



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

**Area 4: Ceredigion
LANDMAP Change Detection
Visual & Sensory Aspect
Monitoring Report
Final: March 2015**

Bronwen Thomas

Rev No.3

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Introduction

1.1. In August 2013 Natural Resources Wales (NRW) commissioned Bronwen Thomas Landscape Architect (BTLA) to carry out stages 1, 2a and 2b of the interpretation of the LANDMAP Change Detection Packs (CDP) for the Visual & Sensory aspect covering several parts of Wales including Area 4 which includes Ceredigion.

1.2. In September 2013 BTLA was commissioned to prepare and manage the Local Authority questionnaire input into Visual & Sensory Change Detection across all of Wales.

1.3. In July 2014 BTLA was commissioned to carry out field visits, complete the surveys and update the Visual & Sensory data including the on-line surveys and GIS for the parts of Wales covered in the first stages, including Ceredigion.

2.0 Methodology

2.1. 'LANDMAP Guidance for Wales: Monitoring Landscape Change' (NRW 2014) provides a full explanation of the methodology. The tasks carried out, in brief, have been:

Stage 1: Baseline of Change

- Creation of monitoring tables for each of the local authorities, listing aspect areas, sources of change detection and recommended amendments;
- Desk study of maps and resources supplied in the Change Detection Pack to identify aspect areas where significant landscape change is anticipated, relating to boundaries, classification, evaluation and descriptions;
- Population of relevant columns to form the Stage 1 tables, relating to the CDP resources, namely:
 1. Aspect area UID and name;
 2. Change indicated by OS data, aerial photographs and roads/buildings maps;
 3. Change indicated by complexity maps (segment density) and NDVI;
 4. Change indicated by Phase 1 and seasonal change maps;
 8. (Draft) recommended LANDMAP amendments.

Stage 1a: Local Authority questionnaire findings

- Assessment of information derived from local authority questionnaire.
- Population of relevant columns in the monitoring table:
 5. Change indicated by LPA questionnaire
 8. Adjustments to recommended LANDMAP amendments

Stage 1b: Additional desk-based information

- Assessment of further information requested and supplied by NRW and local authorities;
- Cross-check against Consistency Report to ensure inconsistencies have been rectified;
- Population of relevant columns of the monitoring table:
 6. Changes indicated by other resources;
 8. Adjustments to recommended LANDMAP amendments
- Preparation of summary report to provide information specific to Ceredigion and give a summary of key changes and influences, with illustrations, detected at this stage.

Stage 2: Fieldwork verification and survey completion

- Visits to aspect areas to verify significance of changes and identify additional changes;
- Population of relevant columns in the monitoring table:
 7. Change indicated by fieldwork
 8. Adjustments to recommended LANDMAP amendments
- Adjustments to monitoring table relating to feedback from LPA and others, and incorporation of further additional sources of information;
- Revision of summary report to take account of changes made at stage 2;
- Preliminary Quality Assurance.

Stage 3: Updating the Visual & Sensory Baseline

- Updating all aspect area surveys as recommended in the monitoring table;
- Updating aspect area boundaries in the Visual & Sensory GIS layer;
- Revision of monitoring table and summary report to take account of changes made at stage 3;
- Quality Assurance.

3.0 Monitoring Table Notes

3.1 The final monitoring table has been prepared in accordance with the Technical Specifications. The following general notes provide clarity and explain any modifications.

3.2 The final table accompanies this report.

3.3. Letters (**a. b.** etc.) refer to the separate changes that have been identified in each aspect area. This allows the recommended LANDMAP amendments to relate to the different changes.

3.4. Potential changes identified at stage 2 but not substantiated by fieldwork or other later methods have been retained in the final monitoring table for the sake of transparency.

3.5. Italics refer to amendments required for consistency rather than significant change.

3.6. Figures taken from mapping and aerial photographs show all boundary changes and illustrate some of the amendments. These are provided with the accompanying monitoring table.

3.7. The following notes relate to each column of the monitoring table:

Column 1: Aspect Area UID and name.

Column 2: The Mastermap road and built form change mapping, and the 2001 and 2010 aerial photographs provided the most useful data for detecting possible change. It must be noted that the aerial photographs provided in the CDP do not show the most recent changes.

Column 3: The complexity maps and NDVI mapping identified some possible vegetation changes. In Ceredigion these have assisted in verifying change.

