

Baseline data (Part 3)

10. Water

Summary of baseline

Introduction

Directives are in force to improve water quality in Wales, including the Water Framework Directive, the Bathing Water Directive and the Nitrates Directive.

The Water Framework Directive (WFD) came into force in December 2000 and was incorporated into UK law in 2003. It introduced a consistent approach to water management. It applies to all surface freshwater bodies, including lakes, streams and rivers, together with groundwaters and associated ecosystems, estuaries and coastal waters out to one mile from low water. WFD takes a holistic approach to the water environment, integrating the consideration of water quality, water quantity, physical habitats and ecology. Monitoring of water quality in all water bodies under WFD started in 2007, superseding previous approaches.

The WFD seeks to reduce pollution, improve the condition of aquatic ecosystems, promote the sustainable use of water and reduce the effects of floods and droughts.

The WFD has been implemented in stages based on river basins, through River Basin Management Plans. There are three River Basin Districts in Wales, that covering Pembrokeshire being the one for Western Wales. The WFD classification system for water quality is based on five classes – high, good, moderate, poor and bad.

The general objective of the WFD was to achieve good status for all inland and coastal waters by 22nd December 2015, although there are some exceptions.

The Bathing Water Directive (BWD) came into force in 2015. It seeks to preserve, protect and improve the quality of the environment and to protect human health. It also aims to improve management practices at all bathing waters and to standardise information available to bathers across Europe. The BWD introduced a new classification system with stricter water quality standards. The bathing water classification has 4 classes – excellent, good, sufficient and poor. A minimum of sufficient was required for all bathing water bodies by the end of the 2015 bathing season.

There are associated Bathing Water Regulations, which were introduced in July 2013. From the 2016 bathing season, every local authority controlling a bathing water area had to display bathing water classifications provided by Natural Resources Wales (NRW). The Blue Flag Award scheme makes awards to beaches that achieve excellent water quality standard under the BWD.

The Nitrates Directive aims to reduce and prevent pollution of water by nitrates from agriculture. Member States are required to identify surface and groundwater bodies that are, or could be, high in nitrates from agricultural sources. Once such a water body has been identified, all land draining into that water body is designated as a Nitrate Vulnerable Zone (NVZ) and a code of good agricultural practice will be applied to that area. Water bodies in NVZs are monitored every 4 years for eutrophication and nitrate levels.

Non-designated beaches/water quality

Pembrokeshire has some of the best beaches in Britain. Many of these have been awarded Blue Flag, Green Coast and Seaside awards. Pembrokeshire's beaches also have exceptionally good water quality.

Welsh Government designates beaches in Wales according to their popularity / usage. Beaches that are designated as bathing waters are sampled and monitored by Natural Resources Wales. Non-designated beaches are sampled and monitored by Pembrokeshire County Council.

There are 29 locations in Pembrokeshire that are 'designated as bathing waters' and a further 13 that are in the 'non-designated beaches category' (increasing to 15 if Llanion and Pembroke Castle Pond are included because of their use as water sports venues).

Designated bathing waters are monitored and assessed for compliance with the revised Bathing Water Directive. In Wales, the stricter standards of the revised Bathing Water Directive of 2006 came into force in 2015.

Bathing waters are classified as 'excellent', 'good', 'sufficient' and 'poor'. 'Sufficient' water quality has been required for all bathing waters since 2015. The revised Bathing Water Directive also introduced stricter microbiological standards. The standards use two parameters: intestinal enterococci and *Escherichia coli*, and are based on 95- and 90- percentile values.

The designated bathing waters in Pembrokeshire are within the National Park. The classification at these locations is reported online by Natural Resources Wales. In 2017, 23 of these beaches were classified as excellent, 4 as good and 2 as sufficient.

Pembrokeshire County Council carries out monitoring of non-designated beaches in some cases and Natural Resources Wales does this in other cases. Pembrokeshire County Council samples the non-designated beaches at St. Brides, Gelliswick, Caldey, Martin's Haven, Cwm-yr-Eglwys, West Dale and Goodwick. Of these, Gelliswick and Goodwick are outside the National Park and therefore within the Council's planning jurisdiction. However, the results of sampling are not published.

River quality assessment

The Water Framework Directive of 2000 introduced a holistic approach to the management of water quality and established a system for the protection and improvement of all water bodies, including rivers, estuaries, groundwater, lakes and coastal waters. It complements the provisions of the revised Bathing Waters Directive.

The Water Framework Directive (WFD) introduced a new concept of "good status" that is far more rigorous than previous water environment quality measures. It estimated that 95% of water bodies are at risk of failing to reach the 'good status' category.

The River Basin Management Plans (RBMPs) required by the Directive are important strategies that will influence and be influenced by Development Plans. The first RBMPs in Wales were published by December 2009 and the next iteration are now in place. Further revisions are expected by 2021.

The Western Wales River Basin District is contained and managed wholly within Wales. Natural Resources Wales published the Western Wales River Basin Management Plan on 22/12/15. The purpose of this River Basin Management Plan is to protect and improve the water environment for the wider benefit of people and wildlife. Flood Risk Management Plans have been produced to sit alongside the River Basin Management Plans.

The River Basin District has been divided into nine management catchments, with that for the Cleddau and Pembrokeshire Coastal Rivers covering much of Pembrokeshire. However, there are also parts of the County within the Teifi and North Ceredigion catchment and the Carmarthen Bay and Gower catchment.

For information, previous reporting for LDP Sustainability Appraisal purposes relied on assessments by the Environment Agency using a General Quality Assessment (GQA) procedure, with information on chemical and biological quality of rivers supplied by DEFRA. However, this approach has now been superseded in Wales.

Within the Cleddau and Pembrokeshire Coastal Rivers catchment, the numbers and types of water bodies are as set out below:

Table 85

	<i>Natural</i>	<i>Artificial</i>	<i>Heavily Modified</i>	<i>Total</i>
<i>River*</i>	43	0	2	45
<i>Lake</i>	3	0	2	5
<i>Coastal</i>	5	0	0	5
<i>Estuarine</i>	4	0	0	4
<i>Groundwater</i>	2	0	0	2
<i>Total</i>	57	0	4	61

* River water bodies include canals and surface water transfers

Source: Cleddau and Pembrokeshire Coastal Rivers Management Catchment Summary, 2015

Also within the Cleddau and Pembrokeshire Coastal Rivers catchment, the number and type of protected area are as set out below:

Table 86

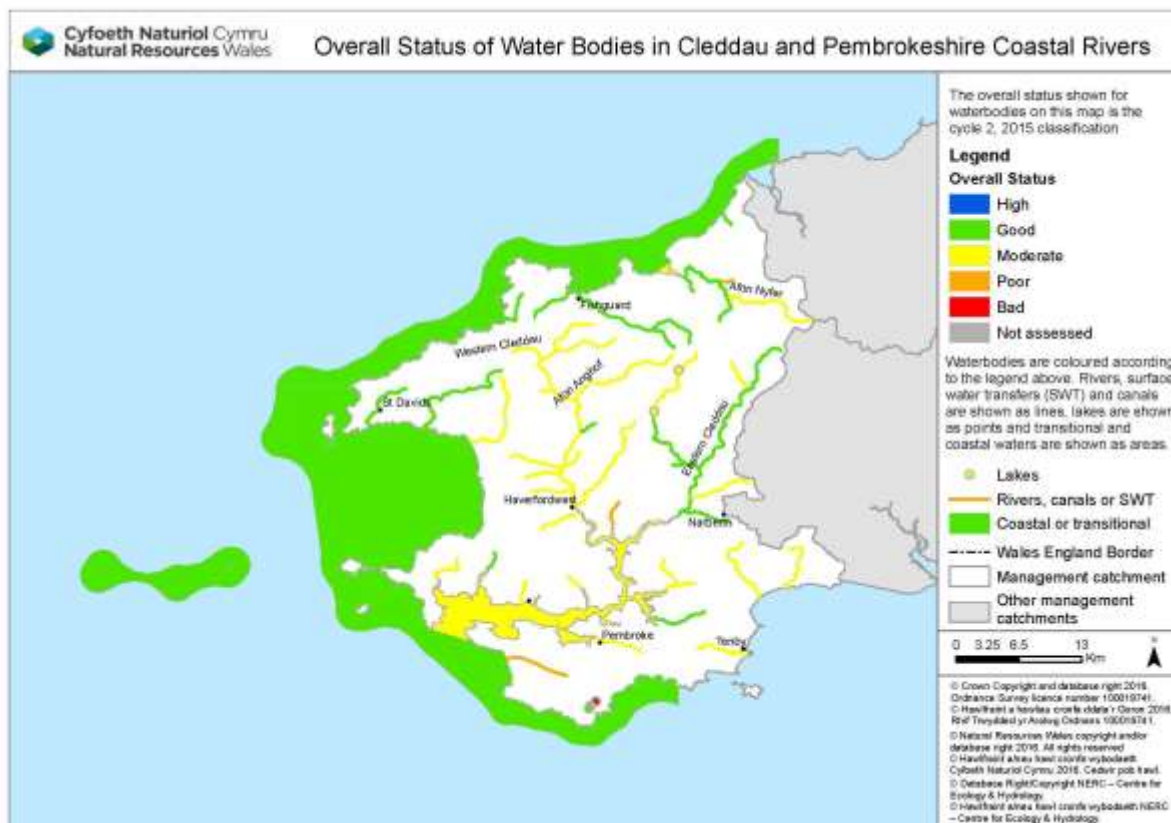
<i>Protected Area</i>	<i>Number or area</i>
Bathing Waters	19
Drinking Water Protected Areas	11
Natura 2000 and Ramsar Sites	14
Nitrate Vulnerable Zones	1560 ha
Shellfish Waters	1
Urban Waste Water Treatment Directive – Sensitive Areas	0

Source: Cleddau and Pembrokeshire Coastal Rivers Management Catchment Summary, 2015

<https://naturalresources.wales/media/3207/cleddau-and-pembrokeshire-coastal-rivers-management-catchment.pdf>

Natural Resources Wales has assessed the condition of water bodies through monitoring. The results are shown in Figure 8 of the Cleddau and Pembrokeshire Coastal Rivers Management Catchment Summary, 2015, which is reproduced below (from the report available on the NRW website):

Figure 8



Source: <https://naturalresources.wales/media/3207/cleddau-and-pembrokeshire-coastal-rivers-management-catchment.pdf>

In summary, 42% of surface water bodies are of good overall classification status, 51% of moderate status, 5% of poor status and 2% of bad status.

The report also records that Milford Haven water bodies are sensitive to nutrient pollution and that data was available that demonstrated that Milford Haven Inner water body met the criteria for designation under the provisions of the Nitrates Directive.

To elaborate, as the map above shows, Milford Haven Waterway and the Daugleddau is of moderate status only for water quality because of the high nutrient levels. Hence, NRW is working with the agricultural community to implement measures to reduce this problem. However, because there are ongoing problems here and elsewhere in Wales, Welsh Government has consulted on proposals to extend coverage of Nitrate Vulnerable Zones (NVZs) in Wales.

NRW's investigations have identified six water bodies in the catchment that are failing because of agriculture and rural land management. These include the Nevern, the Western Cleddau and the Syfynwy Rivers, with a further 11 rivers deemed likely to be failing. Additionally artificial barriers that prevent fish from migrating and reaching their spawning grounds are a reason for failure in three rivers – Westfield Pill, Pembroke River and Cartlett Brook. There are also problems on some rivers because of discharges from wastewater treatment works.

On the 13th December 2017, the Cabinet Secretary for Energy, Planning and Rural Affairs indicated that she is minded to introduce a whole-Wales approach to tackling nitrate pollution from agriculture, to improve water quality. This statement followed a consultation and the intention is now to develop 'the right balance of comprehensive regulatory measures, voluntary measures and investment'.

The Ministerial Statement indicates that agricultural use of nitrates, while vital to help plants and crops to grow, is a major source of water pollution. It adds that 'poor nutrient management is still a major problem across Wales' and that 'pollution of this kind is entirely preventable'.

The Teifi and North Ceredigion catchment extends into the north-eastern part of Pembrokeshire, although much of this catchment lies beyond Pembrokeshire. The number and type of water bodies in this management catchment are set out below:

Table 87

	<i>Natural</i>	<i>Artificial</i>	<i>Heavily Modified</i>	<i>Total</i>
<i>River*</i>	60	0	2	62
<i>Lake</i>	5	0	2	7

<i>Coastal</i>	1	0	0	1
<i>Estuarine</i>	1	0	1	2
<i>Groundwater</i>	2	0	0	2
<i>Total</i>	69	0	5	74

* River water bodies include canals and surface water transfers

Source: Teifi and North Ceredigion Management Catchment Summary, 2015.

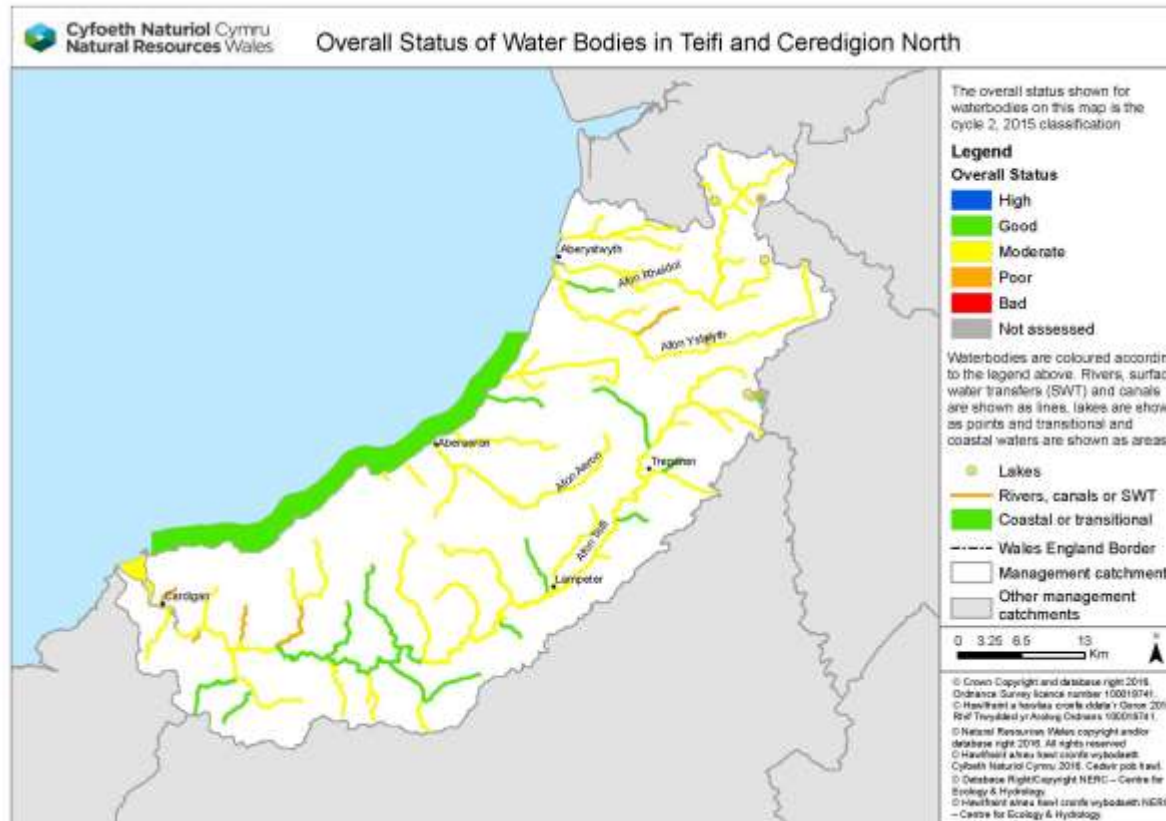
Also within the Teifi and North Ceredigion Catchment, the number and type of protected area are as set out below:

Table 88

<i>Protected Area</i>	<i>Number or area</i>
Bathing Waters	12
Drinking Water Protected Areas	8
Natura 2000 and Ramsar Sites	10
Nitrate Vulnerable Zones	0 ha
Shellfish Waters	0
Urban Waste Water Treatment Directive – Sensitive Areas	0

Natural Resources Wales has assessed the condition of water bodies through monitoring. The results are shown in Figure 9 of the Teifi and North Ceredigion Management Catchment Summary, 2015, which is reproduced below (from the report available on the NRW website):

Figure 9



Source: Teifi and North Ceredigion Management Catchment Summary, 2015
<https://naturalresources.wales/media/3215/teifi-and-north-ceredigion-management-catchment.pdf>

In summary, 22% of surface water bodies are of good overall classification status, 67% of moderate status and 11% of poor status.

In this catchment, 16 river water bodies are failing because of abandoned metal mines, with another 10 likely to be failing for the same reason. Agriculture and rural land management are the reason for a failure of a further 10 water bodies and are likely to be

the reason for a further 12 water bodies failing. Artificial barriers preventing fish from migrating and reaching their spawning grounds account for a further two failures, with three further failures likely for this reason. Acidification from air pollution is a further failure reason in several instances. Four water bodies failed because of discharges from waste water treatment works. Unsewered domestic waste water (septic tanks) are a problem for four river water bodies. Finally, in one case surface water abstraction for a hydro-power scheme is a confirmed reason for failure.

The Carmarthen Bay and Gower catchment extends into the easternmost parts of Pembrokeshire, although much of this catchment lies beyond Pembrokeshire. The number and type of water bodies in this management catchment are set out below:

Table 89

	<i>Natural</i>	<i>Artificial</i>	<i>Heavily Modified</i>	<i>Total</i>
<i>River*</i>	90	0	5	95
<i>Lake</i>	0	0	5	5
<i>Coastal</i>	2	0	0	2
<i>Estuarine</i>	4	0	0	4
<i>Groundwater</i>	4	0	0	4
<i>Total</i>	98	0	10	108

* River water bodies include canals and surface water transfers

Source: Carmarthen Bay and Gower Management Catchment Summary, 2015.

<https://naturalresources.wales/media/679444/carmarthen-bay-and-gower-management-catchment.pdf>

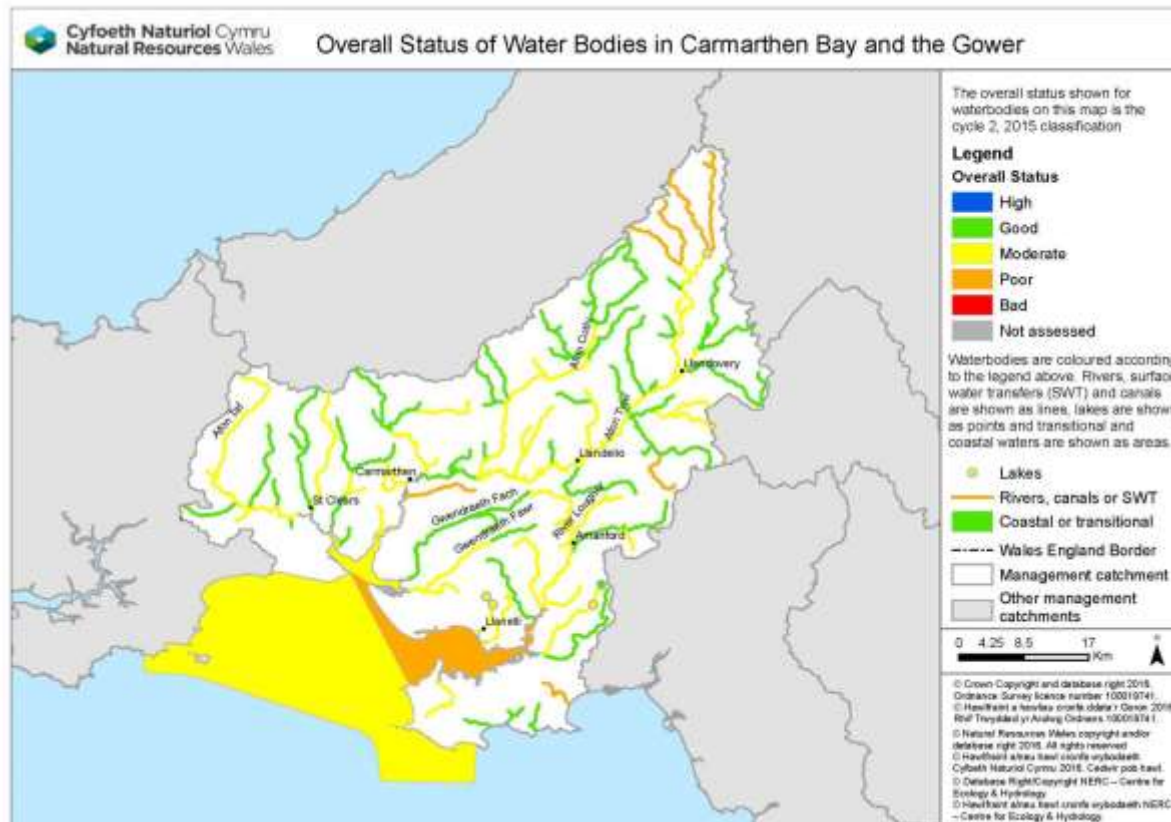
Also within the Carmarthen Bay and Gower Catchment, the number and type of protected area are as set out below:

Table 90

<i>Protected Area</i>	<i>Number or area</i>
Bathing Waters	13
Drinking Water Protected Areas	9
Natura 2000 and Ramsar Sites	13
Nitrate Vulnerable Zones	0 ha
Shellfish Waters	5
Urban Waste Water Treatment Directive – Sensitive Areas	2

Natural Resources Wales has assessed the condition of water bodies through monitoring. The results are shown in Figure 10 of the Carmarthen Bay and Gower Management Catchment Summary, 2015, which is reproduced below (from the report available on the NRW website):

Figure 10



Source: Carmarthen Bay and Gower Management Catchment Summary, 2015.

<https://naturalresources.wales/media/679444/carmarthen-bay-and-gower-management-catchment.pdf>

In summary, 48% of surface water bodies are of good overall classification status, 43% of moderate status and 9% of poor status.

NRW advises that initial investigations indicate that most water bodies in this management catchment are failing in part due to the effects of agriculture and rural land management practices. There are also problems relating to artificial barriers that prevent fish migrating and reaching their spawning grounds, from abandoned mines and from waste water treatment works discharges in certain areas. Physical modifications put in place for flood protection purposes have caused failure in one case.

