

# **Pembrokeshire Coast National Park Management Plan (2020-2024)**

*Background Paper 7:*  
Natural resources

Pembrokeshire Coast National Park Authority  
September 2018

## **About the UK's national parks**

The purposes of UK National Park are set out in the Environment Act 1995. They are:

- (a) conserving and enhancing the natural beauty, wildlife and cultural heritage of the area
- (b) promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public

In the event of an irreconcilable conflict between the purposes, conservation has greater weight (the 'Sandford principle').

Pembrokeshire Coast National Park Authority is charged with delivering the purposes in Pembrokeshire Coast National Park and has a duty to seek to foster the social and economic wellbeing of National Park communities in its pursuit of the purposes.

## **Management Plan 2020-2024**

Each National Park Authority is required to prepare a five-yearly National Park Management Plan "which formulates its policy for the management of the relevant Park and for the carrying out of its functions in relation to that Park" (Environment Act 1995, section 66). The Environment Act 1995 gives relevant authorities a legal duty to have regard to Park purposes and to the Sandford Principle<sup>1</sup>.

A number of background papers have been compiled in preparation for the Pembrokeshire Coast National Park Management Plan 2020-2024. They cover:

1. Landscape, seascape, tranquillity and dark skies
2. Well-being, equality and livelihoods
3. Outdoor recreation and learning
4. Nature conservation
5. Culture and heritage
6. Climate and energy
7. Natural resources
8. Legislation and policy

The Well-being of Future Generations (Wales) Act 2015 and The Environment (Wales) Act 2016 add further statutory backing to National Park purposes and the need for participation and collaboration to achieve them. However there is a two-way relationship between National Park purposes and the legislation. The topic areas are intended to reflect this complementarity, to demonstrate the alignment of National Park policy with Wales' well-being, climate, natural resource and ecosystem resilience goals, and to help identify opportunities to add value between national and local policy areas. The South-west and Marine area statements prepared by Natural Resources Wales will also be an important component of management.

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<sup>1</sup> "In exercising or performing any functions in relation to, or so as to affect, land in a National Park, any relevant authority shall have regard to the purposes [...] and, if it appears that there is a conflict between those purposes, shall attach greater weight to the purpose of conserving and enhancing the natural beauty, wildlife and cultural heritage of the area comprised in the National Park." (Environment Act 1995, s.62)

The background papers set out the state of the National Park and provide a context for identifying opportunities and challenges that the Management Plan will need to address. The opportunities and challenges, and accompanying maps, are set out in an informal document for early engagement with partners and public.

The background papers are technical in nature. Where use of technical terms is unavoidable, they are explained in the text and/or in a glossary.

### **A place-based approach**

While many natural resource issues are best considered at a landscape-scale, action locally should take account of local circumstances. It is proposed that the Management Plan 2020-2024 adopts a place-based approach to policy implementation, with five areas identified as follows:

- Preseli Hills and North Coast
- North-west Coast
- West Coast
- Daugleddau
- South Coast

### **Next steps**

An outline timetable for Management Plan preparation was approved in the Authority's Corporate and Resources Plan 2018/19 (page 33). A more detailed timetable is given below. This was approved by the National Park Authority at its meeting of 20<sup>th</sup> June 2018.

<b>Milestone</b>	<b>By whom/when</b>
Draft preparation timetable, and methods of engagement	Leadership Team, external bodies. May 2018
Approve timetable and engagement proposals	National Park Authority. June 2018
Engage with key stakeholders: <ul style="list-style-type: none"> <li>• Collate evidence (outcomes, issues, policy impact)</li> <li>• Draft / revise Plan and associated assessments (see "Requirements for impact assessments" below)</li> <li>• Prepare an action planning framework</li> </ul>	July to December 2018
Member Workshops to discuss draft reports and assessments	Spring 2019
Authority approval of consultation draft documents (Management Plan, Sustainability Appraisal / Strategic Environmental Assessment, Habitats Regulations Assessment, Equality Impact Assessment)	National Park Authority June 2019
Translation and formatting	June/July 2019
Public consultation (12 weeks)	Park Direction Team August 2019 - October 2019
Report of consultations to Authority. Authority approval of amended documents.	National Park Authority December 2019

<b>Milestone</b>	<b>By whom/when</b>
Translation and formatting	Park Direction/Graphics Team December 2019/ January 2020
Feedback to consultees	December 2019
Publication of approved Management Plan and assessments; formal notification / adoption statements.	January 2020

## Opportunities and challenges identified from this background paper

Addressing issues for water bodies at poor or moderate status, especially diffuse pollution (from e.g. nitrates and phosphates).

Conserving and restoring water levels and natural flow regimes.

Addressing land management risks to soil and soil biodiversity.

Conserving and enhancing soil and vegetation carbon storage.

Reducing air pollution, including ammonia emissions.

Encouraging use of public transport and active travel.