Column 4: Phase 1 habitat mapping has not been supplied. Seasonal change has not provided any further information relating to significant Visual & Sensory change.

Column 5: The LPA has not responded to the questionnaire. NRW provided responses based on local knowledge.

Column 6: Other resources used for Ceredigion:

- Forestry mapping showing conversion from conifer to broadleaf woodland
- Windfarm mapping showing windfarm developments in Ceredigion.
- Pembrokeshire Seascapes.

Column 7: It must be noted that the fieldwork was carried out in summer 2014, approximately six months after the stage 1 monitoring table was completed, and several years after the aerial photographs were taken. Care was taken, therefore, to ensure that developments and other potential changes that appeared to be in progress at earlier stages were checked on site. Fieldwork has verified most of the changes identified.

Column 8: In summary, the following amendments are recommended:

- Fourteen aspect areas require boundary changes. Four of these changes relate to inconsistencies.
- Thirteen aspect areas require checking and/or amendments to survey data relating to descriptions.
- There are no recommended changes to classifications or evaluations.
- One new aspect area is recommended.
- One re-named aspect area

4.0. General Approach to Recommended Amendments Relating to All-Wales Landscape Change

4.1. The following notes provide an overview of the recommended amendments that have been applied to all areas of Wales being monitored by Bronwen Thomas Landscape Architect. Only notes that may be relevant to Ceredigion are included.

Forestry conversion to broadleaf woodland

4.2. Source: All Wales GIS mapping supplied by NRW. This maps areas of former conifer plantation that have been replanted with broadleaves since 2001 in NRW-managed forests.

4.3. Where there are considerable areas of broadleaf conversion shown on the mapping within an aspect area this is noted in column 6. However, all these areas which have been checked during fieldwork are not having any significant visual & sensory impact yet. Therefore the broadleaf conversion is noted as a trend with recommendation to continue conversions to broadleaf, and referred to in the amended summary only, especially in relation to prominent areas such as valley sides overlooking settlements (e.g. Crynant) or main transport/tourist routes (e.g. north of Rosebush in Preselis), or recreational areas (e.g. Afan Forest Park). This only applies to aspect areas which are significantly wooded, not where woodland/forestry is not a key characteristic.

Phytophthora felling

4.4. Source: Comprehensive coverage of actual felling has not been made available therefore this has not been able to be included as change, except where noted as significant during fieldwork.

Windfarms

4.5. Source: All Wales GIS mapping, August 2013. This maps all consented and operational windfarms, giving name, number and heights of turbines.

4.6. Some windfarms have already been included in the Visual & Sensory data, however these surveys will be checked and may be amended, with cumulative effects being considered. Operational windfarms are included as a landscape change within the aspect area, with amendments relating to detractive views within, change to sense of place, trend, condition, recommendations. Windfarms are also considered to be making significant change to views from other aspect areas within 5km, with detractive views out. If these aspect areas are primarily forestry, or valleys without views, or facing away from the windfarm, views from these have not changed significantly. The impact of all the operational and consented windfarms have been verified by fieldwork. Where windfarms are consented but not built, amendments relate to trend and recommendations. In order to provide consistent descriptions, the landscape types identified in 'Guidance on cumulative impact of wind turbines on landscape & visual amenity: Pembrokeshire and Carmarthenshire' (White Consultants 2012) will be used. These are: landscape with very occasional wind turbines; landscape with occasional wind turbines; wind turbine landscape; windfarm.

Single wind turbines

4.7. Sources: LPA questionnaire. No comprehensive mapping has been available, therefore change detection has relied on LPA observations, personal knowledge and fieldwork observations.

4.8. There are many more (and larger) single or pairs of wind turbines now than at the time of the original Visual & Sensory surveys. Where there are a considerable number within an aspect area the cumulative effect may make a change to views within (detractive), trend, recommendations (e.g. parts of Pembrokeshire plateau and around Milford Haven). Where turbines are sparsely scattered and not prominent, no significant change is detected. The landscape types identified in 'Guidance on cumulative impact of wind turbines on landscape & visual amenity: Pembrokeshire and Carmarthenshire' (White Consultants 2012) will be used. These are: area with no turbines; area with very occasional wind turbines; area with occasional turbines; area with turbines.

Solar farms

4.9. Sources: LPA questionnaire. No comprehensive mapping has been available, therefore change detection has relied on LPA observations, personal knowledge and fieldwork observations.