Drinking Water Quality

Most water supplies in Pembrokeshire are provided by a statutory water undertaker or a licensed water supplier, for instance through the water company Dwr Cymru Welsh Water. Drinking Water Protected Areas are in place in a variety of locations across the County, including some important groundwater aquifers.

However, some commercial and domestic water supplies in Pembrokeshire come from private supplies, as set out below:

- Domestic premises with private water supplies – 839
- Commercial premises with private water supplies – 170

Source: Pembrokeshire County Council website, 2018

<https://www.pembrokeshire.gov.uk/pollution-control/private-water-supplies>

Water Quantity

Natural Resources Wales published the Cleddau and Pembrokeshire Coastal Rivers Catchment Abstraction Licensing Strategy in May 2014. It supersedes an earlier strategy that was issued in December 2006. The May 2014 strategy sets out how NRW will manage water resources within this catchment and includes information about managing existing abstraction licenses and water availability for further abstraction. Much of the information in this part of the paper is derived from this document.

This licensing strategy covers most of Pembrokeshire, but does not include the Teifi Catchment in the north-easternmost part of the County, nor some of the rural areas of the County to the east of Narberth, which drain into the Taf and thence to Carmarthen Bay.

Population growth and climate change predictions make it likely that pressure on water resources will increase in the future. Natural Resources Wales seeks to 'maintain and improve sustainable abstraction, balancing the needs of society, the economy and the environment'.

There is a related Cleddau and Pembrokeshire Coastal Rivers Catchment Abstraction Management Strategy (CAMS), which is now a live assessment, subject to continuous update, rather than being formally reviewed on a 6-year cycle, as previously happened.

The Water Framework Directive seeks to protect and enhance the water environment and ensure sustainable use of water resources for economic and social development.

CAMS explains how NRW will manage the water resources of a catchment and contribute to implementing the requirements of the Water Framework Directive.

CAMS provides the following:

- A water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater, collectively known as water bodies;
- Identification of water bodies that fail flow conditions expected to support good ecological status;
- Prevention of deterioration of water body status due to new abstractions; and
- Information to support River Basin Management Plans.

Abstraction licenses are needed if the intention is to abstract more than 20 cubic metres (4,400 gallons) of water per day from a river or stream, a reservoir, lake or pond, a canal, a spring or an underground source.

In terms of detail, the river catchments covered by the Cleddau and Pembrokeshire Coastal Rivers CAMS area are the Eastern and Western Cleddau and the coastal river catchments of the Nevern, Gwaun, Alun, Solva, Ritec, Cresswell, Castlemartin Corse, Westfield Pill and Gann Flats Stream. These are surface water dominated catchments with rapid changes in flows soon after rainfall events.

Intensive agricultural practices have led to significant bankside erosion and habitat destruction, although schemes are now in place to restore riverside habitat, in particular on the Western Cleddau. Generally, the area has high conservation and landscape value, with various SACs and SSSIs designated (there are also SPAs along the coast). There are important fisheries and conservation interests within this CAMS area.

There are 239 licensed abstractions within this CAMS area, all of which are from surface waters. Abstractions from groundwater sources over a large part of south west Wales, including this CAMS area, are currently exempt from licensing by Statutory Instrument, although it is expected that the groundwater exemption will in time be removed under the Water Act 2003. However, as things currently stand, the whole of this CAMS area is exempt for groundwater licensing, as shown by Map 5 of the Cleddau and Pembrokeshire Coastal Rivers Catchment Abstraction Licensing Strategy in May 2014.

The majority of licensed abstractions are for agricultural purposes, such as spray irrigation. This accounts for 90% of licenses, but only 0.12% of licensed water. Fish farming is also a significant user of abstracted water.

Abstraction for public water supply is the main consumptive use within this CAMS area, but accounts for only 3% of the water licensed. Most of the water for public supply in this CAMS area comes from the Eastern and Western Cleddau rivers and their tributaries. The water company Dwr Cymru Welsh Water uses water from these sources to supply most of Pembrokeshire with its domestic water supply. This water company also supplies some major industrial users.

Llys-y-Fran reservoir, on the Afon Syfynwy (a tributary of the Eastern Cleddau) is used to regulate flows in the Eastern Cleddau. This allows abstraction further downstream which provides a public water supply. Water may also be abstracted directly from the reservoir for public water supply.

About two-thirds of licenses in this CAMS area are outside the river catchments in the CAMS resource assessment. Many are on small coastal streams and the Milford Haven Waterway. These are mostly for spray irrigation or for supplying winter storage reservoirs and do not have an impact on low river flows in the summer months.

Pembroke Power Station abstracts from the Milford Haven Waterway and holds the license for the largest non-consumptive abstraction in this CAMS area. It accounts for more than 90% of the total licensed resource.

There are seven known large exempt abstractions within this CAMS area. These are from ground waters for public water supply and private water supplies and have been included in the resource assessment. Groundwater supports many small domestic and agricultural abstractions, but the cumulative quantities are insignificant.

Abstraction management is based on resource assessment. NRW has mapped water resource availability within this catchment. It uses the following classification system for surface water resources:

- High hydrological status
- Water available for licensing
- Restricted water available for licensing
- Water not available for licensing
- Heavily Modified Water Bodies

There are no water bodies of high hydrological status in this catchment.

For groundwater, a similar approach is taken:

- Water available for licensing
- Restricted water available for licensing
- Water not available for licensing

NRW advises that those applying for a license to abstract should consider that not all resources are 100% reliable. Reliability has been mapped by NRW.

NRW also sets out detailed information on how it manages abstractions in this CAMS area, details of which are set out in section 4 of the Cleddau and Pembrokeshire Coastal Rivers Catchment Abstraction Licensing Strategy in May 2014. It is worth noting that estuaries are not included in the CAMS resource assessment, as tidal influences cannot be assessed in the same manner as the inland waters.

Section 4 also explains that there are four groundwater management units in this CAMS area, at Bosherton, Park Springs, Milton and Pendine.

Teifi catchment within Pembrokeshire

A small part of Pembrokeshire is within the Teifi catchment. Agriculture is the main land use in this rural area. Dairy farms dominate the land in the lower, more fertile reaches of the catchments, particularly the Teifi, with mixed dairy and livestock rearing in the middle reaches and livestock rearing in the upper catchments. Forestry covers approximately 20% of the area.

Water is classified as 'available' in the area in Pembrokeshire. The plan also reflects the needs of the Teifi River Special Area of Conservation, and this is shown in appropriate restrictions on abstractions. All abstractions in the relevant areas are assessed under the Habitats Directive, with appropriate limits attributed to those abstractions.

Carmarthen Bay catchment within Pembrokeshire

A small part of Pembrokeshire is within the Taf catchment. The CAMS area is predominantly rural with some areas of urban and industrial development. The developed areas are concentrated around Carmarthen and Llanelli and adjacent to the river in the Amman Valley. There is large-scale metal industry associated with the Swansea and Llanelli areas, although only the latter is within this CAMS area.

Agriculture dominates the land use in this area and plays an important role in the local economy in the form of dairy, beef and sheep farming. Forestry accounts for a large percentage of the land use in the upper reaches of the Tywi catchment and on a few of the tributaries.

Water is classified as 'available' in the area in Pembrokeshire. All abstractions where relevant are assessed under the Habitats Directive, with appropriate limits attributed to those abstractions.

