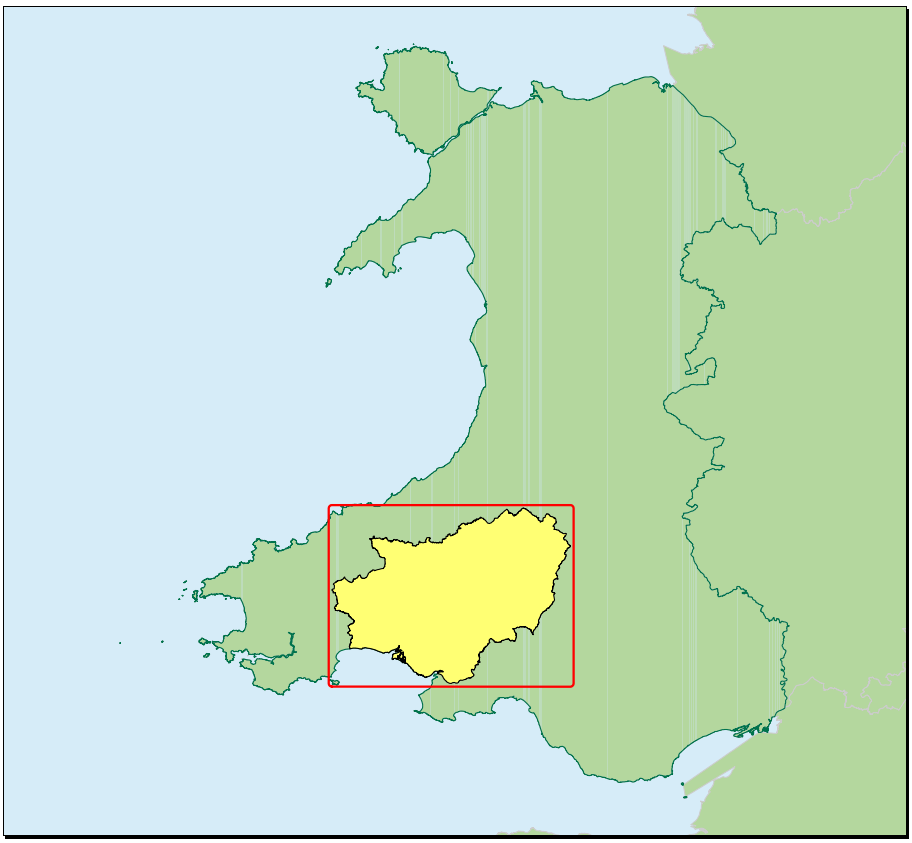
Local Evidence Package

Carmarthenshire

04/10/2013



Local Evidence Package

As of 1st April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru.

Natural Resources Wales has inherited the statutory consultee role that both Environment Agency Wales and the Countryside Council for Wales had in the Strategic Environmental Assessment (SEA) process, under the Environmental Assessment of Plans and Programmes (Wales) Regulations (2004 No. 1656 (W170) that implement the SEA Directive.

We will work with relevant responsible authorities at various stages of the SEA process. This includes provision of data and information to describe baseline environmental conditions at the scoping stage of the SEA process. This evidence pack is intended to help with that. It is intended primarily for use by plan-making authorities such as Local Planning Authorities and Regional Transport Planning Consortia in their discussions with Natural Resources Wales Planning Liaison teams. It summarises environmental information available from Natural Resources Wales. Information is presented in the form of maps cut to Local Authority areas, accompanied by a brief description of the data. Further interpretation is therefore required to assess the meaning of the data in terms of decision making.

Plan-makers will be able to use this information in preparing both plans and accompanying Strategic Environmental Assessment/ Sustainability Appraisals (SEA/SA).

The pack will show plan-making bodies what information we will be able to provide for measuring change as a result of their plan. Some historical trend data is included in this pack as well as forecasts. Plan-making bodies may need to augment this with further trend data so that they can forecast likely changes in the state of the environment without a plan and meet one of the SEA Directive's requirements.

In addition, these packs can be useful for providing evidence for other decision making processes, such as Community Strategies, and Local Service Boards.

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These packs will be updated periodically, normally twice a year. Packs for Local Authorities are made available on the Local Government Data Unit Wales InfoBaseCymru website http://www.infobasecymru.net Packs for National Parks may be requested from the Environmental Assessment & Reporting Team (contact details below) or via your Natural Resources Wales Planning contacts.

Please send all comments or enquiries regarding this package to:

The Environmental Assessment & Reporting Team
Natural Resources Wales
Tŷ Cambria, 29 Newport Road, Cardiff CF24 0TP

ebost:
local.evidence@cyfoethnaturiolcymru.gov.uk
email:
local.evidence@naturalresourceswales.gov.uk

How to Access our Data

This document shows data and information that is available from Natural Resources Wales for Strategic Environmental Assessment and planning purposes.

The Local Evidence Packs were originally produced by Environment Agency Wales so most of the datasets currently included came from Environment Agency Wales. The packs are gradually being developed to include relevant datasets from Countryside Council for Wales and Forestry Commission Wales as well.

There will be a transition period of up to two years during which Natural Resources Wales will still be using the IT systems of its parent bodies, i.e. Environment Agency , Countryside Council for Wales and Forestry Commission Wales, to provide data and information to the public and our professional partners.

Many of the datasets illustrated in this document are available through the **'What's In Your Backyard?** pages of the Environment Agency web site: www.environment-agency.gov.uk (At Home & Leisure> What's In Your Backyard?) or in published reports (Planning & Research> Publications & Reports).

DataShare http://www.geostore.com/environment-agency/ is the Environment Agency's data download and live feed portal, through which spatial datasets can be provided directly to the public and professional partners (such as other government organisations), contractors and commercial licensees. Natural Resources Wales is currently continuing to use DataShare to provide data.

Natural Resources Wales is also continuing to provide data via the Countryside Council for Wales website http://www.ccw.gov.uk and the Forestry Commission website http://www.forestry.gov.uk:

GIS data downloads

http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/gis-download---welcome.aspx

http://www.forestry.gov.uk/datadownload.

Landmap

http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/landmap.aspx

Open Access Maps

http://www.ccw.gov.uk/enjoying-the-country/open-access-land/open-access-maps.aspx

Forestry Commission Wales Map Viewer

http://www.forestry.gov.uk/forestry/INFD-8A9FPS

For further information please talk to your Natural Resources Wales Planning contact or email the Environmental Assessment & Reporting team

ebost: local.evidence@cyfoethnaturiolcymru.gov.uk email: local.evidence@naturalresourceswales.gov.uk

SEA Guidance

The Strategic Environmental Assessment Guidance documents previously provided by the Countryside Council for Wales are still available from the CCW website:

http://www.ccw.gov.uk/landscape--wildlife/managing-land-and-sea/environmental-assessment/strategic-environmental-assess.aspx

Note that some of the links in these documents may be broken. We apologise for this. The guidance documents are currently being updated and the updated versions will be made available as soon as possible.

The Environment Agency guidance, Strategic Environmental Assessment and Climate Change: Guidance for Practitioners is still available here:

http://www.environment-agency.gov.uk/research/policy/40121.aspx

Datasets Illustrated in this Document

The Water Framework Directive, River Basin Management Plans & Classification

As of 1 April 2013, the Countryside Council for Wales, Environment Agency Wales and Forestry Commission Wales became Natural Resources Wales/Cyfoeth Naturiol Cymru.

Natural Resources Wales is now the Competent Authority in Wales for implementing the Water Framework Directive.

Water Framework Directive

The Water Framework Directive (WFD) establishes a framework for the protection of surface waters (rivers, lakes, estuaries and coastal waters) and groundwaters. Its purpose is to prevent deterioration and improve the status of aquatic ecosystems, promote sustainable water use, reduce pollution of groundwater and contribute to mitigating the effects of floods and droughts. The WFD requires us to achieve good status in all of our water bodies by 2027. This means that we must protect and improve the quality of our water bodies so that they can support natural biological communities and are free from pollution.

River Basin Management Plans

River Basin Management Plans (RBMPs) are statutory plans which deliver the requirements of the WFD. Public authorities are required to have regard to them when exercising their functions.

RBMPs outline the main issues for the water environment and the actions we all need to take to deal with them. RBMPs follow a 6 year cycle. The first plans were approved by the Minister in December 2009. Future plans will be published in 2015 and 2021.

There are 3 RBMPs which cover Wales: Dee, Severn and Western Wales.

Natural Resources Wales has responsibility for drawing up the RBMPs for Western Wales and the Dee - working in partnership with a wide range of public, private and voluntary organisations (including water companies and local government). The Environment Agency retains responsibility for the RBMP for the Severn.

The RBMPs are available at:
http://www.environment-agency.gov.uk/research/planning/33106.aspx

Integrated catchment management and working with co-deliverers

Our ambition for Wales' first River Basin Management Plans (RBMPs) is to achieve 50% of all water bodies at Good or better status (or potential) by 2015 and work towards the delivery of objectives for Protected Areas such as Natura 2000 sites and Bathing Waters. To achieve these objectives, many different co-deliverers need to take action, including land managers, farms and businesses, water companies, the third sector (voluntary and charitable groups), local communities, planners and public bodies.

We are delivering a programme of investigations to identify the reasons why water bodies are failing Good Status, and working with co-deliverers to ensure the evidence base for targeting actions is robust. Where there are gaps or no clear mechanisms to deliver improvements we will work with co-deliverers to gather evidence and develop cost-effective solutions.

We also want to work with others to develop our approach to integrated catchment management, which we believe can deliver greater and multiple benefits for people and wildlife.

For information about partnership projects in Wales see:

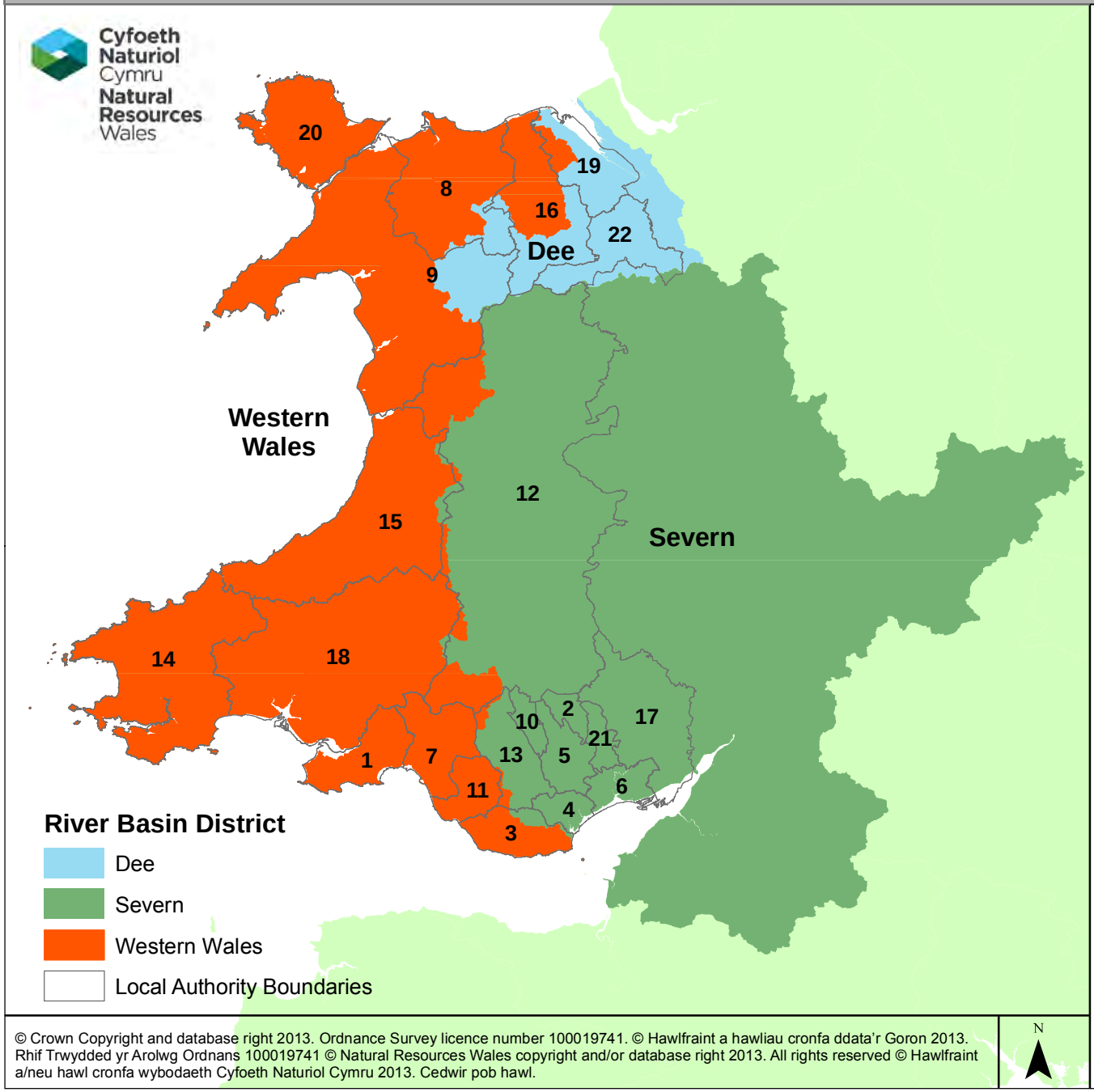
http://www.environment-agency.gov.uk/research/planning/140359.aspx

WFD Classification

The way we classify our waters has changed. Previously, we used the General Quality Assessment (GQA) scheme to assess river water quality in terms of chemistry, biology and nutrients. Now the WFD classification looks at over 30 measures, grouped into ecological status (this includes biology as well as 'elements' like phosphorus and pH) and chemical status ('priority substances' e.g. mercury). The WFD covers estuaries, coastal waters, groundwater and lakes as well as rivers. We have updated our existing assessment techniques and have developed new ones for indicators we have not assessed before.

For further information on WFD classification see:
http://www.environment-agency.gov.uk/research/planning/33260.aspx

River Basin Districts

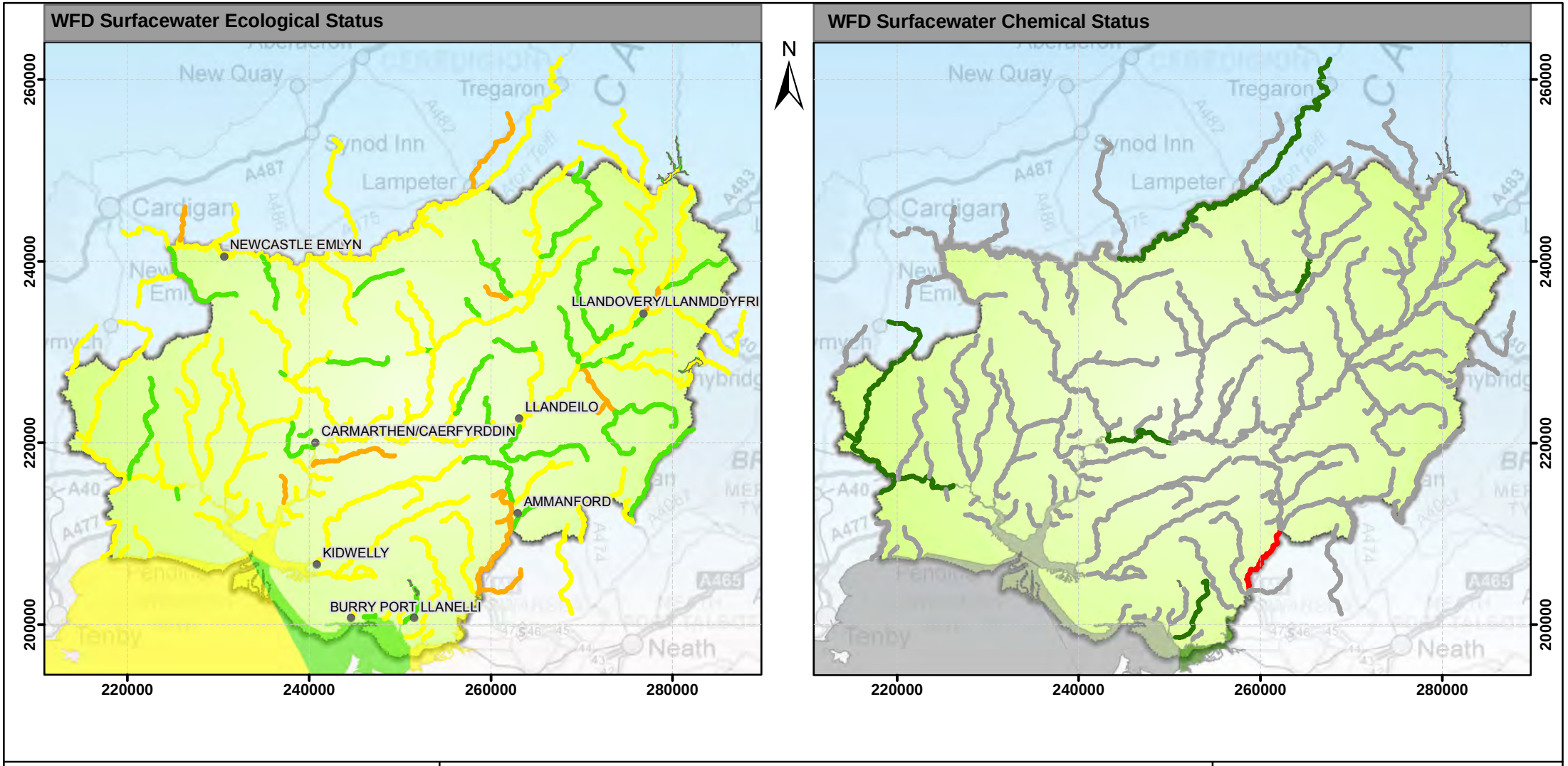


River Basin Districts

A river basin is the area of land from which all surface run-off and spring water flows through a sequence of streams, lakes and rivers into the sea at a single river mouth, estuary or delta. It comprises one or more individual catchments. A river basin district is a river basin or several river basins, together with associated coastal waters.

The map on this page shows the river basin districts that cover Wales.

Local Authority	Label No.
Abertawe - Swansea	1
Blaenau Gwent - Blaenau Gwent	2
Bro Morgannwg - the Vale of Glamorgan	3
Caerdydd - Cardiff	4
Caerffili - Caerphilly	5
Casnewydd - Newport	6
Castell-nedd Port Talbot - Neath Port Talbot	7
Conwy - Conwy	8
Gwynedd - Gwynedd	9
Merthyr Tudful - Merthyr Tydfil	10
Pen-y-bont ar Ogwr - Bridgend	11
Powys - Powys	12
Rhondda Cynon Taf - Rhondda Cynon Taf	13
Sir Benfro - Pembrokeshire	14
Sir Ceredigion - Ceredigion	15
Sir Ddinbych - Denbighshire	16
Sir Fynwy - Monmouthshire	17
Sir Gaerfyrddin - Carmarthenshire	18
Sir y Fflint - Flintshire	19
Sir Ynys Mon - Isle of Anglesey	20
Tor-faen - Torfaen	21
Wrecsam - Wrexham	22



Water Framework Directive Surfacewater Water Body Classification

(Baseline 2009)

Legend

Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

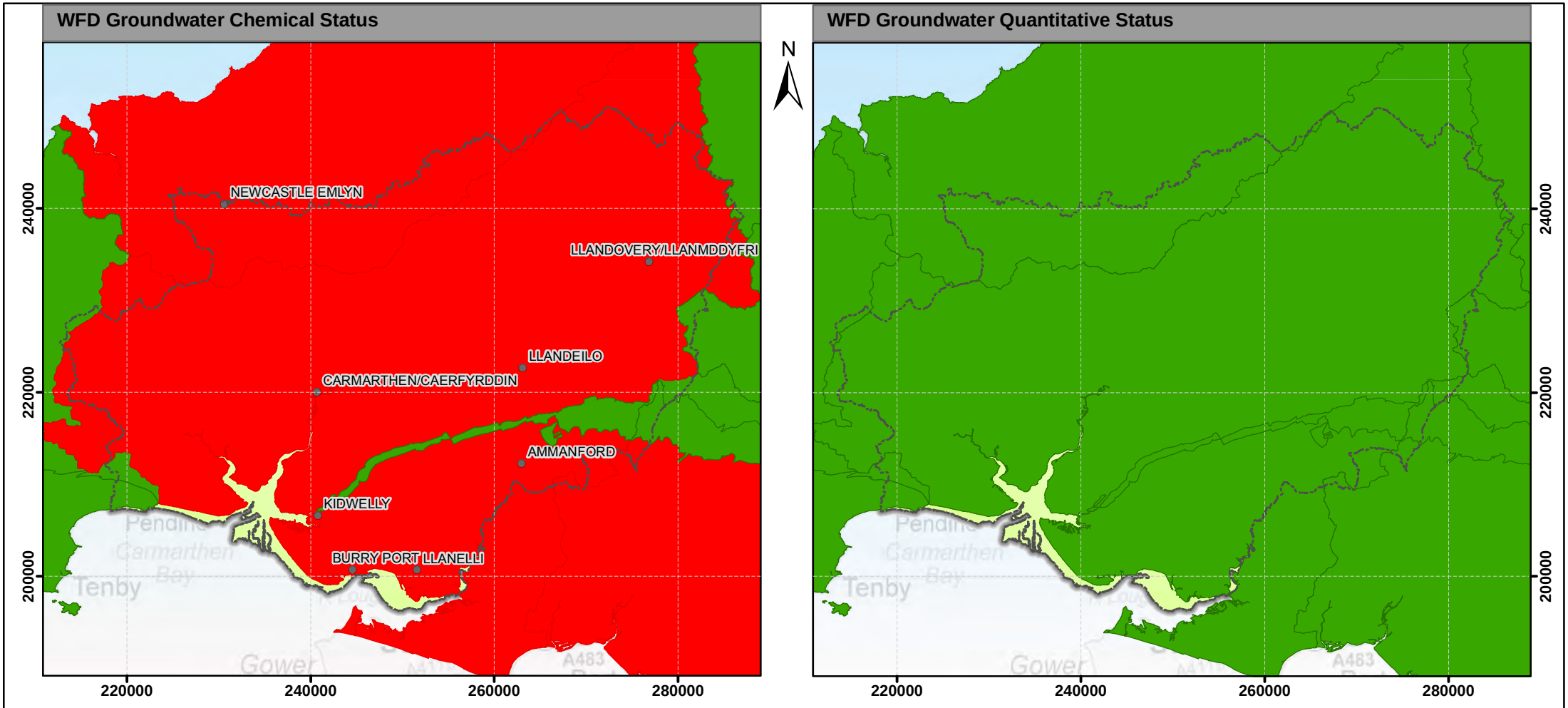
Chemical Status

- Good
- Failing to achieve Good
- Does Not Require Assessment

- Towns & Cities
- Planning Authority Boundary

Cyfoeth Naturiol Cymru Natural Resources Wales

5 2.5 0 5 km



Water Framework Directive Groundwater Water Body Classification

(Baseline 2009)

Legend

Chemical/Quantitative Status

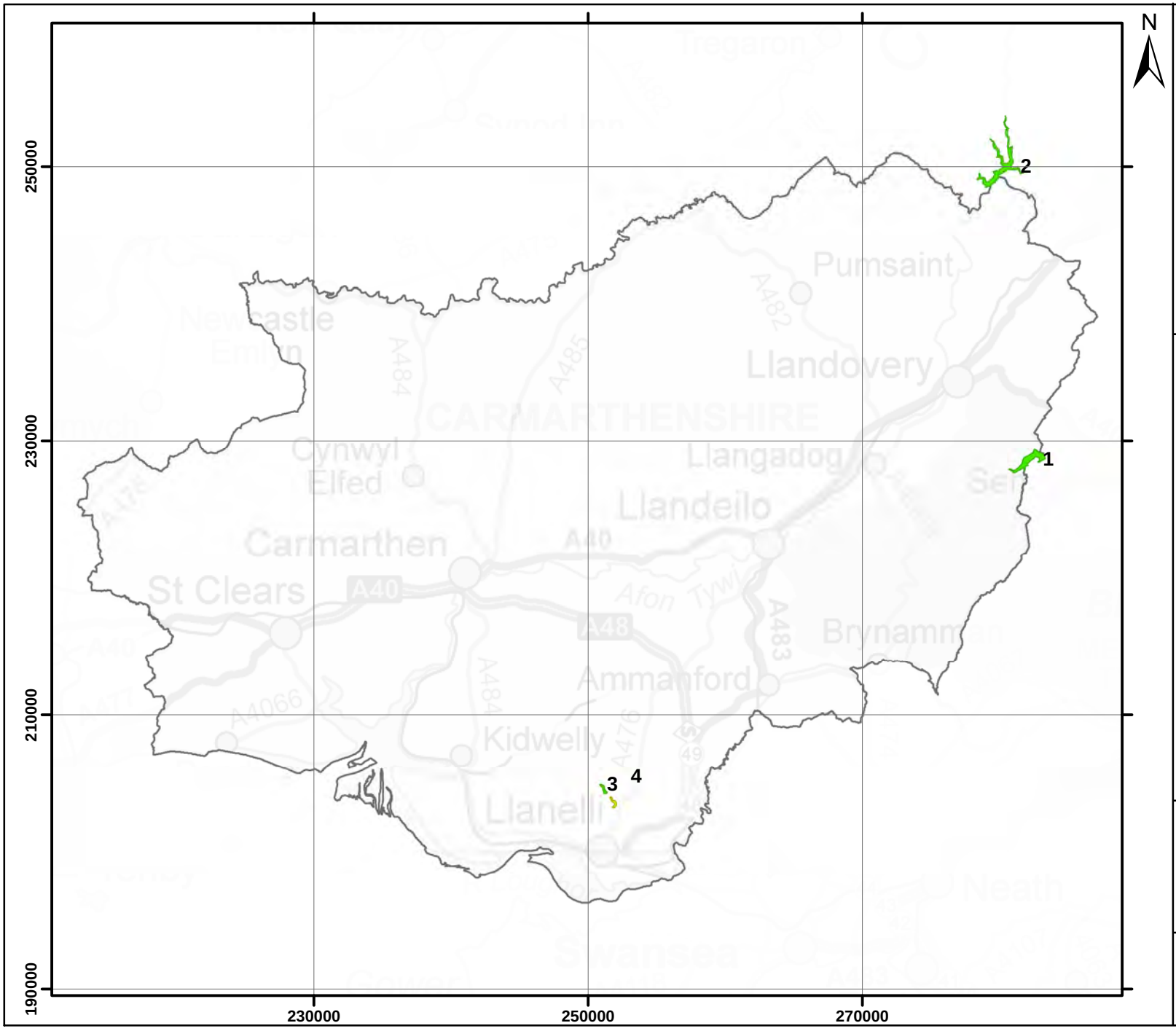
- Good
- Poor

Towns & Cities

Planning Authority Boundary

Cyfoeth Naturiol Cymru Natural Resources Wales

7.5 3.75 0 7.5 km



Water Framework Directive Lakes Ecological Status

(Baseline 2009)

Legend

Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

Planning Authority Boundary

The numbers on the map refer to the table on the following page

Cyfoeth Naturiol Cymru
Natural Resources Wales

7 3.5 0 7 km

Water Framework Directive: Lakes - Ecological Status (Baseline 2009)

Label No.	Lake	Ecological Status	Chemical Status
1	Usk Reservoir	Good	Does Not Require Assessment
2	Llyn Brianne Reservoir	Good	Does Not Require Assessment
3	Upper Lliedi Reservoir	Good	Does Not Require Assessment
4	Cwm Llied Reservoir	Moderate	Does Not Require Assessment

Water Framework Directive: Water Bodies Status Summary (Baseline 2009) for Carmarthenshire

		Ecological status					Chemical status			Quantitative status	
Water Body Category	**Total No. Water Bodies**	**High**	**Good**	**Moderate**	**Poor**	**Bad**	**Good**	**Failing to achieve Good**	**Does not require assessment**	**Good**	**Poor**
River	128		35	83	10		6	1	121		
Lake	4		3	1					4		
Transitional	2			2			1		1		
Coastal	2		1	1					2		
Groundwater	11						7	4		11	

Water Framework Directive Status Maps

The five maps shown in the previous four pages show the baseline, 2009, classification of WFD water bodies. The Water Framework Directive requires there to be no deterioration from this baseline. The aim is to achieve at least Good status by 2015. Where this is not possible and subject to the criteria set out in the Directive, we aim to achieve Good status by 2021 or 2027.

Ecological status is shown for all surfacewater water bodies. Ecological status includes biological elements such as invertebrates and fish as well as supporting physico-chemical elements such as phosphates and nitrates.

Chemical assessment of water bodies is risk-based. Not all water bodies require assessment. Chemical monitoring looks for **priority substances** such as mercury that have been identified as presenting a significant risk to or via the aquatic environment under the Water Framework Directive. We only monitor for priority substances in water bodies where there are known discharges of these pollutants. A list of priority substances can be found here:

http://ec.europa.eu/environment/water/water-framework/priority_substances.htm.

Groundwaters are classified in terms of chemical and quantitative status.

Quantitative status is about the impacts of groundwater abstraction. Over-abstraction of groundwater may reduce river flows and water levels in lakes and wetlands. It may also cause degradation of groundwaters due to saline intrusion from the sea.

Transitional waters are intermediate between fresh and marine water. They include estuaries and saline lagoons.

Lake water bodies and status are shown separately because many of them are too small to identify on the map. The numbered labels shown on the map refer to the table on the page following the map which gives the ecological and chemical status for each lake.

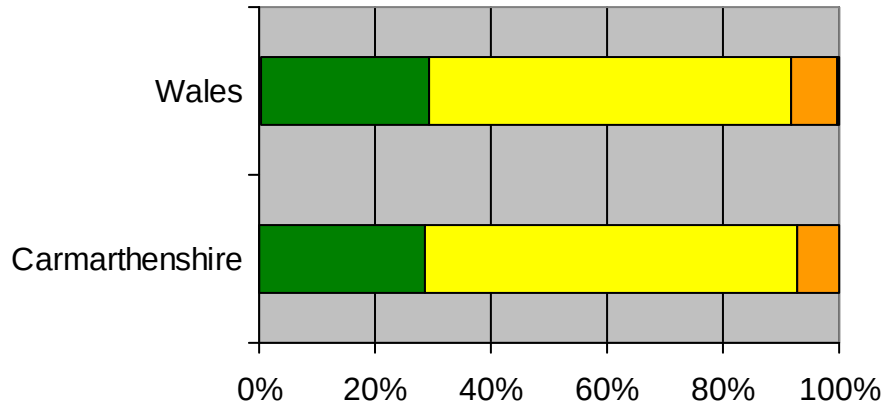
Water Bodies Status Summary

The Water Bodies Status summary table above shows the numbers of each type of water body in each ecological, chemical and quantitative (groundwater only) class according to the baseline, 2009, classification of WFD water bodies.

Baseline 2009 data is shown here because this is the standard that WFD progress will be measured against. Annual updates to the classification and further information on the reasons for failure and the actions that need to be taken are available from your Planning Liaison contact or the Environmental Assessment & Reporting team (local.evidence@naturalresourceswales.gov.uk).