4.10. Solar farms tend to be thinly spread at present and not considered to be making significant visual & sensory change yet (e.g. western part of Vale of Glamorgan, eastern parts of Pembrokeshire plateau). Fieldwork has shown that these are not prominent features from many viewpoints. These are noted and amendments will be made to trend and recommendations.

Settlement expansion

4.11. Sources: GIS Mastermap road and building change mapping, aerial photographs (2001 and 2010), plus Google Earth 2013 photography where applicable. The impacts of most of the areas of expansion have been verified by fieldwork.

4.12. As well as boundary changes around settlement aspect areas there is also encroachment on gaps between settlements which is significant in the 'busy' parts of the country (such as M4 corridor) and tourist areas such as Pembrokeshire and Ceredigion coast. As well as physical encroachment, there is encroachment on views with some prominent edges of settlements impacting on the adjacent rural aspect areas. Where this is significant in the rural aspect areas amendments are recommended to detractive views and trend/recommendation relating to encroachment.

Coastal erosion

4.13. Source: The Welsh Coastal Storms, December 2013 & January 2014 – an assessment of environmental change, NRW Evidence Report 33. This report became available in September 2014, after most fieldwork had been completed. LPA feedback has identified some specific areas of change which have all been verified by fieldwork.

4.14. The acceleration of coastal erosion, in terms of Visual & Sensory landscape change, is having a significant effect on some dunes systems (e.g. Newborough on Anglesey) or necessitating new sea defences (e.g. Borth in Ceredigion) but elsewhere is less significant. Amendment recommendations to aspect areas which have had specific erosion relate to trends and recommendations.

5.0 Summary of Key Changes and Influences in Ceredigion

Expansion of settlements:

5.1 New housing estates on the edges of Cardigan and Lampeter mean that these towns have expanded beyond their aspect area boundaries. Aspect area boundary amendments are required.

5.2 Aberystwyth and Aberporth have additional development within their aspect area which may warrant changes to descriptions.

New road schemes:

5.3. The Llandysul bypass passes through previously open countryside and has changed the views, tranquillity and activity of the aspect areas it passes through. Consequently Llandysul is quieter.

Holiday accommodation:

5.4. There has been an intensification of caravan/chalet development in the immediate vicinity of New Quay. The only other place where this trend has been detected elsewhere in Ceredigion is at Ynyslas.

Airports and military:

5.5. There are replacement buildings at West Wales Airport but this airport is no longer operational.

Windfarms:

5.6. In addition to two previously existing windfarms, several windfarms have become operational towards the east of the county. The larger of these developments have visual impacts within and to adjacent aspect areas although they are mainly out of view of well-populated areas. It is expected that the trend in the development of windfarms in the Cambrian Mountains will continue giving issues of cumulative impact.

Forestry:

5.7. As well as the expected change relating to felling/replanting regimes, there are several areas where blocks of conifers have been replaced with broadleaf trees in potentially prominent positions on valleys sides, near main roads, recreational facilities and routes. These may make significant visual impacts in the future.

5.8. Windfarm development has replaced forestry in some areas.

Moorland:

5.9. Reduced productivity is detected over large parts of the high Cambrian Mountains where grass moorland dominates. It is unclear if this amounts to landscape change, but it may simply be variations in the aerial photography.

Large local developments:

5.10. Recent developments of scattered but conspicuous developments, such as agricultural sheds at Talybont and the scrabbling track in the Aeron valley, may have the cumulative effects of deterioration in visual quality or reduction in tranquillity within localised areas. Fieldwork has verified that currently this is not the case.

Coastal erosion:

5.11. Borth sea defences are making significant change to limited stretches of the coastline and to views from Borth. Other changes relating to sea defences and erosion have not been detected. The cumulative effects of winter storms and continuing extreme weather are likely to continue.

Ceredigion

5.12. Pembrokeshire Seascapes: SCA1, the Teifi Estuary area, relates to CRMRTVS339 and 343, and SCA3 Pen y Afr to Pen y Bal relates to CRMRTVS820/525 in the westernmost part of the county. Neither identify specific changes or trends.