Sources:

NRW, Cleddau Rivers and Pembrokeshire Coastal Rivers Abstraction Licensing Strategy, 2014

https://cdn.naturalresources.wales/media/681624/cleddau-pembs_strategy_english.pdf?mode=pad&rnd=13159636947000000

NRW, Teifi and North Ceredigion Abstraction Licensing Strategy, 2014

https://cdn.naturalresources.wales/media/681623/teifi-north-eredigion_strategy_english.pdf?mode=pad&rnd=13159636947000000

NRW, Carmarthen Bay Abstraction Licensing Strategy, 2014 https://cdn.naturalresources.wales/media/681625/carmarthen-bay_strategy_english.pdf?mode=pad&rnd=13159636948000000

Water quantity issues, constraints and gaps

There are perceived to be issues with water abstraction licensing in the Western and Eastern Cleddau (Cleddau CAMS). There is also a lack of information from DCWW data on water resources and sewerage capacity.

Source Protection Zones

Source Protection Zones (SPZs) defined by the then Environment Agency, now Natural Resources Wales, 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. There are 6 zones in Pembrokeshire, or on the border of the PCNPA or Carmarthenshire/Ceredigion.

In relation to private water supplies, all groundwater abstractions intended for human consumption or food production purposes have a default SPZ1 with a minimum radius of 50 metres. In some cases depending on the volumes abstracted, a default SPZ2 with a minimum radius of 250 metres applies.

This also applies to:

- public drinking water supplies
- other commercial potable supplies (including mineral and bottled-water)
- groundwater abstractions used in commercial food and drink production*
- other sources where additional protection is required

* This does not relate to groundwater that is used solely for the irrigation of crops.

Source: The Environment Agency's Approach to Groundwater, 2018 (the approach taken by NRW)

<https://naturalresources.wales/guidance-and-advice/business-sectors/planning-and-development/advice-for-developers/protecting-groundwater/?lang=en>)

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf

Lle Maps, <http://lle.gov.wales/map#b=europa&l=289;&m=-4.87865,51.92371,10>

Water availability

The majority of Pembrokeshire is fed from Bolton Hill Water Treatment Works located to the West side of Haverfordwest. This works is a strategic asset for Dŵr Cymru Welsh Water (DCWW) in delivering potable water to customers, commercial, health and education premises. DCWW are developing a 25 year water resource plan to meet projected future demands for the County. Based on the future demands already shared with us we do not foresee any problems at present in meeting the anticipated domestic demands during the life of the Local Development Plan. Over the next few years, DCWW will be investing over £21.4 million in Pembrokeshire (and Ceredigion) (Dwr Cymru Welsh Water, <https://dwrcymru.com/en/My-Water/Water-Quality-Investment-Work/Pembrokeshire.aspx>).

Groundwater Aquifers

Limestone aquifers in the south of the County (See PCC, JUDP):
Carew - Milton spring source aquifer - limestone
Minor aquifer near Johnston
Old Hakin Road, Merlin's Bridge area – minor groundwater aquifer
Slade Lane, Haverfordwest – major aquifer groundwater aquifer

Flooding

Flood risk maps are available on the Natural Resources Wales website:

<http://naturalresources.wales/flooding/managing-flood-risk/flood-risk-maps-for-river-basin-districts/?lang=en>

The Welsh Government TAN 15 (Development and Flood Risk) defines areas where risk of flooding should be considered in planning matters. TAN 15 zone B identifies areas known to have flooded in the past due to the presence of sedimentary deposits, zone C2 identifies areas at 0.1% or greater risk of flooding, without significant flood defence structures (there are no C1 areas (at risk of flooding, served by flood defences)

Table 91: Number of properties at risk of flooding, StatsWales, 2014

	Risk					Total
	High	Medium	Medium + high	Low	Very low	
Pembrokeshire	526	338	863	1,513	1	2,377
Wales	21,624	39,474	61,098	146,103	1,333	208,534

From StatsWales

<https://statswales.gov.wales/Catalogue/Environment-and-Countryside/Flooding/environment-and-countryside-state-of-the-environment-our-local-environment-properties-at-risk-of-flooding>

Western Wales Flood Risk Management Plan, NRW

https://naturalresources.wales/media/675146/final_frmf_-_western-wales_pk26b82.pdf

Development Advice Maps are available on the Natural Resources Wales website and should be used in conjunction with Planning Policy Wales and Technical Advice Note 15: Development and Flood Risk.

https://maps.cyfoethnaturiolcymru.gov.uk/Html5Viewer/Index.html?configBase=https://maps.cyfoethnaturiolcymru.gov.uk/Geocortex/Essentials/REST/sites/Flood_Risk/viewers/Flood_Risk/virtualdirectory/Resources/Config/Default&layerTheme=2

Information on flooding in the county is also available on the Pembrokeshire County Council website:
Preliminary Flood Risk Report, PCC, 2011 https://www.pembrokeshire.gov.uk/objview.asp?object_id=3944&language=

Addendum to update the original Preliminary Flood Risk Assessment, 2017
https://www.pembrokeshire.gov.uk/objview.asp?object_id=3945&language=

Flooding issues, constraints and gaps

Climate change is the biggest issue with regards to flooding in the County. The ability of flood defences to cope with increased storminess, increased surface water run-off from urban and rural areas.

Implications

The LDP should take account of water resources, ensure good water quality of any bathing waters and freshwaters, and comply with any legislation and environmental standards relating to the water environment. Planning can also seek to address those impacts from diffuse pollution. The LDP should have regard for flood risk and the possible increased risk as a result of climate change. The plan should also promote sustainable drainage systems.

The SA objectives require that water quality objectives are achieved and quality is improved further. This includes water for biodiversity and human uses. The effects of land-use on water resources should also be minimised. The topic of flooding (fluvial, tidal and surface water) and sea level rises also overlaps with the climatic factors objectives (see previous sections).

11. Soil and land

Contaminated land

Land contamination is usually the result of previous land usage(s) or may, in rare cases, be due to contaminants being present due to natural geological conditions. In certain circumstances land with a historical industrial usage has been known to pollute controlled waters, release potentially toxic or explosive gases, damage buildings and affect human health by the ingestion of or exposure to contaminated food / soil.

The words 'Contaminated Land' now have a specific legal definition. Under Section 78A (2) of Part 2A Environmental Protection Act 1990 (EPA) 'Contaminated Land' is defined as;

"Land which appears to the Local Authority to be in such a condition, by reason of substances in, on, or under the land, that significant harm is being caused, or there is a significant possibility of such harm being caused; or significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused."

"Harm" means harm to the health of living organisms or other interference with the ecological systems of which they form part and, in the case of man, includes harm to his property. Whilst Pembrokeshire does have areas of land affected by contamination, no sites within Pembrokeshire have been formally determined yet as Contaminated Land in accordance with the new definition.

Pembrokeshire County Council has a revised Contaminated Land Inspection Strategy (2016). Major site investigations have taken place at Waterloo Industrial Estate, South Pembrokeshire Golf Club, Meads, Narberth Town Moor, Golden Lane and Goodwick Moor. The majority of the works previously have been funded by the Welsh Governments Contaminated Land Capital Fund. However, this was withdrawn in 2010/11 and as such any further investigations have been funded by Pembrokeshire County Council, although this has been limited. Privately owned sites will be dealt with on a voluntary basis.

Comparators, targets and trend

There is limited information available on national contaminated land as assessment of contaminated land in Wales is varied.