Water Framework Directive: Surfacewater Water Bodies Ecological and Chemical Status (Baseline 2009) for Carmarthenshire

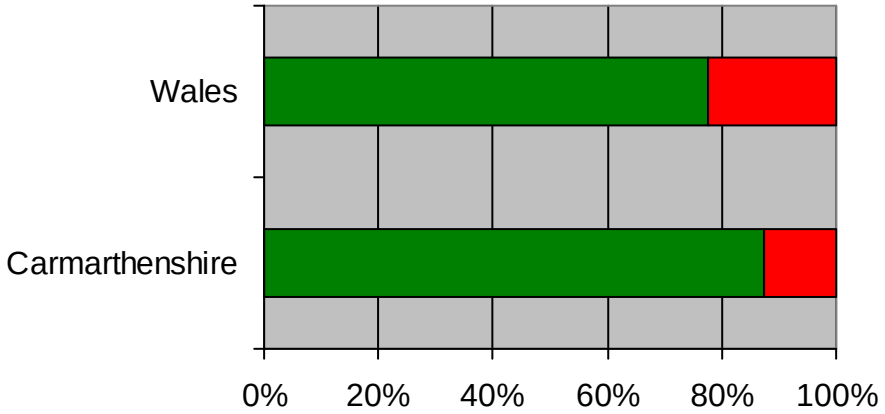
Water Framework Directive: Surfacewater Ecological Status, Percentage of Water Bodies in Each Class



	Carmarthenshire	Wales
Bad	0	4
Poor	10	92
Moderate	87	738
Good	39	339
High	0	5

Number of water bodies in each class

Water Framework Directive: Surfacewater Chemical Status, Percentage of Water Bodies in Each Class



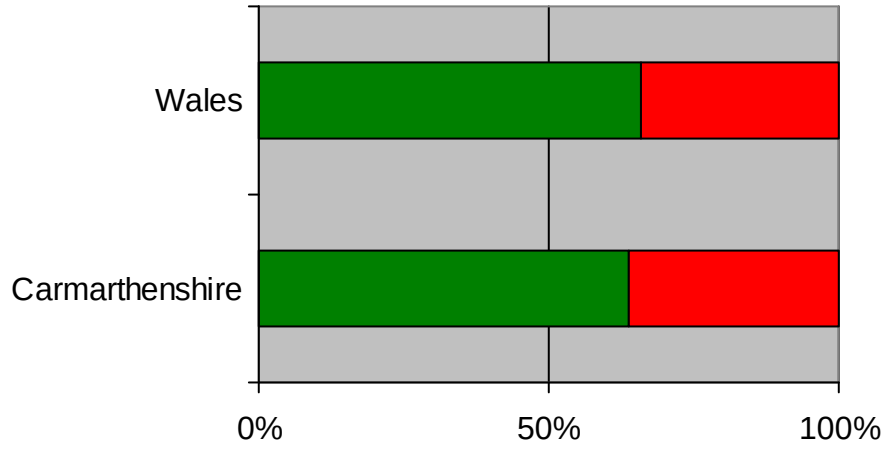
	Carmarthenshire	Wales
Fail	1	21
Good	7	73

Number of water bodies in each class

The charts above show the percentage of surfacewater water bodies in each class for the whole of Wales and for the Planning Authority.

The tables show the numbers of surfacewater water bodies in each class for the whole of Wales and for the Planning Authority.

Water Framework Directive: Groundwater Overall Status (Baseline 2009) for Carmarthenshire



	Carmarthenshire	Wales
Poor	4	13
Good	7	25

Number of water bodies in each class

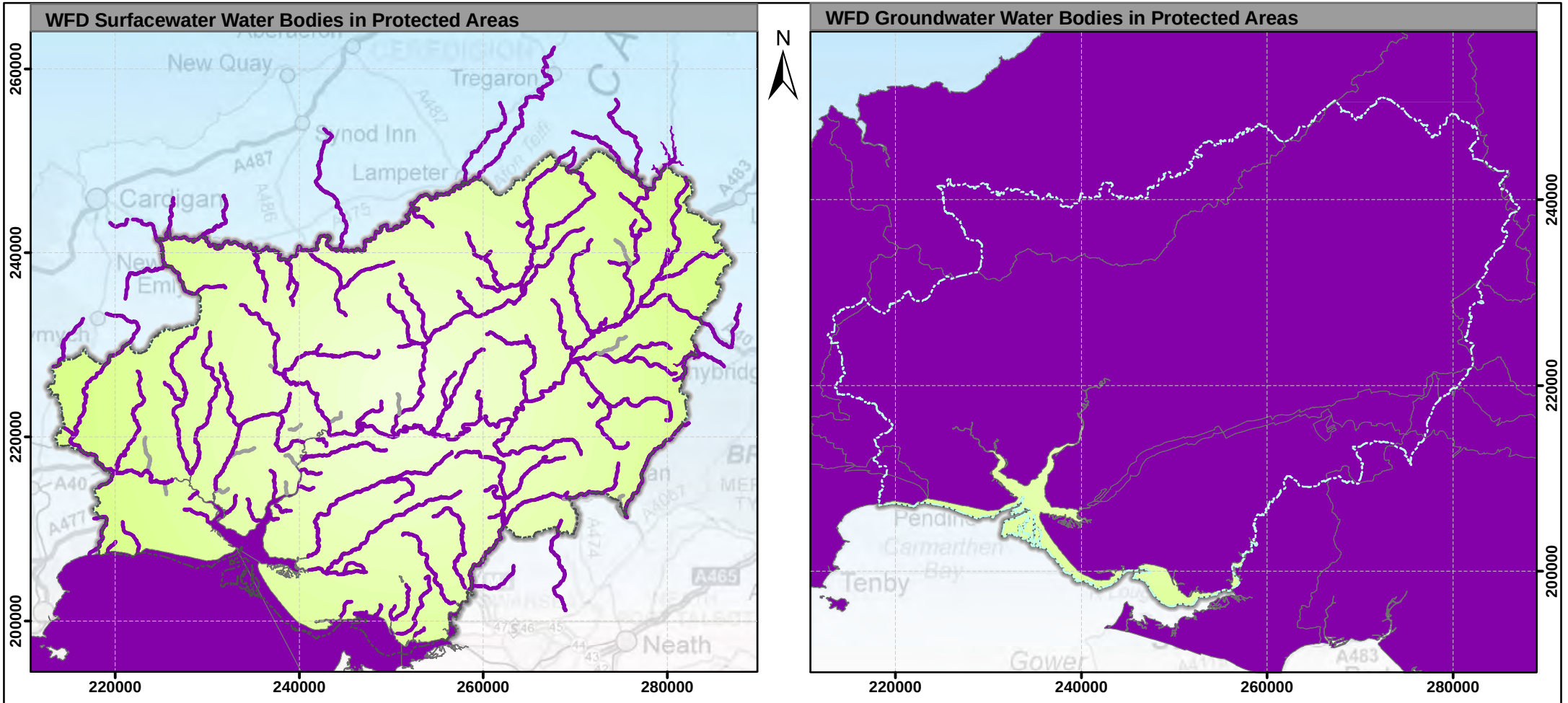
The overall classification status for groundwaters is assessed by combining the chemical status with the quantitative status. If either or both of these is Poor, then the overall status is Poor.

For further information on WFD classification methods see:

http://www.environment-agency.gov.uk/research/planning/33260.aspx

The chart on the left shows the percentage of groundwater water bodies in each class for the whole of Wales and for the Planning Authority.

The table shows the number of groundwater water bodies in each class for the whole of Wales and for the Planning Authority.



Water Framework Directive Water Bodies in Protected Areas

Legend

Protected Area

- Yes
- No
- Planning Authority Boundary

Cyfoeth Naturiol Cymru Natural Resources Wales

6 3 0 6 Km

Water Framework Directive - Water Bodies Protected Areas Summary (Baseline 2009) for Carmarthenshire

Water Body Category	Total Number of Water Bodies Affecting a Protected area	Number of Water Bodies Affecting: Type of Protected Area							
		Bathing Waters	Drinking Water	Fresh Water Fish	Shellfish Waters	Nitrates	Urban Waste Water	Habitats & Species	Wild Birds
River	114	2	4	92			5	55	11
Lake	2		1	2					1
Transitional	2				2		1	2	1
Coastal	2	2			2		1	2	1
Groundwater	11		11			2			

The table above shows the number of WFD water bodies that are associated with a designated Protected Area.

Protected Areas

The Water Framework Directive specifies that areas requiring special protection under other EC Directives and waters used for the abstraction of drinking water are identified as protected areas. The different types of protected areas have their own objectives and standards.

Bathing Waters - bodies of water designated as recreational waters, including areas designated as Bathing Waters

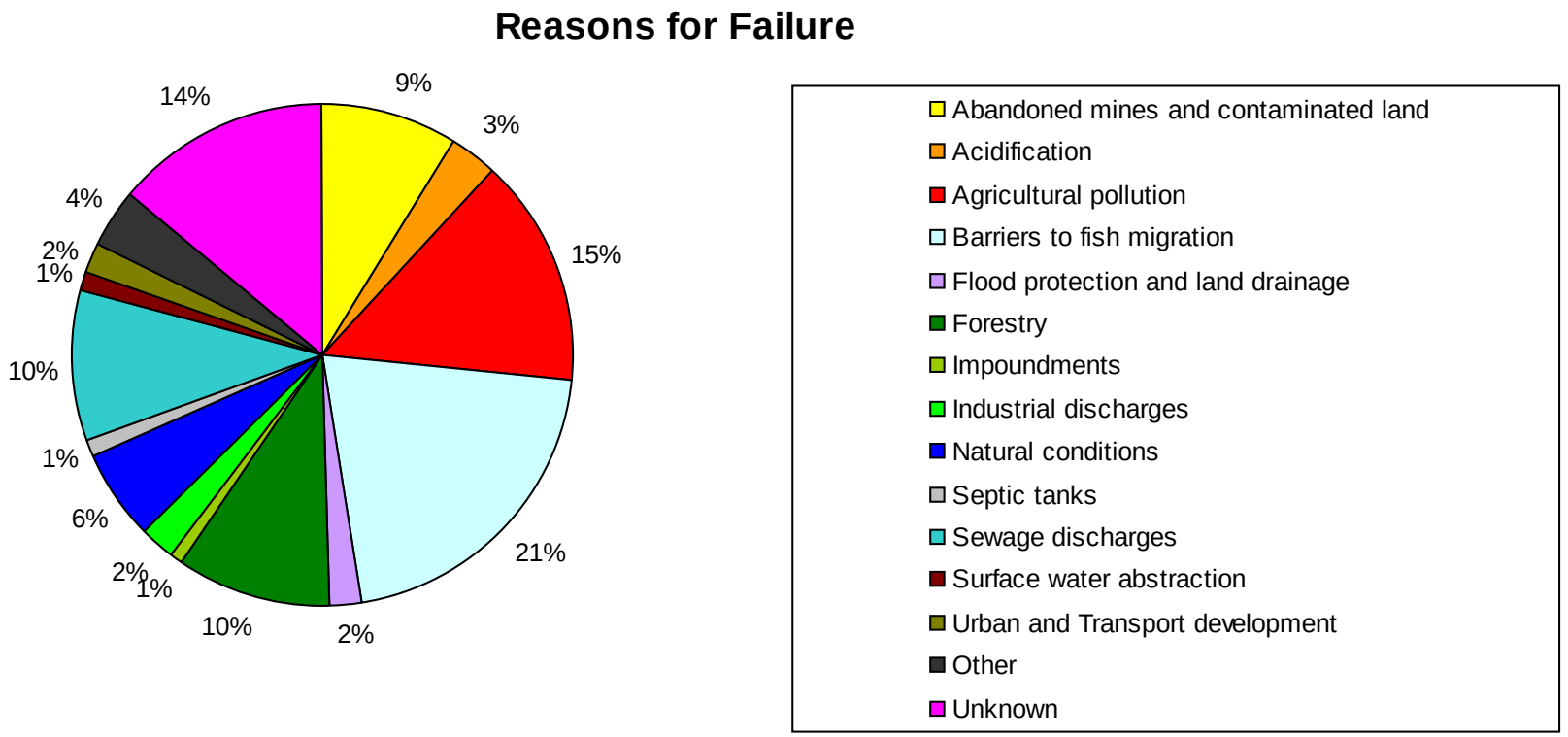
Drinking Water - areas designated for the abstraction of water for human consumption

Freshwater Fish and **Shellfish Waters** - areas designated for the protection of economically significant aquatic species

Nitrates and **Urban Waste Water** - nutrient-sensitive areas, including areas identified as Nitrate Vulnerable Zones under the Nitrates Directive or areas designated as sensitive under the Urban Waste Water Treatment Directive (UWWTD)

Habitats & Species and Wild Birds - areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection, including relevant Natura 2000 sites

Water Framework Directive: Reasons for Failure for Water Bodies in Carmarthenshire



Reasons for failure chart and table

This pie chart shows confirmed or suspected reasons for water bodies in the Planning Authority that are failing to meet WFD objectives. It includes all water body types.

This data represents a snapshot of the current understanding of the reasons for failure data at the time of collation (early 2013). We are continuing to collect and record reasons for failure as part of our ongoing programme of investigations. Further collations of reasons for failure will be made annually.

Natural conditions – this category includes water bodies failing due to ecological recovery time, natural low flows and natural mineralisation.

Notes:

- The chart does not show the number of water bodies failing for particular reasons. It shows the number of times each reason for failure has been identified.
- There can be more than one reason for failure for each water body.
- This data is to be viewed as indicative only as it is based on variable amounts and quality of evidence.
- Not all water bodies have been assessed.

This graph was produced using the 2013 RFF data.

Water Framework Directive: Reasons for Failure for Water Bodies in Carmarthenshire

We have used all our reasons for failure information to identify the main issues impacting our water environment.

Some failures may be caused by issues upstream (e.g. over-abstraction or regulation of flow) or downstream (e.g. a weir or dam will prevent migration of fish). These issues occur across catchments and water bodies. In many cases water bodies fail for more than one reason.

Many different co-deliverers need to take action, including land managers, farms and businesses, water companies, the third sector, local communities, planners and public bodies. Where possible, existing mechanisms and measures will be used to engage and deliver sustainable improvements.

Public Authorities are required to deliver their WFD duties and embed the objectives of RBMPs within their strategies and programmes.

The main reasons for failure that Planning Authorities in general can and should address have been identified:

- Artificial barriers to fish migration
- Abandoned mines & contaminated land
- Sewage discharges
- Flood protection & land drainage
- Urban & transport development

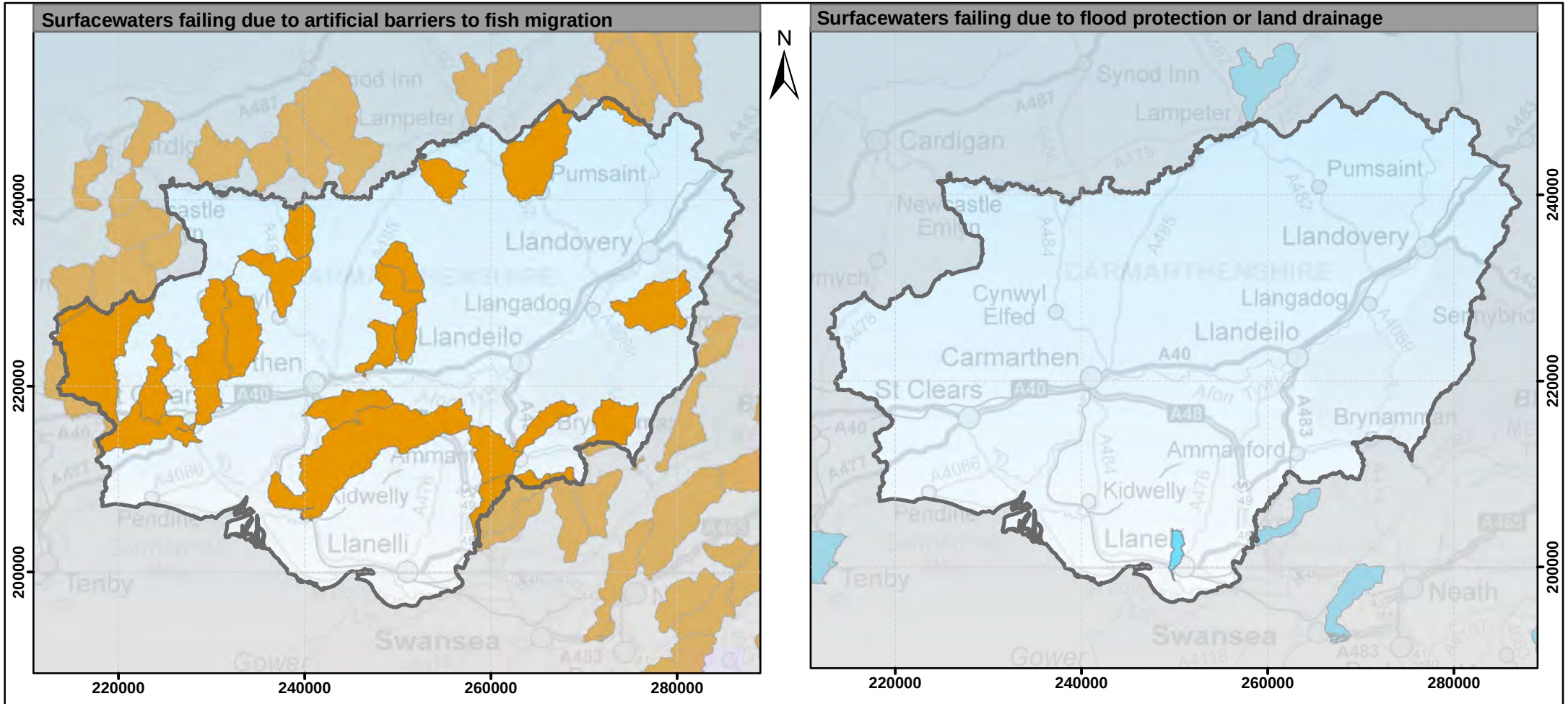
The river catchments where these issues are present in this Planning Authority are shown in the following 6 maps.

All reasons for failure identified in this Planning Authority

The table below shows all of the reasons for failure that have been identified for water bodies in the Planning Authority. (This is the same data as the pie chart on the previous page.)

More information on the reasons for failure is available from your Natural Resources Wales Planning contacts.

Reason for Failure	Number of times reason for failure identified
Abandoned mines and contaminated land	14
Acidification	4
Agricultural pollution	24
Barriers to fish migration	32
Flood protection and land drainage	3
Forestry	15
Impoundments	2
Industrial discharges	3
Natural conditions	9
Septic tanks	1
Sewage discharges	16
Surface water abstraction	2
Urban and Transport development	3
Other	6
Unknown	22



Water Framework Directive Reasons for Failure

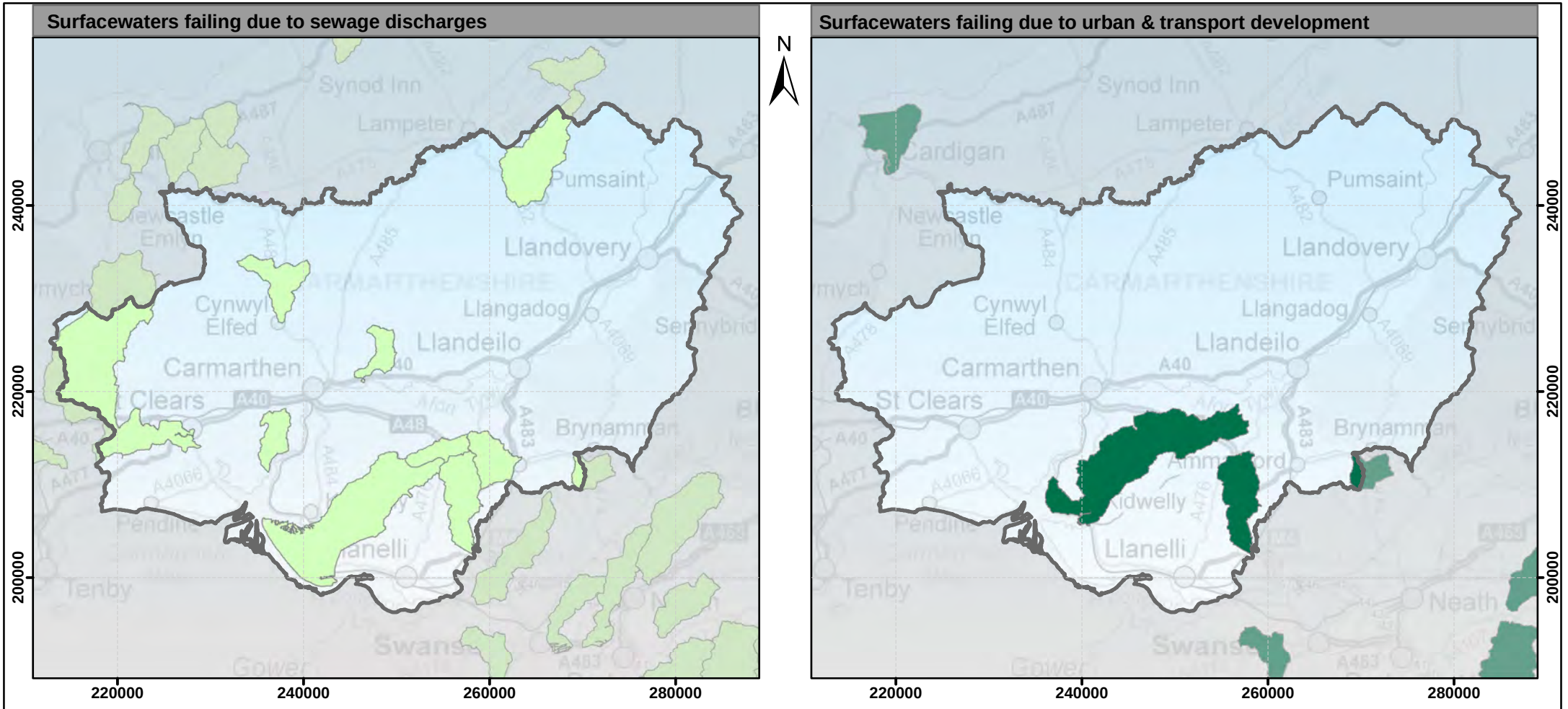
Barriers to Fish Migration and Flood Protection or Land Drainage

Legend

- Flood Protection or Land Drainage
- Barriers to Fish Migration
- Planning Authority Boundary

Cyfoeth Naturiol Cymru
Natural Resources Wales

9 4.5 0 9 km



Water Framework Directive Reasons for Failure

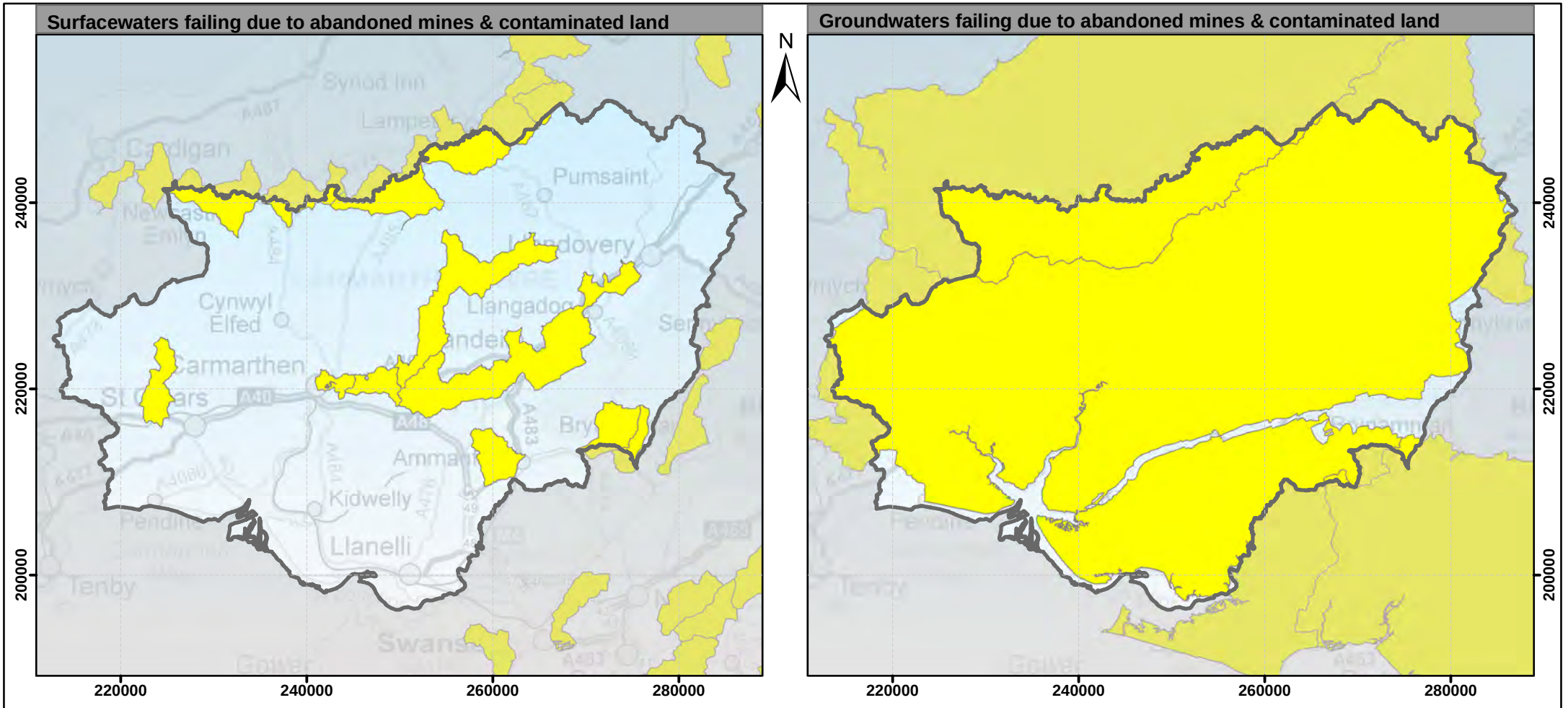
Sewage Discharges and Urban & Transport Development

Legend

- Urban & Transport Development
- Sewage Discharge
- Planning Authority Boundary

Cyfoeth Naturiol Cymru
Natural Resources Wales

9 4.5 0 9 km



Water Framework Directive Reasons for Failure

Abandoned Mines and Contaminated Land

Legend

- Abandoned mines & contaminated land
- Planning Authority Boundary

Cyfoeth Naturiol Cymru Natural Resources Wales

9 4.5 0 9 km

What can Local Authorities do?

Barriers to fish migration

- ensure that planning applications that include impoundment, such as Hydroelectric Power Schemes, do not adversely affect water bodies' WFD status

Abandoned mines & contaminated land

- ensure that risks posed to groundwaters from land contamination are mitigated and remediation is put in place where necessary

Sewage Discharges

- work with householders and businesses, along with Natural Resources Wales and water companies, to address misconnections
- work with developers, sewerage undertakers and Natural Resources Wales when developing their Local Development Plans (LDPs) to ensure sufficient sewage capacity exists both for current and future needs
- work with Natural Resources Wales to ensure any planning permissions granted help to deliver the required water quality
- work with water companies and Natural Resources Wales to implement long term planning that accounts for sewerage and development pressures

Flood protection & land drainage

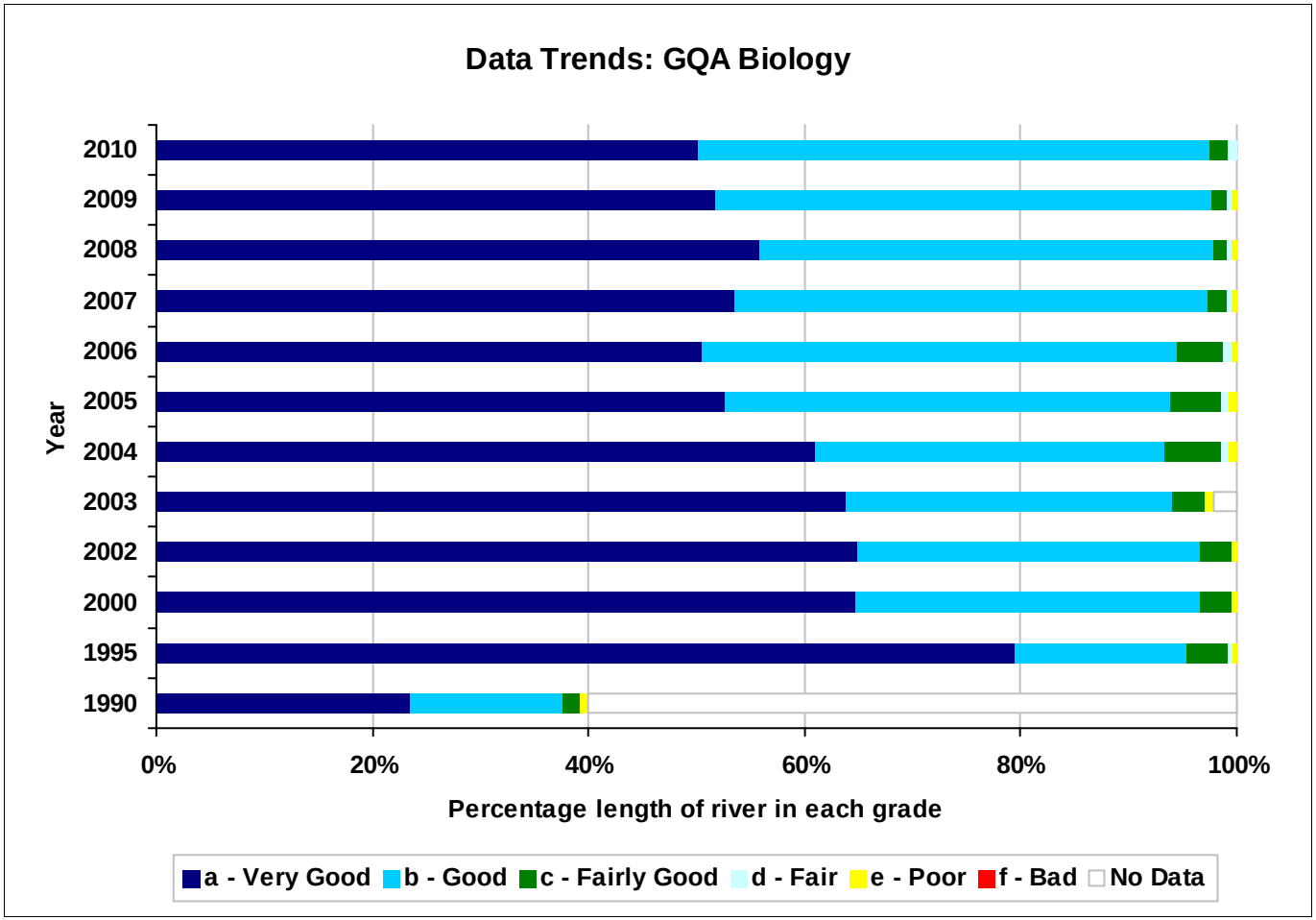
- ensure, along with developers and Natural Resources Wales, that existing and proposed flood protection structures and operations incorporate the required mitigation
- work with Natural Resources Wales to ensure new development is located outside of flood plains
- ensure, along with Natural Resources Wales and land owners, that managed realignment of flood defences delivers environmental improvements where appropriate (e.g. saltmarsh and wetland creation)
- Future SuDS (Sustainable Drainage Systems) Approval Bodies ensure new SuDS deliver solutions for the management of surface water quality and quantity

Urban & transport development

- work with Natural Resources Wales, local communities and the third sector to identify opportunities to restore urban rivers, such as removal of redundant weirs and reinstating riparian habitat and trees
- work with Natural Resources Wales, local communities and water companies to address diffuse pollution and misconnection issues
- ensure that planning decisions take regard of the River Basin Management Plans and support the delivery of environmental improvements.