Protecting earth heritage sites.

*See also background papers 4. Nature conservation and 6. Climate and energy.*

## 1. Designated earth heritage sites

1.1 The Pembrokeshire Coast National Park contains 52 Geological Conservation Review (GCR) sites, covering about 40% of the Pembrokeshire Coastline (excluding the Milford Haven waterway and Daugleddau). All GCR sites are protected by SSSI status. The following table lists GCR sites in Pembrokeshire, and their condition (note: condition for geological sites is dependent on accessibility, visibility and usability, i.e. on the value of the site for research and education).

1.2 In addition to the GCR sites listed above 66 candidate Regionally Important Geological Sites (RIGS) have been identified in the National Park.

Condition and trend	Number of features <sup>2</sup>	Percentage of features
Favourable no change*	44	84.6%
Favourable declining	5	9.6%
Unfavourable	3	5.8%

\* This category includes sites classed as 'Favourable no significant change', 'Favourable unknown' and 'Favourable improved'. Many of these Geological Conservation Review sites cover long stretches of coastline, so in some cases there are small pockets where the feature condition is not favourable.

1.3 Although the table above suggests good management, most of the work in maintaining geological exposure is done by natural processes (e.g. marine erosion). Some erosion is generally necessary to maintain coastal rock exposures, and erosion is a process of interest in itself. However geological features should be recorded before they are lost and natural processes documented as they happen. This record would also help inform civil engineering schemes, such as coastal protection projects.

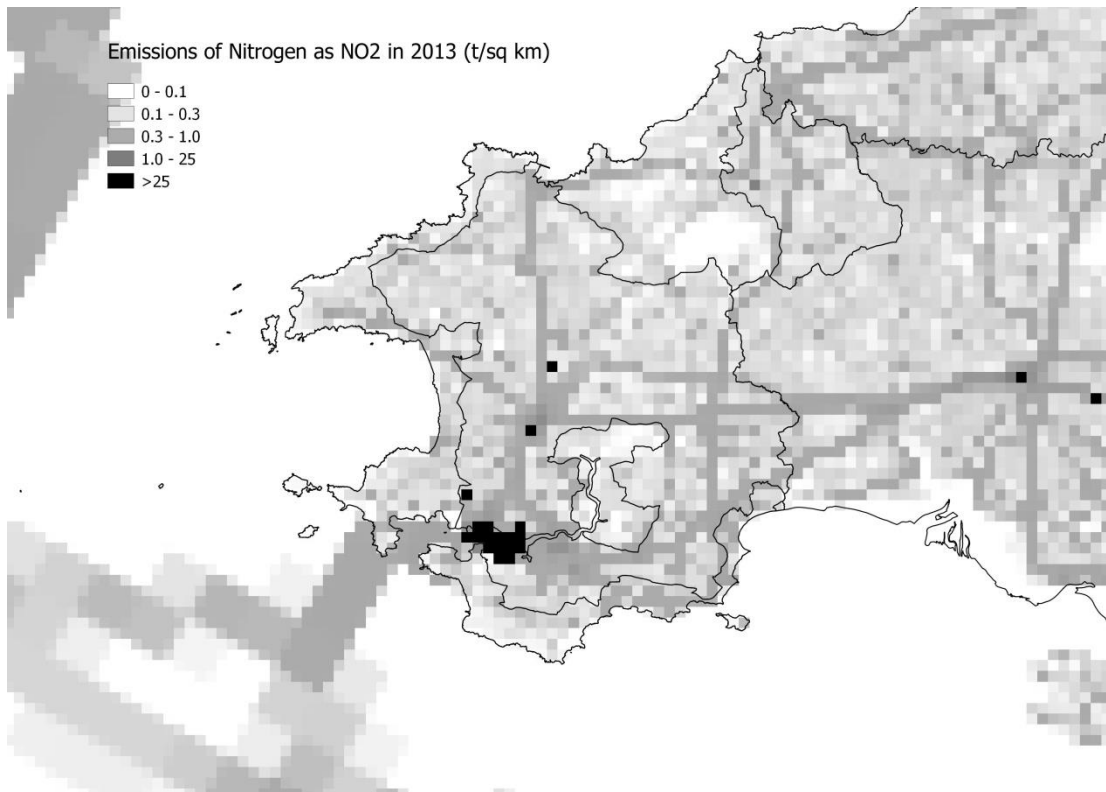
1.4 In many inland areas there have been losses of key geological exposures since the last detailed mapping phase in the early 1900s due to, for example, development, dumping of waste materials and encroachment by vegetation.