Source: <https://www.pembrokeshire.gov.uk/contaminated-land/how-is-pembrokeshire-county-council-tackling-land-contamination>

Subsidence

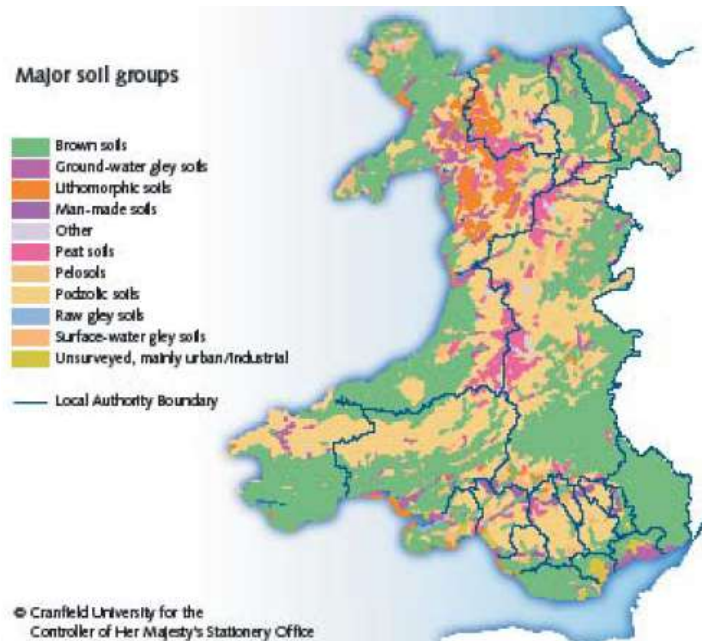
There has been some subsidence associated with historical coal mining in the County.

Soil

There is comparatively little information about soils in Pembrokeshire. Information is available on soil grade, however this is a measure of the soils suitability for intensive agriculture rather than other attributes such as ability to store water or carbon store. Soils in lower lying areas of Pembrokeshire are generally classified as Grade 3 (Grade 1 is classified as being the most suitable). Higher land, particularly in the north of the County, as well as land overlying the coal measures tend to be Grade 4.

Across Wales there is a high incidence of sensitive habitats exceeding critical loads in relation to acidification (acid deposition) and eutrophication (nutrient enrichment). Soils are an important carbon sink and therefore soil conservation can contribute towards building resilience to climate change. The maps below illustrate general soil types and agricultural land classifications.

Figure 11: Major soil groups



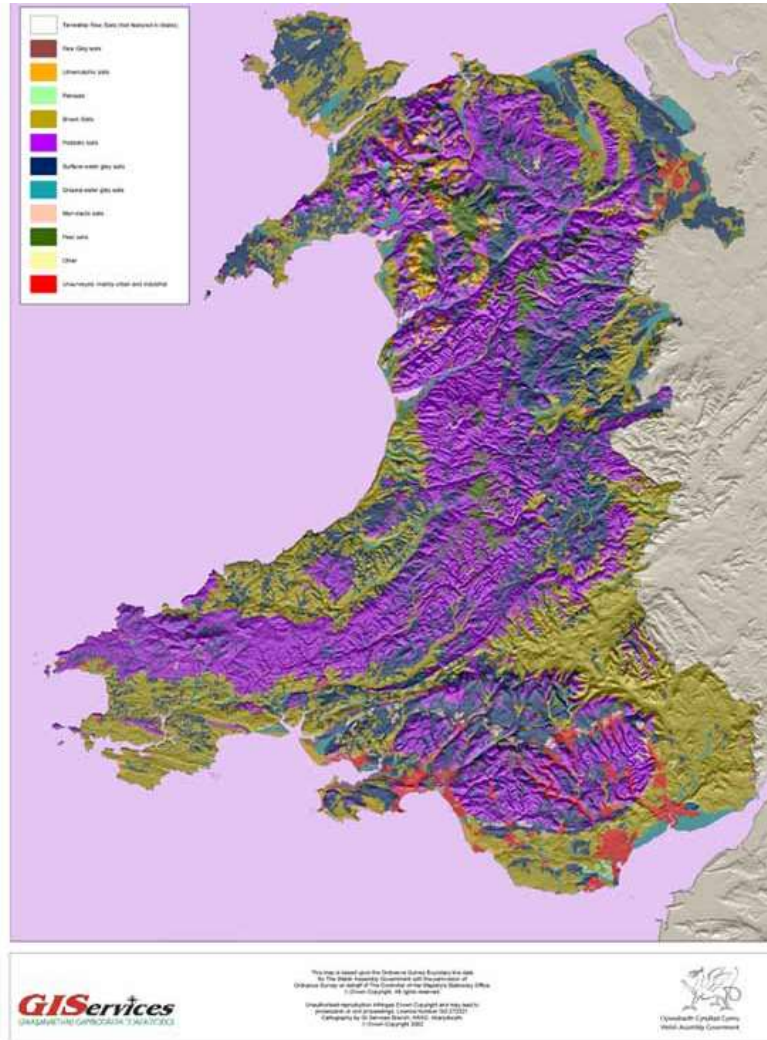
Source: WAG 2005d, Our Environment, Our Future, Your Views, the Consultation on the Environment Strategy for Wales, 2005, also WSP

Soilscapes Maps are available via Cranfield Soil and Agrifood Institute:

<http://www.landis.org.uk/soilscapes/>

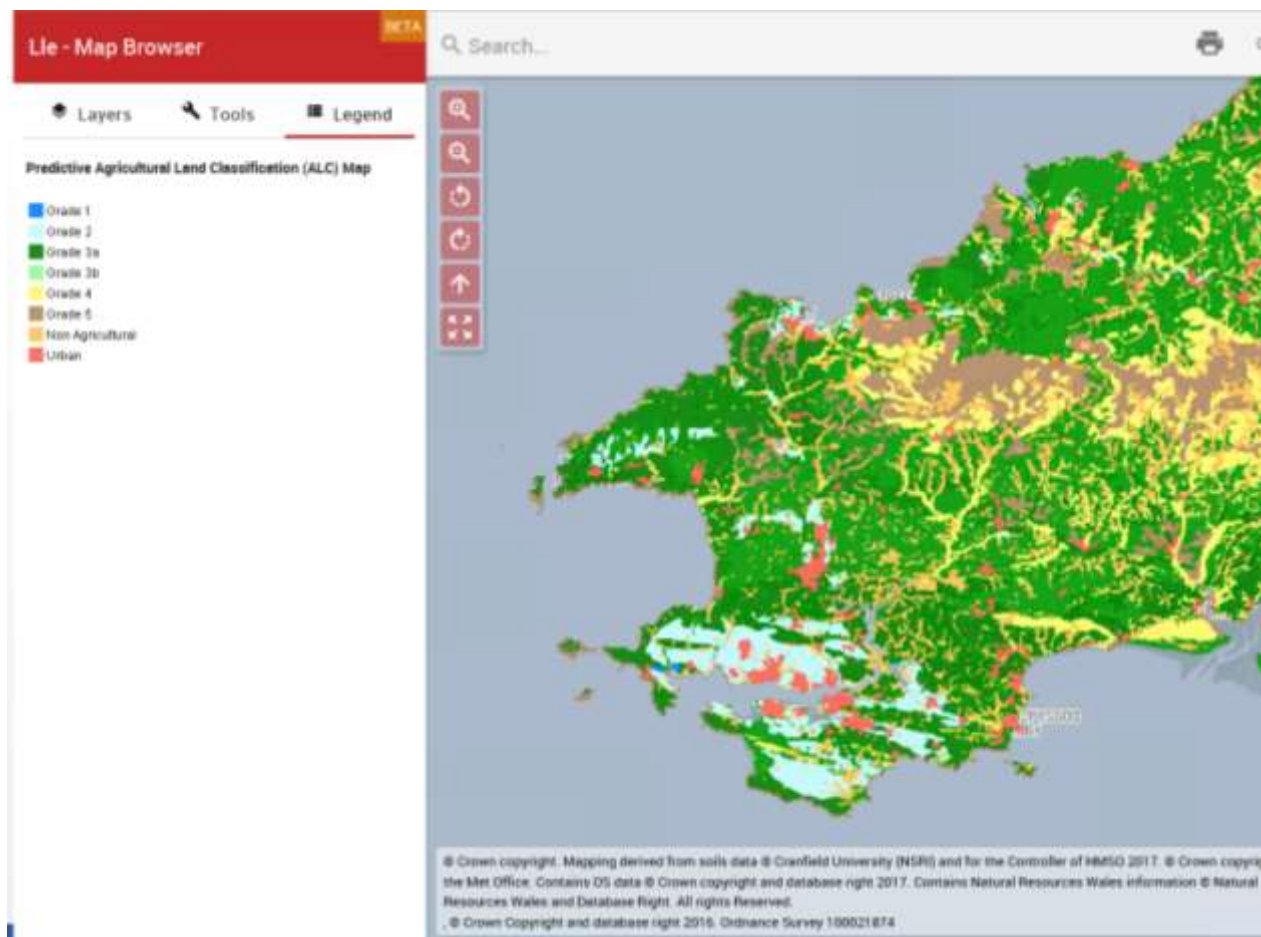
Figure 12: National soil map and relief for Wales

