-grow as several new stems which can be harvested and used.
Herring-bone facing	A facing style of dry-stone walls which consists of rows of diagonally-placed, thin pieces of stone, leaning in alternative directions.
Gateheads	These act as gateposts, but the hinges are built into the structure of the hedge itself.
Grounders	Large stones which are act as foundations of a boundary.
Laying	The process of partially-cutting hedgerow plants, bending them over and then weaving them in and out of stakes to form a barrier.
Sheep creep/tunnel	A hole built into a boundary at ground level to allow sheep to pass freely through, whilst preventing larger animals (such as cattle).

12.2 Welsh terms

Wall	<i>Wal</i> <i>Wal cerrig</i>
Stone-faced earth bank	<i>Clawdd (cloddiau)</i>
Stone-faced stone bank	<i>Clawdd cerrig</i>
Earthbank	<i>Orglawdd</i> <i>Clawdd pridd</i>
Fence	<i>Fens</i>
Slate fence	<i>Fens llechi</i>

Ditch	<i>Ffos (ffosydd)</i>
	<i>Gweirglawdd</i>
Hedge	<i>Gwrych (gwrychoedd)</i> <i>Sietyn</i>
Sheep creep/tunnel	<i>Twll defaid (twllau defaid)</i>
Pillar	<i>Pilor</i>

(This section is awaiting further responses from consultees)

13 References and sources

- ADAS 1996 The hedgerow evaluation system. Unpublished contract report by ADAS for the Department of the Environment.
- Baker, A. R. H. & Butlin, R. A., 1973, *Studies of Field Systems in the British Isles* (Cambridge).
- Barnie, H, 1976 Hedges and landscape history. *The Carmarthenshire Antiquity* 12: 27-30.
- Barnie, H and James, T, 1977, Hedges and landscape history: a study of land use in the Kidwelly area. *The Carmarthenshire Antiquity: supplement*.
- British Trust for Conservation Volunteers, 1975, *Hedging a Practical Conservation Handbook*, the British Trust for Conservation Volunteers, London.
- British Trust for Conservation Volunteers, 1975, *Dry Stone Walling a Practical Conservation Handbook*, the British Trust for Conservation Volunteers, London.
- Bull, E and Herring, P, 1999, *Cornwall's Historic Field Boundaries – A review*. Unpublished report on behalf of the Cornwall Archaeological Unit.
- Byrne, RJ, 1996 Field boundaries in Anglesey, Gwynedd. *Landscape Research* 21(2), 189-194.
- Cadw, Countryside Council for Wales & ICOMOS, 1998, *Register of Landscapes of Outstanding Historic Interest in Wales*. Cardiff: Cadw.
- Catherine Bickmore Associates 1999 Survey, classification and conservation review of Welsh Hedgerows (Phase I). Unpublished report on behalf of the Countryside Council for Wales.
- CCW 2000 *Locally distinctive hedges in Wales: Preliminary Study*. Unpublished report.
- Condry, WM, 1981 *The Natural History of Wales*. London: Collins.
- DANI 1992 Field boundaries in the landscape. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.1 in *Countryside Management – Field Boundaries* series.
- DANI 1992 A hedgerow code of practice. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.2 in *Countryside Management – Field Boundaries* series.
- DANI 1992 Hedges – plating and aftercare. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.3 in *Countryside Management – Field Boundaries* series.
- DANI 1992 Managing gappy and overgrown hedges. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.4 in *Countryside Management – Field Boundaries* series.
- DANI 1992 Dry stone walls. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.5 in *Countryside Management – Field Boundaries* series.
- DANI 1992 Gates, pillars and posts. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.6 in *Countryside Management – Field Boundaries* series.
- DANI 1992 Field boundaries and wildlife. DANI (Department of Agriculture for Northern Ireland). Pamphlet No.7 in *Countryside Management – Field Boundaries* series.
- Davies, M, 1973 *Field systems of South Wales*. In *Studies of Field Systems in Britain* edited by ARH Baker and RA Butlin, 480-529. Cambridge: Cambridge University Press.
- Davies, W, 1810, *General View of the Agriculture and Domestic Economy of North Wales*. Board of Agriculture and Internal Improvement: London.