6.0. Monitoring Table and Figures

Italics denotes amendments required for consistency rather than significant change

| 1 Aspect Area UID & name | 2 Change indicated by: OS data, Aerial photographs & Roads/Buildings | 3 Complexity maps (segment density) & NDVI | 4 Phase 1 & seasonal change | 5 LPA questionnaire (NRW personnel) /feedback | 6 Other resources | 7 Fieldwork | 8 Recommended LANDMAP amendment |
|---|---|---|--|--|---|---|--|
| CRDGNVS001 Cambrian Mountains (north) Windfarms | | | | | Rheidol windfarm, operational 8no. 45m to tips Cefn Croes windfarm, operational, 39no. 99m to tips (large) | | GIS: two new polygons Survey: new record |
| CRDGNVS125 Coastal plateau (north) | a. Large hardstanding inland from Llanon, not apparent on aerials | | | | b. Patches of broadleaf conversion on hillsides near Bow Street – may be seen from main road. | a. No significant impact b. Not noticeable or large enough areas to be significant. c. Llangwyrfon windfarm is conspicuous from B4576 and other parts of this aa | Survey: Amend summary and views to reflect views to Llangwyrfon windfarm. |
| CRDGNVS151 Plimlimon | Not apparent on aerials - shadow | Lots of less productive on open moor – may indicate change in vegetation patterns/visu | | Sheep exclusion for a number of years | | | No amendments required – no significant changes. |

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| CRDGNVS174 New Quay | a. Holiday village roads upgraded. b. expansion of holiday accommodation in 2 places into 688, in east = increase/upgrade in holiday accommodation | | | | | Confirmed. Some holiday accommodation well hidden, others exposed, with views. | GIS: Boundary changes with 688 (b.) Survey: Amend summary, descriptions, views, trend, recommendations to reflect increase/upgrade in tourism. |
| CRDGNVS229 Dyfi grazing marsh | | | | Dyfi Biosphere project | | Not visually obvious | Survey: Amend summary, recommendations and trend to reflect gradual improvements to management from Dyfi Biosphere project |
| CRDGNVS283 Dyfi Dunes | | | | Static caravan park at north end has expanded | | Confirmed – exposed to wide views but not significant change | No amendments required - no significant change |
| CRDGNVS292 Teifi Valley sides (west) | Cardigan expanding into this aa | | | | | | GIS: Boundary change with 771 Survey: note boundary change |
| CRDGNVS310 Teifi tributary valleys | Not apparent on aerials | Less productive woodlands on west side | | | | | No amendments required – no significant change |
| CRDGNVS313 Cambrian Mts (south) | a. Shadow b. Not apparent on aerials | a. Lots of less productive land throughout (both areas) | | b. Off-road abuse, Soar-y-Mynydd to Tyn'y Cornel route | | b. Not permanent change | No amendments required – no significant changes. |
| CRDGNVS339 | South Cardigan | | | | | | GIS: Boundary change |

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|-----------------------------------|--|---|--|---|---|---|--|
| Teifi estuary dunes & saltmarshes | expanding into this aa. <i>Parts of this aa is mis-named /numbered – should be part of 525</i> | | | | | | with 771 <i>Boundary change with 525 to exclude all farmland</i> Survey: note boundary changes |
| CRDGNVS369 Dyfi saltmarshes | <i>Large area of saltmarsh extends into 522 – not recent change</i> | | | | | | GIS: <i>Boundary change with 522</i> Survey: <i>note boundary change</i> |
| CRDGNVS437 Borth | Not apparent on aerials | | | Borth sea defense scheme | | In progress. Conspicuous – cuts off view to sea | Survey: Amend summary, descriptions, views, trend, recommendations to reflect increase in need for sea defenses. |
| CRDGNVS466 Dyfi Estuary | | | | Borth sea defense scheme | | In progress – significant man-made changes to beach in southern part of this aa | Survey: Amend summary, descriptions, trend, recommendations to reflect need for sea defenses. |
| CRDGNVS500 Teifi Valley Bottom | Lampeter – new school expanded into this aa | | | | | | GIS: Boundary change with 771 Survey: note boundary change |
| CRDGNVS508 Cambrian Mts (north) | a. Rheidol windfarm, near main A44 road b. Cefn Croes windfarm built, partly on former forest (983) New roads to Cefn Croes windfarm c. not clear on aerials | c. Quite a lot of less productive land throughout on central & south parts. d. Foel Fach does not show changes in productivity | | d. Land on Foel Fach owned by RSPB, above Eglwys Fach, has had stocking rates reduced over last few years – change from grassland with bracken, scattered scrub and trees to less grassland, inc. bracken cover (too | a. Rheidol windfarm, operational 8no. 45m to tips b. Cefn Croes windfarm, operational, 39no. 99m to tips (large) | a. Rheidol windfarm conspicuous from main A44 and Bwlch Nant yr Arian visitor centre b. Cefn Croes windfarm not impacting on views from roads or other readily | GIS: New aa for two areas with windfarms (CRDGNVS001) Boundary change (in new aa) with 983 to include all cleared forest/windfarm. Survey:Note boundary changes. New aa to include windfarms throughout. |