We will publish an advice note on the Water Framework for Local Authorities in Wales later this year. This will help Local Authorities to have a better understanding of their roles and responsibilities and the actions they can take to contribute to WFD objectives.

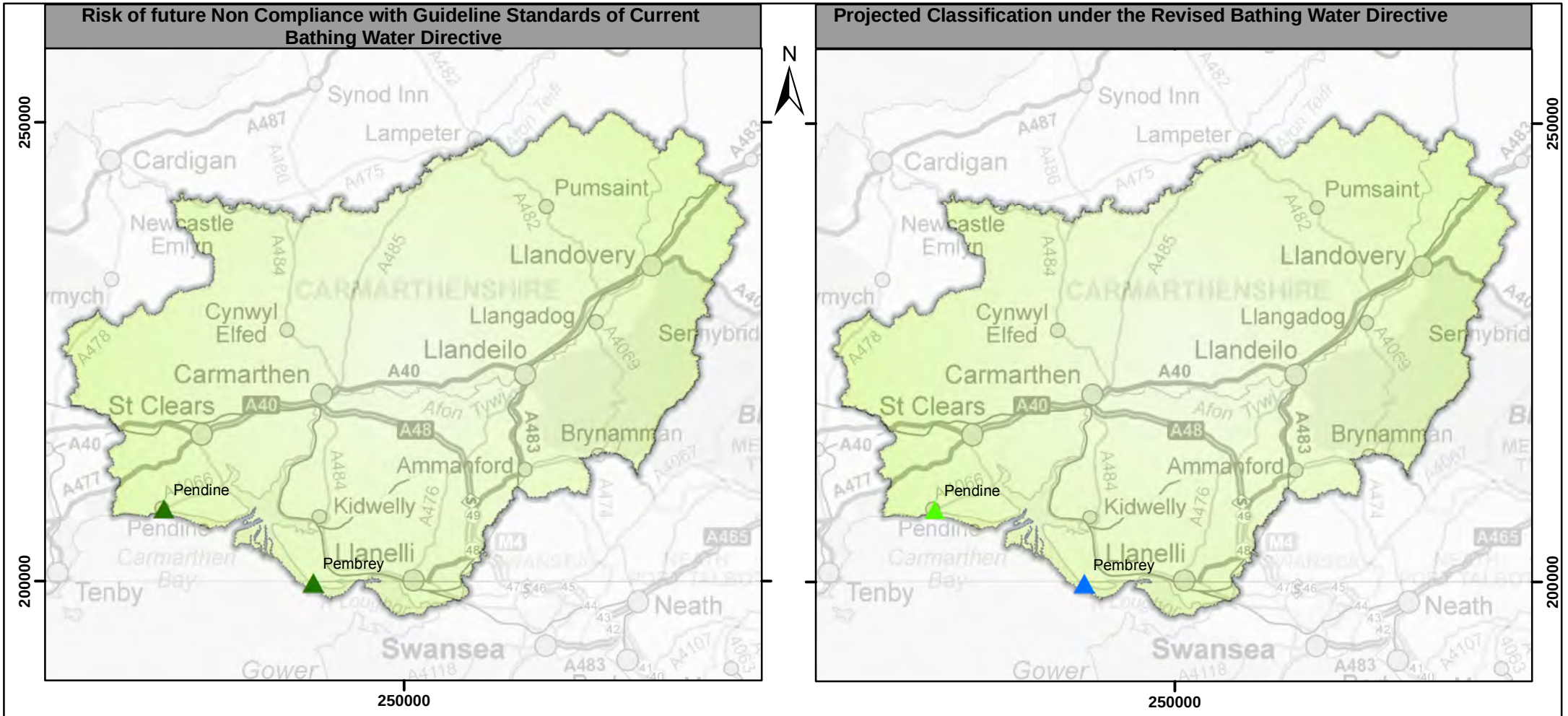
GQA Biology Trends in Carmarthenshire



The General Quality Assessment (GQA) scheme was our previous scheme for assessing water quality. GQA has now been superceded by the Water Framework Directive. 2010 was the last year that GQA was reported.

GQA biology historical trends are shown here for reference. This graph shows the percentage length of the classified river network achieving each GQA grade for biology.

Each bar represents 100% of the classified river and canal network for a year. This bar is divided into bands according to the proportion of the length of the network achieving each grade. The bands are stacked from left to right from Grade a (very good) to f (bad) and then No Data (un-graded). A length of river will be un-graded for biology if the channel is unsuitable for the sampling techniques. The un-graded sections will include canals and drainage ditches as well as the deeper, lower sections of some rivers.



Designated Bathing Waters

2012 Data

Legend

% Risk of Future Non Compliance with G Standard

- 0 - 20%
- 21 - 30%
- 31 - 40%
- 41 - 50%
- 51 - 60%
- 61 - 100%

Local Authority

Projected Classification under the Revised Bathing Water Directive

- Excellent
- Good
- Sufficient
- Poor
- Not classified

Cyfoeth Naturiol Cymru Natural Resources Wales

9 4.5 0 9 Km

Bathing Waters: Water Quality

The map on the left on the previous page shows the future risk of non compliance with the Guideline standards of the current bathing water directive for designated bathing waters, predicted using the 2008 to 2012 dataset.

The map on the right shows the projected classification of designated bathing waters under the revised Bathing Water Directive, based on 2009 to 2012 dataset.

Changes to the EU Bathing Water Directive

The **current Bathing Water directive** (cBWD) specifies a range of water quality standards that should be achieved in designated bathing waters. These standards fall into two categories: mandatory and guideline (G) standards. Compliance with the guideline standards is not mandatory but the directive states that member states should "endeavour" to observe them as guidelines.

The **revised Bathing Water Directive** (rBWD) entered into European Law in March 2006 and was translated into UK Bathing Water regulations in April 2008. The new features of the revised directive will take longer to come into effect. The revised directive should be fully in operation by 2015.

The rBWD makes changes to the monitoring and classification of bathing waters, the management of bathing water quality and the provision of data to the public. The rBWD requires close co-ordination with, and complements the Water Framework Directive.

Bathing water classifications will be based on 4 years of data. There will be 4 classes - EXCELLENT, GOOD, SUFFICIENT and POOR - and stricter microbiological standards.

EXCELLENT	– approximately twice as stringent as the current guideline standard
GOOD	– similar to the current guideline standard
SUFFICIENT	– tighter than the current mandatory standard
POOR	– non-compliant

An objective is set in the directive for all bathing waters to achieve SUFFICIENT status by 2015.

Beach Awards

Until 2013, Guideline water quality was a requirement for **Blue Flag and Green Coast beach awards**. 2012 was the last year that both Blue Flags and Green Coast Award were awarded according to the standards of the current Bathing Water Directive. From 2013 the water quality criteria for these awards is the Excellent classification of the revised Bathing Water Directive.

More information about bathing waters can be found in the Wales Bathing Waters Report

http://environment-agency.gov.uk/static/documents/EAW_WSR_December_2012.pdf

and on the Welsh Government website

http://wales.gov.uk/topics/environmentcountryside/epq/waterflooding/bathingwater/

and the Natural Resources Wales website

http://naturalresourceswales.gov.uk/out-and-about/enjoy-the-outdoors-/bathing-water-quality/

Bathing Waters: Risk of Non-compliance

Risk of non-compliance with Guideline standards

At the end of each Bathing season a percentage risk of non-compliance is calculated for each bathing water.

Compliance in one particular year is an unreliable indication of trends. Variation in compliance from year to year is expected and does not necessarily indicate genuine improvement or deterioration, owing to the statistical limitations of using such a small data set. There will always be some beaches that change their status as a result of marginal failures or passes. The rBWD goes some way to mitigating these effects as classifications are based on four years of sampling data rather than just one.

Actions that Local Authorities can take

- Evaluate the impact that poor bathing water quality may have on your local economy.
- Work with your water companies and Natural Resources Wales to explore options to improve bathing water quality.
- Work with your local community to gain support and commitment. This can include tourism businesses, local farmers, local groups and charities.
- If your bathing waters are predicted to be good or excellent, consider how to improve and maintain this status.

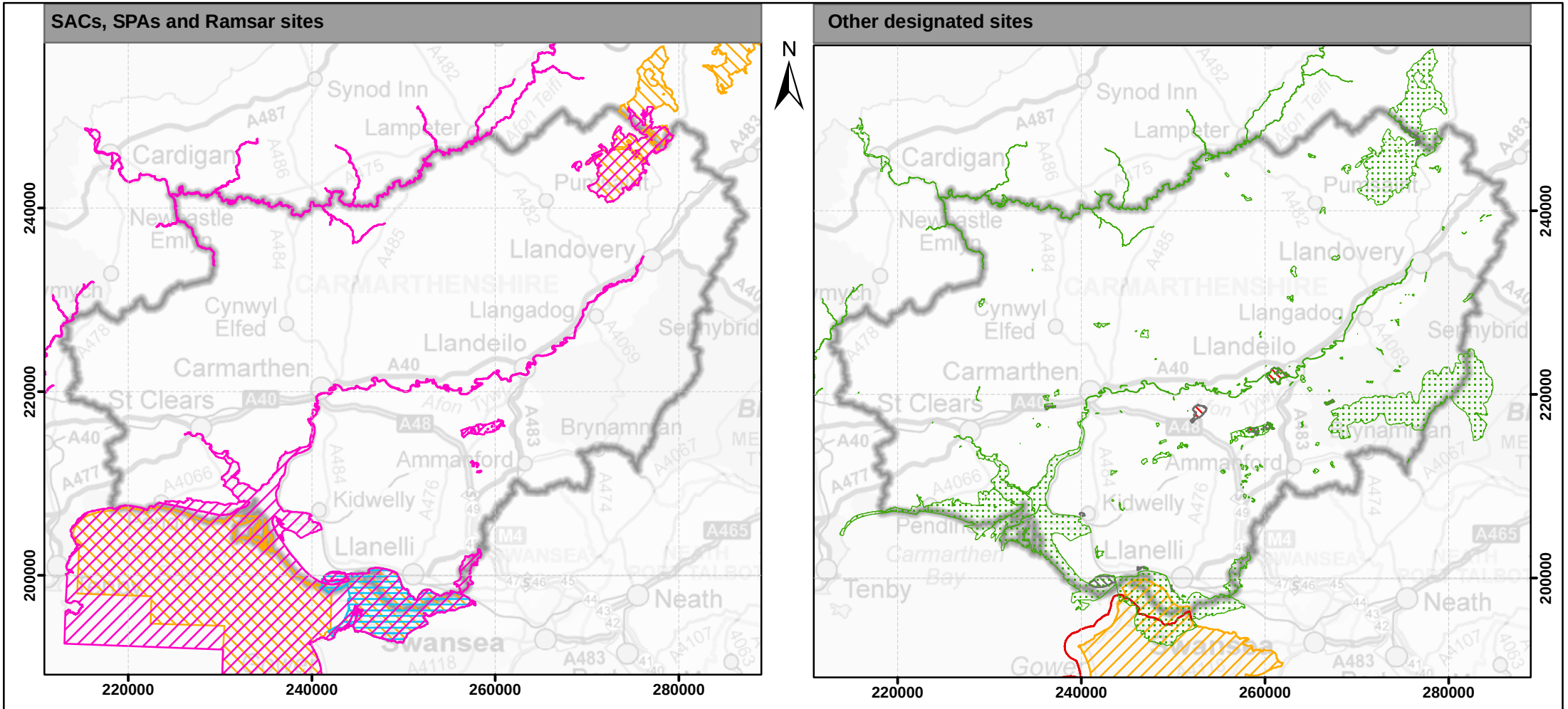
The percentage risk of non-compliance can be interpreted as follows:

%age Risk of Non-Compliance	Predicted Compliance
< 10	Would be expected to achieve G compliance 9 out of 10 bathing seasons on average
10-20	Would be expected to achieve G compliance 8 out of 10 bathing seasons on average

The above should be considered as the relatively consistent G compliance achievers and will include the bathing waters which achieve Blue Flags generally year on year.

21-50	Would be expected to achieve G compliance 5 to 7 times out of 10 bathing seasons. Could reasonably be expected to improve with investment and other measures to achieve consistent G compliance
> 50	Would be expected to achieve G compliance < 5 times out of 10 bathing seasons. None or only occasional G compliance achieved.

More information about bathing waters, including bathing water profiles and water quality data, is available on the Environment Agency Bathing Water Data Explorer http://environment.data.gov.uk/bwq/explorer/



Protected Sites

Cyfoeth Naturiol Cymru
Natural Resources Wales

6 3 0 6
km

Legend

SACs, SPAs and Ramsar sites

- Special Protection Area (SPA)
- Special Areas of Conservation (SAC)
- Ramsar sites
- Planning Authority Boundary

Other Designated Sites

- Heritage Coast
- Sites of Special Scientific Interest (SSSI)
- Areas of Outstanding Natural Beauty
- National Nature Reserves (NNR)
- Marine Nature Reserves (MNR)
- Local Nature Reserves (LNR)
- Biosphere Reserves
- Biogenetic Reserves

Designated Protected Sites

Special Protection Areas (SPAs)

The EC Birds Directive of 1979 requires member states to establish Special Protection Areas to conserve the habitats of two categories of birds: species which are rare or vulnerable, of which there are forty-eight in the UK; and some migratory species which visit our shores regularly.

Special Areas of Conservation (SACs)

SACs are designated under the EC Habitats Directive. They help to maintain the variety of wildlife by protecting vulnerable habitats and the plants and animals that they support.

Ramsar Sites

These are sites identified under the Ramsar Convention on Wetlands of International Importance. These wetlands are of key importance to the survival of many wetland plants and animals. They are vital for many types of birds particularly waterfowl. Wetland sites can be areas of marsh, fen, peatland or open water; natural or artificial; permanent or temporary; with water that is fresh, brackish or salty. They can also include shallow areas of sea.

Heritage Coast

Heritage Coasts are stretches of outstanding, unspoilt coastline. They occupy about 500 km of the Welsh coastline. They were set up to protect our coastlines from insensitive developments. Their status carries no legal protection, but planning authorities must take the designation into account when making decisions on development. Management of Heritage Coasts is the remit of the local authority.

Sites of Special Scientific Interest (SSSIs)

SSSIs are the cornerstone of wildlife and habitat protection in Wales and are backed by law. There are more than 1,000 of them. An SSSI may be made on any area of land which is considered to be of special interest by virtue of its fauna, flora, geological or physiographical / geomorphological features. SSSIs in Wales cover a wide range of habitats from small fens, bogs and riverside meadows to sand dunes, woodlands and vast tracks of uplands. Local planning authorities are required to consult with Natural Resources Wales before allowing any development to proceed that may affect an SSSI.

Areas of Outstanding Natural Beauty (AONBs)

Areas of Outstanding Natural Beauty (AONB's) are designated under national legislation in recognition of the outstanding qualities of their 'natural beauty'. The primary purpose of designation is to secure the conservation and enhancement of their 'natural beauty' which includes protecting flora, fauna, and geological as well as landscape features. The Countryside and Rights of Way Act 2000 requires all relevant authorities to have regard to the purpose of conserving and enhancing the natural beauty of AONBs when performing their functions.

National Nature Reserves (NNRs)

National Nature Reserves represent the very best examples of our wildlife, habitats and geological features. Most NNRs are also SSSI.

Marine Nature Reserves (MNRs)

Marine Nature Reserves are a way of conserving important marine habitats and wildlife, and other features along the shore or on the seabed. Skomer is currently the only MNR in Wales.

Local Nature Reserves (LNRs)

Local Nature Reserves are established and managed by local authorities. LNRs have natural features of special interest to the local area. LNR are useful not only to protect habitats and wildlife but increase people's awareness of their environment. They are often situated in or near urban areas.

Biosphere Reserves

Biosphere Reserves are designated by UNESCO. Each reserve is part of a world-wide chain of permanently protected areas dedicated to studying the way human activity affects the local environment. Wales has one biosphere reserve.

Biogenetic Reserves

Biogenetic reserves are part of a European network of reserves that aims to conserve plants, animals and natural areas that may be common in one country, but scarce in another by protecting the store of genetic material for the future. Sites have to be SSSIs or similar. Wales has one biogenetic reserve.

Landscape, Open Access Land and Protected Species and Habitats data

Designated protected sites

Further data and information about protected sites is available from The Countryside Council for Wales website www.ccw.gov.uk

Protected species data

Data and information about protected species is available from your Natural Resources Wales planning contact and from the following links:

The Countryside Council for Wales website www.ccw.gov.uk

The National Biodiversity Network Gateway http://data.nbn.org.uk/

The Local Records Centres Wales website www.lrcwales.org.uk

South East Wales Biodiversity Records Centre (SEWBReC) http://www.sewbrec.org.uk/

West Wales Biodiversity Information Centre (WWBIC) http://www.wwbic.org.uk/

Biodiversity Information Service for Powys and Brecon Beacons National Park (BIS) http://www.b-i-s.org/index.php

Cofnod, North Wales Environmental Information Service http://www.cofnod.org.uk/About

LANDMAP is an interactive map showing landscape characteristics and qualities and influences on the landscape in Wales. It includes five datasets: Geological Landscape; Landscape Habitats; Visual & Sensory; Historic Landscape and Cultural Landscape. Using the five datasets of information together promotes sustainable landscape decision-making. LANDMAP is the formally adopted methodology for landscape assessment in Wales and informs planning related uses and landscape baseline conditions at both local and landscape scale. It provides a useful starting point for the assessment of cultural services. It is regularly updated and therefore forms a useful baseline against which to monitor long-term change.

The LANDMAP website

http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/landmap.aspx

GIS downloads

http://www.ccw.gov.uk/interactive-maps/gis-download-welcome/gis-boundary-downloads.aspx

Register of Landscapes of Historic Interest in Wales

This is a non-statutory register that has been compiled by the Countryside Council for Wales, Cadw and the International Council for Monuments and Sites (ICOMOS). It is a good source of information about landscape history, and it can be used to help assess the impact of development proposals on the historic landscape. Planning Policy Wales states that local planning authorities should take the Register into account in preparing their development plans. Further information and an interactive map:

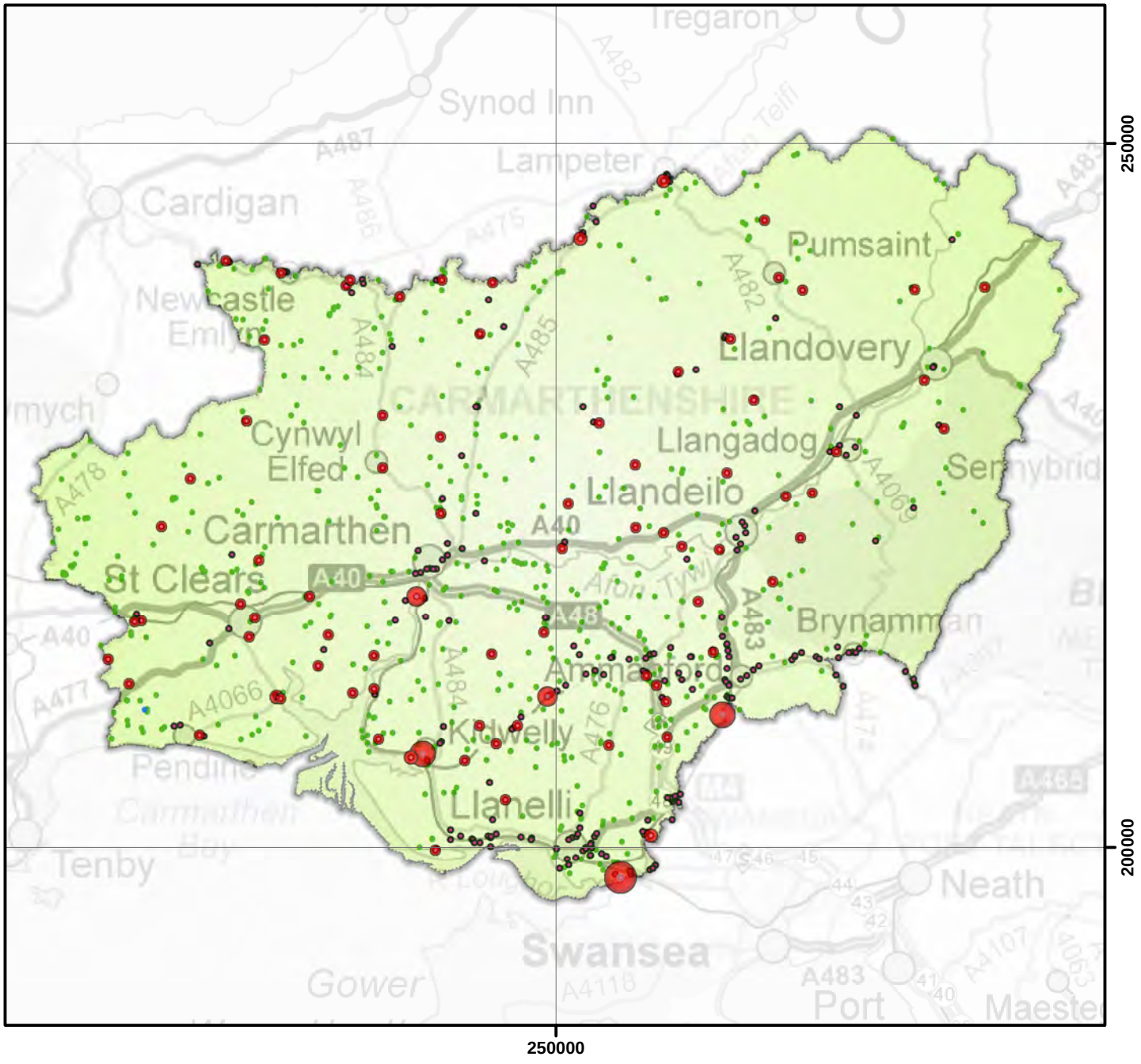
http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/historic-landscapes.aspx

Open Access Land

Open access land in Wales is identified under the Countryside and Rights of Way Act (CROW). About 20% of Wales is mapped as 'access land' where the public have a right of access on foot.

Access land is mostly open country; mountain, moor, heath and downland. It also includes 'registered common land' (land that is recorded on the official registers held by the commons registration authorities) and areas of 'dedicated public forests' where owners such as Natural Resources Wales allow free access.

To implement the CRoW Act, the Countryside Council for Wales produced accurate maps of all open access land. These maps are currently under review. Provisional maps are available at http://www.ccw.gov.uk/enjoying-the-country/open-access-land/open-access-maps.aspx. Final maps will be published in September 2014.



Permitted Discharges to Controlled Waters

Legend

Welsh Water Discharges

Dry Weather Flow (m3/day)

- 0 - 1000
- 1000 - 4000
- 4000 - 8000
- 8000 - 18000
- 18000 - 44000
- 44000 - 310000
- Welsh Water no DWF

Other Discharges

- Active
- Not yet effective
- Local Authority Boundary

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0 4.5 9 18 Km

Permitted Discharges to Controlled Waters and Permitted Industrial Sites in Carmarthenshire

Environmental Permits

The Environmental Permitting (England and Wales) Regulations 2010, introduced in April 2010, have produced a single regulatory framework by streamlining and integrating:

Waste Management Licensing

Pollution Prevention and Control

Water Discharge Consenting

Groundwater Authorisations

Radioactive Substances Regulation

These activities will now all have Environmental Permits (EPR permits)

Permitted Discharges to Controlled waters

Natural Resources Wales has a wide range of responsibilities under legislation to protect and improve the water environment. As part of these responsibilities we actively monitor the quality of watercourses and groundwaters.

Controlled waters include inland freshwaters, groundwaters, tidal waters and coastal waters up to 3 nautical miles out to sea.

Natural Resources Wales now regulates discharges to controlled waters using Environmental Permits. The permit allows the holder to discharge into controlled waters. The permit details the conditions under which the discharge can be made, including the amounts and concentrations of specific pollutants the operator can release into controlled waters.

The Permitted Discharges to Controlled Waters map on the previous page shows locations of all current discharge consents. Dwr Cymru Welsh Water (DCWW) consents to discharge are symbolised according to the consented dry weather flow (DWF).This can be taken as an indication of the size of the discharge.

Permitted Industrial Sites

The following map and table show the location of permitted industrial sites in the planning authority.

Natural Resources Wales uses environmental permits to control emissions from industrial processes that have the potential to pollute. These permits set limits to control the level of pollutants that can be released to air, land or water from a particular site, and may require the site operator to carry out processes in accordance with stated conditions.

Permitted processes can include; complex process industries (chemical or cement works and power stations), sewage treatment works, waste management facilities (landfill sites and incinerators) and industries that use radioactive material.

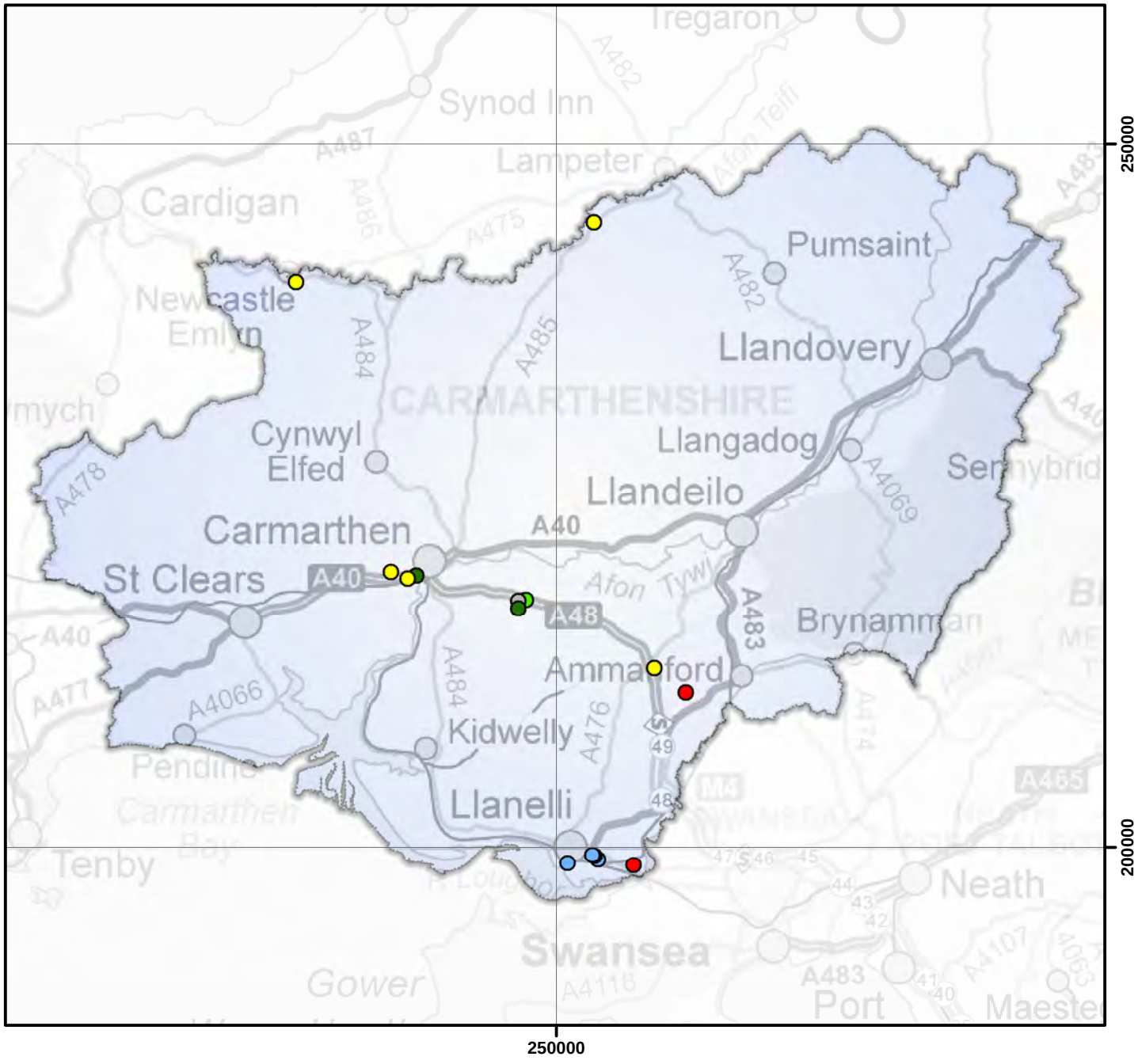
Part 2 of Schedule 1 of the Environmental Permitting Regulations separates the permitted sectors into Part A(1), Part A(2) or Part B activities.

Part A(1) activities are regulated by the Natural Resources Wales.

Part A(2) and Part B activities are regulated by local authorities.