- Delewanowicz, M, 1981, *Relict fields and associated structures in the parish of Llanaber, Gwynedd*
Unpublished UCNW dissertation.
- Edwards, N (ed.), 1997, *Landscape and Settlement in Medieval Wales*
- Emery, F, 1967, The farming regions of Wales, in Thirsk, J (ed), *The agrarian history of of England and Wales IV, 1500-1640*, 113-60
- Fleming, A & Ralph, 1982, [to be checked]
- Foster, S and Hingley, R, 1994, The potential and significance of field system remains, in *Foster and Smout* (eds), pp 135 - 44.
- Foster, S and Smout, C (eds), 1994, *The history of soils and field systems*.
- Garner, L, 1984, *Drystone Walls*. Shire Publications.
- Gresham, C A, 1973, *Eifionydd*.
- Gresham, C A , 1987, Medieval parish and township boundaries in Gwynedd, *BBCS*, vol. xxxiv, 137 - 49
- Gwyn, D & Thompson, D, 2000, *Historic landscape characterisation - Ardal Arfon*, unpublished GAT Report no. 351
- Gwyn, D & Thompson, D, 2001, *Historic landscape characterisation - Caernarfon - Nantlle*, unpublished GAT Report no. 402
- Herring, P, 1986, *An Exercise in landscape History Pre-Norman and Medieval Brown Willy and Bodmin Moor Cornwall*, vol I of 3, unpublished M.Phil. thesis, University of Sheffield.
- Hodges, R, 1991, Wall to wall history - the story of Roystone Grange.
- Hooke, D, 1975, Llanaber: a study in landscape development, *JMHRs*, vol. VII, part 3, pp. 221-30.
- Hooke D, 1997 *Place-name and Vegetation History as a Key to Understanding Settlement in the Conwy Valley*, in Edwards, N (ed.).
- Hooper, MD, Moore, NW and Pollard, E. 1974 *Hedges*. London: Collins.
- Jackson, DL, 2000 Guidance on the interpretation of the Biodiversity Broad Habitat Classification (terrestrial and freshwater types): Definitions and the relationship with other habitat classifications. *JNCC Report*, No. 307.
- Jackson, J, 1996 A survey of Hedgerows in North West Wales. Unpublished report to the Countryside Council for Wales.
- Jenkins, JG 1976 *Life and tradition in Rural Wales*. London: Dent and Sons.
- Johns, C & Herring, P, 1996, *St Keverne Historic Landscape Assessment*
- Johnson, R and Roberts, JG, 2001 *Ardudwy Early Landscapes Project*, unpublished project proposal.
- Johnson, N & Rose, P, 1994, *Bodmin Moor Archaeological Survey: vol. 1 the human landscape to c. 1800*.
- Jones, E J, 1925. The enclosure movement in Anglesey (1788 - 1866), *TAAS*, pp 21-58, and 1926, pp 51-89.

- Jones, G R J, 1973, Field systems of North Wales, in Baker, A H R and Butlin, R (eds.), *Studies of field systems in the British Isles* (Cambridge), pp 430 - 479.
- Jones, S, 1998, *Deserted rural settlement in eastern Caernarfonshire*, unpublished GAT Report no. 289.
- Jones, S & Thompson, D, 1996, *Deserted rural settlement in Gwynedd – a pilot study*, unpublished GAT report.
- Jones Pierce, T, 1938, Some tendencies in the Agrarian History of Caernarfonshire during the Later Middle Ages, *TCHS*, 1, pp 1-27.
- Kay, G, 1794, *General View of the Agriculture of North Wales*. Board of Agriculture and Internal Improvement: Edinburgh.
- Kissock, J. 1991 Farms, fields and hedges: aspects of the rural economy of north-east Gower c. 1300 to c. 1650. *Archaeologia Cambrensis* 140: 130-147.
- Latham, J, 1992, Tre-Seissyllt, *unpublished National Trust survey*
- Linnard, W, 2000 *Welsh Woods and Forests – a History*. Llandysul: Gomer Press.
- Llangynidr Local Historical Society, 2000, *Shadows in a landscape – the Evolution of a Community*. Llandysul: Gomer Press.
- Longley, D, Johnstone, N and Evans, J, Excavations on two farms of the Romano-British period at Bryn Eryr and Bush Farm, Gwynedd, *Britannia*, XXIX, 185-246.
- Rainsford-Hannay, F, 1957, *Dry Stone Walling*. London: Faber and Faber.
- Richards, Moorehead and Laing Ltd, 2000, *A55 DBFO – Basic Recording*. Unpublished report.
- Roberts, RO, 1973, *Farming in Caernarfonshire around 1800* (Vaynol MS 4057, 4055 and 4056). Caernarfon: Caernarfonshire Record Office.
- Scourfield, E, undated, *The Welsh Farming Scene*. Cardiff: National Museum of Wales.
- Scourfield, E, 1977 Regional variation in hedging styles in Wales. *Folk Life* 15: 106-115.
- Taylor, S, nd, Mynachdy'r Graig, South Wales, *unpublished National Trust survey*
- Taylor, S, 1998, Treginnis & Porth Clais, South Wales, *unpublished National Trust survey*
- Thomas, C, 1967, Enclosure and the rural landscape of Merioneth in the sixteenth century, *Transactions of the Institute of British geographers*, 42, 153-62.
- Thomas, C, 1968, Thirteenth century farm economies in Gwynedd, *Agricultural History Review*, VIII, pp 1-13.
- Thomas, C, 1972, Social organization and rural settlement in medieval North Wales, *JMHR*, vol VI, no. 2, pp 121 - 31.
- Thomas, C, 1973, Place name analysis in the geographical study of the rural landscape of Wales, *Studia Celtica*, VIII.
- Thomas, C, 1975, Colonization, enclosure and the rural landscape, *National Library of Wales Journal*, XIX (2), pp132-146.
- Thomas, C, 1978, The Rural landscape of North Wales in the later middle ages, *Geographia Polonica*, 38, 271-77