Source: http://www.countryside.wales.gov.uk/fe_maps/maps_preview.asp?image_id=9



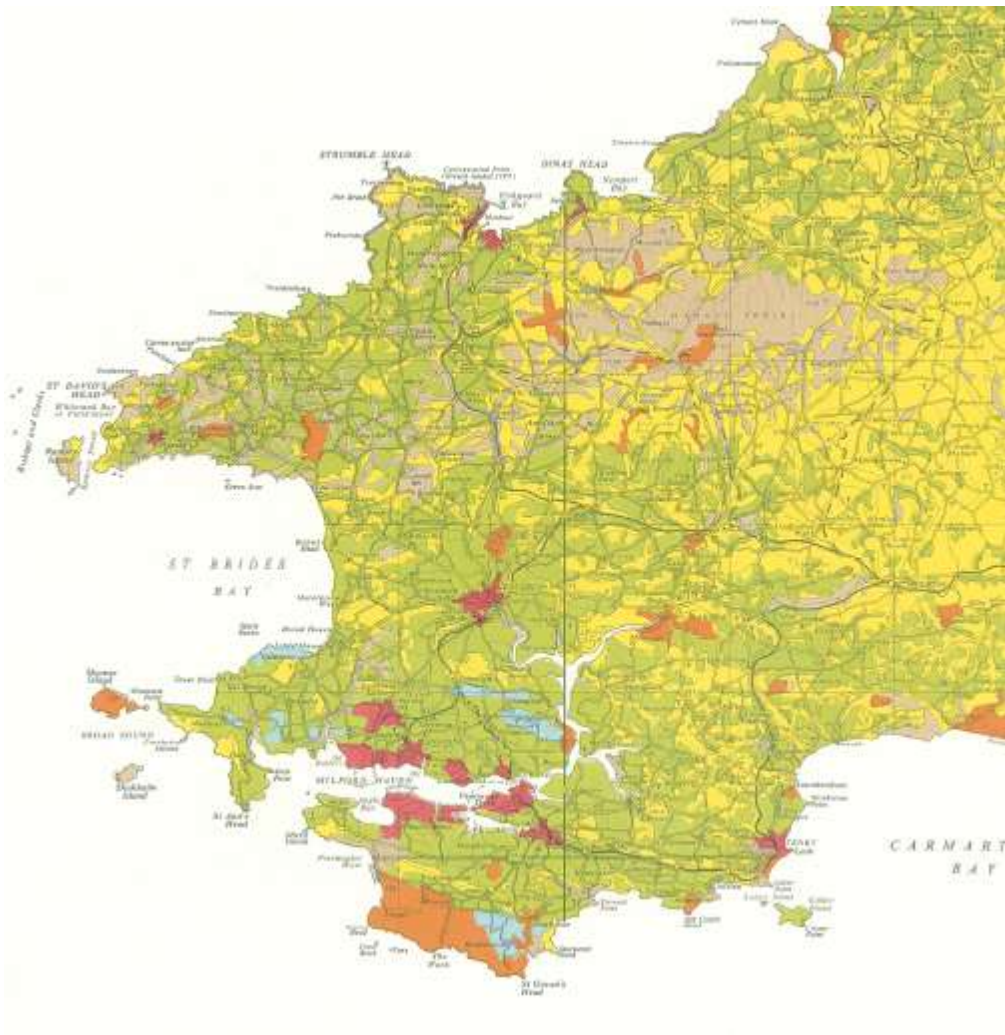
Soil maps are available at:

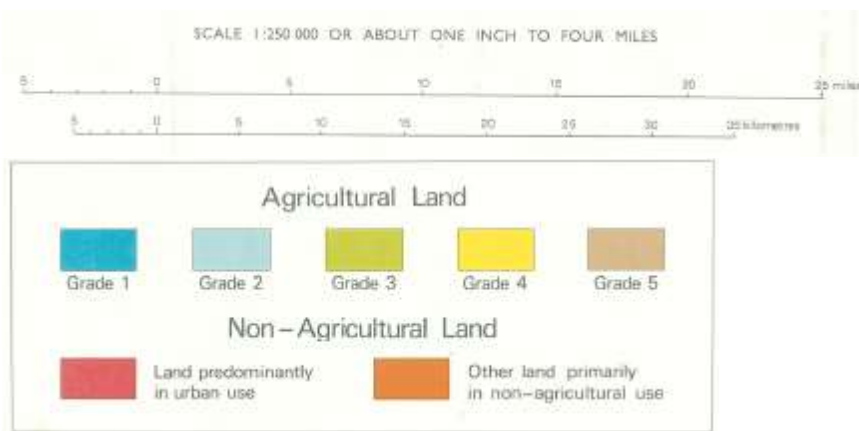
LandIS <http://www.landis.org.uk/data/natmap.cfm>



Source: <http://lle.gov.wales/map#b=europa&l=906;&m=-4.88459,51.87555,10>

Figure 13: Agricultural Land Classification





Source: Defra

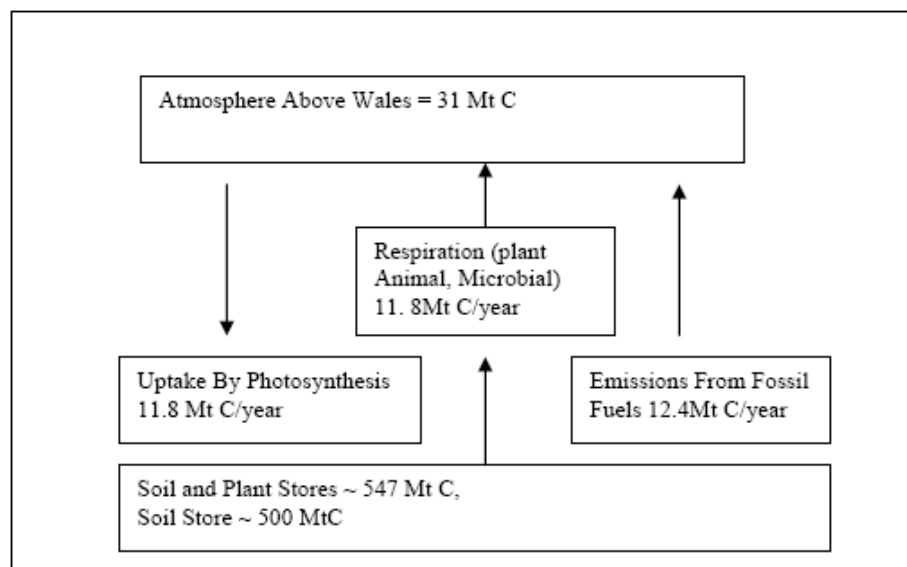
There is approximately 76.42% agricultural land in Wales.