Further information on the Natural Resources Wales website:

http://naturalresourceswales.gov.uk/apply-buy-report/apply-buy-grid/installations/



Permitted Industrial Sites

Legend

Industrial sites

- Other activity

Activity

- Agriculture
- Cement & Minerals
- Chemicals
- Combustion
- Energy from Waste
- Food & Drink
- Landfill
- Metals
- Paper, Pulp & Textiles
- Refineries
- Waste Storage
- Local Authority Boundary

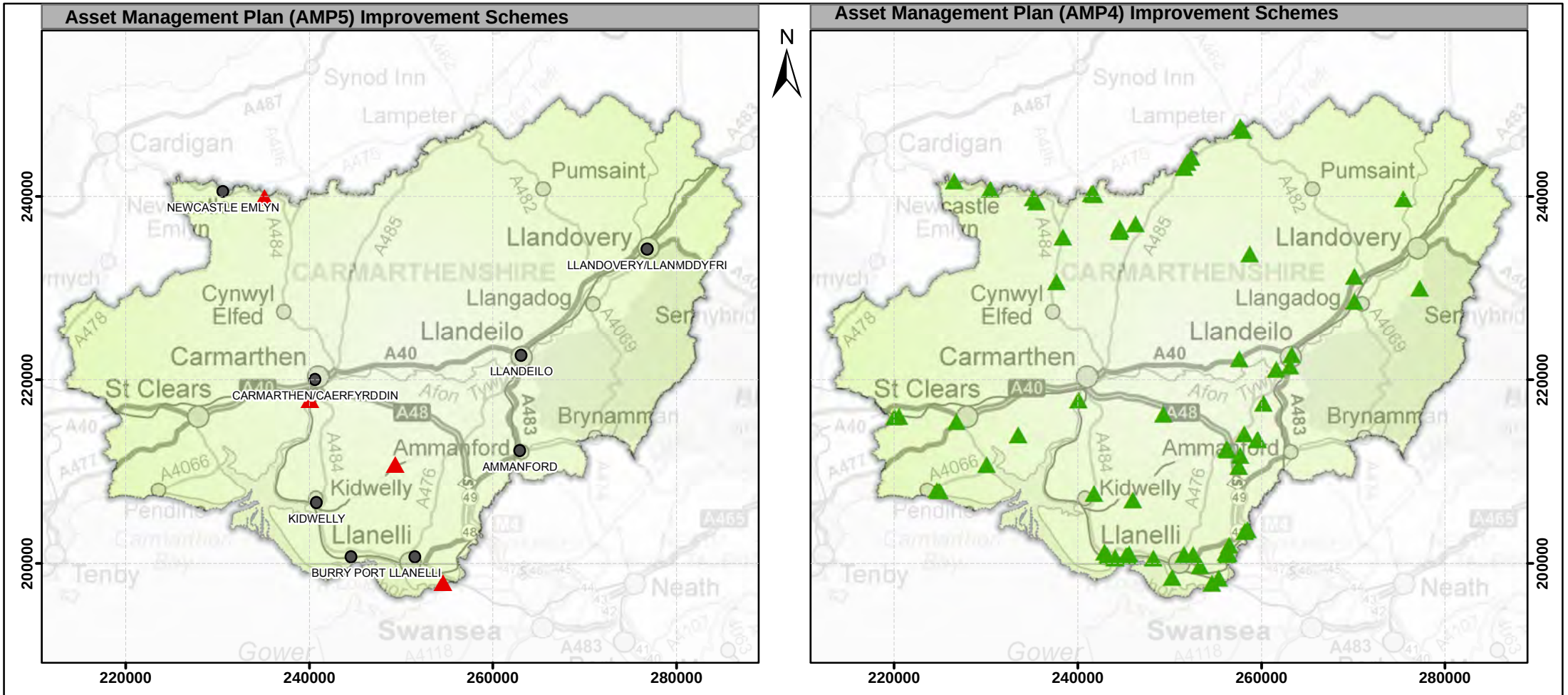
Cyfoeth Naturiol Cymru Natural Resources Wales

7 3.5 0 7 Km

Permitted Industrial Sites

Original Permit No.	Site Name	Operator	Address	National Grid Reference	Activity
BU8002IT	CROSS HANDS ANIMAL RAW MATERIAL	Dawn Meats UK	CROSS HANDS BUSINESS PARK,CROSS HANDS,LLANELLI,LLANELLI,SA14 6RB	SN56971273	Food & Drink
JP3439SZ	Corus Trostre Boiler House	Veolia Water Industrial Outsourcing Limited	Corus Packaging Plus,Trostre Works,Llanelli,SA14 9SD	SS52969915	Metals
YP3937SH	Amex Park	Mekatek Ltd	Amex Park,Llanstephan Road,Johnstown,Carmarthen,SA31 3NF	SN40061931	Waste Storage
BM2381IQ	LLANELLI TIN RECOVERY WORKS	AMG Resources Ltd	NEVILL'S DOCK,LLANELLI,LLANELLI,SA15 2HD	SS50809890	Metals
BV4223IE	Llanelli Plant	Huntsman Corporation UK Ltd	LLANELLI PLANT,BYNEA,LLANELLI,LLANELLI,SA14 9TE	SS55489877	Chemicals
BV9667IV	BOCM Pauls - Carmarthen	BOCM Pauls Ltd	ALLTYCNAP ROAD,JOHNSTOWN,CARMARTHEN,CARMARTHEN,SA31 3RD	SN39451909	Food & Drink
BV9683IH	Teify Park	Dunbia (Wales) Ltd	Teify Park,LLANYBYDDER,SA40 9QE	SN52684441	Food & Drink
BX7142ID	AMMANFORD BIODIESEL	Sundance Renewables (Sustainable Energy Co-Operative) Ltd	EXCAL LIMITED,EXCAL HOUSE,CAPEL HENDRE INDUSTRIAL ESTATE,AMMANFORD,AMMANFORD,SA18 3SJ	SN59211101	Chemicals
BX9471IU	TROSTRE TIN	Tata Steel UK Limited	Corus UK Ltd,Trostre Works,Llanelli,SA14 9SD	SS52739939	Metals
CP3735PB	Nantycaws Landfill Site	CWM Environmental Limited	Nantycaws Landfill Site,Llanddarog Road,Nantycaws,Carmarthen,SA32 8BG	SN47861758	Landfill
EP3034GS	Llysonnen Mill	Wynnstay Group PLC	Llysonnen Mill,Travellers Rest,CARMARTHEN,SA31 3SG	SN38291958	Food & Drink

Original Permit No.	Site Name	Operator	Address	National Grid Reference	Activity
FP3434UB	The Creamery Aberarad	Saputo Cheese (UK) Ltd	The Creamery,Aberarad,Newcastle Emlyn,SA38 9DQ	SN31534016	Food & Drink
FP3730ZM	Tin Anode Plant	Tata Steel UK Limited	Tata Steel,Trostre Works,Llanelli,SA14 9SD	SS52569946	Metals
LP3038SU	Nantycaws Generation Plant	Novera Energy Generation No.2 Limited	Nantycaws Landfill Site,Llanddarog Road,Nantycaws,CARMARTHEN,SA32 8BG	SN47301750	Other
PP3338CQ	Nant-y-caws Landfill Site (Phase 1 Effluent Treatment Plant)	WEBS Limited	Nant-y-caws Landfill Site (Phase 1 Effluent Treatment Plant),Llanddarog Road,CARMARTHEN,SA32 8BG	SN47311696	Waste Storage



Dwr Cymru Welsh Water Asset Management Plans

AMP4 (2005-2010) and AMP5 (2010-2015)

(completion status as at end March 2013)

Legend

AMP5 Schemes

Completed

- Y
- N
- Towns

AMP4 Schemes

Completed

- Y
- N
- Local Authority

Cyfoeth Naturiol Cymru Natural Resources Wales

9 4.5 0 9 Km

AMP4 Improvement Schemes, 2005-2010

Scheme/Discharge Name	Drivers	Completed
MYDDFAI VILLAGE SEWERAGE SCHEM	Urban Waste Water Treatment Directive	Y
PENDINE STW	Groundwater	Y
COOMBE CHESHIRE HOME STW, ST. CLEARS, DYFED	Groundwater	Y
LLANSADWRN SPS	Urban Waste Water Treatment Directive	Y
SWO. BURRY PORT AREA - INTO OL	Urban Waste Water Treatment Directive	Y
CSO AT SN596 135 IN BLAENAU & PENYGROES CATCHMENT	Urban Waste Water Treatment Directive	Y
SAWMILLS R.BANK STORM SWO A	Urban Waste Water Treatment Directive	Y
280m D/S RD. BDGE. AT HENDY	Urban Waste Water Treatment Directive	Y
GRAIGWEN TENBY RD P.S.	Urban Waste Water Treatment Directive	Y
WOGAN MEWS CSO, LAUGHARNE, CARMS	Urban Waste Water Treatment Directive	Y
LLANBYTHER (MANHOLE 7)EMERGEN	Urban Waste Water Treatment Directive	Y
NEW ROAD (REAR OF NO. 1) CSO,	Urban Waste Water Treatment Directive	Y
ALBION P.S.	Urban Waste Water Treatment Directive	Y
WHITLAND P.S.	Urban Waste Water Treatment Directive	Y
100M D/S RD.BDGE.CWMGWILI(SWO	Urban Waste Water Treatment Directive	Y
250m D/S GLAN-YR-AFON BDGE. L'	Urban Waste Water Treatment Directive	Y
ABERGORLECH STW	Urban Waste Water Treatment Directive	Y
PRIMARY SCHOOL, FFAIRFACH	Urban Waste Water Treatment Directive	Y
WHITLAND STW	River Quality Objectives	Y
ADPAR/NEWCASTLE EMLYN STW (DCWW)	Freshwater Fish Directive, Urban Waste Water Treatment Directive	Y
BROAD OAK STW	River Quality Objectives	Y

Scheme/Discharge Name	Drivers	Completed
CARMEL STW	River Quality Objectives	Y
CARWAY STW	River Quality Objectives	Y
CENARTH STW (GLANYRAFON)	Urban Waste Water Treatment Directive	Y
CILYCWM VILLAGE STW	River Quality Objectives, Urban Waste Water Treatment Directive	Y
CWMDUAD STW	River Quality Objectives	Y
WHITLAND STW	Urban Waste Water Treatment Directive	Y
LLANYBYTHER STW	Freshwater Fish Directive, Urban Waste Water Treatment Directive	Y
LLANDYSUL STW	Urban Waste Water Treatment Directive	Y
NEW LLANELLI STW STORM TANKS D	Bathing Waters, Urban Waste Water Treatment Directive	Y
SWO.NR. ST.ILLTYD'S CHURCH, PE	Bathing Waters, Urban Waste Water Treatment Directive	Y
CSO. NORTHUMBERLAND OUTFALL	Bathing Waters Directive, Shellfish Waters Directive, Urban Waste Water Treatment Directive	Y
PWLL SEWAGE WORKS	Bathing Waters Directive, Shellfish Waters Directive, Urban Waste Water Treatment Directive	Y
CAERBRYN RD., BETWEEN FOOTBRID	Urban Waste Water Treatment Directive	Y
PONTWELLI, 5M D/S LLANDYSSUL B	Urban Waste Water Treatment Directive	Y
5m D/S EMERGENCE FROM CULVERT	Urban Waste Water Treatment Directive	Y
FFAIRFACH STW	Freshwater Fish Directive, Urban Waste Water Treatment Directive	Y
ORIEL JONES, CEREDIGION ABERDUAR, LLANBYDDER	Urban Waste Water Treatment Directive	Y
TY HEN RHOS P.S	Urban Waste Water Treatment Directive	Y
MH45001803-CHURCH ROAD BURRY PORT	Urban Waste Water Treatment Directive	Y
GARREG PS STORM - MYNYDD-Y-GARREG	Urban Waste Water Treatment Directive	Y
SSO AT LLANGENNECH PS	Urban Waste Water Treatment Directive	Y

Scheme/Discharge Name	Drivers	Completed
PENDINE STW STORM	Groundwater	Y
CARM ASHBURNHAM SPS CSO BURRY PORT	Urban Waste Water Treatment Directive	Y
270m D/S RD. BDGE. HENDY	Urban Waste Water Treatment Directive	Y
CERED SWO, MART AREA, STATION TERRACE,LAMPETER	Urban Waste Water Treatment Directive	Y
OUTSIDE BYNEA P STN	Urban Waste Water Treatment Directive	Y
THREE RIVERS FEASIBILITY STUDY AND OPTIONS DEV'T	Shellfish Waters Directive	Y
CHURCH ROAD CSO, CRYNANT	Urban Waste Water Treatment Directive	Y
66 TYLE TEG, LLANELLI	Urban Waste Water Treatment Directive	Y
PENCADER EMERGENCY OVERFLOW NO1	Urban Waste Water Treatment Directive	Y
PENDINE STW	Groundwaters	Y
PENDINE STW STORM	Groundwaters	Y
Pencader Emergency Overflow No2	Urban Waste Water Treatment Directive	Y
LLANGAIN SPS NO. 1	Urban Waste Water Treatment Directive	Y
DREFACH VELINDRE - STORM	Urban Waste Water Treatment Directive	Y
AT JUNC. OF ACCESS TRACK TO CR	Urban Waste Water Treatment Directive	Y
CROSSHANDS DIVERTER STN 20m D/	Urban Waste Water Treatment Directive	Y
DREFACH/VELINDRE SEWAGE SCHEME	Urban Waste Water Treatment Directive	Y
REAR OF TRIO ENGINEERING LLANG	Urban Waste Water Treatment Directive	Y
SWO. YNYS TOMENLLE HENDY AREA	Urban Waste Water Treatment Directive	Y
LLANGENNECH P.S. SSO	Urban Waste Water Treatment Directive	Y
PEN-Y-GROES P.S.,GATE ROAD	Urban Waste Water Treatment Directive	Y
PENCADER STW - STORM	Urban Waste Water Treatment Directive	Y
MH 44000602-HEOL VAUGHAN, BURRY PORT	Urban Waste Water Treatment Directive	Y

Scheme/Discharge Name	Drivers	Completed
43 HEOL HEN ROAD	Urban Waste Water Treatment Directive	Y
HAVARD ROAD / POSSIBLE CSO BEL	Urban Waste Water Treatment Directive	Y
LLANDDAROG P.S - EMERGENCY OVERFLOW	Urban Waste Water Treatment Directive	Y
PENCADER STW - STORM	Urban Waste Water Treatment Directive	Y
52 TYLE TEG	Urban Waste Water Treatment Directive	Y
HEOL GOFFA ROAD	Urban Waste Water Treatment Directive	Y
CHAMBER U/S of BYNEA P STN	Urban Waste Water Treatment Directive	Y
ADPAR/NEWCASTLE EMLYN STW (DCWW)	Freshwater Fish Directive, Urban Waste Water Treatment Directive	Y
CWMANN PS OVERFLOW LAMPETER	Urban Waste Water Treatment Directive	Y

Completed status is as of end March 2013

AMP5 Improvement Schemes, 2010-2015

Scheme/Discharge Name	Drivers	Water Body Type	Water Body Name	Completed
Pontyberem STW	Habitats Directive Improvements	River	Gwendraeth Fawr - Afon Goch to tidal limit	N
Parc y Splotts STW	Habitats Directive Improvements	Transitional	Tywi, Cywyn & Gwendraeth	N
Llanelli STW	Habitats Directive Improvements	Transitional	Loughor	N
Drefach Stw	Discharge Flow Limit Increase	River	Bargod - headwaters to confluence with Teifi	N

Completed status is as of end March 2013

AMP4 Programme for 2005-10 and AMP5 Programme for 2010-2015

Ofwat are the economic regulator for the water industry. Their main role is to seek value for money for water industry customers. Natural Resources Wales, along with the Drinking Water Inspectorate, are responsible for the environmental regulation of the water industry in Wales.

Ofwat sets the price limits that water companies can charge their customers for the supply of water and the treatment of waste water for the following five years. This happens every 5 years and is known as a Periodic Review. In November 2009, following price review PR09, Ofwat set the prices that water companies will charge their customers between 2010 and 2015.

The Periodic Review also determines how much investment water companies can spend on maintaining and improving their services. As part of the price review the water companies, working with Natural Resources Wales, the Drinking Water Inspectorate and other interested stakeholders, develop a programme of environmental and water quality improvements to be delivered in the next 5 years. The resulting investment programme is known as an Asset Management Plan or AMP and includes the National Environment Programme that has been drawn up by Natural Resources Wales.

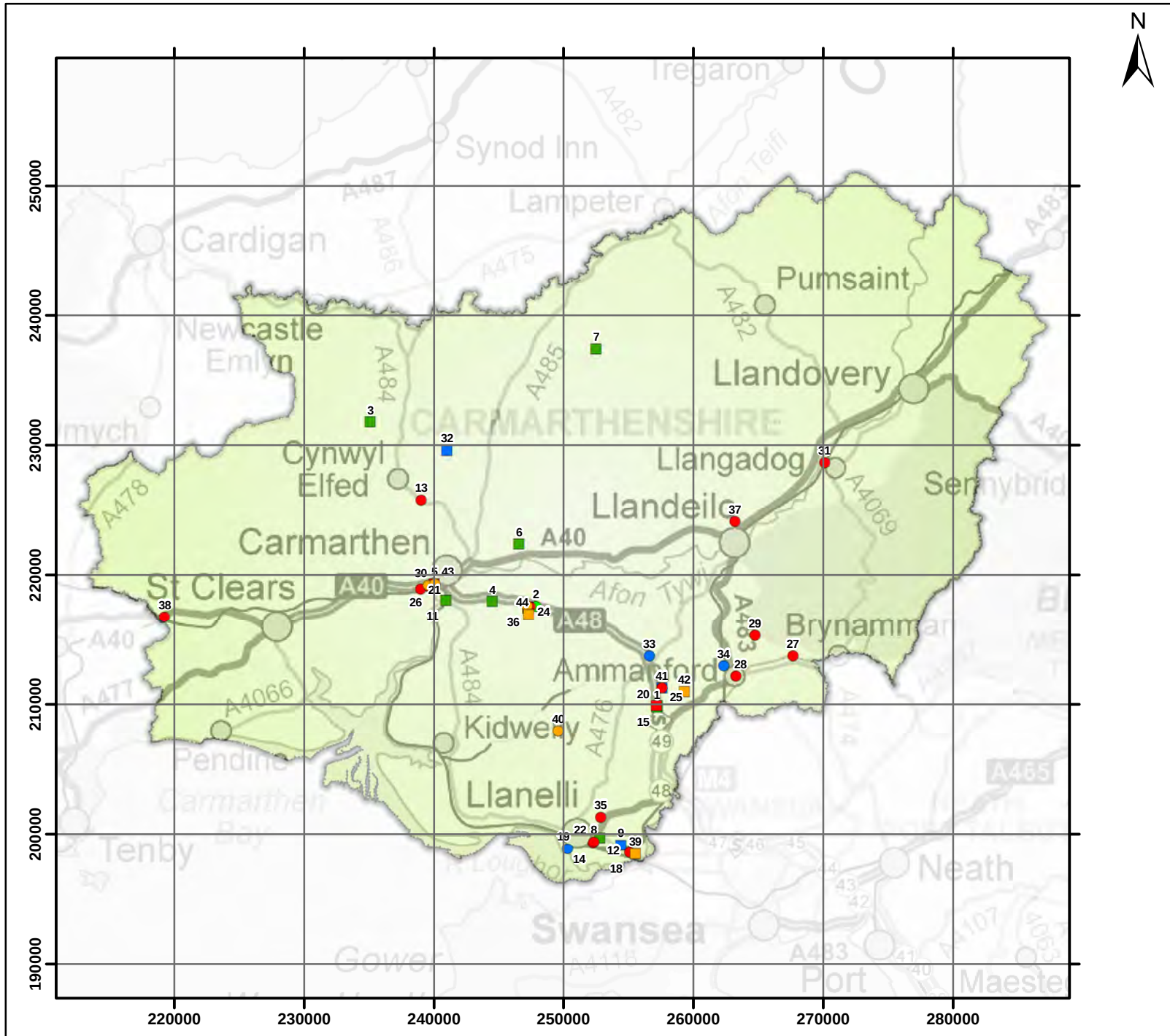
The current AMP, AMP5, runs from 2010 to 2015. The previous programme, AMP4, ran from 2005 to 2010.

The Asset Management Plan (AMP4) Improvement Schemes map on the previous page shows assets owned by Dŵr Cymru which were identified for improvement during AMP4 (2005-2010). It also shows which schemes have been completed. The Asset Management Plan (AMP5) Improvement Scheme map shows assets owned by Dŵr Cymru which were identified for improvement during AMP5 (2010-2015). It also shows which schemes have been completed.

Links to further information:

Dwr Cymru/Welsh Water website www.dwrcymru.co.uk

Ofwat website www.ofwat.gov.uk



Permitted Waste Management Sites

Legend

Permitted Waste Management Sites

- Closed Landfill, Inactive in 2011
- Closed Landfill, Active in 2011
- Landfill, Inactive in 2011
- Landfill, Active in 2011
- Metal Recovery, Inactive in 2011
- Metal Recovery, Active in 2011
- Transfer, Inactive in 2011
- Transfer, Active in 2011
- Treatment, Inactive in 2011
- Treatment, Active in 2011
- Use of Waste, Inactive in 2011
- Use of Waste, Active in 2011
- Other, Inactive in 2011
- Other, Active in 2011
- Local Authority Boundary

Numeric labels reference features shown in the table following.

Cyfoeth Naturiol Cymru Natural Resources Wales

0 2.5 5 10 Km

Permitted Waste Management Sites

Label No.	Permit No.	Site Name	Category	Active in 2011?
1	34401	Ty Isaf Landfill	Landfill	
2	CP3735PB	Nantycaws Landfill Site	Landfill	Y
3	34043	Waunlwyd Farm	Closed Landfill	
4	34044	Penycoed Landfill	Closed Landfill	
5	34045	Mekatek Ltd	Transfer	
6	34046	White Mill Quarry	Closed Landfill	
7	34053	Pets At Rest	Closed Landfill	
8	34058	Trostre Civic Amenity Site	Transfer	Y
9	34065	Rees Metals	Metal Recovery	
10	34073	J & A Metals	Metal Recovery	
11	34080	Pibwrlwyd Inert Landfill	Closed Landfill	
12	34091	Land Off Trostre Link Road	Closed Landfill	
13	34093	Rock & Fountain Quarry	Transfer	Y
14	34103	Troste Depot	Transfer	Y
15	34114	New Lodge Farm Inert Landfill	Closed Landfill	
16	34138	Nantycaws Landfill Phase 1	Closed Landfill	
17	34143	Nantycaws Waste Storage And Treatment Facility	Transfer	
18	34156	Skip Solutions Ltd	Transfer	Y
19	34158	Neville's Dock	Metal Recovery	Y
20	34179	New Lodge Farm Transfer Station	Transfer	
21	34181	Transfer Station	Transfer	Y
22	34182	Trostre Civic Amenity / Transfer Station	Transfer	Y
23	34199	Carmarthenshire Environmental Resource Trust Ltd	Treatment	Y
24	34207	Nantycaws Transfer Station	Transfer	Y
25	34211	J & A Metals Recycling Centre	Transfer	Y

Label No.	Permit No.	Site Name	Category	Active in 2011?
26	34214	Cillefwr Depot	Transfer	Y
27	34215	Cwmamman Depot	Transfer	Y
28	34216	Biodegradeable Waste Transfer Station	Transfer	Y
29	34217	Wernddu Civic Amenity And Transfer Station	Transfer	Y
30	34218	Transfer Station / Recycling Centre	Treatment	Y
31	34220	Old Sawmills Waste Transfer Station With Treatment	Transfer	Y
32	34236	Glannant Garage	Metal Recovery	
33	34241	Pen Y Banc Yard	Metal Recovery	Y
34	34244	Ammanford Metal Recycling	Metal Recovery	Y
35	34255	Dyfed Recycling Services	Transfer	Y
36	34278	C E R T Compost Facility No 2	Treatment	Y
37	34284	Non-hazardous Waste Transfer Station	Transfer	Y
38	34299	Whitland Recycling Centre & Civic Amenity Site	Transfer	Y
39	101057	Dura Recycling	Treatment	
40	101837	Carway Fawr Site Office	Treatment	Y
41	102703	Pendragon Waste & Skip Hire	Transfer	Y
42	103565	Natural U K Ltd Healthcare Managment Facility	Treatment	
43	YP3937SH	Amex Park	Treatment	Y
44	PP3338CQ	Nant-y-caws Landfill Site (Phase 1 Effluent Treatment Plant)	Treatment	

Waste Management Sites

Waste Management Sites

Waste Management Licensing was one of the regulatory systems used to regulate the waste management industry. We now regulate waste and other industries under one system, Environmental Permitting Regulations. Operations that previously had a Waste Management Licence (WML) will now have an Environmental Permit.

The Permitted Waste Management Sites map shows the locations of permitted waste management sites as in November 2012. These sites have a current permit for waste management activities, but may not be currently accepting waste. Those waste management sites that received waste during 2011 have been shown as active.

Sources of Waste Management Data and Information

Waste Data Interrogator and Reporting Tool

The Waste Data Interrogator contains details of all waste deposited and removed from permitted waste facilities in England and Wales for a given year, including hazardous waste, but not waste from exempted facilities such as land spreading or exempt scrap yards. This tool is primarily designed to provide data for waste planners and waste management professionals for undertaking strategic waste management assessments and general waste flow analysis.

Hazardous Waste Interrogator

The Hazardous Waste Interrogator 2011 lets you view and analyse detailed information from our hazardous waste database. You can find data on the different types and quantities of waste produced, where it is produced and deposited, and how it is disposed of and recovered in England and Wales.

The Waste Data Interrogator and the Hazardous Waste Interrogator may be downloaded from our DataShare website.

There is an annual summary of the types and quantities of waste handled by permitted waste management facilities in Wales on the Environment Agency website.

Other waste data and information

The **Landfill Allowances Scheme** (Wales) Regulations 2004 (The LAS regulations) came into force in Wales on 1 October 2004, to reduce the amount of biodegradable municipal waste going to landfill sites. Landfilling biodegradable municipal waste, for example food, paper, and garden waste, can contribute to environmental problems such as leachate production - liquid that drains or 'leaches' from a landfill. It also releases methane, a potent greenhouse gas, which can contribute to climate change.

Wales waste data information 2011

http://www.environment-agency.gov.uk/research/library/data/142825.aspx

Details of how to get the interrogators and an explanation of where the waste data comes from

http://www.environment-agency.gov.uk/research/library/data/142777.aspx

Further information about the Landfill Allowances scheme

http://naturalresourceswales.gov.uk/our-work/policy-advice-guidance/waste-Policy/landfill-allowance-scheme/

Report on the Landfill Allowances Scheme (LAS) Wales 2012-13

http://naturalresourceswales.gov.uk/content/docs/pdfs/our-work/Policy-advice-and-guidance/87161/landfill-allowances-2012-13

Data and information about **fly-tipping** is available on the Welsh Government website

http://wales.gov.uk/topics/statistics/headlines/environment2012/120816/

Waste: Remaining Landfill Capacity and Landfill Inputs

Landfill Directive site classification

The implementation of the Landfill Directive introduced many new requirements. Under the Directive, landfills were classified into three main types: Hazardous waste; Non-hazardous waste and Inert waste.

Some non-hazardous landfills can also have a separate hazardous waste cell for Stable Non Reactive Hazardous Wastes (SNRHW), e.g. asbestos and gypsum. This cell is usually a very small part of the overall site. There is only one of these in Wales.

There are also detailed restrictions on the waste (i.e. Waste Acceptance Criteria) that each class of landfill can take.

Landfill Inputs

A total of 2.2 million tonnes of waste was landfilled in Wales in 2011. This is a 4% reduction compared to the 2.3 million tonnes of waste sent to landfill during 2010. The total tonnage of waste landfilled in Wales has fallen by 51% since 2001.

65% of the waste that was landfilled in 2011 was HIC (Household, Industrial & Commercial) waste, 35% was inert/C&D (Construction & Demolition) waste and approximately 130 tonnes (<0.001%) was hazardous waste (consisting of mainly ashes and slags from power stations and metal manufacture).

Landfill Capacity

There was 35.1 million cubic metres of remaining capacity at permitted landfill sites in Wales at the end of 2011. This would provide nearly 10 years of landfill life for non-hazardous waste at 2011 rates of disposal.

Overall capacity decreased by 7 per cent compared to 2010. No additional landfill capacity was created this year.

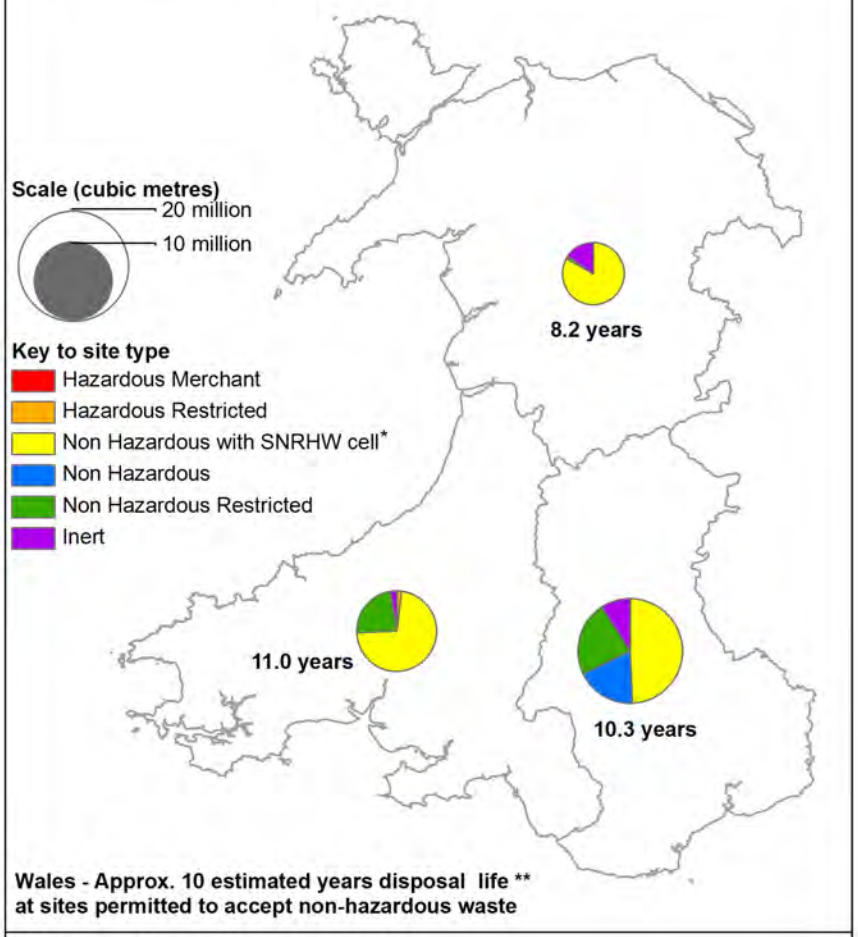
At the end of 2011:

- 8 per cent of capacity was at inert sites
- 72 per cent of capacity was at non-hazardous sites
- 20 per cent of capacity was at restricted user sites (non hazardous and hazardous).