- Thomas, C, 1980, Field name evidence in the reconstruction of medieval settlement nuclei in North Wales, *National Library of Wales Journal*, 21, 340-56
- Thompson, D, 1997, *Historic landscape characterisation of Llyn Environmentally Sensitive Area*, GAT Report 261
- Thompson, D, 1998, *Historic landscape characterisation for management – Llyn ESA and beyond*, GAT Report no. 284.
- UK Biodiversity Steering Group 1995 *Biodiversity: The UK Biodiversity Steering Group Report – Volume II: Action Plans*. London: HMSO.
- Welsh Office, MAFF & the Department of the Environment, 1997, *The Hedgerow Regulations. A guide to the Law and Good Practice*.

Appendix I

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(Llandysul: Gomer Press, 2000). v + 247 pp, 23 tables; 97 figs. £19.95.

Welsh woods are in a poor state, with few honourable exceptions. In metaphor and reality they cling to the steep hillsides and rough places. Their past is complex, their future perilous. There are few highly-trained foresters in Wales and they have little influence in woodland restoration. Commercial pressures, political indifference and insensitive owners determine matters. The broadleaved woodland is mainly coppice oak on ancient enfeebled stumps – no younger seedling trees, the ubiquitous sheep sees to that. The grazed woods are aesthetically pleasing to an untutored eye, but quiteretchedly poor to forester and knowledgeable naturalist. The statistical majority of the near 12 per cent of Wales nominally forested comprises the uplands planted with conifers during the post-war dash for timber reserves by a state frightened at the dearth of pitwood and timber, 90 per cent of which had been imports in 1914.

A thorough understanding of how Welsh woodland has come to its present state is an absolute pre-requisite to any sensible programme for its restoration. William Linnard received high praise in 1982 for the scholarly, readable version of his PhD thesis published by the National Museum of Wales as the first edition of this book. It was soon out of print. This new edition by Gomer brings the history up to date with chapters covering the period of Forestry Commission activity since 1919. It also benefits by new research on earlier periods and much improved illustrations.

The woodland history is told straight with little comment as to the consequences of the exploitative misuse of woods as they dwindled from 90 per cent land cover in prehistory to 4 per cent in 1914. History, however, is Linnard's purpose and he is a splendid tutor to the growing audience who wish to back their conservation impulses with a solid background of woodland history. He offers plenteous detail from primary documents whilst maintaining a clear sweep to the story.

Linnard charts the re-forestation of postglacial Wales from pollen evidence. Pine comes and goes. Oak starts its long struggle to survive saprogradation by people and stock. The Romans clear and use forest, the

Normans far more, breaking up the near universal lowland forest. The process of selecting fine trees is under way, impoverishing the genetic base for successor woods. The Cistercians assart* great areas for their flocks. Underwood and small wood is cut on increasingly short rotations to char for smelting and lime burning. Forest laws, the key to any structured long-term management of woodland, are largely ignored in Wales. There is a first wave of tree planting vigour a century after John Evelyn gave the wake-up call. Thomas Johnes around 1800 spearheaded the activity, planting vast numbers of larch and oak at Hafod.

In 1919, the infant Forestry Commission faced a situation where almost half the remnant woodland area was classified as 'devastated scrub'. The conifer-clad hill land which causes such widespread present day anguish was largely planted in two decades after 1945. These plantations comprise low quality trees and in their present roughly managed state are wind prone and near to stagnation until mechanically clear-felled, a far cry from the silviculture envisaged when they were optimistically planted. To convert these to mixed, productive and conservation-rich continuous forest cover will be a truly daunting task.

In a rare aside, Linnard chides today's foresters for rediscovering the 'multiple use' concept. In early times this was 'multiple exploitation' of an overwhelming forest cover by a tiny population. The new attempt at 'multiple use' must battle to create a modern ethos and technology of woodland management in the face of a large, heavy-handed population that seems to know little and care less. The hope is that this erudite, stylish history can urge those who do have a say in the fate of Welsh woodland to follow paths of enlightenment.

Howard Owens

*An assart is an area of cleared woodland.

This article was written for and will appear in the Agricultural History Review. It is reproduced by kind permission of the Dr John Walton, Reviews Editor, Agricultural History Review.

Members' Expertise Sought.

What characterises your boundaries?

David Thomas

As reported by Patricia Moore in The Bulletin, Summer 2000, Gwynedd Archaeological Trust has recently started on a project, jointly funded by Cadw: Welsh Historic Monuments and the Countryside Council for Wales (CCW), to investigate boundaries and boundary types in Wales.