## 2. Air quality

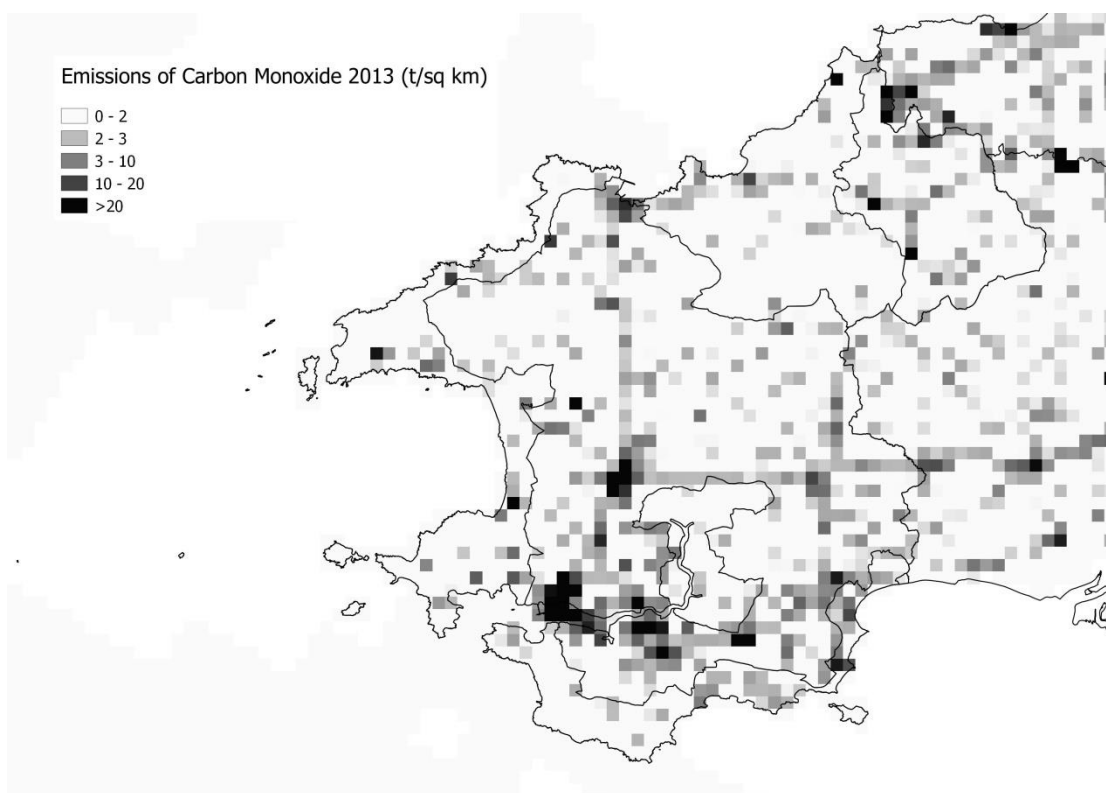
2.1 A range of air pollution emissions data and maps, with emissions broken down by sector are available from the web site of the National Atmospheric Emissions Inventory (<http://www.naei.org.uk/index.php>). Emissions maps for Pembrokeshire in 2012 are presented below for Oxides of Nitrogen (NOx) and Carbon Monoxide, and the 2012 emissions map for particulate matter smaller than 10µm.

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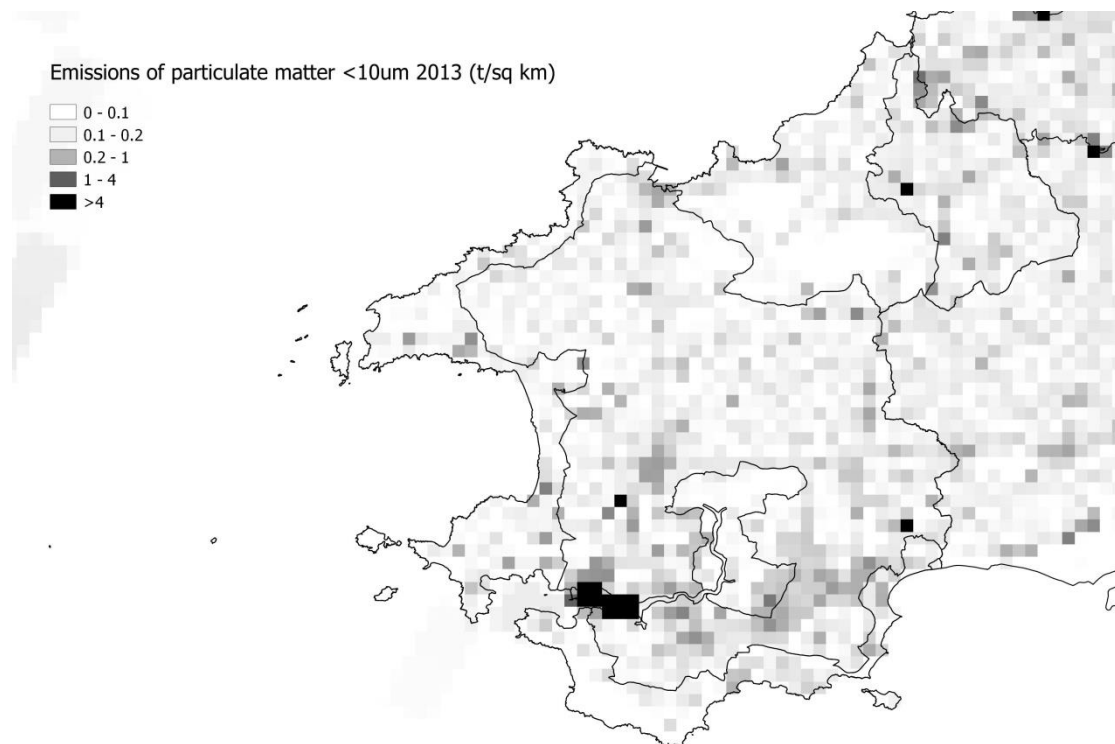
<sup>2</sup> A 'feature' refers here to an earth heritage object or natural process.