Wales Waste Information 2011

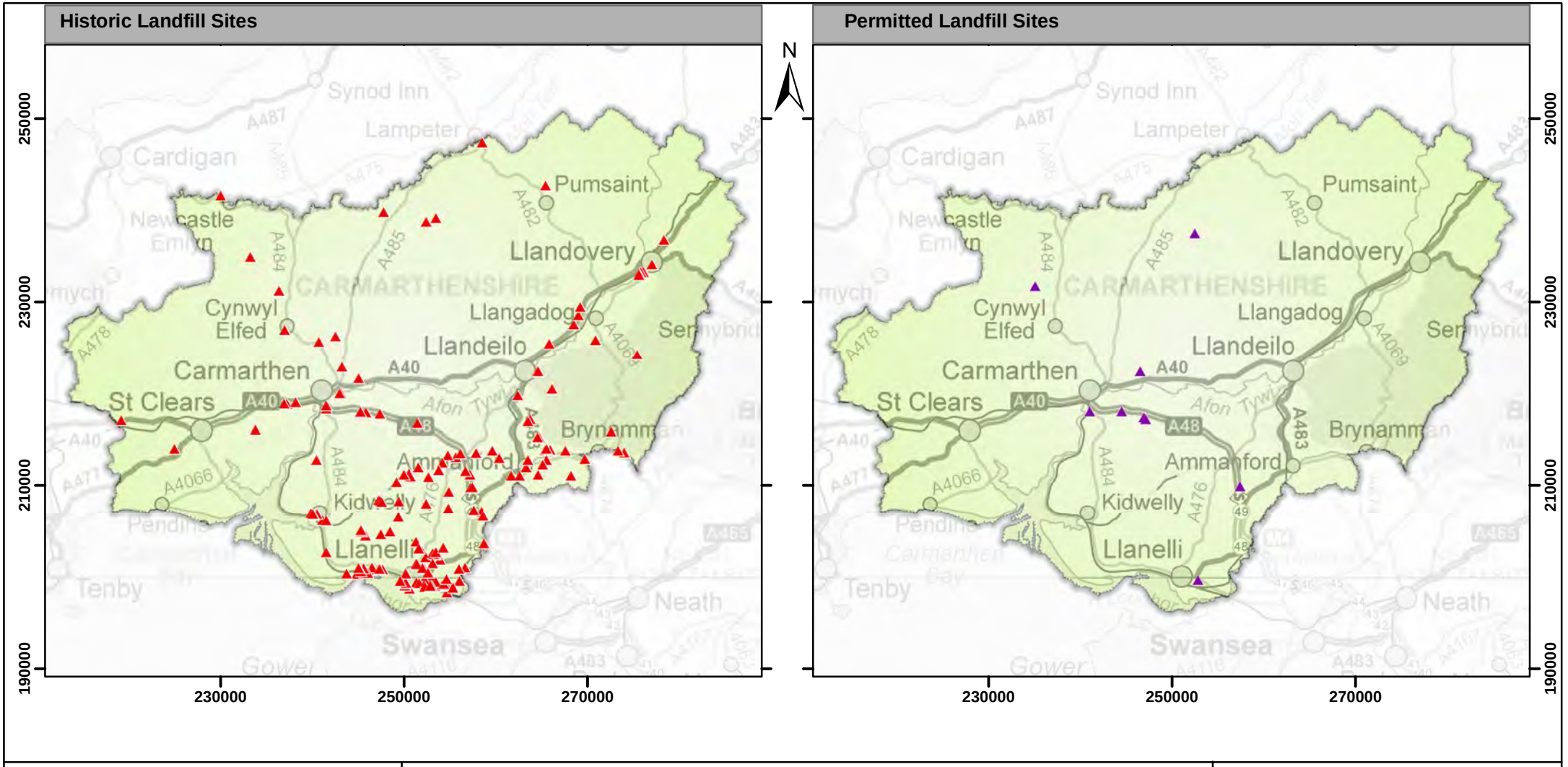
http://www.environment-agency.gov.uk/research/library/data/142825.aspx

Wales: remaining landfill capacity by region and site type, showing life expectancy 2011 data



* Stable Non Reactive Hazardous Waste

** Estimate is indication only based on dividing regional capacity (void) at non-hazardous landfill sites by site inputs for 2011; for estimation purposes waste density is assumed to be 1.2 tonnes per m^3, engineering and cover are assumed to consume an average of 25% total void space



Historic and Currently Permitted Landfill Sites

Legend

- Historic Landfill Sites
- Local Authority Boundary
- Permitted Landfill Sites
- Local Authority Boundary

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Natural Resources Wales

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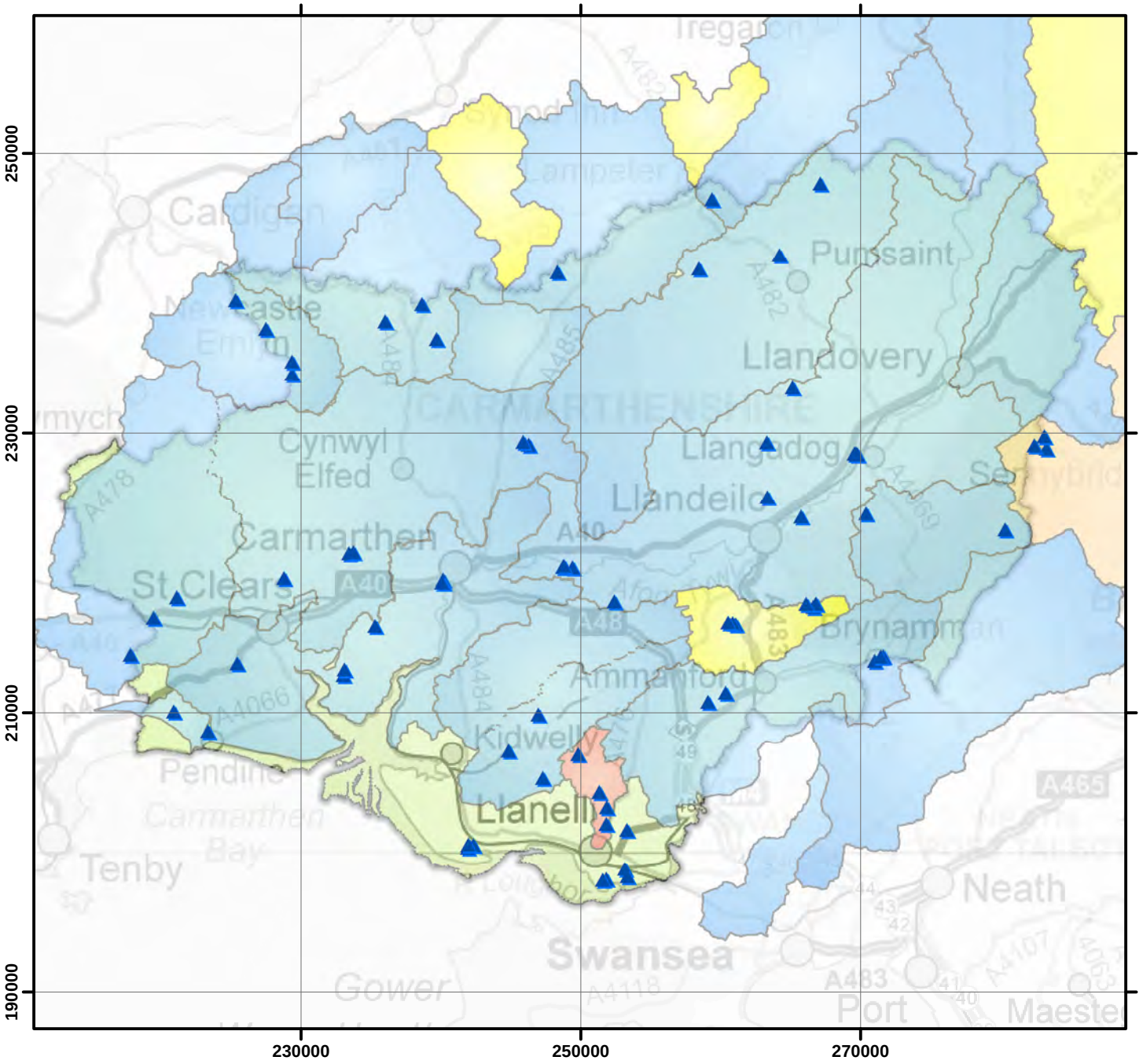
Km

Waste Management: Historic and Permitted Landfills

Historic Landfill sites	Permitted Landfill Sites
This map shows the location of historic landfills known to Natural Resources Wales. Historic landfill sites are locations where there are records of waste being received to be buried but the site is now closed or covered. These landfills do not have a current permit. The information held has been collated from data held by Local Authorities, the former Department of the Environment, British Geological Survey and Environment Agency suspended authorised landfill licences. When landfills regulated by Natural Resources Wales are no longer permitted, they are added to the historic landfill database.	This map shows the location of all operational landfills. Operational landfills are sites with a current permit that are still accepting waste, or are no longer accepting waste but still being actively managed.



CAMS Resource Availability Status

December 2008

Legend

- Active Abstraction Licenses

Resource Availability Status

- No Water Available
- Over Abstracted
- Over Licensed
- Water Available
- Assessment not complete
- Not Assessed
- Not included in LA

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7 3.5 0 7 Km

Water Resources

Natural Resources Wales is responsible for managing water resources in Wales. One of the ways that this is done is through licensing water abstraction. We developed Catchment Abstraction Management Strategies (CAMS):

- to inform the public on water resources and licensing practice
- to provide a consistent approach to local water resources management
- to help to balance the needs of water users and the environment

CAMS are 6 year plans detailing how water resources in an area will be managed.

CAMS relevant to Carmarthenshire are:
Cleddau and Pembrokeshire Costal Rivers, Swansea Bay, Teifi and North Ceredigion, Carmarthen Bay and the Gower, Usk, Wye

Catchment Abstraction Management Strategies (CAMS) have been produced 'to provide a framework for resource availability assessment and produce a licensing strategy which aids the sustainable management of water resources on a catchment scale.'

The current CAMS documents for Wales can be found here:

Catchment Abstraction Management Plans - Wales http://www.environment-agency.gov.uk/business/topics/water/119933.aspx

A new approach to CAMS has been developed to align with the Water Framework Directive (WFD) process. The implementation of the WFD requires further assessments of the water environment that were previously not part of CAMS. Also, the role of CAMS in licensing abstraction and managing time-limiting licences needs to be strengthened. By moving CAMS away from a cyclic review and into the day to day business, in particular its role in managing time-limited licences, we have made the process more flexible. This is important in the light of uncertainties such as climate change.

In June 2010 we published *Managing Water Abstraction* which sets out the national approach and regulatory framework within which we will manage water resources. http://www.environment-agency.gov.uk/business/topics/water/119927.aspx

Catchment Abstraction Management Strategies (CAMS)

Catchment Abstraction Management Strategies (CAMS): resource availability status

For all CAMS Areas classified as **'water available'**. (blue)

- Additional water is likely to be available for abstraction even at low flows.
- Larger volumes of water may be available at higher flows or for non-consumptive purposes.
- All new licences will be subject to restrictions that protect the environment and existing water users.
- All licence applications will be assessed on a case by case basis
- Existing Abstraction Licences – There will be no impact on existing abstractors unless their abstraction is causing an adverse impact on a designated site. Action may be needed under the Habitats Directive Review of Consents.

For all CAMS Areas classified as **'no water available'**. (yellow)

- No additional water is available for abstraction at low flows.
- Water may be available at high flows or for non-consumptive purposes.
- All new licences will be subject to restrictions that protect the environment and existing water users.
- All licence applications will be assessed on a case by case basis
- Existing Abstraction Licences – There will be no impact on existing abstractors unless their abstraction is causing an adverse impact on a designated site. Action may be needed under the Habitats Directive Review of Consents.

For all CAMS Areas classified as **'over licensed'**. (orange)

- Most abstractors do not abstract their full licence quantity. If existing licences used their full allocation, they would have the potential to cause unacceptable environmental impact at low flows.
- New licences will only be granted if water is available at higher flows.
- All licence applications will be assessed on a case by case basis.
- Existing Abstraction licences - there will be no impact on existing abstractors unless their abstraction is causing an adverse impact on a designated site. Action may be needed under the Habitats Directive Review of Consents

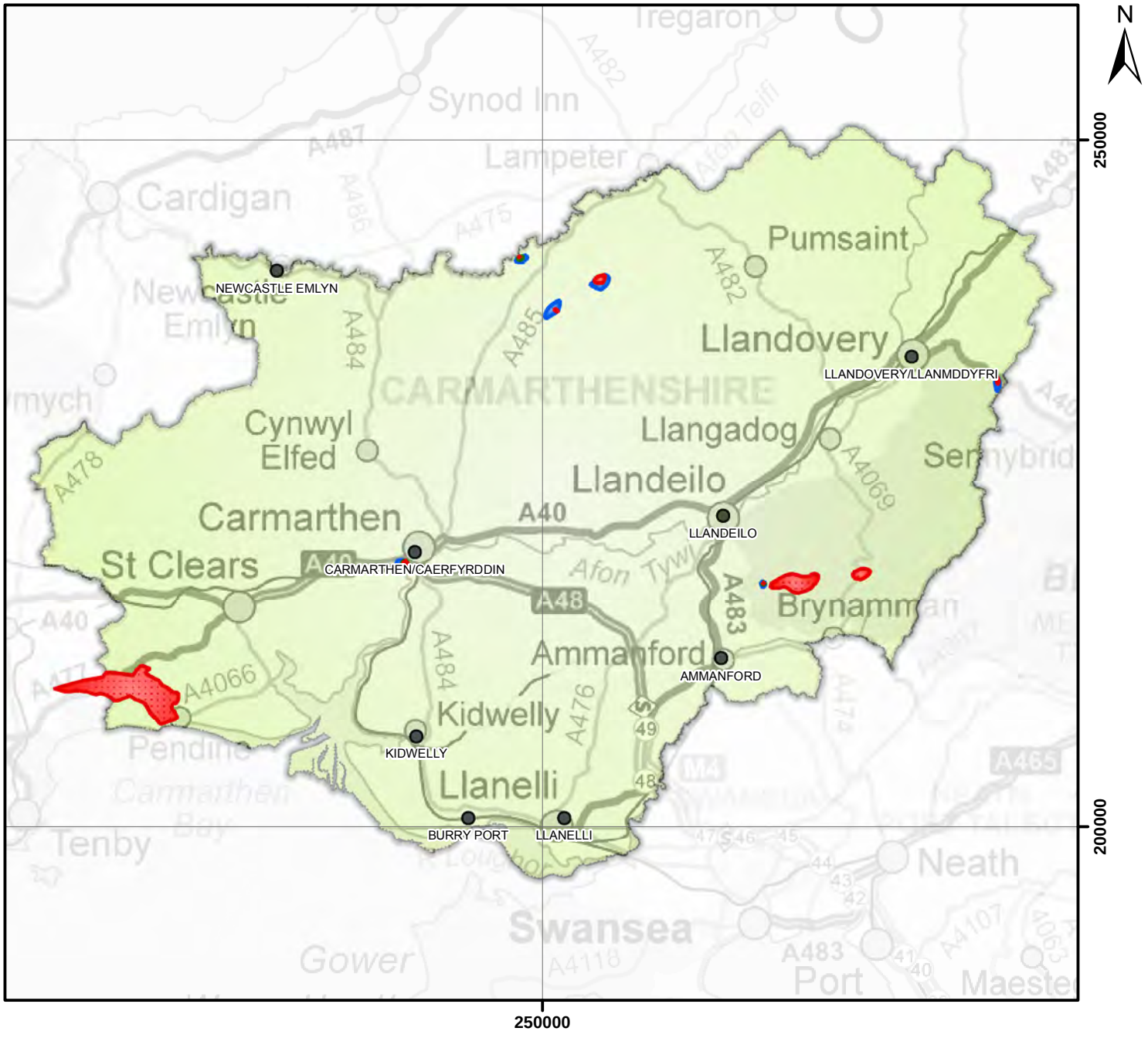
For all CAMS Areas classified as **'over abstracted'**. (Red)

- Existing licences already have the potential to cause unacceptable environmental impact at low flows.
- In some cases new licences will be granted if water is available at higher flows.
- All licence applications will be assessed on a case by case basis.
- Existing Abstraction licences - there will be no impact on existing abstractors unless their abstraction is causing an adverse impact on a designated site. Action may be needed under the Habitats Directive Review of Consents

Not yet assessed (purple) – these areas have not yet been assessed under the CAMS process. This work is on going.

Not assessed (green)

- Not all watercourses are assessed under the CAMS process. Those very small coastal watercourses where abstraction is limited are not included within the classification.
- All licences applied for in these locations will be subject to the same licensing processes as all other applications.
- All licence applications will be assessed on a case by case basis.



Groundwater Source Protection Zones (SPZ)

Legend

Source Protection Zones

- Zone 1 - Inner Protection Zone
- Zone 2 - Outer Protection Zone
- Zone 3 - Total Catchment
- Zone of Special Interest
- Local Authority

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Natural Resources Wales

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Km

Groundwater Source Protection Zones (SPZ) in Carmarthenshire

Groundwater

Groundwater supplies about one third of drinking water in England and around 3 per cent in Wales. Groundwater also helps to maintain the flow in many of our rivers and wetland ecosystems.

Pollution and increasing demand for water are putting groundwater resources under pressure.

Definitions

Groundwater	water that is below the surface of the ground in the saturation zone (below the water table) and in direct contact with the ground or subsoil
Aquifer	a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater
Recharge	water which percolates downward from the surface into groundwater

Links to Further information:

A comprehensive guide on groundwater protection is available on the Environment Agency website: "Groundwater Protection: Principles and Practice" (GP3)

http://www.environment-agency.gov.uk/research/library/publications/144346.aspx

This policy sets out how we manage and protect groundwater resources, and our plans for the future.

Source Protection Zones (SPZs)

We have defined Source Protection Zones (SPZs) for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The closer the activity, the greater the risk. The maps show three main zones (inner, outer and total catchment) and a fourth zone of special interest, which we occasionally apply, to a groundwater source.

Zone 1 (Inner protection zone)

Defined as the 50 day travel time from any point below the water table to the source. This zone has a minimum radius of 50 metres.

Zone 2 (Outer protection zone)

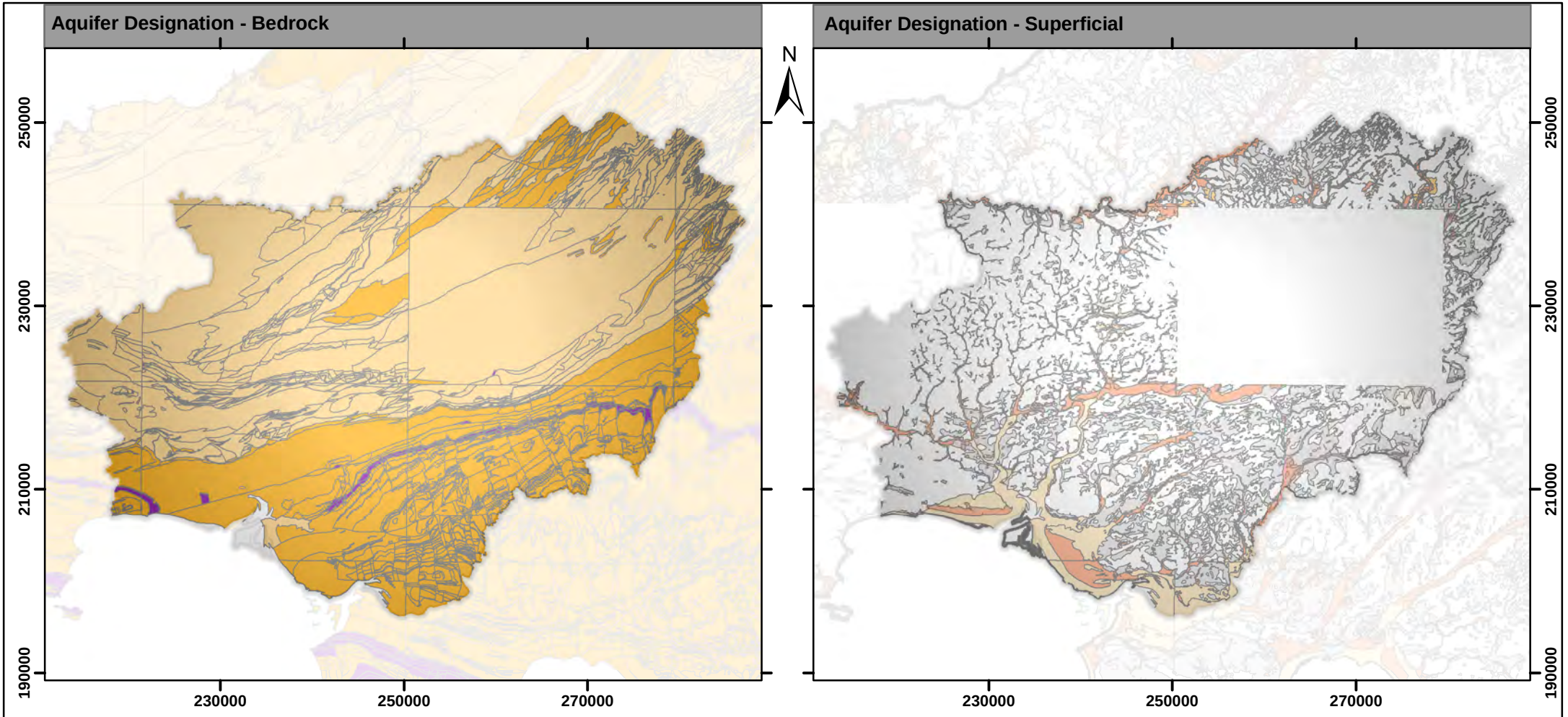
Defined by the 400-day travel time from a point below the water table. Additionally this zone has a minimum radius of 250 or 500 metres, depending on the size of the abstraction.

Zone 3 (Total catchment)

This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source.

Zone of special interest

A fourth zone SPZ4 or 'Zone of Special Interest' was previously defined for some groundwater sources. These zones highlighted areas (mainly on non-aquifers) where known local conditions meant that potentially polluting activities could impact on a groundwater source even though the area is outside the normal catchment of that source. In future this zone will be incorporated into one of the other zones (1, 2 or 3), whichever is appropriate in the particular case.



Aquifer Designation

Legend

Aquifer Typology - Bedrock

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unproductive

Aquifer Typology - Superficial

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

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Natural Resources Wales

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Km

Aquifer Designation Maps

We help to protect groundwater by identifying different types of aquifer - underground layers of water-bearing permeable rock or drift deposits from which groundwater can be extracted.

Our Groundwater Protection Policy now uses aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data is based on geological mapping provided by the British Geological Survey. It will be updated regularly to reflect their ongoing programme of improvements to these maps. We gratefully acknowledge this assistance.

The maps show two different types of aquifer designation:

Bedrock – solid permeable formations e.g. sandstone, chalk and limestone

Superficial – permeable unconsolidated (loose) deposits e.g. sands and gravels

Note: Some map tiles on the Aquifer Designation – Superficial maps may appear to be missing. These areas were not surveyed because they do not contain significant aquifers and the whole area has been classified as unproductive.

The aquifer designation maps shown on the previous page display the following designations:

Principal Aquifers

These are layers of rock or drift deposits that have high intergranular and/or fracture permeability- meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary Aquifers

These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:

Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata

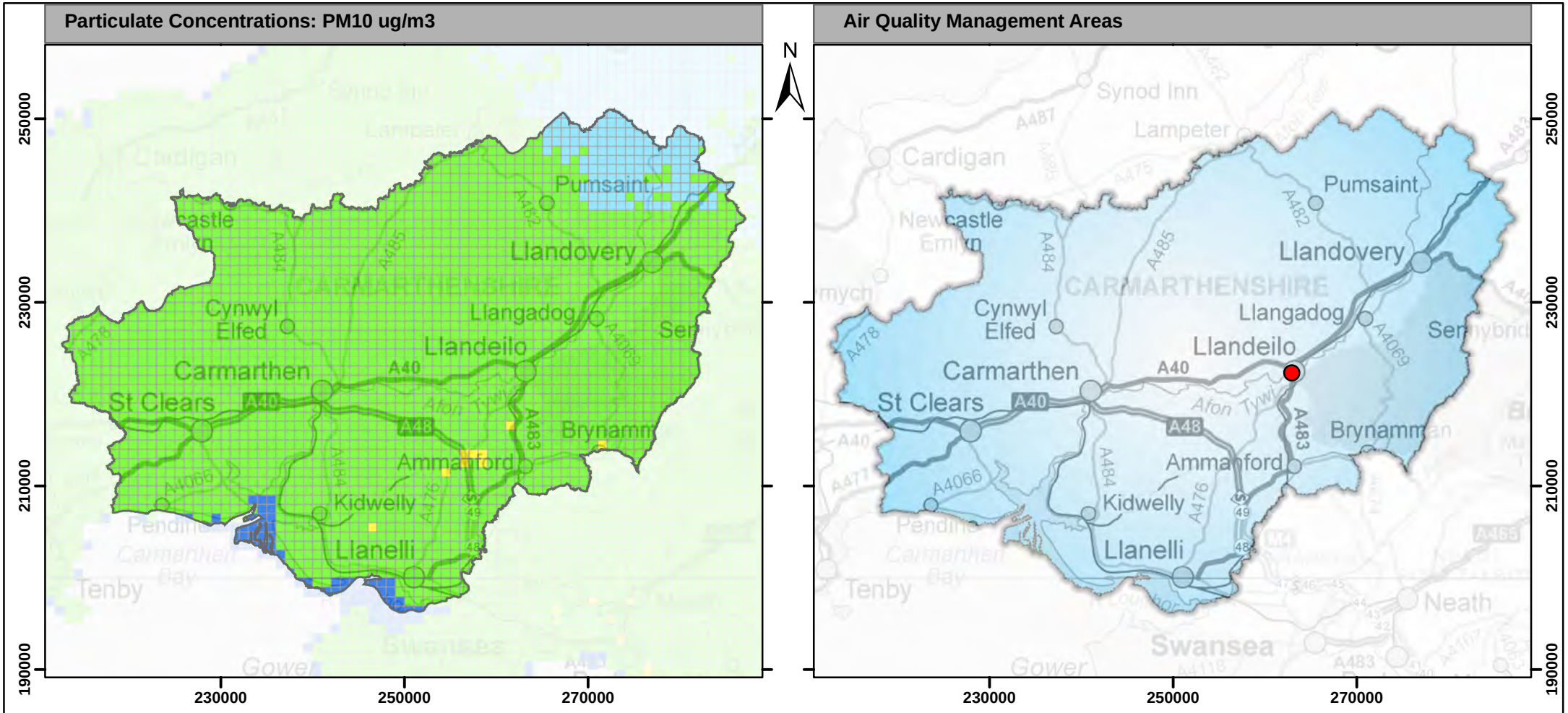
These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Note: We are only able to display the principal and secondary aquifers as coloured areas on the maps. All uncoloured areas on the bedrock designation map will be unproductive strata. However, for uncoloured areas on the superficial (drift) designation map you will not be able to distinguish between areas of unproductive strata and areas where no drift is present. To do this you will need to consult the published geological survey maps

Links to further information

Environment Agency website - Aquifer designations

http://www.environment-agency.gov.uk/homeandleisure/117020.aspx



Air Quality: Modelled Annual Mean Concentrations for PM10 (2010)

and

Air Quality Management Area Locations

Air Quality

PM10

- <=5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 30
- Local Authority Boundary

Legend

Air Quality Management Areas

- Air Quality Management Area
- Local Authority Boundary

Air Quality Management Areas are as known at Jan 2013

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Air Quality: Modelled concentrations for PM10 in Carmarthenshire

Particulate Matter (PM_{10})

The PM_{10} concentration map shows modelled annual mean concentrations for PM_{10} mapped to a 1km grid. The data is produced by Ricardo-AEA for Defra and is based on modelled emissions to the atmosphere from UK sources from the National Atmospheric Emissions Inventory (NAEI) together with measured concentrations. The data is available from http://uk-air.defra.gov.uk/ under the Open Government Licence http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2/.

This map should only be used as an indication of the level of the substance in the local environment. This map is meant to be used at an aggregated scale towards the local authority level and errors may be found when looking at single 1km x 1km cells themselves. The aggregation of this data over a 10km radius is thought to be valid and the map does provide a indication of the spatial distribution of each substance. However, care should be taken to not 'over interpret' the data shown.

Particulate Matter is generally categorised on the basis of the size of the particles, PM_{10} being particles with a diameter of less than 10µm. PM is made up of a wide range of materials and is produced by a variety of processes such as combustion (eg in vehicle engines), mechanical breakdown of hard materials (e.g. quarrying) and natural sources (e.g. sea salt). As well as primary particles emitted directly into the atmosphere there can be secondary particles formed by chemical reactions in the air.

Both short-term and long-term exposure to ambient levels of PM are consistently associated with respiratory and cardiovascular illness and mortality as well as other ill-health effects.

The current UK National Air Quality Strategy objectives and Air Quality Standards (Wales) 2010 Regulations limit values for PM_{10} are a concentration of less than 40 µg m^{-3} measured as an annual mean and 50 µg m^{-3} measured as a 24 hour mean (not to be exceeded more than 35 times per year). We have mapped the available data for the annual mean concentrations, but do not have access to modelled estimates of the daily averages.

Links to further information:

Air Quality on the GOV.UK website

https://www.gov.uk/government/policies/protecting-and-enhancing-our-urban-and-natural-environment-to-improve-public-health-and-wellbeing

Air Quality on the Welsh Government website

http://wales.gov.uk/topics/environmentcountryside/epq/airqualitypollution/airquality/

UK-AIR: Defra's air information resource

http://uk-air.defra.gov.uk/

Air Quality Management Areas (AQMA)

Local Authorities are required to ensure that local air quality meets national standards. If not, they must take action to improve air quality.

Since December 1997, local authorities have been carrying out a review and assessment of air quality in their area. This involves measuring air pollution and trying to predict how it will change in the next few years. The aim of the review is to make sure that the national air quality objectives will be achieved throughout the UK by the relevant deadlines. These objectives have been put in place to protect people's health and the environment.

If a local authority finds any places where the objectives are not likely to be achieved, it must declare an Air Quality Management Area there. This area could be just one or two streets, or it could be much bigger. Then the local authority will put together a plan to improve the air quality - a Local Air Quality Action Plan.

AQMAs have been declared in Wales for PM_{10} and NO_2 .

Some links to further information:

Welsh Government – Air Quality

http://new.wales.gov.uk/topics/environmentcountryside/epq/airqualitypollution/

StatsWales – State of the Environment indicator: number of people living in Air Quality Management Areas
http://statswales.wales.gov.uk/

(StatsWales Home>Environment and Countryside> State of the Environment> Environmental Hazards)

Defra – Air Quality Management Areas
http://aqma.defra.gov.uk/

Nitrogen Oxides (NO and NO_2)

Nitric oxide (NO) is mainly derived from road transport emissions and other combustion processes such as the electricity supply industry. NO is not considered to be harmful to health. However, once released to the atmosphere, NO is usually very rapidly oxidised to nitrogen dioxide (NO_2), which is harmful to health. NO_2 and NO are both oxides of nitrogen and together are referred to as nitrogen oxides (NOx).

Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza. Continued or frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness in children.