The principal outcome of the CCW-funded part of this project is to produce a preliminary inventory and regional atlas of traditional boundary types in Wales. This will be used to inform LANDMAP (Landscape Assessment and Decision Making Process) exercises currently being carried out by unitary authorities, and other countryside initiatives such as the Gofal (the all-Wales agri-environmental scheme). The aim is to ensure that the variety of traditional boundaries characteristic of different parts of the country is preserved, and that the appropriate techniques are employed when boundaries are repaired and rebuilt.

At this stage we are hoping to identify and map all types of traditional boundary that have a significant distribution and frequency in Wales. The principal types currently envisaged include dry-stone walls, hedges, earth banks, cloddiau (embanked stone walls), ditches and slate pillar fences. In addition, we know that some of these may have significant sub-types including, for example, hedges of a particular species (hawthorn, holly, holly, laburnum, privet, bird cherry etc.), dry-stone walls of a particular construction or period, or boundaries that require a particular management regime (for example the drainage rees on the Gwent levels).

We are keen to involve WHGT members and branches in compiling this inventory and atlas, as we know that their local knowledge represents a huge reservoir of information, and we would be grateful for any information readers can send us.

Ideally, the details we require are: a brief description of the type(s), a rough idea of the location and distribution of the type (either a grid reference or the name of a nearby town or village), a photograph and any historical references that may exist which give details of date or construction. If possible we would also like to know of any

particular threats or management problems associated with individual boundaries. If it would help, we can supply recording forms and maps for people to fill in. However, any information which can be supplied would be much appreciated, so don't worry about having to make a formal response. The first stage of the project is due to be completed by the end of March.

For further details please contact David Thompson or John Roberts at Gwynedd Archaeological Trust, Garth Road, Bangor, Gwynedd LL57 2RT tel. 01248 352535 or email dthompson@heneb.co.uk or john.roberts@heneb.co.uk. We look forward to hearing from you.



Appendix II

Standard consultation letter concerning regional types (with list of consultees)

Dear

Field boundary types in Wales

I realise that this is probably not the best time to approach you with a request for help, but there probably is no 'best time'. Gwynedd Archaeological Trust has recently begun a project, jointly funded by Cadw: Welsh Historic Monuments and the Countryside Council for Wales (CCW), to investigate boundaries and boundary types in Wales.

The principal outcome of the CCW-funded part of this project is to produce a preliminary inventory and regional atlas of traditional boundary types in Wales. This will be used to inform *LANDMAP* (Landscape Assessment and Decision Making Process) exercises currently being carried out by unitary authorities, and hopefully other countryside initiatives such as Tir Gofal. The aim is to ensure that the variety of traditional boundaries characteristic of different parts of the country is preserved, to provide a resource for future reference, and to make recommendations concerning appropriate techniques of repair and re-building for different boundaries. To this end, we would be grateful for any information you may have on field boundaries within or beyond your area, and we would also be interested to hear how you approach the question of advising on boundary repair.

At this stage we are hoping to identify and map all types of traditional boundary that have a significant distribution and frequency in Wales (and I emphasise that it is types and not individual boundaries with which we are concerned). The principal types currently envisaged include dry-stone walls, hedges, earth banks, *cloddiau* (embanked stone walls), ditches and slate pillar fences. In addition, we know that some of these may have significant sub-types including, for example, hedges of a particular species (hawthorn, holly, beech, laburnum, privet, bird cherry etc.), dry-stone walls of a particular construction or period, or boundaries that require a particular management regime (for example the drainage reens on the Gwent levels). We are also keen to record local Welsh-language terms for different types of boundary, as well as techniques of building and repair.

We are keen to involve Tir Gofal project officers in compiling this inventory and atlas, as you probably have the most extensive practical experience and knowledge of field boundaries in Wales.

Ideally, the details we require are a brief description of the type(s), and a rough idea of the location and distribution of the type (a broad area sketched on to road atlas or similar would suffice at this stage: we have included an example of the sort of thing we are looking for, and have enclosed a map of the area around you). Any illustrative photographs you may have available would be extremely useful. If possible we would also like to know of any particular threats or management problems you consider to be associated with boundary types. However, any information which can be supplied would be much appreciated, so please don't worry about having to make a formal response. The first stage of the project is due to be completed by the end of March, so we would appreciate hearing from you at your earliest convenience. We hope that the project will continue in future years, perhaps developing as a series of regional studies.

By the same token, if you think that you could benefit from such a project in a particular way, or if you have any ideas which might help the project develop more practical applications, we would be very pleased to hear from you.

Please contact David Thompson or John Roberts at Gwynedd Archaeological Trust, Garth Road, Bangor, Gwynedd LL57 2RT tel. 01248 352535 or email dthompson@heneb.co.uk or john.roberts@heneb.co.uk.

We appreciate that this takes time, but would be grateful for any information you can supply. We look forward to hearing from you and thank you in advance for your assistance.