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| | | | | dense) and brambles in places. Implication for locally rare <i>Segelia atlantica</i> (lichen) which appears to have been lost from site. | | accessible places, but only seen from afar. 8 separate and diverse areas in this aa. Need to sub-divide | |
| CRDGNVS513 Mynydd Bach | a. Roads to windfarm (windfarm built pre-2001) b. scramble track adjacent to windfarm | | | | a. Llangwryfon windfarm, operational, 11no. 66m tips | a. Windfarm conspicuous from nearby areas to north and west including aa 125 b. Not permanent change-becoming indiscernable | Survey: Check/amend summary, views, trend to include windfarm. No amendments required |
| CRDGNVS522 Dyfi intertidal | <i>Large area is saltmarsh – not recent</i> | | | | | | GIS: <i>Boundary change with 369</i> Survey: <i>note boundary change</i> |
| CRDGNVS525 Cardigan Bay coastal plateau | a. Cardigan expanding into this aa b. West Wales airport new/re-built developments plus longer runway and new road <i>Large areas of adjacent 339 should be in this aa</i> | | | | | b. Airport is unused. Not significant impact. | GIS: Boundary change with 771 (a.) <i>Remove boundaries with 339 to include in this aa</i> Survey: note boundary change |
| CRDGNVS527 Leri Valley | Not apparent on aerials | | | | Patches of broadleaf conversion near Talybont | Not noticeable change | No amendments required – no significant changes. |
| CRDGNVS546 Talgarreg | a. Expansion of Groesfford Business | | | b. Llandysul bypass. c. Synod Inn to | | a. not much new development. | Survey: Amend summary, descriptions, |

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|---------------------------------------|---|--|--|----------------------------|--|--|---|
| Plateau | Park. b. new Llandysul bypass | | | Llandysul road scheme | | b. Conspicuous new interchange and change in views. c. On-line improvements – impact limited. | views, trend to reflect road improvements. |
| CRDGNVS558 Penrhyn-coch surrounds | Windfarm built pre-2001 | | | | Operational windfarm, 19no. 56m to tips | Conspicuous from A487 and seen from much of Dyfi estuary land | Survey: Check/amend summary and views |
| CRDGNVS588 Lower Teifi valley | a. Lampeter housing expanding into this aa b. Llandysul bypass | | | b. Llandysul bypass | | b. Bypass cuts steeply across valley, intrusive views also from adjacent aa.in Carmarthenshire | GIS: Boundary change with 827 (a.) Survey: Amend summary, views, trend to reflect impact of bypass. (b.) |
| CRDGNVS597 Afon Ceulan | Housing expansion at Talybont, by church | | | | | Not significant | No amendments required – no significant changes. |
| CRDGNVS644 Aberystwyth | Lots new development, much on valley floor | | | | | Significantly different character to approaches from east | Survey: Amend summary, descriptions, trend, recommendations to reflect increase in developments. |
| CRDGNVS688 Coastal valleys | New Quay holiday accommodation expanding into this aa in 2 places | | | | | | GIS: Boundary changes with 174 Survey: note boundary changes |
| CRDGNVS707 Plantation north of A44 | | | | | a. Rheidol windfarm may be conspicuous from this aa b. Patches of broadleaf | a. Windfarm conspicuous from Bwych Nant-yr-Arian visitor centre. b. Not | Survey: Check/amend summary and views to include windfarm in adjacent aa. |