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### 3. State of Natural Resources Report 2016

3.1 The report includes the following natural resource condition, extent and trend data in relation to Wales as a whole:

#### Air quality

- The decline in heavy industry alongside regulation has resulted in a reduction in emissions of some pollutants, such as particulate matter. Other sources, that are subject to less or no regulatory control, such as transport, agriculture and domestic heating, have become more of a concern.
- Ammonia remains an issue, both as a local air pollutant and as a contributor to the formation of secondary particulate matter, concentrations of which have risen in Wales in recent years, largely due to changes in agricultural practice.
- 90% of semi-natural nitrogen sensitive Welsh habitats are subject to nitrogen deposition in excess of critical load limits.

#### Freshwater

- The landscape and geology of Wales provide few natural stores of water either in aquifers or soils. This means that rainfall generally travels quickly to rivers and streams and little is held back to slowly pass through the ground to maintain river flows (base flows) in drier periods. Rivers rise rapidly when it rains and drop quickly afterwards. As a consequence, the flows in all Welsh rivers can change particularly quickly leading to flood conditions, but also to very low flows in extended periods of dry weather.



- Changes in hydraulic conditions are identified as having an impact or likely to have an impact on 40%) of Wales' Natura 2000 sites
- Climate change is predicted to affect the amount and distribution of rainfall, with consequences for flows and water levels and for drought and flood events which may become more common. Work carried out in 2002 showed that by 2050 river flows in winter may rise by 10-15% but in the summer and early autumn could reduce by over 50% and as much as 80% in some places.
- Climate change may affect groundwater recharge. By 2025 it is likely that groundwater recharge will decrease, resulting in decreased dry weather river flows and a general lowering of groundwater levels. This may have impacts on base-flow to rivers and wetlands in dry periods and affects small domestic and agricultural water supplies.

### **Marine and coastal**

- Climate change effects are the main broad scale driver of change for coastal and marine hydrological processes, including changes to tidal levels due to sea-level rise and increased storminess leading to increases in wave energy.
- Climate change is also predicted to increase sea surface temperatures, to affect salinity to a lesser degree and may increasingly affect mixing and stratification over time.

### **Soil**

- More than 400 different soil types are found in Wales. They contribute to, reflect, and support biodiversity, landscapes and land uses.
- Welsh soils contain 410 million tonnes of carbon.
- The soils of best quality and most productive agricultural land are a scarce and finite resource in Wales; accounting for less than 7% of land area
- Soil quality has deteriorated across all habitats apart from woodlands where there has been some improvement.
- Around 10-15% of grassland fields in England and Wales are thought to be affected by severe soil compaction and 50-60% are in moderate condition
- Only 30% of the Welsh peat soil area is considered to be in good condition.
- Climate change related risks are threatening the many services that soils provide, notably those that relate to soil biota, soil organic matter, and soil erosion and compaction.

## **4. Soils**

4.1 Soils is a 1:250,000 scale, simplified soils dataset, created from the more detailed National Soil Map with the purpose of effectively communicating a general understanding of the variations which occur between soil types, and how soils affect the environment. It is developed by Cranfield University and sponsored by DEFRA.

4.2 The majority of the National Park area is classified as one of the following types:

Soilscape 6: Freely draining slightly acid loamy soils  
Soilscape 7: Freely draining slightly acid but base-rich soils  
Soilscape 13: Freely draining acid loamy soils over rock  
Soilscape 16: Very acid loamy upland soils with a wet peaty surface  
Soilscape 17: Slowly permeable seasonally wet acid loamy and clayey soils  
Soilscape 19: Slowly permeable wet very acid upland soils with a peaty surface  
Soilscape 20: Loamy and clayey floodplain soils with naturally high groundwater

## 5. Water quality

5.1 The classification (under the Water Framework Directive (2000) classification system) of water bodies in the National Park is generally “Moderate” according to the most recent assessments, which were carried out in 2012. A water body that is of “moderate” status is one that “Good” or “High” ecological status but is failing to achieve a “Good” chemical status. The table below shows a summary of the overall status of water bodies under the Water Framework Directive classification system.