The standard letter (ref: TGPOletter) was sent out on 30th /31st January 2001 to the following

Names in **bold** are those people who have responded

Penrhydeudraeth

Ivy Berkshire
Dewi Davies
Emyr Jones
Alun Lloyd Davies

Llys y Bont

Molly Atkinson
Ann Butler
Sally Ellis
Alun Huws
Dyfed Jones
Mike Whittaker
(plus Elinor Gwyn)

Mold

Eleri Wynne
Heather Lewis
Simon Heuston-Roberts

Bala

Glenda Thomas - Berwyns

Newtown

Jane Tibbott

Llanrindod Wells

Jane Goodwin
Jo Rees
Helen Barnes

Cardiff

Eleanor Battye

Swansea

Alison Coombs

Aberystwyth

Arfon Williams
Jon Turner
Phil Stone
Lynne Farquhar

Llandeilo

Candace Browne
Anne Marie McDevitt
Toby Small
Jeff Spencer
Kevin Taylor
Sarah Andrews
Huwel Manley

Haverfordwest

Fiona Lane
Ann Humble
Mary Chadwick,

Also suggested by EB

Ian Dutch, Ceredigion County Council

Rosie Carmichael, Carmarthen County Council

Mike Howe, Pembrokeshire Coast National Park

Mr J Davies, Brecon Beacons National Park

Jim Davies, Carmarthenshire County Council [not sent]

Archaeologists

C Hill – Glamorgan Gwent Archaeological Trust [negative response]
P Coplestone (pp C Martin) -
L Austin – Cambria Archaeology (Dyfed Archaeological Trust)
P Dorling – Brecon Beacons National Park
P Crew – Snowdonia National Park
F Gale – Denbighshire Council
S Greuter – Wrexham Council
S Briggs – Royal Commission on Ancient and Historical Monuments Wales

Appendix III

Boundary types and character areas derived from consultation exercise
– print out of MapInfo table data

Print out of MapInfo database (data fields attached to boundary character types table)

Area no.	Short description	Boundary types	Source	Source ID no
1	Hedges, mainly on earthbanks	hedgerows, hedgerows on earth banks	CCW Tir Gofal Project Officer Glenda Thomas	
2	Hedges, stone and earthbanks, stone walls	hedgerows, drystone walls, earth banks, stone-faced earth banks	CCW Tir Gofal Project Officer Glenda Thomas	
3	Walls	drystone walls	CCW Tir Gofal Project Officer Glenda Thomas	
4	Hedges and earthbanks	hedgerows and earthbanks	CCW Tir Gofal Project Officer Glenda Thomas	
5	Hedges	hedgerows	CCW Tir Gofal Project Officer Glenda Thomas	
6	Walls and earthbanks	drystone walls, earth banks	CCW Tir Gofal Project Officer Glenda Thomas	
7	Walls and earthbanks, a few hedges	drystone walls, earth banks, hedgerows	CCW Tir Gofal Project Officer Glenda Thomas	
8	Walls and earthbanks	drystone walls, earth banks	CCW Tir Gofal Project Officer Glenda Thomas	
9	Mountain mostly lacking trad. boundaries	open land	CCW Tir Gofal Project Officer Glenda Thomas	
10	Upper fields: walls. Lower: hedges, sometimes on or alongside low walls/earthbanks	drystone walls, earth banks, hedgerows on earthbanks, hedgerows alongside earth banks	CCW Tir Gofal Project Officer Glenda Thomas	
11	Mainly stone walls, many earthbanks, hedges infrequent	drystone walls, earth banks, hedgerows	CCW Tir Gofal Project Officer Glenda Thomas	
12	Stone walls	drystone walls	CCW Tir Gofal Project Officer Glenda Thomas	
13	Hedges	hedgerows	CCW Tir Gofal Project Officer Glenda Thomas	
14	drystone walls	drystone walls	CCW Tir Gofal Project Officer Eleri Wynne	8
15	Few boundaries, remnants of low walls & earth cloddiau. Mostly fenced into compartments	post and wire fencing, relict walls, cloddiau	CCW Tir Gofal Project Officer Eleri Wynne	9
16	Hedgerows, often on banks	hedgerows, hedgerows on earth banks	CCW Tir Gofal Project Officer Eleri Wynne	10
17	Hedgerows, some with earth banks	hedgerows, earth banks	CCW Tir Gofal Project Officer Eleri Wynne	
18	Hedgerows with earthbanks. drystone walls over c.400m	hedgerows with earthbanks, drystone walls	CCW Tir Gofal Project Officer Eleri Wynne	
19	Hedgerows	hedgerows	CCW Tir Gofal Project Officer Eleri Wynne	
20	hedgerows	hedgerows	CCW Tir Gofal Project Officer Eleri Wynne	2
21	hedgerows	hedgerows	CCW Tir Gofal Project Officer Eleri Wynne	2
22	Mainly hedges, & low, loose piled stone with mature trees (old hedge?). Some d-s walls higher up.	hedgerows, drystone walls	CCW Tir Gofal Project Officer Eleri Wynne	3
23	Mainly drystone walls, some hedgerows at lower portions.	drystone walls, hedgerows	CCW Tir Gofal Project Officer Eleri Wynne	4
24	drystone walls (limestones)	drystone walls (limestones)	Phil Coplestone, CPAT	1
25	drystone walls (sandstone)	drystone walls (sandstone)	Phil Coplestone, CPAT	2
26	drystone walls (slate slab)	drystone walls (slate slab)	Phil Coplestone, CPAT	3
27	drystone walls (shales & hedges)	drystone walls (shales & hedges)	Phil Coplestone, CPAT	4
28	hedges	hedges	Phil Coplestone, CPAT	5
29	North of Wrexham and southern Denbighshire: drystone walls (sandstones & gritstones) and hedgerows	North of Wrexham and southern Denbighshire: drystone walls (sandstones & gritstones) and hedgerows	Phil Coplestone, CPAT	6
30	drystone walls (limestone)	drystone walls (limestone)	Phil Coplestone, CPAT	7
31	drystone walls (poor shales)	drystone walls (limestone)	Phil Coplestone, CPAT	8
32	drystone walls (poor shales & slates)	drystone walls (poor shales)	Phil Coplestone, CPAT	9
33	drystone walls (better quality slates)	drystone walls (poor shales & slates)	Phil Coplestone, CPAT	10
34	drystone walls (slates & granites)	drystone walls (slates & granites)	Phil Coplestone, CPAT	11
35	Laburnum hedgerows	hedgerows (laburnum)	Carmarthenshire County Council - Rosie Carmichael	2
36	Laburnum hedgerows	hedgerows (laburnum)	Carmarthenshire County Council - Rosie	2

