



**Cyfoeth
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Wales

**Area 3: Swansea
LANDMAP Change Detection:
Visual & Sensory Aspect
Monitoring Report
Final: March 2015**

Bronwen Thomas

Rev No. 3

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1.0 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 3 which includes the Swansea.

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 Swansea.

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 Swansea 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 denote amendments required for consistency rather than landscape 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 Swansea these have not proved to be conclusive of change but 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. There has been a telephone conversation with the Gower AONB officer.

Column 6: Other resources used for Swansea:

- Forestry mapping showing conversion from conifer to broadleaf woodland
- Windfarm mapping showing windfarm development in Swansea and beyond.
- Google Earth (referenced as GE2013) provides more up-to-date aerial photographs for Swansea.
- Inconsistencies and errors in GIS and survey data are noted in this column.

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:

- Nineteen aspect areas require boundary changes. Ten boundary changes relate to inconsistencies.
- Eight aspect areas require amendments to survey data relating to descriptions.
- Four aspect areas require amendments to survey data due to errors and inconsistencies.
- There are two recommended changes to classifications or evaluations, these relate to inconsistencies.
- One new aspect area is recommended.

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 Swansea 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. No specific areas affected by *Phytophthora* have been detected in Swansea.

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: 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 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. No specific changes relating to solar farms have been detected in Swansea

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. No specific changes due to coastal erosion have been detected in Swansea.

Poor/inaccurate original GIS and surveys

4.15. Table entries in italics relate to upgrading existing LANDMAP data where it will be otherwise be inconsistent with change detection. Checking with consistency report (Feb 2011) has brought up some major inconsistencies remaining or poorly rectified.

5.0 Summary of Key Changes and Influences in Swansea

Expansion/development of settlements:

5.1. The built-up parts of Swansea are not included in LANDMAP. Expansion of the city has taken place in several places, requiring boundary changes. Port Tennant, Gowerton, Pontlliw and Pontarddulais have also expanded beyond their aspect area boundaries. There are new industrial and housing developments on both sides of the M4 in the Tawe valley. A new aspect area is recommended for these areas of development.

Large local developments:

The developing business park north of the M4 at J46 is replacing derelict works. This is conspicuous from the motorway and makes a significant impact.

Forestry:

5.2. There does not appear to be much significant change to forestry and woodland. Areas of broadleaf conversion are limited.

Windfarms:

5.3. There is one windfarm consented in the north (SWNSVS735) but this has not been built yet. There are some visual effects of windfarms on adjoining areas of upland to the north and east in Carmarthenshire and Neath Port Talbot.

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/ feedback	6 Other resources	7 Fieldwork	8 Recommended LANDMAP amendment
SWNSVS001						'Tregof Village' housing and new roads on much of part south of M4 means significant changed. Large area of new housing to n. of M4.	GIS: re-name polygon Survey: new record
SWNSVS080 Clyne Valley	a. Buildings and roads at lower end. Not apparent on aerial. b. Tracks from Killay. Not apparent on aerial.				a.&b. GE2013 not apparent		No amendment required – no significant change
SWNVS113 Parkmill					<i>CR – Change VS50 to High</i>		<i>CR done</i>
SWNVS125 Pwlldu Head west to Three Cliffs Bay					<i>CR – Revalue as Outstanding</i>		<i>CR done</i>
SWNSVS146 North of Clydach	<i>Parts of Clydach in this aa (poorly drawn boundary)</i>						GIS: <i>Boundary change with 920</i> Survey: <i>note boundary change</i>
SWNVS148 Mewslade Bay					<i>CR – change VS26 to Outstanding</i>		<i>CR done</i>
SWNSVS153 Mynydd Carn Goch & surrounds	Expansion of 726 into aa						GIS: Boundary change with 726 Survey: note boundary change