Water Body Category	Overall status						
	Total No. Water Bodies	High	Good	Moderate	Poor	Bad	Not yet assessed
River	85		13	69	3		
Lake	2		1	1			
Transitional	5		2	3			
Coastal	5		2	3			
Ground Water	5		2		3		

**Source:** Natural Resources Wales (2012)

## 6. Nitrogen pollution

6.1 Atmospheric nitrogen can have significant effects on human health. It acidifies soils and freshwaters and favours a small number of fast-growing species at the expense of species of conservation concern (e.g. lichens and mosses). Critical load thresholds are being exceeded across a large proportion of UK protected sites.

6.2 The main sources of atmospheric nitrogen are ammonia and nitrogen oxides. Emissions of nitrogen oxides have been considerably reduced over recent decades, but less has been achieved in reducing ammonia emissions.

6.3 Agriculture is a primary source of ammonia emissions and of nitrate pollution. Management of cattle manure accounts for about 40% of ammonia emissions. Nitrogen is also lost from manufactured fertilisers during application. The identification of local emissions sources is the first step in targeting mitigation options such as covering slurry stores.

6.4 An agricultural ammonia emissions attribution map (for Natura 2000 receptors) – shows medium and high emission densities from cattle sector in Pembrokeshire<sup>3</sup>.

6.5 In 2016, Welsh Government consulted on proposals to manage agricultural nitrates, and an all-Wales approach is to be adopted.

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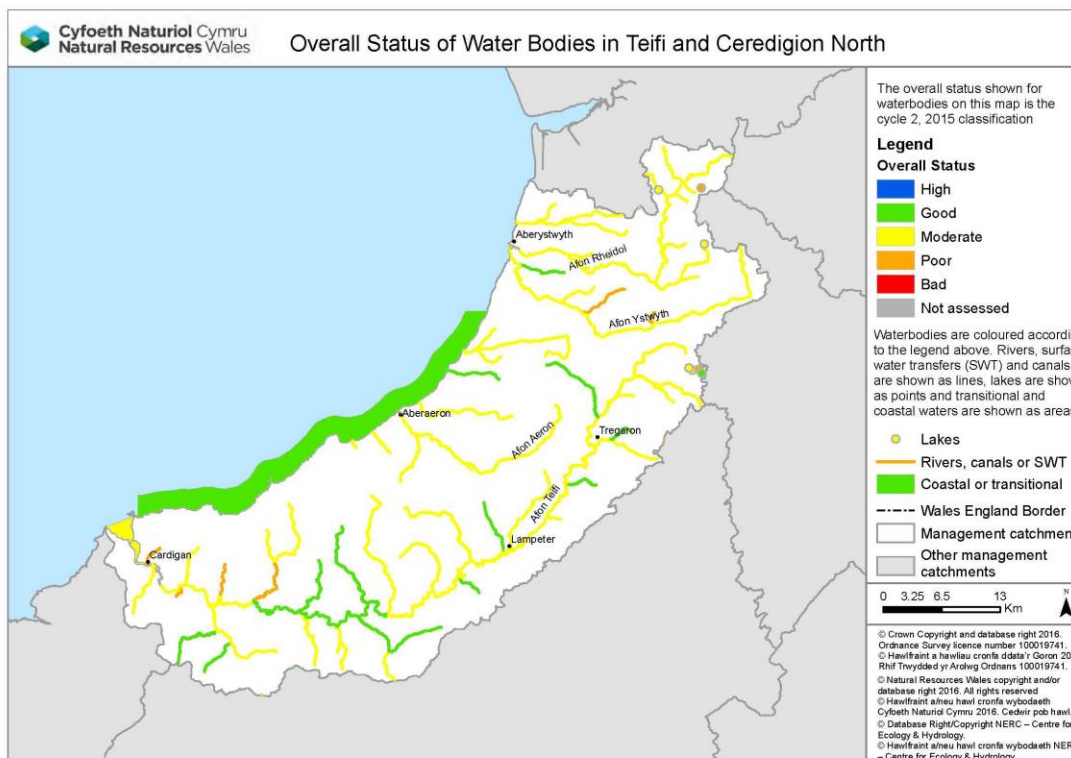
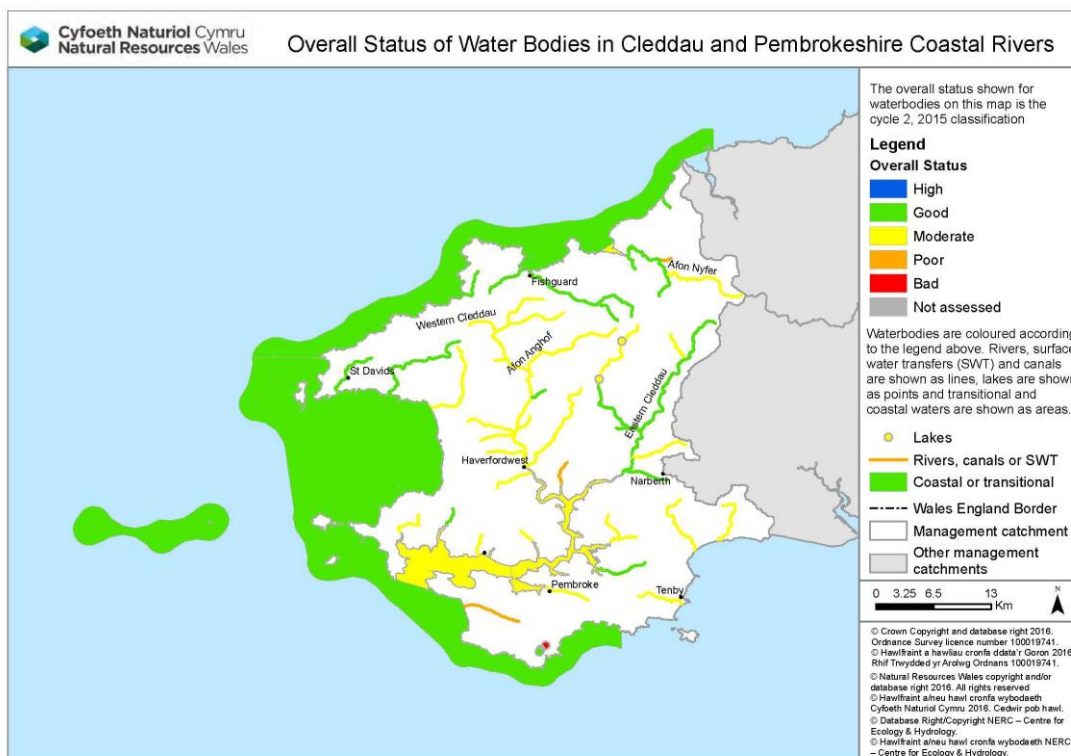
<sup>3</sup> NERC Centre for Ecology and Hydrology, 2015, Assessing and Addressing Atmospheric Nitrogen Impacts on Natura 2000 Sites in Wales