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| | | | | | conversion on slopes around Goginam-fach | conspicuous | |
| CRDGNVS725 Cardigan Bay cliffs | Shadow | Stretches of more productive, south of Cwmttydu | | | | | No amendments required – no significant changes. |
| CRDGNVS729 Llwernog Valley | | | | | | Rheidol windfarm conspicuous from this aa | Survey: Check/amend summary and views to reflect impact of windfarm in adjacent aa. No amendment required |
| CRDGNVS735 Plantation Tywi Forest | Not clear on aerials | | | | Various patches of broadleaf conversion – may be views from reservoir side | Not noticeable from reservoir side. | No amendments required – no significant changes. |
| CRDGNVS768 Aberporth MOD | | | | Drone testing | | No changes apparent | No amendments required – no significant changes. |
| CRDGNVS771 Cardigan | Expanding into 525,292,339 | | | | | | GIS: Boundary changes with 525,292,339 Survey: note boundary changes |
| CRDGNVS795 Talgarreg plateau | <i>This aa is mis-named (same as 546)</i> | | | | Broadleaf conversion adjacent to main road n. of Lampeter | Not conspicuous from main road. | <i>GIS and survey: re-name this aa 'Llwyn-y-groes Plateau'</i> |
| CRDGNVS827 Lampeter | a. housing, expansion, north b. School expansion to west | | | | | | GIS: Boundary changes with 588 & 828 (a.) and 500 (b.) Survey: note boundary changes |
| CRDGNVS828 | Lampeter expanding | | | | | | GIS: Boundary change |

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|--|--|---|--|--|---|---|---|
| Afon Dulas | into this aa | | | | | | with 827 Survey: note boundary changes |
| CRDGNVS867 Tre Taliesin | a. Growth of woodlands apparent. b. several farm complex expansions | a. More productive, including correlation with broadleaf | | b. Talybont/ Pentrebach agricultural sheds x 4 big, visual, unscreened = detractors | a. Various large patches of broadleaf conversion | a. Changes to woodlands not conspicuous. b. sheds noticeable | Survey: Amend summary, description, views, trend, recommendations to reflect gradual improvements to woodlands and increase in detractive developments. |
| CRDGNVS901 Plantation Nant-y-Moch reservoir | Not apparent on aerals | | | | Various patches of broadleaf conversion | Not visible | No amendments required – no significant changes. |
| CRDGNVS911 Aeron valley | Bike track on south side near Dolau Aeron | | | | | Track is not conspicuous and no accompanying development | No amendments required – no significant changes. |
| CRDGNVS955 Aberporth | Large housing development within | | | | | | Survey: Amend summary and trend to reflect increase in development. |
| CRDGNVS983 | Cefn Croes windfarm built on cleared part of this aa | | | | | | GIS: Boundary change with 508 to exclude felled area/windfarm. Survey: Amend summary to reflect change/adjacent windfarm |