			Carmichael	
37	Laburnum hedgerows	hedgerows (laburnum)	Carmarthenshire County Council - Rosie Carmichael	2
38	Laburnum hedgerows	hedgerows (laburnum)	Carmarthenshire County Council - Rosie Carmichael	2
39	Stone estate walls - Edwinsford Estate (needs further research)	drystone walls (estate)	Carmarthenshire County Council - Rosie Carmichael	1
40	Kidwelly Levels - ditches	ditches	Carmarthenshire County Council - Rosie Carmichael	3
41	Llanelli Levels - ditches, relict boundaries (needs further research)	ditches	Carmarthenshire County Council - Rosie Carmichael	4
42	Tall stone walls - including dry stone walls and mortared estate walls	drystone walls (tall), mortared walls (estate farms, tall)	CCW Assistant District Officer, Anglesey - Sally Ellis	5
43	Parallel ditches with stone faced earth bank topped by hedge between	double ditched stone-faced earth bank with hedge	CCW Assistant District Officer, Anglesey - Sally Ellis	10 8.2
44	Slate fences - Henblas Estate	slate fences (estate)	CCW Assistant District Officer, Anglesey - Sally Ellis	2
45	Drystone walls	drystone walls	CCW Assistant District Officer, Anglesey - Sally Ellis	3
46	Cloddiau - some with gorse dominated hedge	cloddiau (gorse frequently dominant)	CCW Assistant District Officer, Anglesey - Sally Ellis	4
47	Mix of drystone walls, cloddiau and hedges	drystone walls, cloddiau, hedges	CCW Assistant District Officer, Anglesey - Sally Ellis	6
48	C19th, straight field wall, re-alignment	drystone walls (C19th regular, previous phases)	GAT	1
49	Small stone-walled fields overlying prehistoric phases	drystone walls (small regular fields, prehistoric phases)	GAT	2
50	Drystone walls, irregular, mostly resulting from piecemeal enc, often with poss prehistoric origins	drystone walls (piecemeal enclosure)	GAT	3
51	Upland area characterised by stone walls	drystone walls (Enclosure walls)	GAT	5
52	Squatter enclosure, stone walls	drystone walls (small regular fields, encroachment)	GAT	6
53	Stone walls	drystone walls	GAT	7
54	Parkland	stone faced banks, stone faced banks with hedges	GAT	8 8.1
55	Upland area characterised by stone walls	drystone walls	GAT	9
56	C20th farming landscape, p&w fences, some banks	post and wire fences, earth banks	GAT	10 5
57	Upland area of stone walls	drystone walls (regular, Enclosure walls)	GAT	11 6.1
58	Mixed earth banks, some stone walls & some p&w fences	drystone walls, post and wire fences, earth banks	GAT	12 8.2
59	Stone walls	drystone walls	GAT	13 6.1
60	Later enclosure stone walls	drystone walls (regular, Enclosure walls)	GAT	14 6.1
61	Low lying farmland, earth banks and p&w fences	earth banks, post and wire fences	GAT	15 6.1
62	Stone-walled fields, pre & post-med	drystone walls (medieval, post-medieval)	GAT	16 6.1
63	Disparate boundaries, earth banks and p&w fences	earth banks, post and wire fences	GAT	17 8.2
64	Cloddiau, strip fields	cloddiau (strip fields)	GAT	18 5
65	Cloddiau, strip fields	cloddiau (strip fields)	GAT	19 5
66	Cloddiau utilising rounded stones as facing (possibly beach gathered)	cloddiau	GAT	1 5
67	Slate fences. Three small distributions shown (from south to north): Nantlle, Bethesda (on former Pe		GAT	2
68	Slate fences. Three small distributions shown (from south to north): Nantlle,		GAT	2