<https://naturalresources.wales/media/674560/life-n2k-aaanis-report.pdf>

DEFRA, 2018, Code of Good Agricultural Practice for Reducing Ammonia Emissions

## 7. Western Wales River Basin Management Plan 2015-2021

7.1 The river basin district includes the Cleddau and Pembrokeshire Rivers management catchment and the Teifi and North Ceredigion management catchment.



7.2 Catchment measures<sup>4</sup> for relevant authorities include:

- Emissions controls to reduce nitrogen and acidic deposition.
- regulate pollution from point sources.
- implement changes to land drainage regimes and structures to restore water levels.
- Silt reduction and disposal
- Reduce impacts of regulated flows and abstractions, restore more natural flow regimes, implement options to improve water levels, such as water efficiency and recycling measures
- management of invasive non-native species in line with current national invasive species Action Plans
- Mine water and contaminated land remediation
- Reduce impacts of flood defence structures and operations - improve connectivity, habitat, and morphology
- Target actions to ensure septic tanks are maintained correctly
- Reducing pollution from continuous and intermittent discharges, includes additional treatment at sewage treatment works and reducing surface water drainage to sewers
- Reduce the impacts of erosion, disturbance and damage from both water-based and terrestrial access
- basic and additional measures such as correct management of slurry, silage, fuel oil, and agricultural chemicals; clean and dirty water separation; nutrient management planning; buffer strips and riparian fencing; cover crops and soil management.