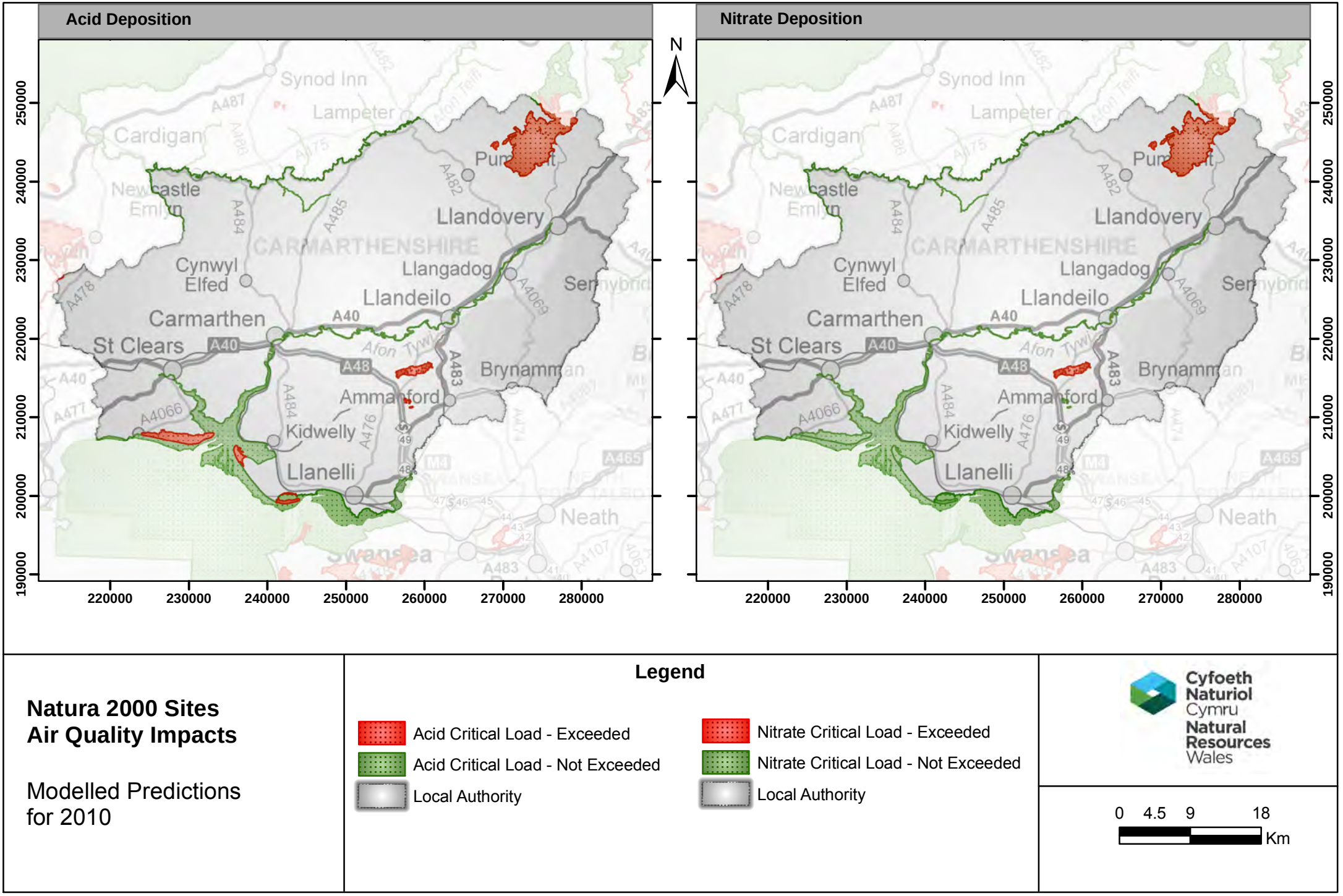
High levels of NOx can have an adverse effect on vegetation, including leaf or needle damage and reduced growth. Deposition of pollutants derived from NOx emissions contribute to acidification and/or eutrophication of sensitive habitats leading to loss of biodiversity, often at locations far removed from the original emissions. NO_X also contributes to the formation of secondary particles and ground level ozone, both of which are associated with ill-health effects. Ozone also damages vegetation.

The current UK National Air Quality Strategy objectives for nitrogen dioxide are a concentration of 200 µg m^{-3} measured as a 1 hour mean not to be exceeded more than 18 times a year and an annual mean of 40 µg m^{-3} not to be exceeded.

The table on the following page shows Air Quality Management Areas in the planning authority area (as at January 2013).

Air Quality: Air Quality Management Areas (AQMA) in Carmarthenshire

AQMA name	Local Authority	pollutant	standards	original year of designation	alias
Llandeilo	Carmarthenshire	NO2	Annual mean > 40	2011	



Natura 2000 Sites
Air Quality Impacts

Modelled Predictions for 2010

Legend

- Acid Critical Load - Exceeded
- Acid Critical Load - Not Exceeded
- Local Authority
- Nitrate Critical Load - Exceeded
- Nitrate Critical Load - Not Exceeded
- Local Authority

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Natural Resources Wales

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Km

Critical Loads - Acid Deposition and Nitrate Deposition

Acid deposition includes both wet and dry deposition of pollutants from the atmosphere that have the potential to acidify soils and freshwaters. The pollutants include sulphur dioxide (SO_2), nitrogen oxides (NO_x) and ammonia (NH_3).

Nitrogen deposition is the deposition of mainly nitrogen oxides (NO_x) and ammonia (NH_3) from the atmosphere to land. Total deposition is the combination of both wet and dry deposition. Nitrogen deposition refers to the pollutant dose that may lead to eutrophication.

In order to decipher whether acid or nitrogen deposition is having a negative effect on an ecosystem, or an aspect of an ecosystem, critical loads are set for individual habitats, for example a woodland or a bog, and species, for example a moss or a freshwater plant. Critical load relates to the quantity of a pollutant deposited from air to ground. Where deposition is less than a critical load it can be concluded that deposition is not having a negative effect on specified sensitive elements of the environment. The critical load is the threshold level for the deposition of a pollutant above which harmful indirect effects can be shown on a habitat or species. If deposition is greater than the critical load then it is deemed as an exceedance of critical load.

The effects of acid deposition vary according to habitat or species. In general where acid deposition is high there is a decrease in overall biodiversity. Woodland habitats see a decline in general tree health and trees can become more susceptible to stresses such as drought and frost. Mosses, lichens and bryophytes are most at risk of damage from acidification and are often used as bio-indicators in order to establish whether acid deposition is having a negative effect. Acidification of freshwaters leads to a reduction in biodiversity - as pH falls the number of species of invertebrates and fish falls. Loss of invertebrates and fish leads to a reduction in available food supply affecting fauna further up the food chain.

Nitrogen deposition can lead to the eutrophication of an ecosystem where plant species that are more tolerant of higher nitrogen levels dominate, reducing plant diversity, both on terrestrial sites and in the freshwater environment. A reduction in plant diversity will have knock on effects where fauna diversity will also decrease.

The main sources of **sulphur deposition** in the UK are large point sources such as power stations and refineries. Deposition from large, national and international sources is known as long range deposition. However there are local sources of sulphur, such as local point sources and transport.

The largest source of **nitrogen deposition** in the UK is from livestock emissions. Other large sources are emissions from transport - sites that are in close proximity to major roads can be subject to high levels of NO_x.

Critical Loads are modelled using the National Critical Loads database. We talk about status as at 2010 because this is the date set in the Habitats directive for the end of Habitats review of consents.

Natura 2000 is the European Union-wide network of protected areas, recognised as 'sites of Community importance' under the EC Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). The Natura 2000 network includes two types of designated areas: Special Areas of Conservation (SAC) and Special Protection Areas (SPA). SACs are designated under the EC Habitats Directive and SPAs are classified under the EC Wild Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds).

Some links to further information:

APIS provides a comprehensive source of information on air pollution and the effects on habitats and species. APIS has been developed in partnership by the UK conservation agencies and regulatory agencies and the Centre for Ecology and Hydrology
http://www.apis.ac.uk
http://www.apis.ac.uk/starters-guide-air-pollution

Critical Loads & Dynamic Modelling http://cldm.defra.gov.uk/

Defra information about Natura 2000 sites

https://www.gov.uk/protected-or-designated-areas#european-sites

Joint Nature Conservation Committee information about protected sites, Special Areas of Conservation (SAC) and Special Protection Areas (SPA)

http://www.jncc.gov.uk/page-4

Welsh Index of Multiple Deprivation: Air Quality

The Welsh Index of Multiple Deprivation

The Welsh Index of Multiple Deprivation 2011 (WIMD) is the official measure of deprivation at the small area level in Wales. WIMD was developed for the Welsh Government by the Welsh Government Statistical Directorate and the Local Government Data Unit (Wales).

More information can be found in the Welsh Government's Welsh Index of Multiple Deprivation 2011: Summary Report

http://new.wales.gov.uk/topics/statistics/theme/wimd/wimd2011/

There are eight domains, or kinds, of deprivation included in the overall index of deprivation: Income; Employment; Education; Health; Access to services; Housing; Physical environment and Community safety.

Natural Resources Wales provides the data for the physical environment domain.

The physical environment domain of the WIMD index incorporates four indicators: air quality (concentrations of air pollutants), emissions of air pollutants, flood risk and proximity to regulated sites i.e. waste disposal and industrial sites.

Air Quality

Air quality is believed to be a good proxy measure of the quality of the surrounding environment. Poor air quality suggests proximity to certain activities such as traffic, domestic combustion and industrial sites – activities that could have a negative impact on quality of life, the local environment and health.

The Air Quality indicator uses data on concentrations of pollutants (benzene, nitrogen dioxide, sulphur dioxide, particulates, carbon monoxide and ozone) and Air Quality Management Area data. More information on how the index was produced can be found in Welsh Index of Multiple Deprivation 2008: Technical Report and the Welsh Index of Multiple Deprivation 2011: Summary of Methodological Changes.

http://wales.gov.uk/docs/statistics/2009/090319wimdtechreport09en.pdf

http://wales.gov.uk/topics/statistics/publications/wimd11method/

Air Emissions

Air quality is the preferred measure of risks from air pollution but air emissions data provides a good set of complementary data covering pollutants that are not included in the Air Quality indicator. Emissions data are good indicators of proximity to polluting activities. More information on how the index was produced can be found in Welsh Index of Multiple Deprivation 2008: Technical Report.

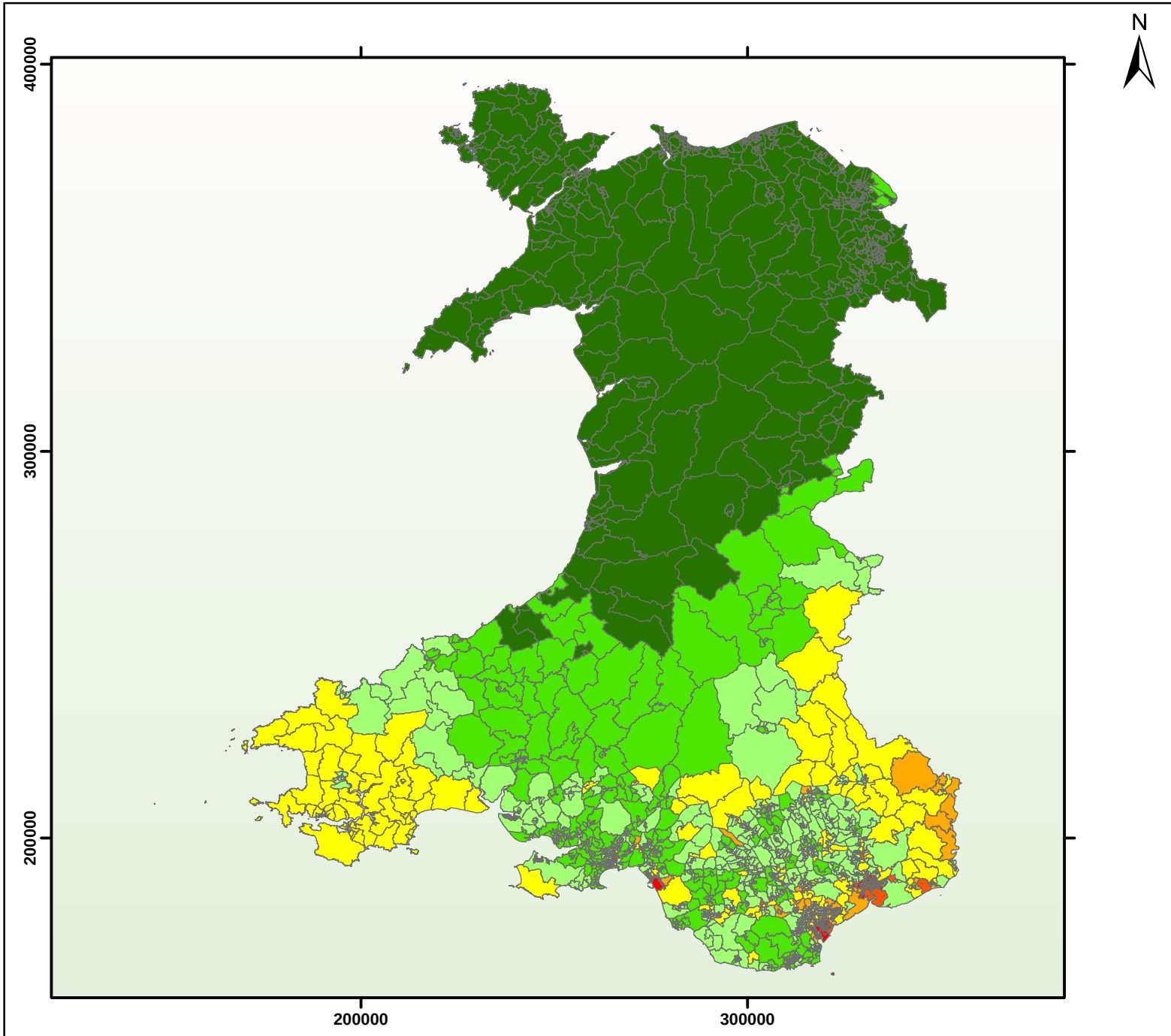
http://wales.gov.uk/docs/statistics/2009/090319wimdtechreport09en.pdf

The four maps in the following pages show:

- Lower Layer Super Output Areas (LSOA) in Wales and the position of the LSOA within the index for Air Quality
- Lower Layer Super Output Areas (LSOA) in the Local Authority and the position of the LSOA within the index for Air Quality
- Lower Layer Super Output Areas (LSOA) in Wales and the position of the LSOA within the index for Air Emissions
- Lower Layer Super Output Areas (LSOA) in the Local Authority and the position of the LSOA within the index for Air Emissions

The areas shown in red have the most significant air quality issues.

Note: For more information on LSOAs and what they are, see http://www.neighbourhood.statistics.gov.uk NeSS Geography



Welsh Index of Multiple Deprivation (WIMD): Population Averaged Air Quality Concentration Index

WIMD 2011

Legend

Position of LSOA within Index

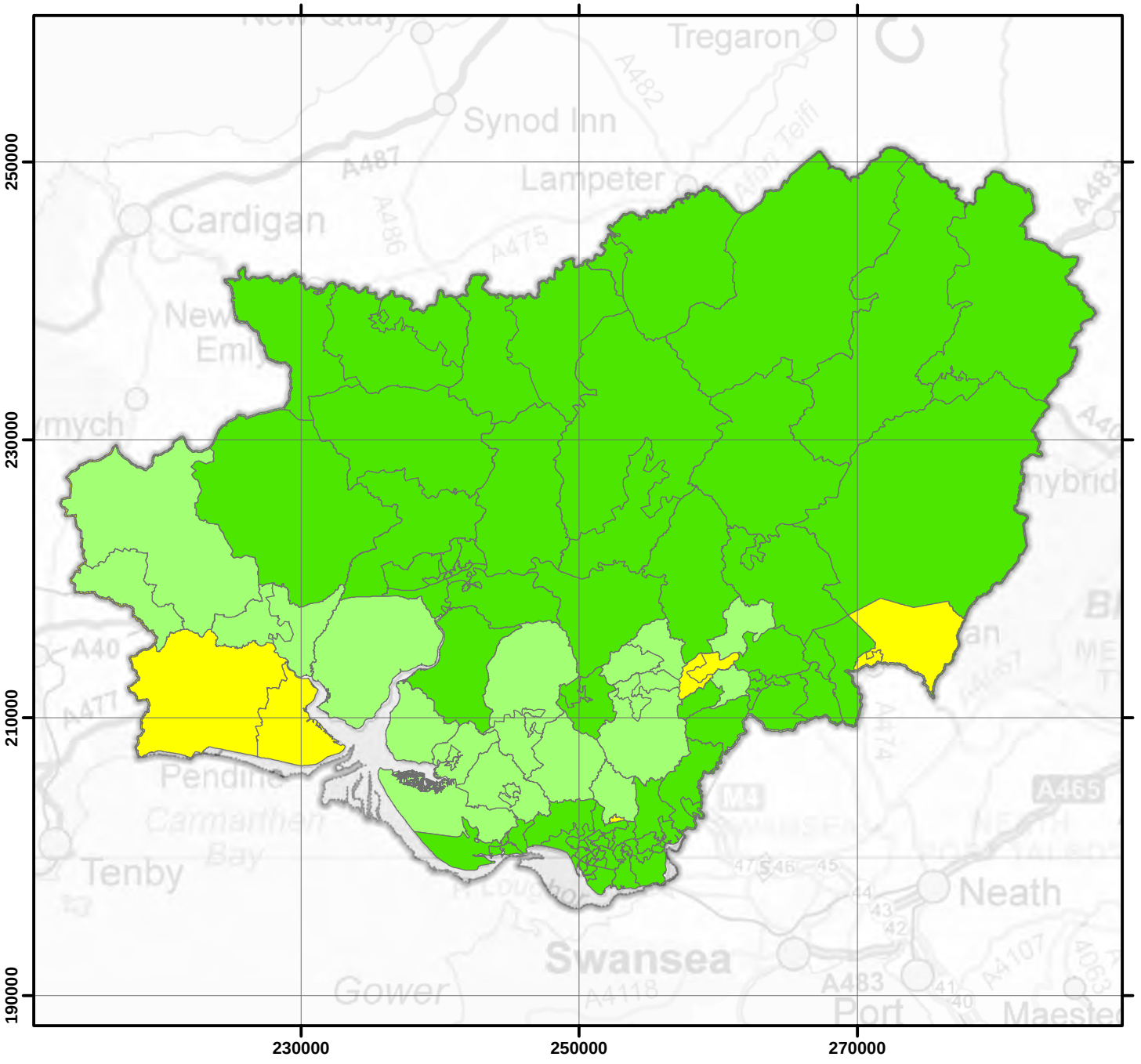
Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)

Communities with the most significant air quality issues in relation to population are shown in red

Cyfoeth Naturiol Cymru
Natural Resources Wales

0 15 30 60
Km



Welsh Index of Multiple Deprivation (WIMD): Population Averaged Air Quality Concentration Index

WIMD 2011

Legend

Position of LSOA within Index

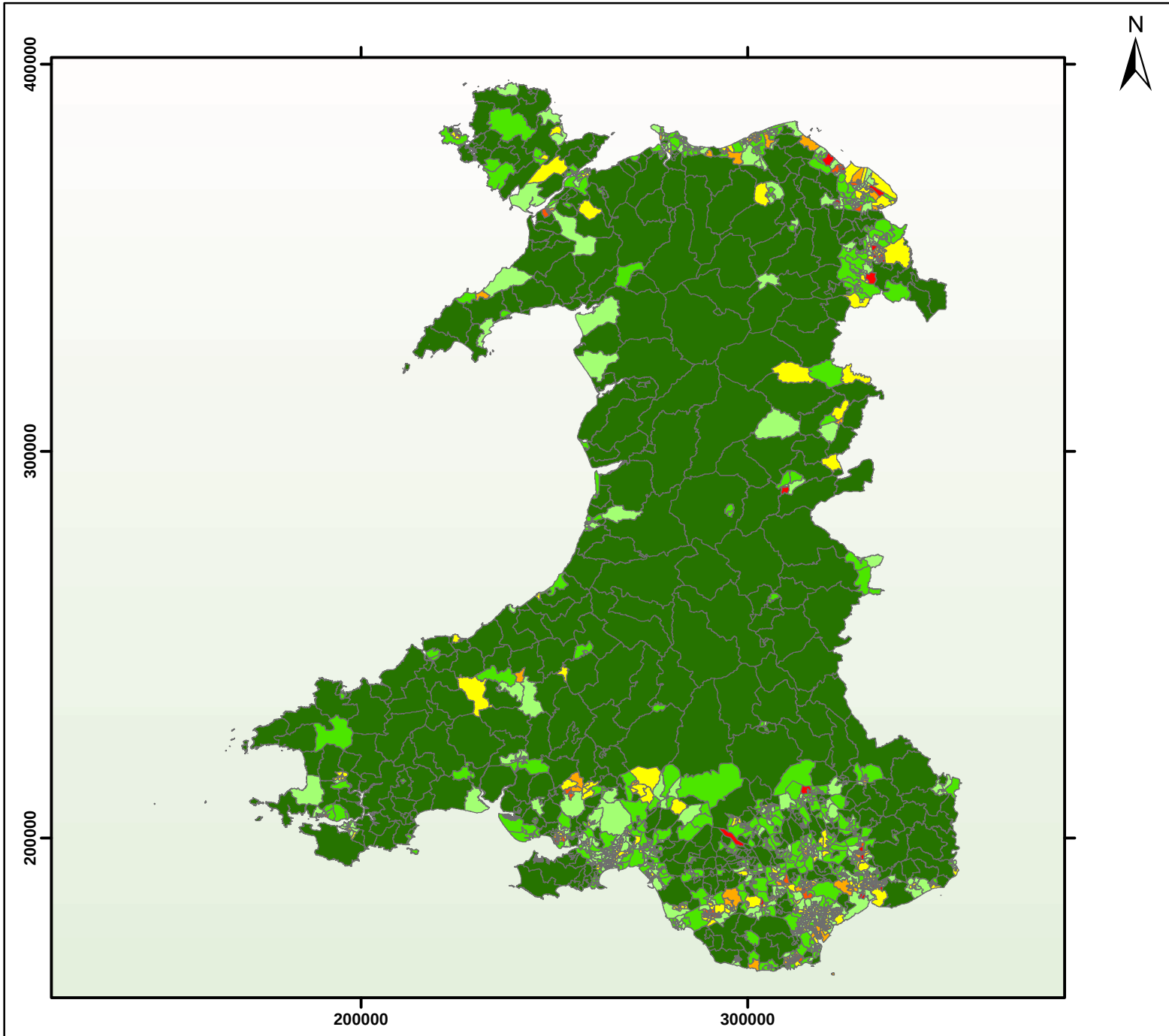
Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)
- Local Authority

Communities with the most significant air quality issues in relation to population are shown in red.

Cyfoeth Naturiol Cymru
Natural Resources Wales

0 4.5 9 18
Km



Welsh Index of Multiple Deprivation (WIMD): Population Averaged Air Emissions Index

WIMD 2011

Legend

Position of LSOA within Index

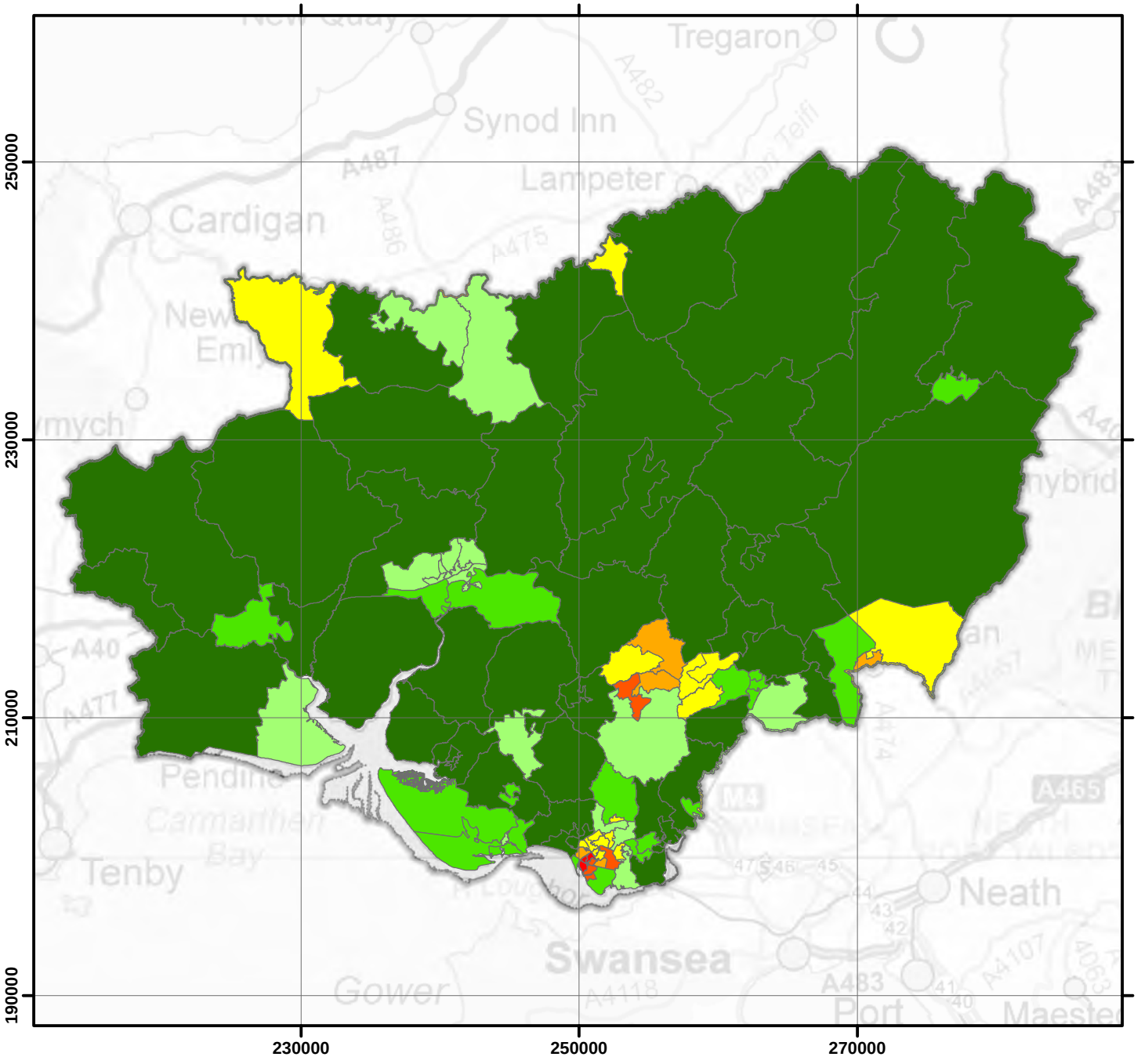
Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)

Communities with the most significant air quality issues in relation to population are shown in red

Cyfoeth Naturiol Cymru
Natural Resources Wales

0 15 30 60
Km



Welsh Index of Multiple Deprivation (WIMD): Population Averaged Air Emissions Index

WIMD 2011

Legend

Position of LSOA within Index

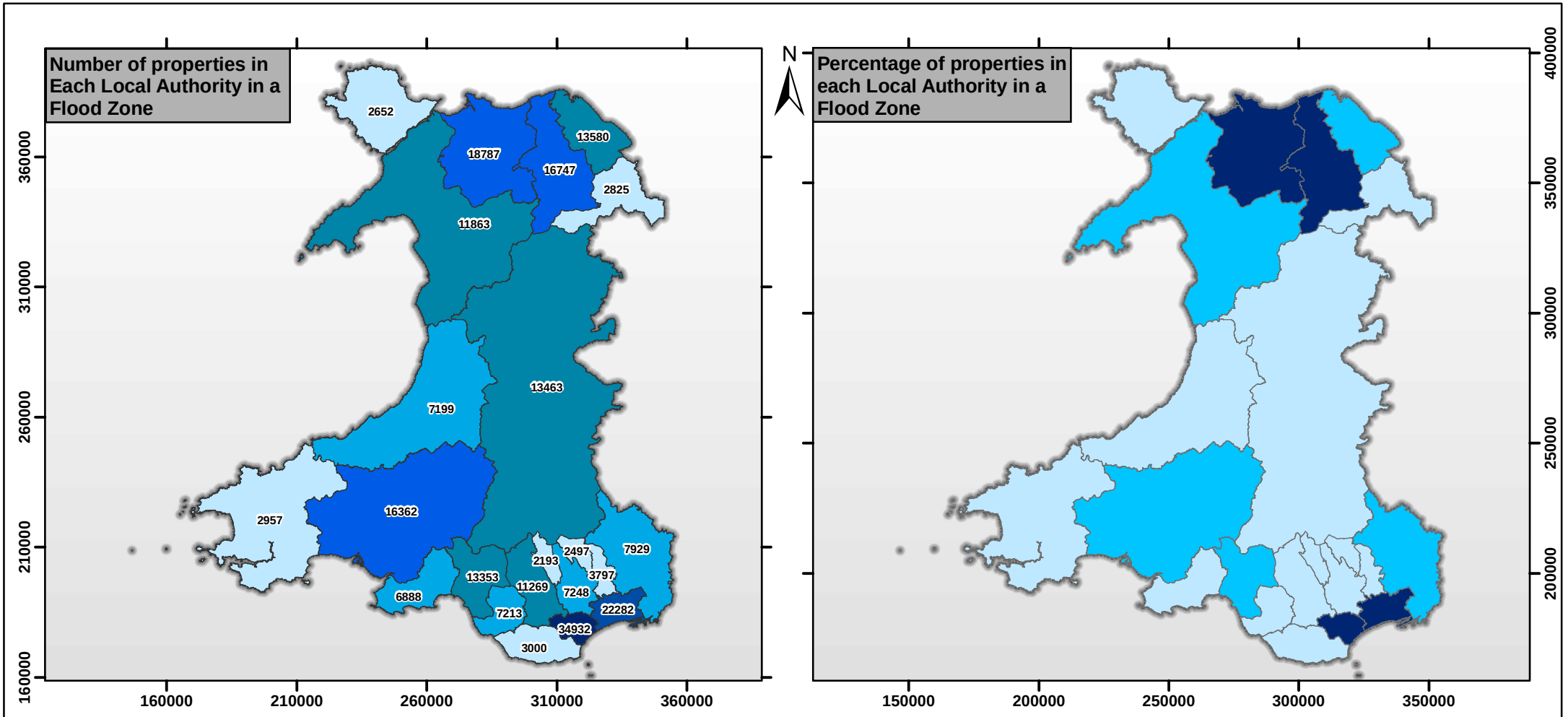
Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)
- Local Authority

Communities with the most significant air quality issues in relation to population are shown in red.

Cyfoeth Naturiol Cymru
Natural Resources Wales

8 4 0 8
Km



Number and Proportion of Properties in each Local Authority in Wales in a Flood Zone

National Flood Risk Assessment (NaFRA) 2012 Data

Legend

No of properties in a Flood Zone

- 0- 5000
- 5001 - 10000
- 10001 - 15000
- 15001 - 20000
- 20001 - 25000
- 25001 - 35000

% Properties in Flood Zones in each LA

- 0% - 10%
- 10% - 20%
- 20% - 35%

Cyfoeth Naturiol Cymru Natural Resources Wales

0 15 30 60
km

The impact of flooding on Wales

Floods and coastal erosion are the greatest natural threats to the people, economy and environment of Wales.

Across Wales around 220,000 properties are currently at risk of flooding from rivers and the sea. Around half a million, out of a population of 3 million, live and work on the flood plains in Wales. The potential annual economic risk to residential and business properties and their contents was estimated at £200 million in April 2008. Commercial, industrial and key infrastructure, like power supplies, communication systems, transport links, emergency services and schools are situated on land at risk of flooding and estimated to be worth over £8 billion.

The maps above show the number of properties in each local authority and the proportion of properties in each local authority at risk of flooding.

Climate change is expected to increase river flooding, cause sea level rise and increase the flood and coastal erosion risk. The 2004 Foresight Future Flooding report suggested that the annual economic damages in Wales will rise from £70 million in 2004 to £1,235 million in the 2080s under the most likely scenario. However, as the Stern Report found, taking action now can reduce the longer term total economic damage.