Bethesda (on former Pe

69	Slate fences. Three small distributions shown (from south to north): Nantlle, Bethesda (on former Pe		GAT	2
70	Drystone walls enclosing small straight sided fields. Small-holding encroachment.	drystone walls (small, regular fields, C19th, squatter encroachments)	GAT	4
71	Wet land where boundaries are defined by ditches.	ditches	GAT	7
72	Demesne walls. Substantial late C18th/early C19th stone walls. Around house & farm of estates.	drystone walls (substantial), mortared walls (Demesne walls, C19th)	GAT	5
73	Demesne walls. Substantial late C18th/early C19th stone walls. Around house & farm of estates.	drystone walls (substantial), mortared walls (Demesne walls, C19th)	GAT	5
74	Demesne walls. Substantial late C18th/early C19th stone walls. Around house & farm of estates.	drystone walls (substantial), mortared walls (Demesne walls, C19th)	GAT	5
75	NW coastal fringe of Arfon, hedgerows dominant, often on banks, some stone-faced banks & walls.	hedgerows on banks, stone-faced banks, drystonewalls	GAT	3
76	Drystone walls enclosing small straight sided fields. Small-holding encroachment.	drystone walls (small, regular fields, C19th, squatter encroachments)	GAT	4
77	Drystone walls enclosing small straight sided fields. Small-holding encroachment.	drystone walls (small, regular fields, C19th, squatter encroachments)	GAT	4
78	Predominantly open mountain. Occasional walls. Tend to date to the C19th period of Parliamentary enc	drystone walls (regular, C19th, sheepwalks)	GAT	6
79	Predominantly open mountain. Occasional walls. Tend to date to the C19th period of Parliamentary enc	drystone walls (regular, C19th, sheepwalks)	GAT	6
80	Predominantly open mountain. Occasional walls. Tend to date to the C19th period of Parliamentary enc	drystone walls (regular, C19th, sheepwalks)	GAT	6
81	Predominantly open mountain. Occasional walls. Tend to date to the C19th period of Parliamentary enc	drystone walls (regular, C19th, sheepwalks)	GAT	6
82	Predominantly open mountain. Occasional walls. Tend to date to the C19th period of Parliamentary enc	drystone walls (regular, C19th, sheepwalks)	GAT	6
83	Stone walls?	drystone walls	GAT	
84	Stone walls?	drystone walls	GAT	
85	Earth banks	earth banks	GAT	
86	Hedges and walls mixed	hedgerows, drystone walls	GAT	
87	Stone walls	drystone walls	GAT	
88	Boundaries few and far between		GAT	
89	Stone walls	drystone walls	GAT	
90	Mixture of banks, walls and hedges	earth banks, drystone walls, hedgerows	GAT	
91	None		GAT	
92	Small stone walls	drystone walls, low (cattle)	GAT	
93	Impressive stone walls	drystone walls, high (sheep)	GAT	
94	None		GAT	
95	Banks?	earth banks	GAT	
96	None		GAT	
97	None, N/A		GAT	
98	Banks?	earth banks	GAT	
99	N/A		GAT	
100	Banks, some stone walls	earth banks, drystone walls	GAT	
101	Stone walls	drystone walls	GAT	

4M

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102	None		GAT
103	Stone walls define quilletts	drystone walls	GAT
104	None in particular		GAT
105	? Earth banks predominate	earth banks	GAT
106	Very high stone walls	drystone walls, high (sheep)	GAT
107	Stone walls	drystone walls	GAT
108	Earth banks probably predominate	earth banks	GAT
109	Definitely stone wall territory (low)	drystone walls, low (cattle)	GAT
110	None		GAT
111	None		GAT
112	Post & wire fences predominate ?	post & wire fences	GAT
113	Stone walls, compact	drystone walls	GAT
114	Stone walls	drystone walls	GAT
115	Stone walls, compact	drystone walls	GAT
116	Stone walls	drystone walls	GAT
117	Mixture of walls and banks	drystone walls, earth banks	GAT
118	Mixed character, walls, banks, hedges etc	drystone walls, earth banks, hedgerows	GAT
119	Predominantly open mountain, occasional walls. Tend to date to C19th Parliamentary enclosure.	drystone walls	GAT
120	Predominantly open mountain, occasional walls. Tend to date to C19th Parliamentary enclosure.	drystone walls	GAT
121	Wetland where boundaries are defined by ditches.	ditches	GAT
122	Drystone walls built of local limestone (Great & Little Orme).	drystone walls	GAT
123	Drystone walls built of local limestone (Great & Little Orme).	drystone walls	GAT
124	C20th forestry		GAT
125	Prehistoric landscape of stone walls with later on top.	drystone walls (relict walls)	GAT
126	Regular drystone walls, upland landscape v. distinctive, v. straight stone walls.	drystone walls	GAT
127	Ditches and dykes (reclaimed)	ditches	GAT
128	Stone walls, some early, others late & straight.	drystone walls	GAT
129	Upland, some banks and stone walls.	earth banks, drystone walls	GAT
130	C20th forestry		GAT
131	Smaller fields, stone walls.	drystone walls	GAT
132	Stone-wall landscape	drystone walls	GAT