SWNSVS196 Cefn Bryn	Network of paths restored. Not apparent on aerial.				GE2013 shows not obvious change		No amendment required – no significant change
SWNSVS226 Penbwl, etc	Expansion of 726 into this aa						GIS: Boundary change with 726 Survey: Check/amend reference to encroachment on Penllergaer designed landscape.
SWNSVS253 Clyne Common	Expansion of Newton into this area						GIS: Boundary change with Swansea Survey: note boundary change
SWNSVS304 Pontarddulais	Housing expansions at edges into 691, 738						GIS: Boundary change with 691 and 738. Survey: Amend summary and trend to reflect expansion of settlement.
SWNSVS321 Afon Lliw & surrounds	<i>Poorly drawn boundary with 982</i>				<i>CR – consider dividing into two areas</i>		GIS: <i>Re-draw boundary with 982</i> Survey: <i>note boundary change</i> <i>CR done (322)</i>
SWNSVS322 Upper Lliw Valley	<i>Poorly drawn boundary with 982</i>						GIS: <i>Re-draw boundary with 982</i> Survey: <i>note boundary change</i>
SWNSVS351 Port Eynon Point					<i>CR – Revalue as Outstanding</i>		<i>CR done</i>
SWNSVS361 Afon Tawe	Lot of new industry and housing both sides of M4. Confirmed on aerial.				<i>CR - re-evaluate to overall Moderate</i>	'Tregof Village' housing and new roads on much of part south of M4 means significant changed. Large area of new housing to n. of M4.	GIS & survey: New aa for all part south of M4 – development classification.(SWNSVS001) Original survey: Amend summary, descriptions, trend, recommendations to reflect reduced area and increase in development.
SWNSVS368 Caswell Bay					<i>CR – change VS26 to Outstanding</i>		<i>CR done</i>
SWNSVS408	<i>Mis-named/mis-</i>						<i>GIS: Mis-matched - Refers</i>

Worms Head to Port Eynon Point	<i>placed</i>						<i>to Bury Holms to Foxhole Point on GIS – swap with 581 Survey: amend to relate specifically to Port Eynon/Worms Head cliffs</i>
SWNVS428 Kilvay Hill	Edge of Port Tennant expanding into this area					<i>CR – consider dividing to accommodate range of values</i>	GIS: Boundary change with Swansea
SWNVS496 Worms Head						<i>CR – refine descriptions & re-evaluate as Outstanding</i>	<i>CR partially done, but describes as wave-cut platform rather than tidal islands. Survey: amend classification and descriptions</i>
SWNVS522 Mynydd bach y cocs						<i>CR – justify evaluation</i>	CR done
SWNSVS541 Mumbles Head west to Caswell	<i>Poorly defined boundary with 881</i>					<i>CR – Improve descriptions</i>	GIS: Refine boundary with 881 Survey: note boundary change CR done
SWNSVS581 Burry Holms to Foxhole Point	<i>Mis-named/mis-placed?</i>					<i>CR – revalue as Outstanding</i>	<i>GIS: mismatched - Refers to cliffs from Worms Head to Port Eynon Point on GIS – swap with 408. Survey: amend to relate specifically to Burry Holms/Foxhole Point, including evaluation</i>
SWNSVS622 Rhossili Down						<i>CR – Refine descriptions and revalue as Outstanding Create new aa for outlier - High</i>	<i>CR – done, but new aa 623 is named 'Rhossili Hill' rather than Harding Down</i>
SWNSVS623 Rhossili Hill							<i>'Rhossili Hill' rather than Harding Down</i> Survey: re-name as Harding Down
SWNSVS683 Llanrhidian Marsh	Not clear on aerials	less productive saltmarsh in		Not aware of changes			No significant change apparent No amendment required – no significant change