Ceredigion: Change Detection Figures

CRDGNVS174 : Holiday accommodation at New Quay



Boundary changes



2001



2010

CRDGNVS369/522: Dyfi saltmarshes



Boundary change to include well-established marsh area

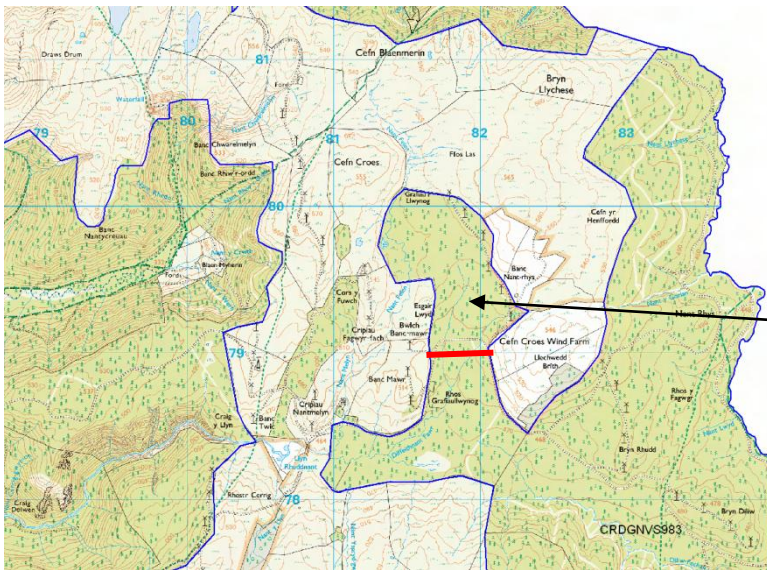
CRDGNVS508: Cefn Croes windfarm



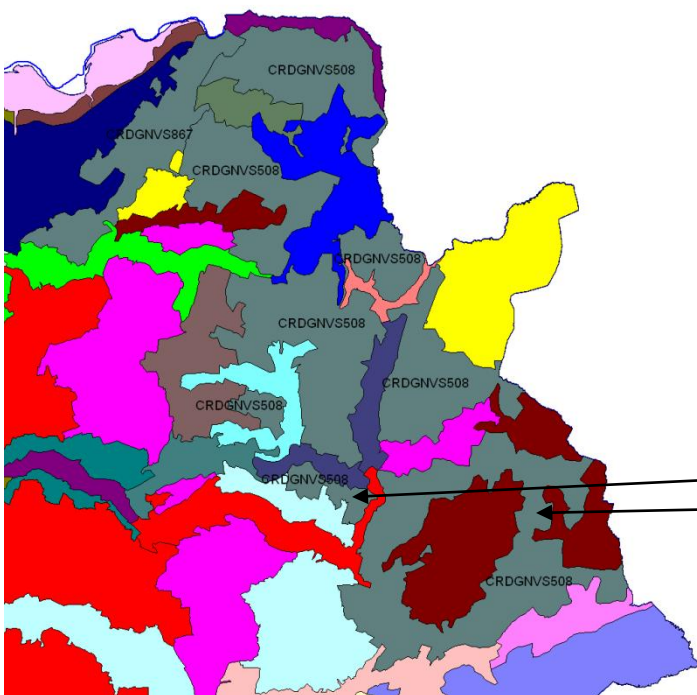
2001



2010

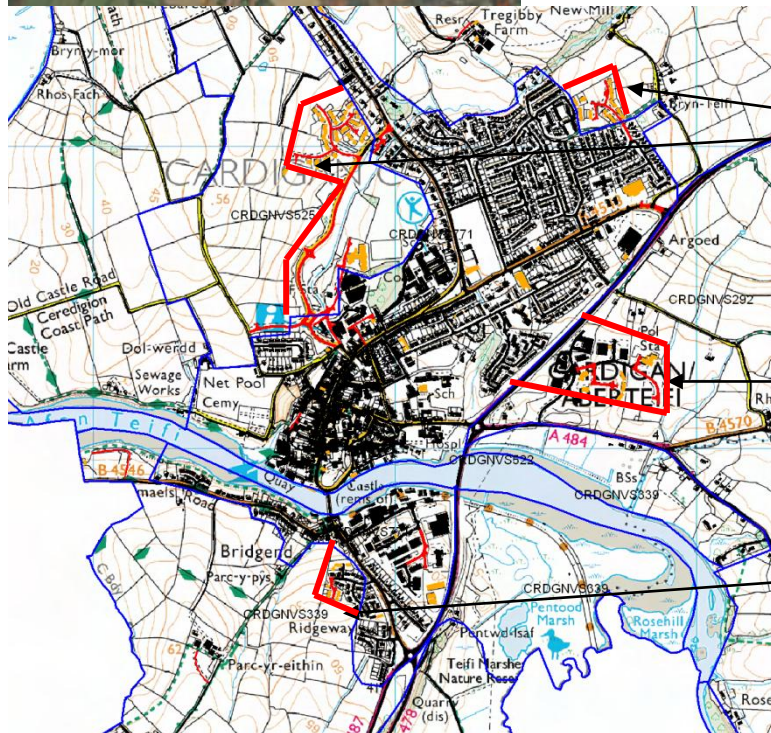


Boundary change to exclude windfarm/cleared forestry from 983



Two areas of 508 with windfarms to form new aspect area

CRDGNVS771: Cardigan expansion

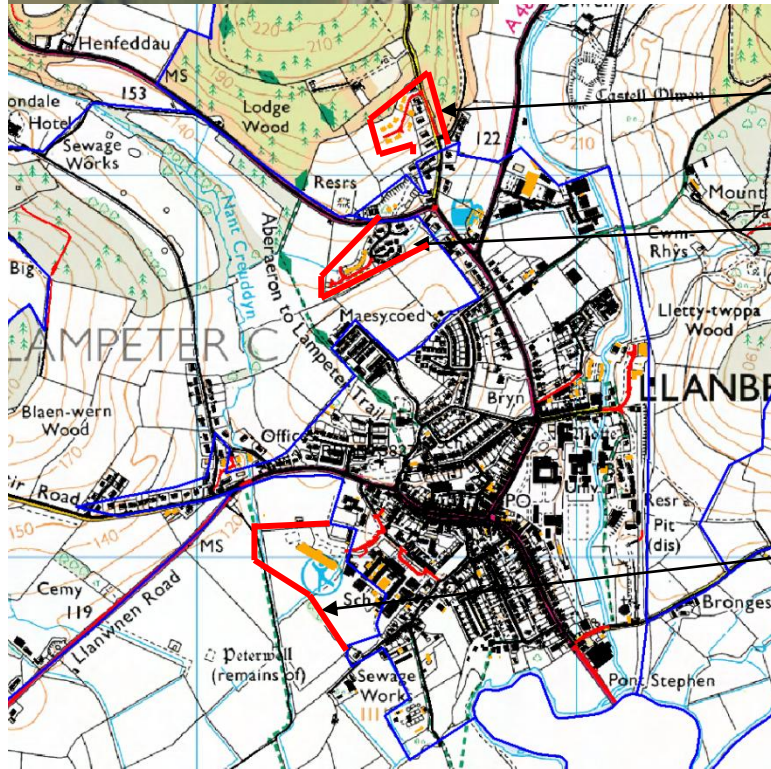


Boundary changes with 525

Boundary change with 292