Welsh Index of Multiple Deprivation: Flood Risk

The Welsh Index of Multiple Deprivation

The Welsh Index of Multiple Deprivation 2011 (WIMD) is the official measure of deprivation at the small area level in Wales. WIMD was developed for the Welsh Government by the Welsh Government Statistical Directorate and the Local Government Data Unit (Wales).

More information can be found in the Welsh Government's Welsh Index of Multiple Deprivation 2011: Summary Report

http://new.wales.gov.uk/topics/statistics/theme/wimd/wimd2011/

There are eight domains, or kinds, of deprivation included in the overall index of deprivation: Income; Employment; Education; Health; Access to services; Housing; Physical environment and Community safety.

Natural Resources Wales is involved in the production of the physical environment domain index.

The physical environment domain of the WIMD index incorporates four indicators: air quality (concentrations of air pollutants), emissions of air pollutants, flood risk and proximity to regulated sites i.e. waste disposal and industrial sites.

Flood Risk

Those who suffer flooding have a significant lowering of quality of life that can last for a number of years. Homes in areas that suffer increased flood risk will often have significantly higher insurance premiums, potentially leading to higher financial hardship in these areas. It is likely that economically and socially deprived areas will take longer to recover from flood events.

Flood risk calculations and maps were based on the 2009 NAFRA database which includes flood risk, taking into account flood defences where these are known. Different levels of risk were taken into account, as is done with insurance companies, with 3 levels of risk; significant, moderate and low risk. The risk is based on frequency rather than level of damage caused by any flooding.

More information on how the index was produced can be found in Welsh Index of Multiple Deprivation 2008: Technical Report and the Welsh Index of Multiple Deprivation 2011: Summary of Methodological Changes.

http://wales.gov.uk/docs/statistics/2009/090319wimdtechreport09en.pdf

http://wales.gov.uk/topics/statistics/publications/wimd11method/

More information on flood risk assessment and the NAFRA database can be found in Flooding in Wales – National Assessment of Flood Risk http://www.environment-agency.gov.uk/research/library/publications/108958.aspx

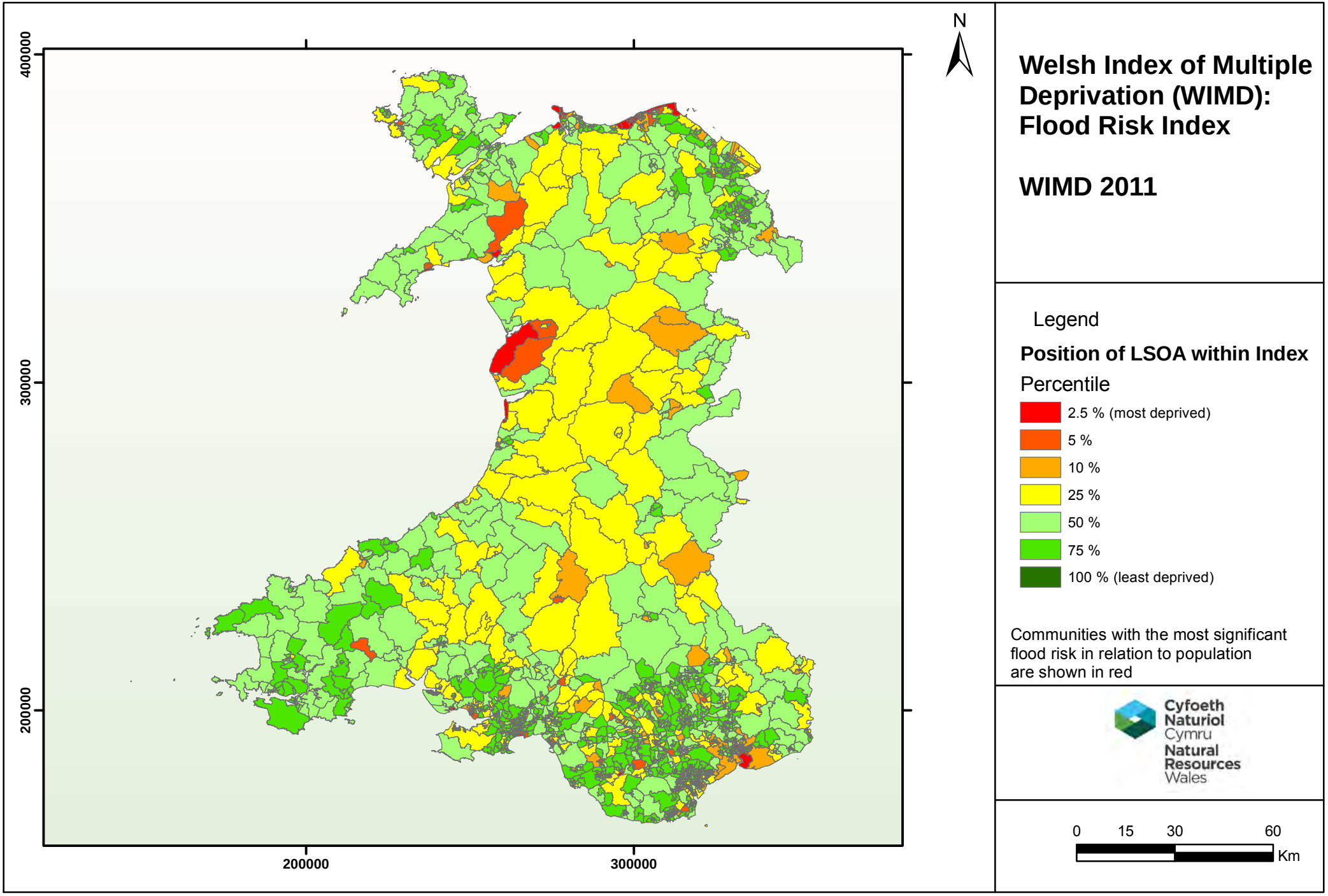
on the Environment Agency website.

The two maps in the following pages show:

- Lower Layer Super Output Areas (LSOA) in Wales and the position of the LSOA within the index for Flood Risk
- Lower Layer Super Output Areas (LSOA) in the Local Authority and the position of the LSOA within the index for Flood Risk

The areas shown in red have the most significant flood risk in relation to population.

The WIMD: Flood Risk Index by LSOA table after the maps shows how each LSOA in the planning authority is ranked within Wales for flood risk. Low rank corresponds to relatively high flood risk.



Welsh Index of Multiple Deprivation (WIMD): Flood Risk Index

WIMD 2011

Legend

Position of LSOA within Index

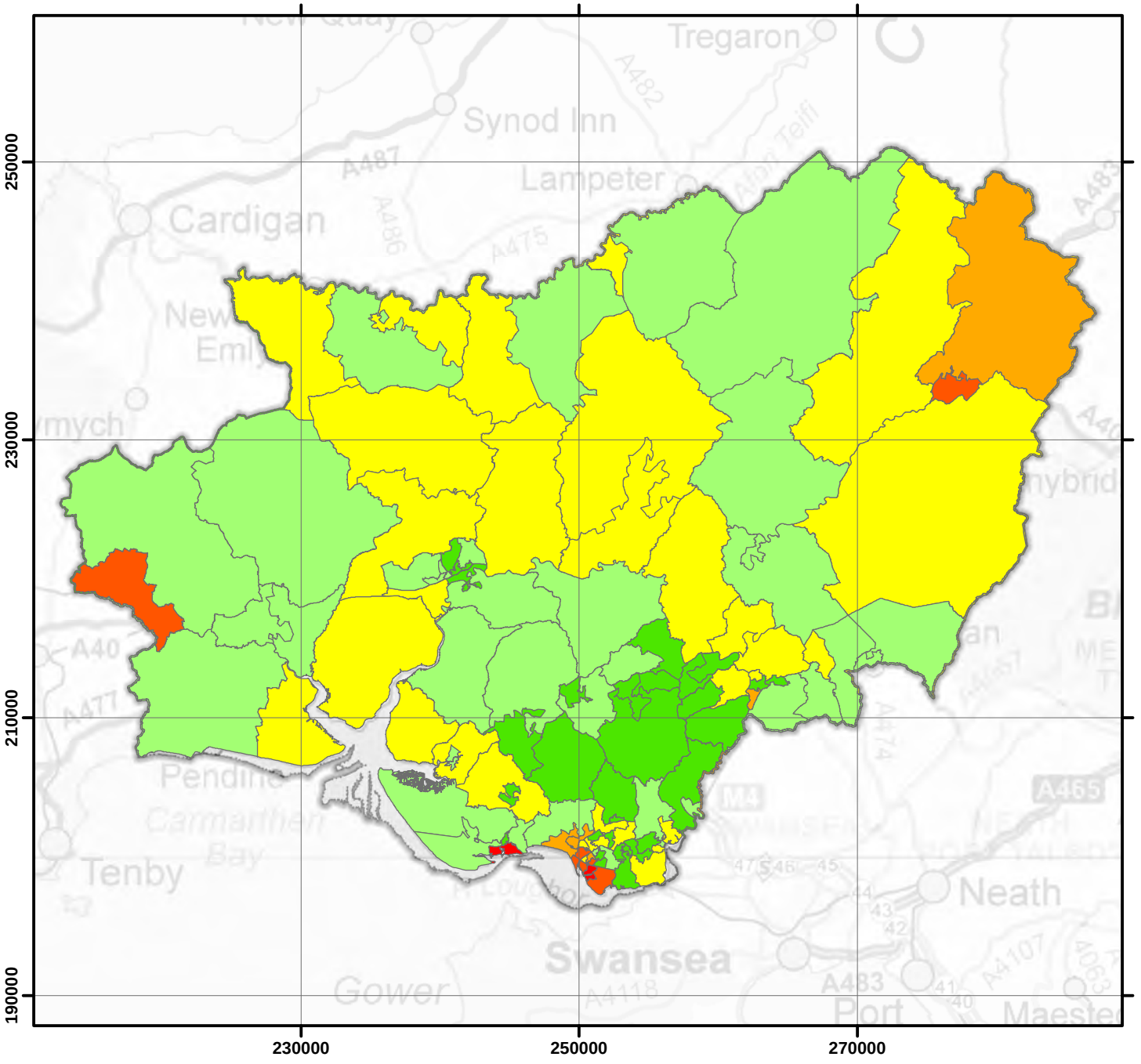
Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)

Communities with the most significant flood risk in relation to population are shown in red

Cyfoeth Naturiol Cymru
Natural Resources Wales

0 15 30 60
Km



Welsh Index of Multiple Deprivation (WIMD): Flood Risk Index

WIMD 2011

Legend

Position of LSOA within Index

Percentile

- 2.5 % (most deprived)
- 5 %
- 10 %
- 25 %
- 50 %
- 75 %
- 100 % (least deprived)
- Local Authority

Communities with the most significant flood risk in relation to population are shown in red.

Cyfoeth Naturiol Cymru
Natural Resources Wales

7 3.5 0 7
Km

WIMD: Flood Risk Rank by Lower Super Output Area (LSOA)

This table shows how each LSOA in the planning authority is ranked within Wales for flood risk. Low rank corresponds to relatively high risk.

ONS = Office of National Statistics

LSOA Code	LSOA Name	ONS LSOA Name	Flood Risk - National Rank
W01000633	Burry Port 2	Carmarthenshire 021B	42
W01000659	Glanymor 1	Carmarthenshire 026A	46
W01000734	Tyisha 3	Carmarthenshire 026F	50
W01000654	Elli 2	Carmarthenshire 023B	56
W01000660	Glanymor 2	Carmarthenshire 026B	58
W01000735	Whitland	Carmarthenshire 009D	65
W01000679	Llandovery 2	Carmarthenshire 002D	67
W01000661	Glanymor 3	Carmarthenshire 026C	95
W01000733	Tyisha 2	Carmarthenshire 026E	107
W01000669	Hengoed (Carmarthenshire) 3	Carmarthenshire 023E	116
W01000846	Pontardulais 2	Swansea 001B	132
W01000678	Llandovery 1	Carmarthenshire 002C	138
W01000667	Hengoed (Carmarthenshire) 1	Carmarthenshire 023C	141
W01000847	Pontardulais 3	Swansea 001C	163
W01000625	Ammanford 1	Carmarthenshire 013A	189
W01000505	Ystradgynlais 2	Powys 019F	191
W01000635	Bynea 1	Carmarthenshire 025A	207
W01000714	Pontamman 1	Carmarthenshire 013D	223
W01000688	Llangeler 1	Carmarthenshire 003B	238
W01000692	Llangennech 3	Carmarthenshire 019C	245
W01000642	Carmarthen Town South 2	Carmarthenshire 008B	248
W01000658	Glanamman 2	Carmarthenshire 010C	252
W01000437	Cwm-twrch	Powys 019B	256
W01000687	Llangadog	Carmarthenshire 004C	257
W01000682	Llanegwad 1	Carmarthenshire 005B	261
W01000725	Saron 2	Carmarthenshire 011D	275
W01000655	Felinfoel	Carmarthenshire 020C	276
W01000680	Llandybie 1	Carmarthenshire 011A	299
W01000732	Tyisha 1	Carmarthenshire 026D	304
W01000802	Lower Loughor	Swansea 007D	336
W01000624	Abergwili	Carmarthenshire 005A	337
W01000723	St. Ishmael 2	Carmarthenshire 012E	345
W01000647	Cilycwm	Carmarthenshire 002A	347
W01000527	Lampeter 1	Ceredigion 008A	348

LSOA Code	LSOA Name	ONS LSOA Name	Flood Risk - National Rank
W01000653	Elli 1	Carmarthenshire 023A	349
W01000705	Lliedi 3	Carmarthenshire 022C	355
W01000681	Llandybie 2	Carmarthenshire 011B	371
W01000528	Lampeter 2	Ceredigion 008B	374
W01000471	Llanwrtyd Wells	Powys 014E	381
W01000685	Llanfihangel-ar-Arth 1	Carmarthenshire 001A	386
W01000649	Cynwyl Elfed 2	Carmarthenshire 006E	387
W01000683	Llanegwad 2	Carmarthenshire 005C	388
W01000730	Trimsaran 2	Carmarthenshire 018D	392
W01000684	Llanfihangel Aberbythych	Carmarthenshire 005D	395
W01000541	Llanwenog	Ceredigion 008E	396
W01000928	Gwaun-Cae-Gurwen 1	Neath Port Talbot 001C	414
W01000474	Maescar/Llywel	Powys 016B	415
W01000673	Laugharne Township 2	Carmarthenshire 014B	420
W01000648	Cynwyl Elfed 1	Carmarthenshire 006D	426
W01000702	Llanybydder 2	Carmarthenshire 001D	439
W01000700	Llansteffan	Carmarthenshire 014C	440
W01000671	Kidwelly 2	Carmarthenshire 018B	453
W01000651	Dafen 1	Carmarthenshire 020A	455
W01000646	Cenarth	Carmarthenshire 003A	462
W01000703	Lliedi 1	Carmarthenshire 022A	469
W01000650	Cynwyl Gaeo	Carmarthenshire 002B	483
W01000670	Kidwelly 1	Carmarthenshire 018A	487
W01000803	Mawr	Swansea 002F	488
W01000627	Betws	Carmarthenshire 013C	489
W01000657	Glanamman 1	Carmarthenshire 010B	530
W01000643	Carmarthen Town West 1	Carmarthenshire 006A	535
W01000690	Llangennech 1	Carmarthenshire 019A	536
W01000721	St. Clears 2	Carmarthenshire 009C	539
W01000533	Llandysul Town	Ceredigion 010D	545
W01000929	Gwaun-Cae-Gurwen 2	Neath Port Talbot 001D	548
W01000677	Llandeilo 2	Carmarthenshire 004B	552
W01000537	Llangybi	Ceredigion 008D	555
W01000709	Manordeilo and Salem	Carmarthenshire 004D	558
W01000719	Quarter Bach 2	Carmarthenshire 010E	559
W01000675	Llanddarog	Carmarthenshire 012A	561
W01000531	Llandyfriog	Ceredigion 010C	562

ONS = Office of National Statistics

LSOA Code	LSOA Name	ONS LSOA Name	Flood Risk - National Rank
W01000558	Cilgerran	Pembrokeshire 001A	565
W01000672	Laugharne Township 1	Carmarthenshire 014A	574
W01000694	Llangunnor 2	Carmarthenshire 008D	599
W01000634	Burry Port 3	Carmarthenshire 021C	621
W01000553	Amroth	Pembrokeshire 011A	629
W01000728	Trelech	Carmarthenshire 003D	644
W01000720	St. Clears 1	Carmarthenshire 009B	655
W01000674	Llanboidy	Carmarthenshire 009A	663
W01000710	Pembrey 1	Carmarthenshire 021D	676
W01000701	Llanybydder 1	Carmarthenshire 001C	693
W01000522	Capel Dewi	Ceredigion 010B	700
W01000666	Hendy 2	Carmarthenshire 017B	711
W01000676	Llandeilo 1	Carmarthenshire 004A	712
W01000645	Carmarthen Town West 3	Carmarthenshire 006C	729
W01000656	Garnant	Carmarthenshire 010A	741
W01000686	Llanfihangel-ar-Arth 2	Carmarthenshire 001B	747
W01000722	St. Ishmael 1	Carmarthenshire 012D	751
W01000536	Llangeitho	Ceredigion 006A	756
W01000519	Beulah	Ceredigion 010A	757
W01000689	Llangeler 2	Carmarthenshire 003C	767
W01000931	Lower Brynamman	Neath Port Talbot 001E	778
W01000629	Bigyn 2	Carmarthenshire 024B	812
W01000696	Llangyndeyrn 2	Carmarthenshire 012C	833
W01000946	Pontardawe 1	Neath Port Talbot 004B	838
W01000668	Hengoed (Carmarthenshire) 2	Carmarthenshire 023D	841
W01000716	Pontyberem 1	Carmarthenshire 016D	847
W01000644	Carmarthen Town West 2	Carmarthenshire 006B	849
W01000628	Bigyn 1	Carmarthenshire 024A	878
W01000919	Cwmllynfell	Neath Port Talbot 001A	891
W01000640	Carmarthen Town North 4	Carmarthenshire 007D	907
W01000711	Pembrey 2	Carmarthenshire 021E	926
W01000577	Lampeter Velfrey	Pembrokeshire 007A	928
W01000718	Quarter Bach 1	Carmarthenshire 010D	942
W01000663	Gorslas 1	Carmarthenshire 016B	945
W01000877	Upper Loughor 1	Swansea 007E	960
W01000561	Crymych 2	Pembrokeshire 001D	967
W01000708	Llwynhendy 3	Carmarthenshire 025E	985

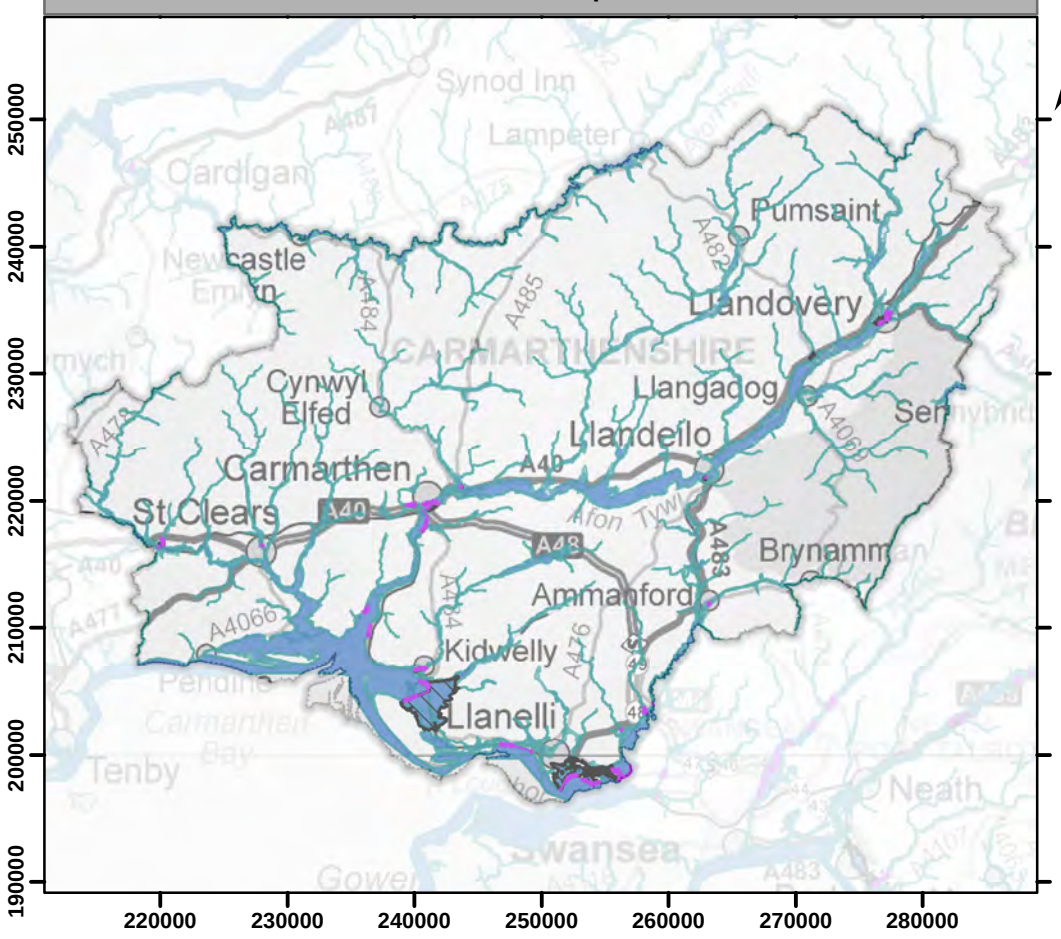
ONS = Office of National Statistics

LSOA Code	LSOA Name	ONS LSOA Name	Flood Risk - National Rank
W01000582	Maenclochog 1	Pembrokeshire 004A	987
W01000559	Clydau	Pembrokeshire 001B	988
W01000726	Swiss Valley 1	Carmarthenshire 019D	1007
W01000583	Maenclochog 2	Pembrokeshire 004B	1015
W01000626	Ammanford 2	Carmarthenshire 013B	1025
W01000715	Pontamman 2	Carmarthenshire 013E	1035
W01000641	Carmarthen Town South 1	Carmarthenshire 008A	1037
W01000845	Pontardulais 1	Swansea 001A	1039
W01000695	Llangyndeyrn 1	Carmarthenshire 012B	1052
W01000631	Bigyn 4	Carmarthenshire 024D	1061
W01000706	Llwynhendy 1	Carmarthenshire 025C	1070
W01000662	Glyn (Carmarthenshire)	Carmarthenshire 016A	1077
W01000652	Dafen 2	Carmarthenshire 020B	1090
W01000842	Penyrheol (Swansea) 2	Swansea 005D	1101
W01000724	Saron 1	Carmarthenshire 011C	1120
W01000637	Carmarthen Town North 1	Carmarthenshire 007A	1125
W01000844	Penyrheol (Swansea) 4	Swansea 005F	1138
W01000699	Llannon 3	Carmarthenshire 015C	1142
W01000717	Pontyberem 2	Carmarthenshire 016E	1149
W01000691	Llangennech 2	Carmarthenshire 019B	1159
W01000693	Llangunnor 1	Carmarthenshire 008C	1159
W01000878	Upper Loughor 2	Swansea 007F	1159
W01000697	Llannon 1	Carmarthenshire 015A	1159
W01000713	Penygroes (Carmarthenshire) 2	Carmarthenshire 015E	1159
W01000712	Penygroes (Carmarthenshire) 1	Carmarthenshire 015D	1159
W01000698	Llannon 2	Carmarthenshire 015B	1159
W01000665	Hendy 1	Carmarthenshire 017A	1159
W01000727	Swiss Valley 2	Carmarthenshire 019E	1159
W01000664	Gorslas 2	Carmarthenshire 016C	1159
W01000704	Lliedi 2	Carmarthenshire 022B	1159
W01000707	Llwynhendy 2	Carmarthenshire 025D	1159
W01000639	Carmarthen Town North 3	Carmarthenshire 007C	1159
W01000638	Carmarthen Town North 2	Carmarthenshire 007B	1159
W01000636	Bynea 2	Carmarthenshire 025B	1159
W01000729	Trimsaran 1	Carmarthenshire 018C	1159
W01000632	Burry Port 1	Carmarthenshire 021A	1159
W01000630	Bigyn 3	Carmarthenshire 024C	1159

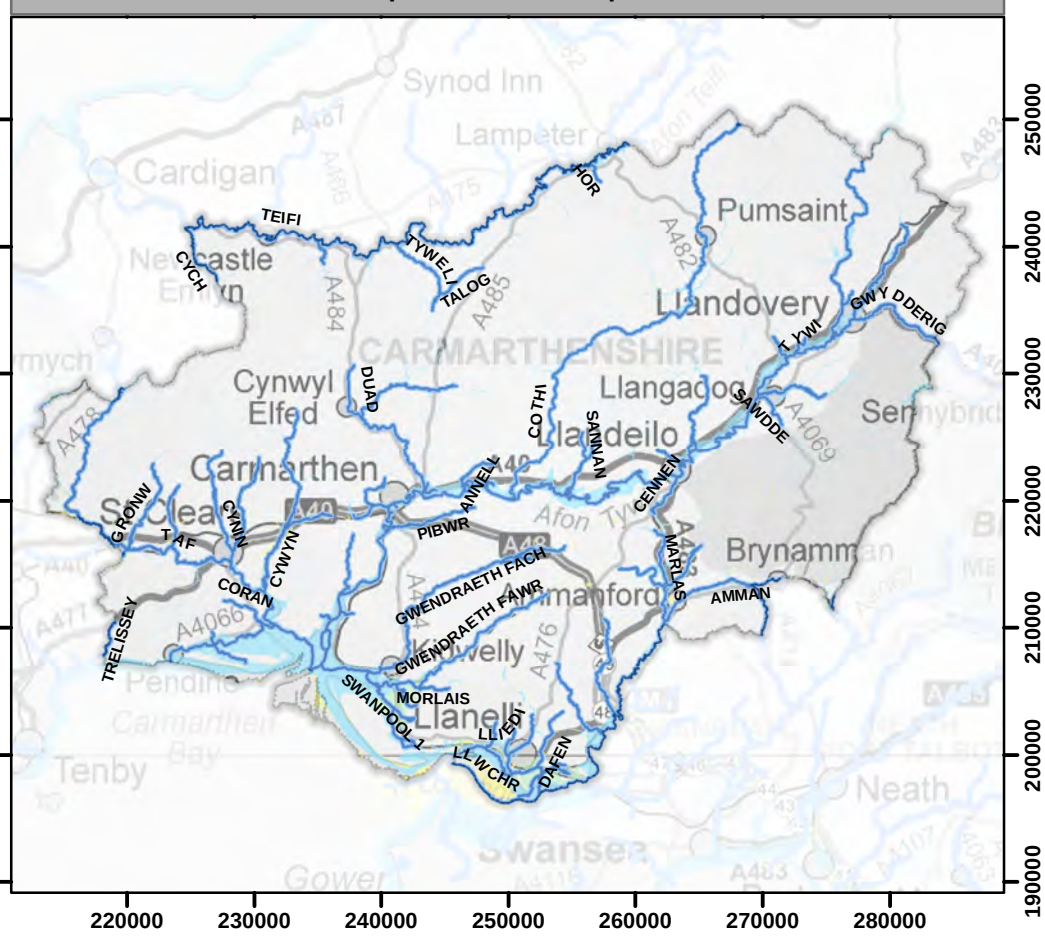
ONS = Office of National Statistics

LSOA Code	LSOA Name	ONS LSOA Name	Flood Risk - National Rank	ONS = Office of National Statistics
W01000731	Tycroes	Carmarthenshire 017C	1159	

Natural Resources Wales Flood Risk Map



Welsh Government Development Advice Maps



Flood Risk Maps

Legend

- Areas benefiting from defences
- Local Authority Boundary
- Flood Storage Areas
- Flood Zone 3
- Flood Zone 2
- Flood Defences
- Local Authority Boundary
- TAN15 DAM Zone C2
- TAN15 DAM Zone C1
- TAN15 DAM Zone B
- Main Rivers

Cyfoeth Naturiol Cymru Natural Resources Wales

9 4.5 0 9 Km

Flood Risk Maps

Flood Risk Maps

We produce detailed flood maps (see the map on the left on the previous page) that show the potential risk of flooding. These flood maps are available on the Environment Agency web pages What's in your backyard?

http://www.environment-agency.gov.uk/homeandleisure/default.aspx

Flood zone 2 – best estimate of the areas of land between Zone 3 and the extent of the flood from rivers or the sea with a 1000 to 1 chance of flooding in any year. It includes those areas defined in flood zone 3

Flood zone 3 – best estimate of the areas of land with a 100 to 1 chance (or greater) of flooding each year from rivers, or with a 200 to 1 chance (or greater) of flooding each year from the sea.

Flood Storage Area - may also be referred to as a balancing reservoir, storage basin or balancing pond. Its purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer interval.

Development Advice Maps

The Welsh Government Technical Advice Note TAN15 Development and Flood Risk gives technical guidance in relation to development and flooding.

http://wales.gov.uk/topics/planning/policy/tans/tan15/

TAN15 is supported by Development Advice Maps (DAM). The map on the right on the previous page shows the main rivers and the flooding zones shown on the Development Advice Maps.

Zone B - Areas known to have been flooded in the past evidenced by sedimentary deposits.

Zone C1 - Areas of the floodplain that are developed and served by significant infrastructure, including flood defences.

Zone C2 - Areas of the floodplain without significant flood defence infrastructure

Main rivers – The watercourses shown as main rivers on the second map above right are designated by Defra. Natural Resources Wales has permissive powers to carry out flood defence works, maintenance and operational activities for main rivers only.