		west and east (Penclawdd), and north (north of Gorseinon)					
SWNSVS691 NW of Gorseinon	Pontarddulais expanding into this area						GIS: Boundary change with 304 Survey: note boundary change
SWNSVS700 Afon Llan & surrounds	a. <i>Poorly drawn with 726 south</i> b. Expansion of edge of Swansea to east						GIS: <i>Boundary change with 726(a.)</i> Boundary change to exclude (Swansea) (b) Survey: note boundary changes
SWNSVS726 Gowerton etc	a. Industrial expansion of Swansea in east b. North expansion of Grovesend. c. North-east part includes a lot of open countryside						GIS: boundary change to exclude from this aa (a.) Boundary change with 691 (b.) Survey: Check/amend to reflect considerable areas of open country within this aa. (c.)
SWNSVS735 Pentwyn Mawr	a. Not apparent from aerials b. Not built 2010	a. Less productive on top of Graig Fawr			b. Mynydd y Gwair 2 Windfarm consented 16no. 121ht High tranquility	a. Not obvious b. Not built yet c. Maesgwyn Windfarm just to north in Carmarthenshire. Is conspicuous from many parts of this aa	Survey: Amend summary, views, sensory qualities, trend, recommendations to reflect windfarm developments.
SWNSVS738 Rhyd-y-Pandy	a. Expansion of Swansea next to M4 b. Pontarddulais expansion c. expansion of Pontlliw & <i>poorly drawn boundary with 982</i>					a. Morrision Hospital expansion. d. New Swansea North substation in adjacent aa - lots of pylons clustering around. e. New business park developing on former works site adjacent to J46 of M4 – straddles 738 and 811 f. solar farm south of Llwyncelyn – not conspicuous	GIS: Boundary change with Swansea (a) Boundary change with 304 (b) . Re-draw boundary with 982 (c) . Boundary change with 811 to include all business park (e) . Survey: Check/amend summary to clarify that there are three separate parts of this aa. Amend summary, descriptions, views, condition, trend, recommendations to reflect

							expansions of settlements and new developments within.
SWNSVS785 Penrice Castle	Tracks through forestry. Not apparent on aerials				<i>CR – change VS26 to High</i>	No significant change observed	No amendment required – no significant change. <i>CR done</i>
SWNSVS811 (Llanfech) Penllergaer Forest	a. Large development on eastern extension. In progress on aerial. c. <i>poorly drawn boundary with 982 (Pont Iliw)</i> d. not apparent from aerials				d. Various forestry changes to broadleaf including most compartments in north	a. New Swansea North substation not visible except for lots of pylons clustering around. e. New business park developing on former works site adjacent to J46 of M4 – straddles 738 and 811	GIS: Boundary change with 738 to exclude business park (e), <i>re-draw boundary with 982(c)</i> Survey: Amend summary, descriptions, condition, trend, recommendations to reflect substation development and broadleaf conversion. Note boundary change. <i>Generally poor descriptions etc. in original survey.</i>
SWNSVS876 Llanddewi	a. Roads at The Vile. Not apparent on aerial. b. Tracks at caravans park at Pilton Cross. Not apparent on aerial. c. Not apparent on aerial.	c. Lots of areas (several fields size) of both more and less productive			<i>CR – subdivide and create several new aa</i>	No significant change observed	No amendment required – no significant change. <i>CR done</i>
SWNSVS881 South-east Gower	<i>Poorly drawn edge of Oystermouth and coast (987,541)</i>						GIS: <i>Refine boundary to follow edge of settlement and coast with 987 and 541.</i> Survey: <i>note boundary changes</i>
SWNSVS920 Clydach	<i>North edge excludes older development, in 146</i>						GIS: <i>Boundary change with 146</i> Survey: <i>Note boundary changes</i>
SWNSVS982 Pontlliw	<i>Poorly drawn boundary needs to extend north</i>						GIS: <i>Refine boundary with 321, 738, 322, 811</i> Survey: <i>Note boundary changes</i>
SWNSVS987 Pwlldu Head	<i>Poorly drawn boundary with 881</i>				<i>CR – Refine descriptions and</i>		GIS: <i>Refine boundary with 881</i>

(cliffs)					<i>revalue as Outstanding</i>		<i>Survey: Note boundary changes CR done</i>
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Swansea: Change Detection Figures

SWNSVS253 Clyne - Housing at Newton expanding beyond Swansea boundary



SWNSVS881 South-east Gower
Poorly drawn aspect area boundaries at Mumbles and coast with 987



SWNSVS304- Pontarddulais, expansion and excluded development



SWNSVS361 Afon Tawe
Developments on either side of M4



2001



2010



Google Earth 2013

SWNSVS982 Pontlliw – poorly-drawn boundary



SWNSVS428 Kilvay Hill
edge of Port Tennant
(Swansea) expanding



SWNSVS726 – Gowerton, etc.



Expansions in north east
south east



Reduction (expansion of Swansea) in
south east

SWNSVS920 Clydach





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0300 065 3000 (Mon-Fri, 8am - 6pm)

enquiries@naturalresourceswales.gov.uk
www.naturalresourceswales.gov.uk

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