Boundary change with 339

CRDGNVS827: Lampeter expansion



Boundary change with 828

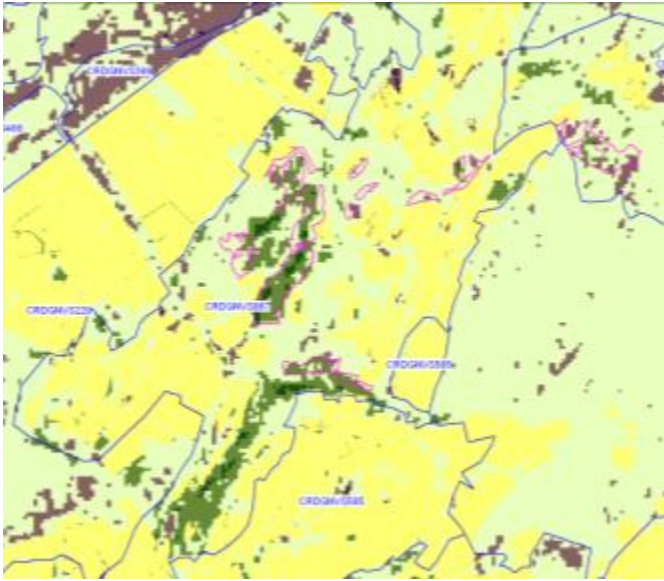
Boundary change with 588

Boundary change with 500

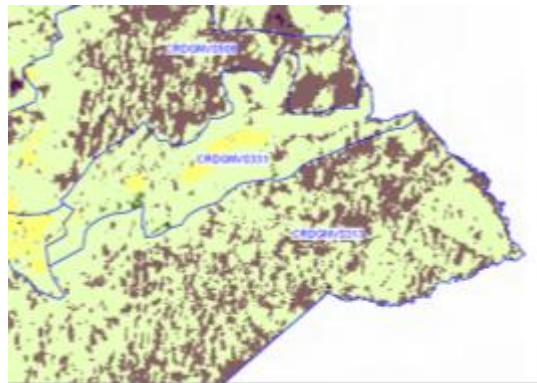
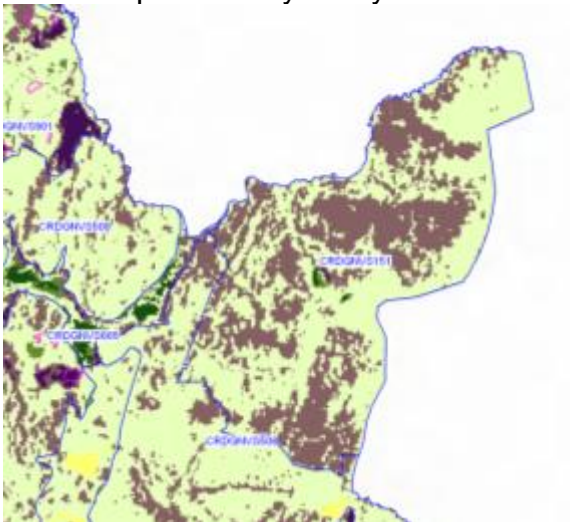
CRDGNVS795: Llandysul bypass



CRDGNVS867: Forestry changes, including conversion to broadleaf woodland around Talybont and Tre'r-ddol on A487



Reduced productivity at Plynlimon and south of Cwmystwyth



CRDGNVS513: scrambling track



CRDGNVS911: bike track



CRDGNVS525: West Wales airport



2001



2010



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