Links to further information:

More information and advice on flooding: http://naturalresourceswales.gov.uk/alerts/

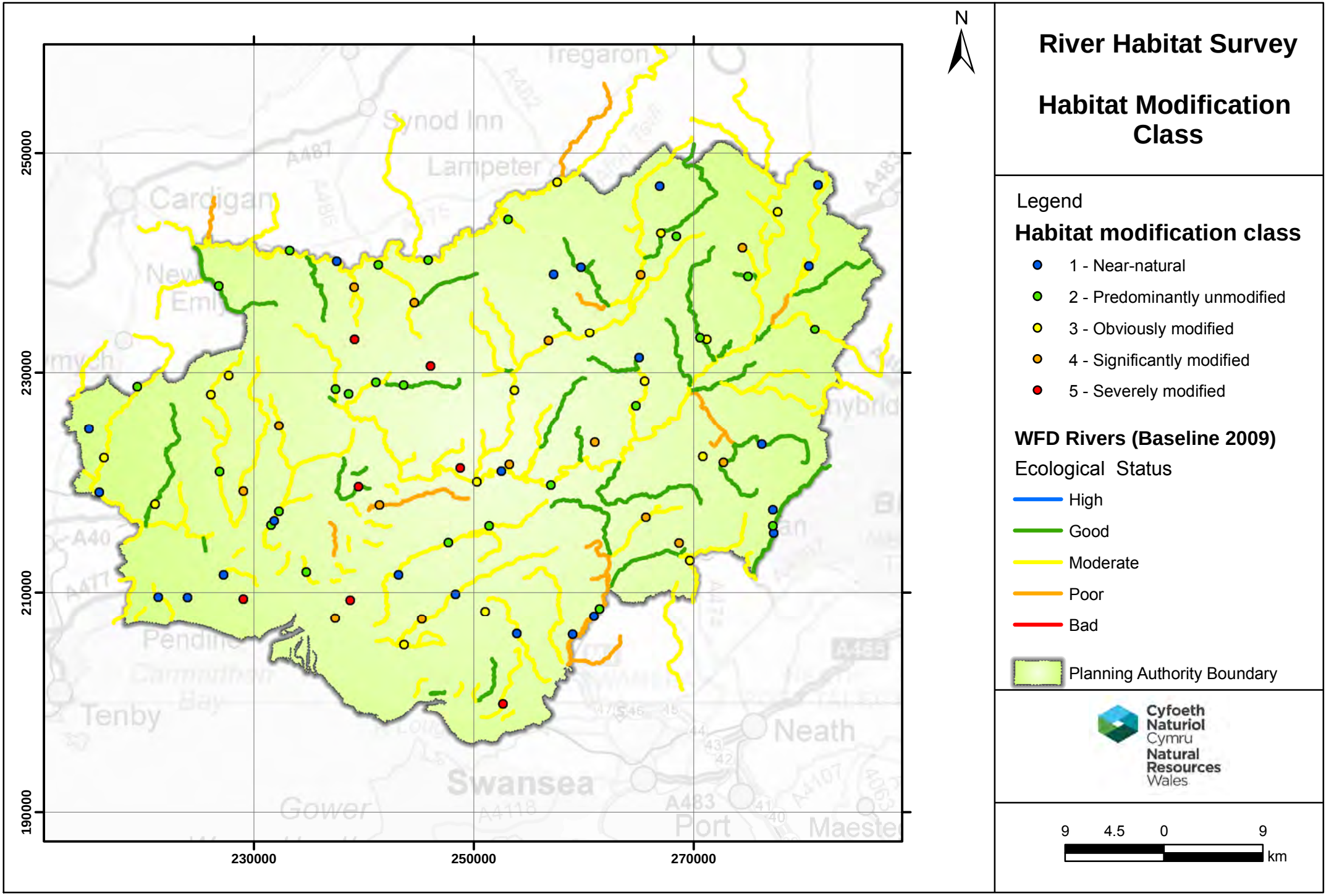
Use the 'What's in your backyard?' facility to find out if an area is at risk by entering in the postcode.

Environment Agency - What's in your backyard? (http://www.environment-agency.gov.uk/homeandleisure/37793.aspx)

The Development Advice Map (DAM) for use with Technical Advice Note (TAN) 15 is available as an Interactive Development Advice Map: http://data.wales.gov.uk/apps/floodmapping/

There is also an early warning system available for people who live in high risk areas called the 'Flood Warning' system.

Ring **0845 988 1188** to see if you can sign up to the free service. Warnings can be delivered by phone, text, email, fax or pager.



River Habitat Survey

Habitat Modification Class

Legend

Habitat modification class

- 1 - Near-natural
- 2 - Predominantly unmodified
- 3 - Obviously modified
- 4 - Significantly modified
- 5 - Severely modified

WFD Rivers (Baseline 2009)

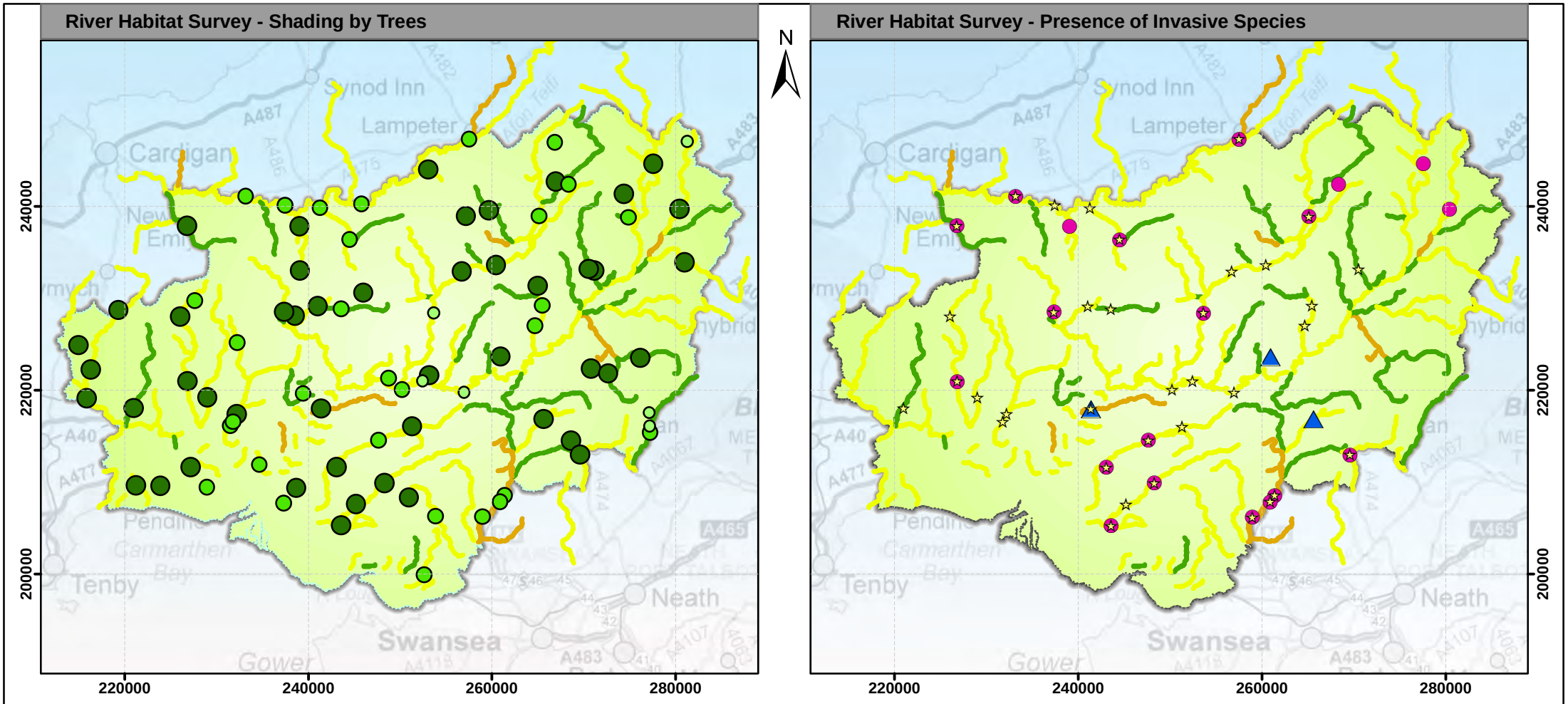
Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

Planning Authority Boundary

Cyfoeth Naturiol Cymru
Natural Resources Wales

9 4.5 0 9
km



River Habitat Survey

Tree Shading and Invasive Species

See table following for details of invasive species found

Legend

River Shading by Trees

- Extensive
- Present
- None

Planning Authority Boundary

WFD rivers (Baseline 2009) Ecological Status

- High
- Good
- Moderate
- Poor
- Bad

Invasive species present

- Himalayan Balsam
- Japanese Knotweed
- Giant Hogweed

Cyfoeth Naturiol Cymru Natural Resources Wales

9 4.5 0 9 Km

River Habitat Survey Sites

Habitat Modification Class:
1 - Near-natural 2 - Predominantly unmodified 3 - Obviously modified 4 - Significantly modified 5 - Severely modified

E = extensive P = present Y = present (blank if absent)

River	Site Grid Reference	Habitat Modification Class	Tree Shading	Giant Hogweed	Himalayan Balsam	Japanese Knotweed
TRIB OF DULAIS	SN7115933011	3	E			
GWYDDERIG	SN8100033915	2	E			
BRAN	SN8045639700	1	E			Y
DUNANT	SN7490038772	2	P			
COTHI	SN6516538900	4	P		Y	Y
GWEILAIS	SN7440041340	4	E			
DULAIS	SN7053633153	2	E		Y	
NANT BAI	SN7761044637	3	E			Y
DAFEN	SS5262099875	5	P			
TRIB OF GWENDRAETH FAWR	SN4524807577	4	E		Y	
GWENDRAETH FAWR	SN4830709842	1	E		Y	Y
TRIB OF GWENDRAETH FAWR	SN4361105263	3	E		Y	Y
TRIB OF AMAN	SN6863514495	4	E			
TRIB OF AMAN	SN6962512920	3	E		Y	Y
LLWCHWR	SN6563616824	4	E	Y		
GWENDRAETH FACH	SN4311411615	1	E		Y	Y
GWENDRAETH FACH	SN4767414534	2	P		Y	Y
TRIB OF MYDDYFI	SN6098723627	4	E	Y		
UN-NAMED	SN2393009550	1	E			
UN-NAMED	SN2899709406	5	P			
TAF	SN1633422242	3	E			
TRIB OF TAF	SN1499024870	1	E			
TAF	SN1590719114	1	E			
GFONW	SN2100218011	3	E		Y	
TRIB OF TAF	SN2722011620	1	E			
PYLE BACH	SN6500031336	1	E			
UNNAMED	SN2126009595	1	E			

River	Site Grid Reference	Habitat Modification Class	Tree Shading	Giant Hogweed	Himalayan Balsam	Japanese Knotweed
AFON DEWI FAWR	SN2903119200	4	E		Y	
AFON SIEDI	SN3909437800	4	E			Y
AFON TEIFI	SN3750040125	1	P		Y	
NANT PIBWR	SN4139817957	4	E	Y	Y	
DULAIS	SN6549429200	3	P		Y	
DULAIS	SN6471727000	2	P		Y	
CYCH	SN2680037882	2	E		Y	Y
COTHI	SN5675032895	4	E		Y	
COTHI	SN6050033600	3	E		Y	
TAF	SN1935528700	2	E			
NANT MOELEN	SN5721738928	1	E			
TRIB DUAD	SN3914533000	5	E			
MARLAIS	SN5970039570	1	E			
TEIFI	SN3321041085	2	P		Y	Y
COTHI	SN6697042670	3	E			
CLAWDD	SN6687046956	1	P			
TRIB OF CYNNANT FAWR	SN8128047072	1				
COTHI	SN6839642393	2	P			Y
TEIF	SN5757047311	3	P		Y	Y
DUAR	SN5310043954	2	E			
TEIFI	SN4581240241	2	P			
TYWELI	SN4456036390	4	P		Y	Y
LLWCHWR	SN6140308512	2	P		Y	Y
LLWCHWR	SN6091407851	1	P		Y	Y
LOUGHOR	SN5896706176	1	P		Y	Y
MORLAIS	SN5387006255	1	P			
UN	SN3736107667	4	P			
GWENDRAETH FACH	SN5136116027	2	E		Y	
TYWI	SN5699719760	2			Y	
TRIB OF TYWI	SN3473011862	2	P			

River	Site Grid Reference	Habitat Modification Class	Tree Shading	Giant Hogweed	Himalayan Balsam	Japanese Knotweed
TRIB OF TYWI	SN3947619604	5	P			
CYWYN	SN3224717384	2	E		Y	
TRIB OF TYWI	SN5319121606	4	E			
TYWI / TOWY	SN5247421006	1			Y	
COTHI	SN5368228397	3			Y	Y
TRIB OF TYWI	SN4874021295	5	P			
GWILI	SN4106029122	2	E		Y	
GWILI	SN4360228851	2	P		Y	
TRIB OF GWILI	SN3857428074	2	E			
DUAD	SN3740128498	2	E		Y	Y
NANT CWM DAFYDD	SN4603630594	5	E			
CYWYN	SN3153116122	2	P			
NANT Y LLYN	SN7715917525	1				
TWRCH	SN7725415390	1	P			
TWRCH	SN7718716056	2				
TYWELI	SN4129839798	2	P		Y	
TRIB. OF MEILWCH	SN7080022328	3	E			
CLYDACH	SN7269021793	4	E			
SAWDDE	SN7615723465	1	E			
UNNAMED	SN3874309315	5	E			
UNNAMED	SN5101708284	3	E			
TWYI / TOWY	SN5024720024	3	P		Y	
CYWYN	SN3180516518	1	P		Y	
CYWYN	SN3226725157	4	P			
TRIB. OF CYNIN	SN2766729735	3	P			
ASEN	SN2607527976	3	E		Y	
SLEN	SN2684820957	2	E		Y	Y

River Habitat Survey

The River Habitat Survey (RHS) baseline survey is a major habitat survey of streams and rivers in England, Wales and the Isle of Man that was carried out, most recently, between May 2006 and September 2008.

The RHS is a standard field survey of 500 metre stretches of river. Data are collected about the physical character of the banks and channel. This includes specific details about the bank and channel structure such as natural features, artificial modifications, land-use and bankside vegetation structure. Other key features and modifications (for example, the extent of tree shading and the presence of invasive species) are recorded as absent, present (up to 33 per cent of the site) or extensive (more than 33 per cent) across the 500m stretch.

Note: The main aim of RHS baseline surveys is to provide an authoritative assessment of the physical character of river habitats and assess changes across the whole of England and Wales. The sample size is not big enough to provide statistically valid summary results at scales smaller than this, but the results are indicative on a site basis.

Habitat Modification Class

The Habitat Modification Class (HMC) is based on an assessment of the presence and extent of artificial modifications: bank and channel resectioning; bank and channel reinforcement; culverts and bridges; fords; weirs, dams and sluices; in-stream deflectors and drainage outfalls; embankments and artificial berms (two-stage channels); bankside trampling by livestock.

Where there are long stretches of reinforcement or resectioning, the river is less likely to be able to offer habitats for wildlife.

Riverside trees and shading

Trees are an important feature of river channel and riparian habitats. They help to protect banks by forming a natural barrier to erosion, due to the binding effect of their roots. Trees also act as habitats in their own right. Exposed roots form suitable shelters for otters, overhanging branches act as perches for kingfishers, and fine roots create shelter for invertebrates and fish. Shading of the channel from riverside trees can be important for regulating the temperature of the water, particularly for smaller headwater streams.

Invasive non-native plants on river banks

RHS collects data on three invasive non-native plants - Himalayan balsam, Japanese knotweed and giant hogweed. These plants can cause problems by displacing the natural plant species and also causing bank erosion when they die in winter. As RHS only records plants growing by the riverside, the results only show their distribution in riparian habitats. All these species are widespread elsewhere in the countryside and in particular along paths and railways. It is important to note that although our data may show these plants are not present at a particular site, this does not necessarily mean that they are not found along the river as a whole.

Himalayan balsam

Himalayan (or Indian) balsam (*Impatiens glandulifera*) grows in dense patches and suppresses the growth of native plants. In winter it dies, providing little shelter and food for wildlife and leaving bare river banks more susceptible to erosion.

Giant hogweed

Giant hogweed (*Heracleum mantegazzianum*) was introduced as an ornamental plant. It has since escaped from gardens and spread across the country, particularly along watercourses. The sap can cause serious blisters and skin irritation.

Japanese knotweed

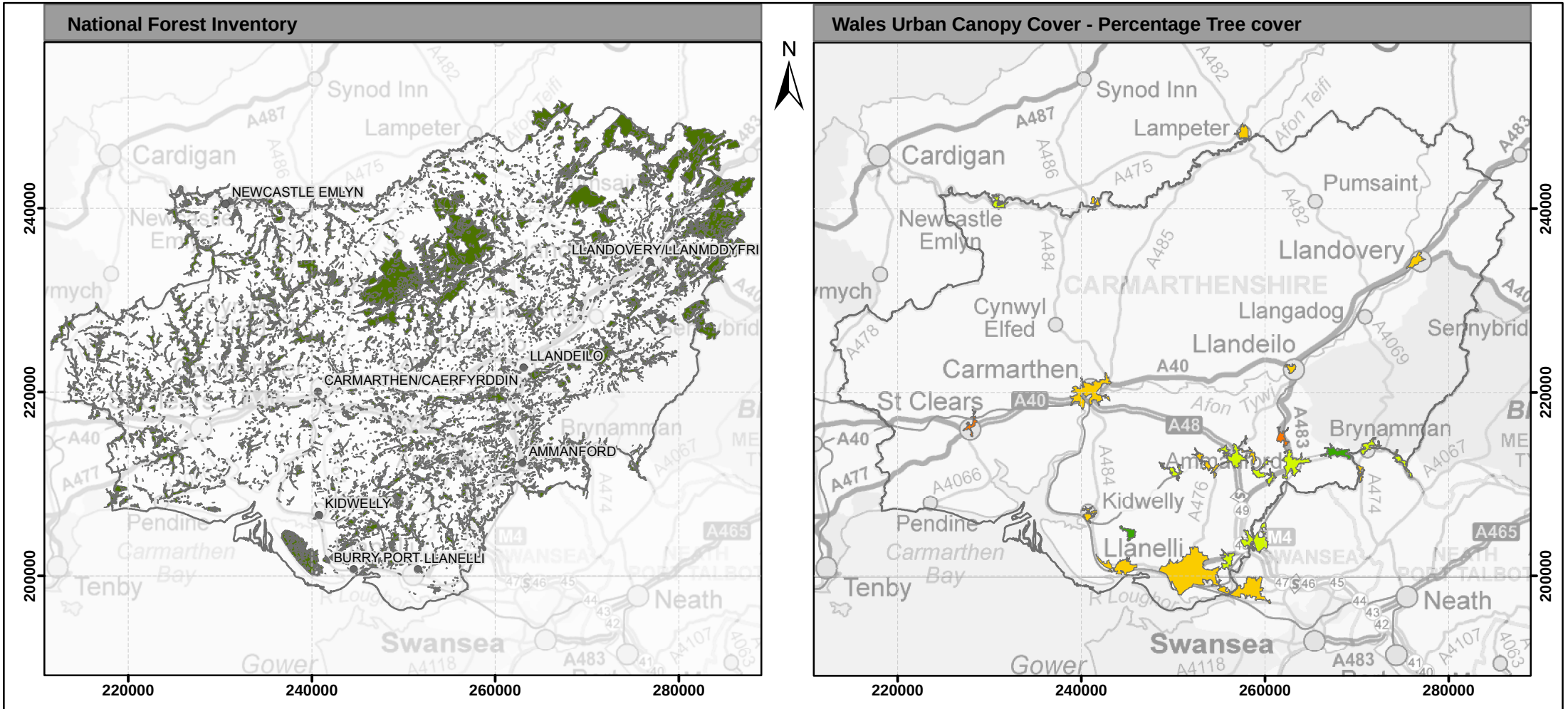
Japanese knotweed (*Fallopia japonica*) was introduced to Britain in the early nineteenth Century and has spread through a range of habitats and along watercourses. It is very fast growing and can penetrate through concrete, causing structural damage to roads and buildings, as well as displacing native species.

Links to further information:

Environment Agency - The state of river habitats in England & Wales
http://www.environment-agency.gov.uk/research/library/publications/123383.aspx

River habitats in Wales: current state and character

http://publications.environment-agency.gov.uk/pdf/GEHO0910BTAJ-E-E.pdf



The National Forest Inventory & Wales Urban Canopy Cover

Legend

National Forest Inventory

- Woodland
- Planning Authority Boundary
- Towns & Cities

Tree Cover (%)

- 0-5
- 5-10
- 10-15
- 15-20
- 20-25
- >25

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7.5 3.75 0 7.5 km

The National Forest Inventory

The map on the left on the previous page shows the National Forest Inventory.

This dataset provides a view of the extent and nature of woodlands in Wales. It records all woodland areas greater than 0.5 ha in area in urban and rural areas. National Inventory surveys have been carried out at 10-15 year intervals since 1924 so there is historic data available for comparison. The inventories used to be known as the National Inventory of Woodlands & Trees (NIWT). There are some differences in the survey information due to improvements in technology and the inclusion of urban woods.

Wales Urban Canopy Cover

The benefits of urban woodlands and trees are clear, and the need to protect them and increase their numbers is compelling:

- Providing ecosystem services – temperature regulation, habitat and biodiversity, water regulation, noise reduction, reduction in air pollution, aesthetic benefits.
- Supporting economic regeneration, e.g. through increased town centre shopping, higher property values and provision of employment.
- Their planting, maintenance and presence helps build community ('social capital'), pride and engagement, and reduces anti-social behaviour.
- Urban trees promote better health, both mental and physical

In its strategy for woodlands and trees, Woodlands for Wales, the Welsh Government states its aim to ensure that woodlands and trees play a greater and more valued role in towns and cities, improving quality of life and surroundings for people who live in urban areas.

The Wales Urban Canopy Cover dataset shows tree cover for two hundred and twenty urban areas across Wales. The study was carried out in 2006 and again in 2009. The data will be useful to formulate evidence-based policy on urban trees and to target towns and wards in need of trees.

We will publish a report on the Wales Urban Canopy Cover project early in 2014. This report drills down to Lower Super Output Area level and analyses the data in conjunction with the Wales Index of Multiple Deprivation. We also plan to provide reports at Local Authority and town level.

The map on the right on the previous page shows percentage tree cover for the urban areas in this planning authority.

The Wales average tree cover is 17%.

You can see the Wales Urban Canopy Cover data on the Forestry Commission Wales Map Viewer (in the Forestry Commission, Policy sub-folder)

http://www.forestry.gov.uk/forestry/INFD-8A9FPS

Links to further information:

Woodlands for Wales

http://www.forestry.gov.uk/forestry/INFD-7GDE7A

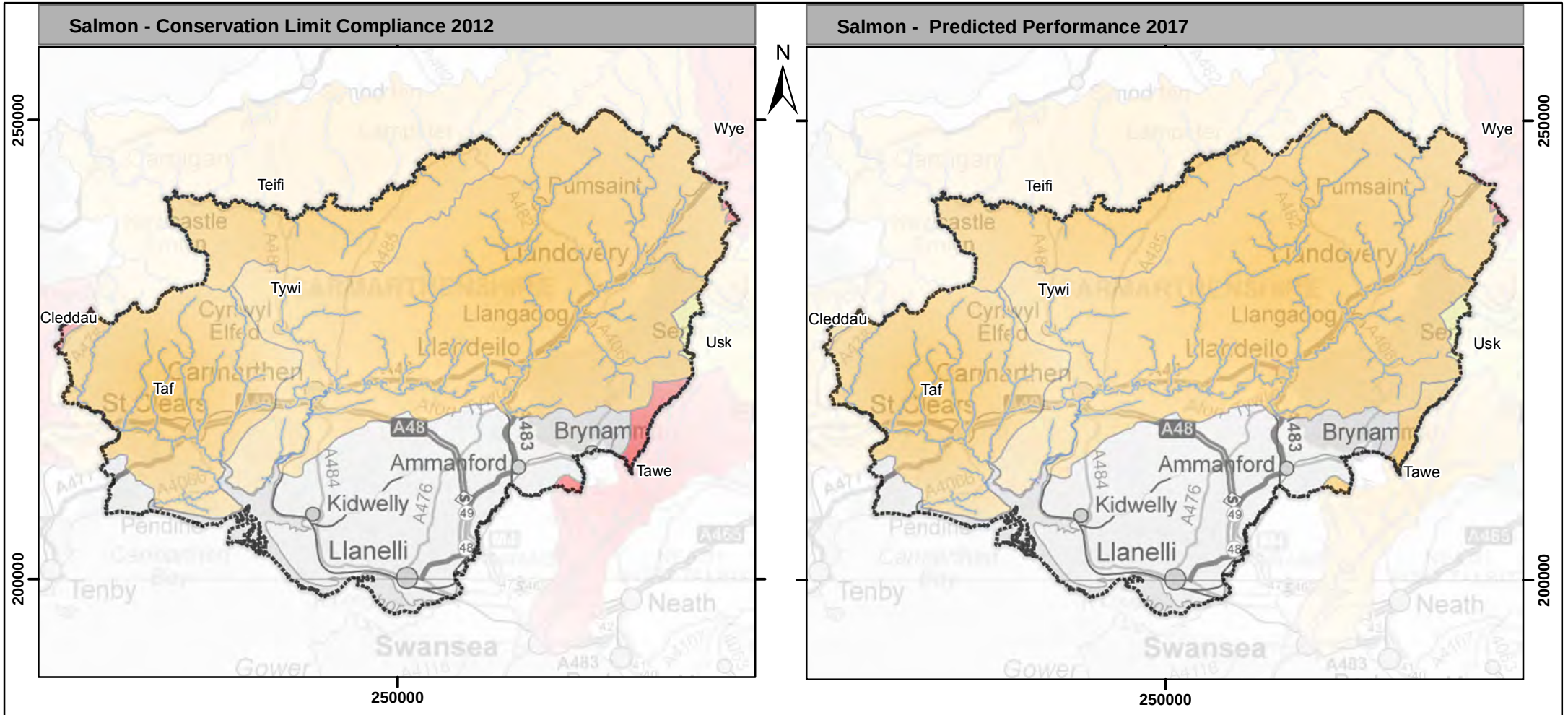
http://wales.gov.uk/topics/environmentcountryside/forestry/woodlandsforwales/

Forest Research website http://www.forestry.gov.uk/fr/research

Forest Research - Urban trees and greenspace in a changing climate http://www.forestry.gov.uk/fr/urbanclimate

Forestry Commission Wales - Urban Trees (benefits of urban trees and links to further info)

http://www.forestry.gov.uk/forestry/INFD-8J2HGS



Salmon Action Plans

Conservation Limit Compliance and Predicted Performance

Legend

- At risk
- Prob at risk
- Probably not at risk
- Not at risk
- Not assessed
- Local Authority Boundary

Cyfoeth Naturiol Cymru Natural Resources Wales

10 5 0 10 Km

Salmon Action Plans

Salmon Action Plans

The two maps on the previous page show current status and five year forecast status for principal salmon rivers indicating level of risk to salmon populations. The main issues for each river are shown in the table following.

Natural Resources Wales has a series of action plans, based on river catchments, setting out what needs to be done to support and restore salmon populations. Salmon Action Plans can be seen here: http://www.environment-agency.gov.uk/research/library/publications/33967.aspx

Natural Resources Wales' Salmon Management Strategy concentrates on four main objectives for the management of salmon:

- optimise number of salmon returning to home water fisheries
- maintain and improve fitness and diversity of salmon stocks
- optimise the total economic value of surplus stocks
- ensure necessary costs are met by beneficiaries

Objectives are addressed by means of local Salmon Action Plans (SAPs) – produced annually for each principal salmon river. Each SAP reviews the salmon stock and salmon fisheries on a particular river, and seeks to identify the main issues responsible for limiting performance. In addition, an annual assessment of performance is made and reported.

There are 23 principal salmon rivers in Wales (including the Severn, which the Environment Agency leads on). This list of principal salmon rivers was determined on catch size in the 1990's.

Key Issues Affecting Performance

A number of contributory factors that may constrain or adversely affect salmon stock performance have been identified. These include: exploitation (fishing); water quality; water quantity; river channel structure and siltation; and in-river obstructions to migration. The severity of each of these factors will be different from river to river. Even rivers where the salmon stock is performing well may have factors that are adversely affecting stocks.

- Channel structure and siltation are a key problem in most rivers across Wales. Intensive agriculture, forestry and the downstream impacts of water supply reservoirs impact on some rivers. New developments may give rise to local impacts by modifying channel structure and/or silt loadings.
- Water quality problems affect many rivers, and may be attributed to industrial discharges, agricultural pollution, metal mining, sewerage systems and acidification. Opportunities to improve water quality should be considered.
- Whilst major obstructions are thought to be significant on only a few rivers, their impact can be substantial. The effects are usually associated with historic mills, water supply, hydropower, aquaculture and tidal barrages, although new developments may give rise to new problems.

The annual assessment for principal salmon rivers includes current and forecast stock performance and main factors responsible for suppressing a river's performance.

http://www.environment-agency.gov.uk/research/library/publications/33945.aspx

Salmon Action Plans

Key Issues Affecting Performance

River	Exploitation	Water Quality	Water Quantity	Channel Structure and Siltation	Obstructions
Tawe					X
Wye	X	X	X	X	X
Usk	X		X	X	X
Teifi			X	X	X
Taf		X		X	X
Tywi				X	X
E&W Cleddau		X		X	X

List of Abbreviations

AMP	Asset Management Plan (Water Companies)
AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
BOD	Biochemical Oxygen Demand
CAMS	Catchment Abstraction Management Strategies
cBWD	Current Bathing Water Directive
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow (a combined sewer is one carrying foul sewage and surface water)
DCWW	Dŵr Cymru/Welsh Water
Defra	Department of the Environment, Food and Rural Affairs
EC	European Commission (When referring to bathing waters - bathing waters designated under the EC Bathing Waters Directive (76/160/EEC)
EPR	Environmental Permitting Regulations – the new environmental permitting regime that replaces WML and IPPC
GQA	General Quality Assessment
IPPC	Integrated Pollution Prevention and Control – predecessor permitting regime to EPR
LA	Local Authority
LSOA	Lower Layer Super Output Area – statistical area (containing a population of about 1,500 people). Used in Wales Index of Multiple Deprivation
Natura 2000	Natura 2000 is the European Union-wide network of protected areas under the EC Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). Includes SACs and SPAs.
NEP	National Environment Programme
NGR	National Grid Reference (location of site)
Non-EC	(When referring to bathing waters) bathing waters not designated under the EC Bathing Waters Directive but monitored by Local Authorities
NO_x	Nitrogen oxides (nitrous oxide and nitrogen dioxide)
NVZ	Nitrate Vulnerable Zone
OFWAT	The economic regulator for the water and sewerage industry in England and Wales
PM_{10}	Particulate Matter – particles of diameter less than 10 µm
RBD	River Basin District
rBWD	The revised EC Bathing Water Directive (2006/7/EC) that was transposed into UK law in 2008
RHS	River Habitat Survey
RQO	River Quality Objective
SA	Sensitive Area (as defined in the Urban Waste Water Treatment Directive)
SAC	Special Areas of Conservation (SAC). SACs are designated under the EC Habitats Directive
SAP	Salmon Action Plan
SEA	Strategic Environmental Assessment
SOx	Sulphur oxides
SPA	Special Protection Areas (SPA). SPAs are classified under the EC Wild Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds).
SPZ	Groundwater Source Protection Zone
SSSI	Site of Special Scientific Interest Identified / notified by the Countryside Council for Wales under the Wildlife and Countryside Act 1981 for its importance to nature conservation.
STW	Sewage Treatment Works
TAN15	Technical Advice Note about Development and Flood Risk (published by the Welsh Government)
TAN15 DAM	Development Advice Map (Used to determine when flood risk issues need to be taken into account in planning future development. Published by the Welsh Government.)
UWWTD	Urban Waste Water Treatment Directive (91/271/EEC)
WG	Welsh Government
WFD	EC Water Framework Directive (2000/60/EC)
WIMD	Wales Index of Multiple Deprivation
WML	Waste Management Licence – now being superseded by EPR permits
WWTW	Waste Water Treatment Works i.e. sewage treatment works