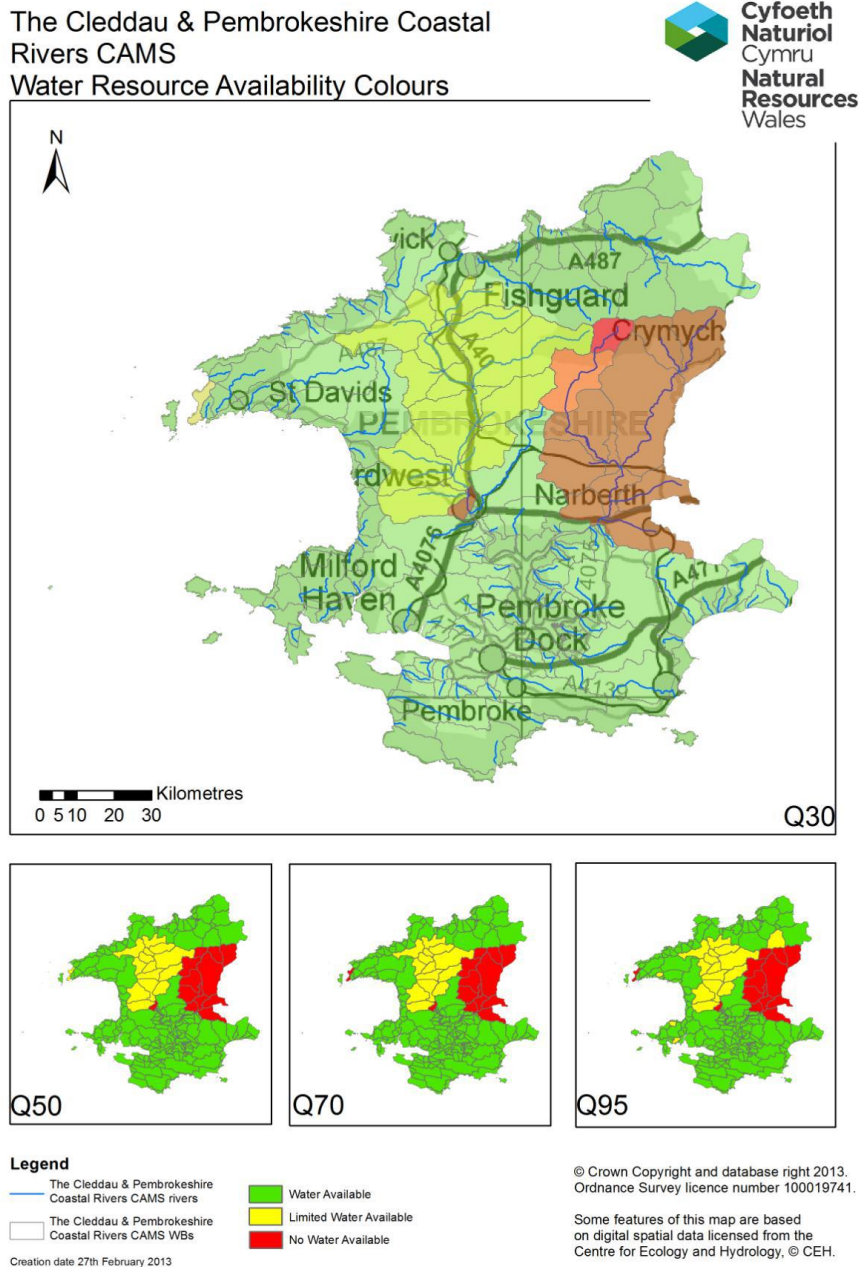
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<sup>4</sup> Cleddau and Pembrokeshire Coastal Rivers Management Catchment Summary  
[https://cdn.naturalresources.wales/media/679390/2016-updated-pembrokeshire\\_catchment\\_summary\\_nrw.pdf?mode=pad&rnd=131596369400000000](https://cdn.naturalresources.wales/media/679390/2016-updated-pembrokeshire_catchment_summary_nrw.pdf?mode=pad&rnd=131596369400000000)

Teifi and North Ceredigion Management Catchment Summary  
[https://cdn.naturalresources.wales/media/679392/2016-updated-teifi\\_catchment\\_summary\\_nrw.pdf?mode=pad&rnd=131596369400000000](https://cdn.naturalresources.wales/media/679392/2016-updated-teifi_catchment_summary_nrw.pdf?mode=pad&rnd=131596369400000000)