~~6.3~~
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 FORESTRY 11
 6.1
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 10
 6.1
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 FORESTRY 11
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 6.1

Appendix IV

Provisional extended glossary of boundary types

Provisional extended glossary of boundary types

BOUNDARY TYPE

Hedgerows
Hedgerows with trees
Relict hedgerows
Drystone walls
Single thickness drystone walls
Mortared walls
Boulder walls
Consumption walls / walls derived from or enlarged through field clearance
Stone rubble banks
Stone faced stone rubble bank
Slate fences
Earth / turf banks
Stone core banks
Stone-faced earth bank (1 side faced)
Layered stone and earth banks – examples found in Pembrokeshire
Cloddiau (earth banks faced on either side)
Lynchets – often indicative of soil build up behind a field boundary
Stone-faced lynchets
Post & wire fences
Wooden fences
Iron railings
Ditches
Reens
Drains
Ha has
Revetments

SUBTYPE CATEGORIES

SUBTYPE CLASS

Multiple boundaries

Hedgebanks (variety of types depending upon form of basal boundary)
hedgerows alongside
parallel ditch
ditches either side
bank below
bank alongside
banks either side
(on top)
(along side)
(either side)

Estate boundaries

Associated species

Laburnum
Holly
Beech
Sycamore
Hazel
Crab apple
Spirea
Privet
Blackthorn
Hawthorn
Dogrose
Elder
Wild plum
Ash

	<ul style="list-style-type: none"> Oak Willow Rowan Birch Gorse Bracken
Relict boundaries	<ul style="list-style-type: none"> Grown-out (hedgerows) Footings
Size	<ul style="list-style-type: none"> Low (Cattle) High (Sheep) High (Estate / Demesne boundary) Height (stated) Width (stated)
Geology	<ul style="list-style-type: none"> Limestone Red sandstone Slate rubble Slate slab Shale Gritstone Granite etc
Period	<ul style="list-style-type: none"> Prehistoric: until AD43 Romano-British: AD43 - AD450 Early Medieval: AD451 - AD1080 Medieval: AD1081 - AD1540 Post Medieval: AD1541 - AD1815 Modern: AD1750 - Yesterday
Century	C14th, C15th, C16th, C17th, C18th, C19th, C20th etc
Stone grading	<ul style="list-style-type: none"> Rubble Surface gathered Quarried Ashlars Orthostats Rough slate blocks Sawn slate blocks
Stone size	<ul style="list-style-type: none"> Small stone Medium stone Large stone Massive
Construction	<ul style="list-style-type: none"> ?Uncoursed / random Coursed irregular Coursed regular
Construction quality	<ul style="list-style-type: none"> Active boundary - excellent Active boundary - good Active boundary - reasonable Active boundary - poor Active boundary - gappy Redundant boundary - gappy Redundant boundary - tumbled Redundant boundary - footings
Capping type / coping type	With cope stones

	Without cope stones Laid slabs Slanting slabs Upright slabs Blocks Slanting blocks Upright blocks Dressed cope stones
Multiple boundaries	Prehistoric origins Realignment of preceding layout
Boundary layout	?Irregular / winding / wandering ?Curvilinear ?Regular / straight ?Patchwork regular and irregular Small fields Large field Patchwork small to large fields ??Strip fields ??Quillets ??Fossilised open field cultivation
Historical type	Assarts Piecemeal enclosure of open field Piecemeal enclosure of pasture Piecemeal enclosure of common Formal enclosure of open field Formal enclosure of pasture Piecemeal enclosure of common Squatter encroachments on common Sheep walk ?Cattle walls ?Consumption walls Woodland boundaries (external, compartment etc) Drainage Reclamation from sea Parkland / pleasure grounds Parish / township boundaries Major geo-political boundaries
Boundary furniture	Gates Stiles Sheep creeps / tyllau defaid Water 'throughs' Rabbit / game 'smoots'
Gate types	Iron - in situ (plain) Iron - in situ (decorated / ornate) Iron - reused (plain) Iron - reused (decorated / ornate) Galvanised Wooded - traditional Wooden - modern mass produced
Stile types	stone - squeeze stile stone - step-stile stone - step-over stile stone - rung stile wood - ladder stile wood - ?traditional stile wood - squeeze stile

**Associated features
(archaeological)**

wood - gate

Hut circle

Hut circle settlement

Deserted rural settlement (medieval)

Deserted rural settlement (post medieval)

?Topography

Open mountain

Steep mountain slope

Steep hill-slope

Valley side

Valley bottom

Plain

Undulating

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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