## 8. Abstraction licensing strategies

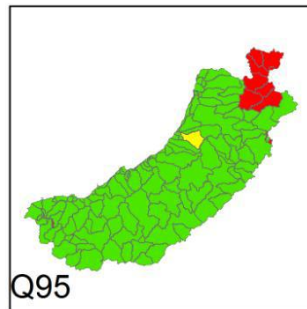
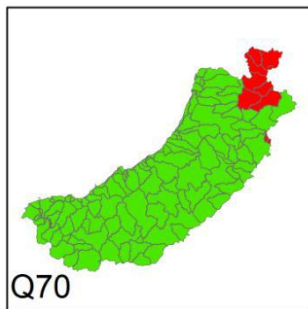
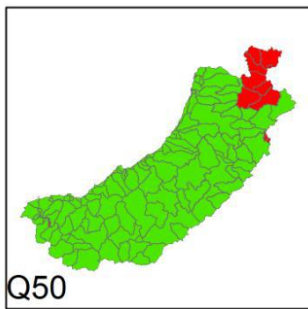
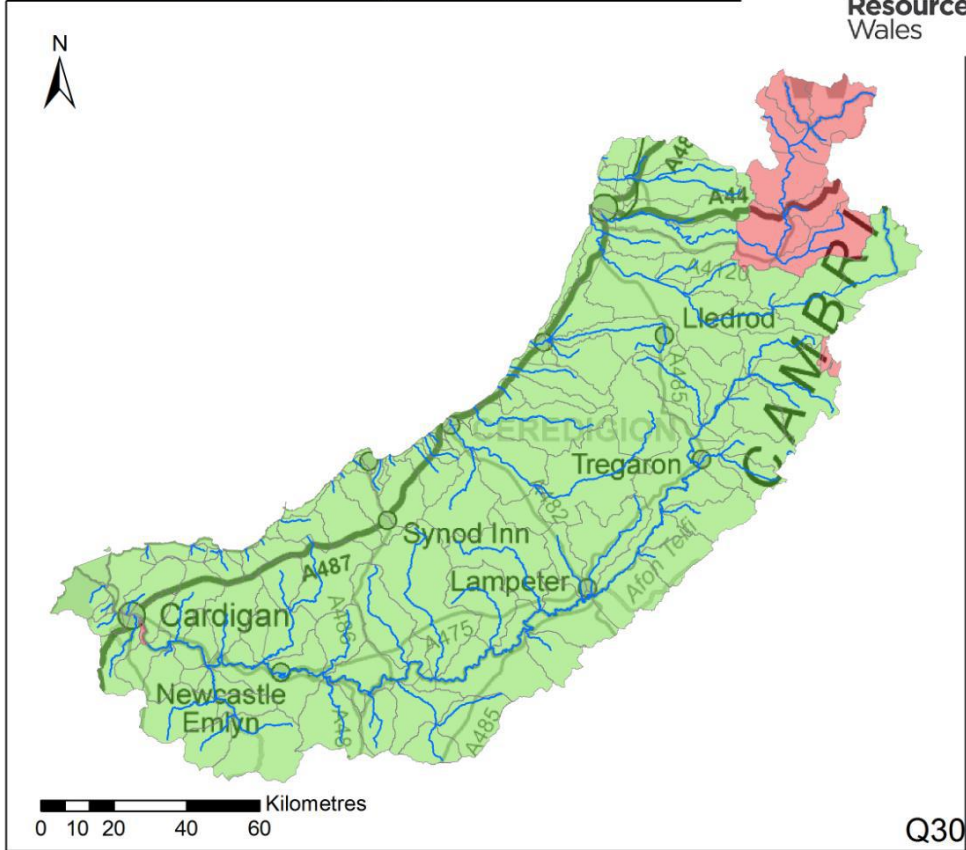
8.1 Natural Resources Wales' Catchment Abstraction Management Strategies assess the amount of water available in each river catchment. The strategies directly relevant to the National Park area are The Cleddau and Pembrokeshire Coastal Rivers Abstraction Licensing Strategy<sup>5</sup> and the Teifi and North Ceredigion Abstraction Licensing Strategy<sup>6</sup>.



<sup>5</sup> [https://cdn.naturalresources.wales/media/679390/2016-updated-pembrokeshire\\_catchment\\_summary\\_nrw.pdf?mode=pad&rnd=1315963694000000](https://cdn.naturalresources.wales/media/679390/2016-updated-pembrokeshire_catchment_summary_nrw.pdf?mode=pad&rnd=1315963694000000)

<sup>6</sup> [https://cdn.naturalresources.wales/media/681623/teifi-north-credigion\\_strategy\\_english.pdf?mode=pad&rnd=13159636947000000](https://cdn.naturalresources.wales/media/681623/teifi-north-credigion_strategy_english.pdf?mode=pad&rnd=13159636947000000)

Teifi & North Ceredigion CAMS  
Water Resource Availability Colours



**Legend**

- Teifi & North Ceredigion CAMS rivers
- Water Available
- Limited Water Available
- No Water Available
- Teifi & North Ceredigion CAMS WBs

Creation date 27th February 2013

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## 9. Water Resources Management

9.1 Water Resources Management Plans are prepared by Dŵr Cymru / Welsh Water. The draft Water Resources Management Plan 2019<sup>7</sup> looks out to 2020 to 2050 to assess risks to supplying sufficient water to meet the customer demand, even during the driest years. The Plan demonstrates where there is sufficient water to meet demand; where there is not, it explains how imbalances will be resolved.

9.2 The supply demand balance for the Mid and South Ceredigion Water Resource Zone indicates a surplus across the 30 year planning period from 2020 to 2050.

9.3 The supply demand surplus in Pembrokeshire will reduce significantly in 2019 as the amount taken from the Cleddau rivers is reduced to meet environmental obligations. The zone is forecast to fall into supply deficit in 2021 with a shortfall of around 5MI/d by 2025 which increases to a maximum of 14 MI/d in 2049/50.

9.4 The proposed installation of variable speed pumps in the Canaston pumping station will enable more efficient river regulation to preserve Llysyfran reservoir storage during critical dry years. The change in operation will preserve sufficient water in Llysyfran to meet the supply against demand shortfall during severe droughts. The measure will also provide additional resilience against climate change and severe drought.

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<sup>7</sup> <https://www.dwrcymru.com/en/My-Water/Water-Resources/Draft-Water-Resources-Management-Plan-2019.aspx>