The current agri-environment scheme is Glastir (previously Tir Gofal, and Environmentally Sensitive Areas).

Soil processes

Environmental services such as retaining and releasing clean water in river catchments, buffering, filtering and transforming and storing contaminants are provided by soil. Soils are also a store for carbon (Figure 14) with Welsh soils storing 16 times more carbon than the atmosphere above Wales (Welsh Soils Action Plan, 2008), soil is also important for biodiversity. The Environment (Wales) Act 2016 sets out the approach to help Wales to reduce its carbon emissions. This will be set in regulations by the end of 2018 (WG, 2018). Welsh soils store 410 million tonnes of carbon, as well as being the basis for all agriculture (State of Natural Resources Report, SoNaRR, 2017).

Figure 14: Provisional Carbon Budget for Wales (Megatonnes Carbon - MtC)



Source: Welsh Soils Action Plan (2008)

Source: <https://cdn.naturalresources.wales/media/684107/chapter-1-introduction-to-sonarr-final-for-publication.pdf>

Soil and agricultural land issues

There is a general lack of current state and trends in soils in Wales, including soil quality; issues such as acidification, soil erosion and the extent of soil carbon stores and the vulnerability and resilience of soils to land use, land management and changing weather patterns and climate.

Radon

The natural radioactive gas radon comes from the small amounts of uranium which occur naturally in all rocks and soils. The geology of Pembrokeshire means that there are higher levels of radon than in other parts of the country and is designated as a radon affected area. Radon has been found to cause lung cancer and therefore any new development will need to ensure mitigation against radon.

Maps are available online at:

<http://www.ukradon.org/information/ukmaps>

Information at Public Health Wales: <http://www.wales.nhs.uk/sitesplus/888/page/81979>

Implications/Issues

The LDP should seek to protect soil quality and quantity from erosion and contamination during development. The plan should also seek to regenerate contaminated land, development on brownfield land, and ensure land is protected from contamination.

The SA objectives for land and soil incorporate:

- The re-use of derelict and previously developed land (and buildings)
- Remediating contaminated land
- Minimising soil erosion and pollution to soils
- Loss of agricultural land
- Promoting sustainable agriculture.

12. Biodiversity, fauna and flora

Summary of baseline

Pembrokeshire (excluding the area of National Park Designation) has entirely or in part, 13 European sites designated for habitats and species (SACs, and Candidate SACs (Sites of Community Importance and SPAs), and over 30 Sites of Special Scientific Interest), plus other areas

There are parts of land based Special Areas of Conservation (SACs) within the area excluding the Pembrokeshire Coast National Park Authority. There are parts of three marine based SACs including part of the Pembrokeshire Marine SAC, part of the Cardigan Bay SAC and a small part of Carmarthen Bay and Estuaries SAC, there are now two Sites of Community Importance (SCI) for harbour porpoise. There is also part of one Special Protection Area (SPA) designated under the EU Birds Directive within a small coastal area of the County (Carmarthen Bay SPA). The County also has all or parts of over 30 Sites of Special Scientific Interest (SSSI). There are also National Nature Reserves (NNRs) and one Local Nature Reserve (LNR). There are many linear sites which provide essential 'corridors' or ecological connectivity for biodiversity. This area includes land based SACs, SSSIs, NNRs and LNRs.

European sites (Natura 2000 sites)

The table below summarises the designated features, condition and vulnerabilities. There is usually a 6 year reporting cycle for the condition of SACs and SPAs, and the last report was due in 2012. Indicative site level feature condition assessments has been made for the European marine sites in Wales in 2017/2018.

There are a couple of new sites – West Wales Marine Candidate SAC (harbour porpoise) and Bristol Channel Approaches Candidate SAC (harbour porpoise). Now described as SCIs Sites of Community Importance
http://jncc.defra.gov.uk/ProtectedSites/SACselection/SAC_list.asp?Country=W

Condition assessments are not available for these sites. More recent terrestrial site condition assessments are not available.

SACs

Table 92

*Marine site assessments based on indicative site level feature condition undertaken 2017, others based on previous assessment.

SAC and SAC Features	Condition: Trend*	Vulnerabilities/potential threats
Bristol Channel Approaches (Part) UK0030396 (Site of Community Importance)		
1351 Harbour porpoise	Not yet available	
West Wales Marine (Part) UK0030397 (Site of Community Importance)		
1351 Harbour Porpoise	Not yet available	
*Carmarthen Bay and Estuaries (Part) UK0020020		
1110 Sandbanks which are slightly covered by sea water all the time	Unfavourable	Over-grazing (including deer browsing); Flood defence or Coastal defence works, potential threats from fisheries and shellfish management, aggregate dredging, water quality (diffuse and point source water pollution).
1130 Estuaries	Unfavourable	
1140 Mudflats and sandflats not covered by seawater at low tide	Unfavourable	
1160 Large shallow inlets and bays	Unfavourable	
1310 Salicornia and other annuals colonising mud and sand	Favourable	
1330 Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	Unfavourable	
1103 Twaite shad <i>Alosa fallax</i>	Unfavourable	
1095 Sea lamprey <i>Petromyzon marinus</i>	Unfavourable	
1099 River lamprey <i>Lampetra fluviatilis</i>	Unfavourable	
1102 Allis shad <i>Alosa alosa</i>	Unfavourable	
1355 Otter <i>Lutra lutra</i>	Favourable	
*Cardigan Bay (Part) UK0012712		

1110 Sandbanks which are slightly covered by sea water all the time	Unfavourable	Bottlenose dolphin, porpoise and seals are vulnerable to disturbance from seismic surveys and sea based recreation. Environmental contaminants such as mercury and PCBs in dolphin prey. Entanglement of marine mammals in fishing nets. Fisheries, damage to seabed habitats. Marine litter, military testing or ordnance. Harbour dredging projects.
1170 Reefs	Favourable	
8330 Submerged or partially submerged sea caves	Unknown	
1349 Bottlenose dolphin <i>Tursiops truncatus</i>	Favourable	
1095 Sea lamprey <i>Petromyzon marinus</i>	Unknown	
1099 River lamprey <i>Lampetra fluviatilis</i>	Favourable	
1364 Grey seal <i>Halichoerus grypus</i>	Favourable	
*Pembrokeshire Marine (Part) UK0013116		
1130 Estuaries	Unfavourable	Water quality issues (point and diffuse source pollution, sediment pollution), marine communities vulnerable to damage from certain fishing methods (bait digging). Pollution from transport or exploration/production of oil and gas. Coastal infrastructure, invasive species.
1160 Large shallow inlets and bays	Unfavourable	
1170 Reefs	Unfavourable	
1110 Sandbanks which are slightly covered by sea water all the time	Unfavourable	
1140 Mudflats and sandflats not covered by seawater at low tide	Unfavourable	
1150 Coastal lagoons	Unfavourable	
1330 Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>)	Unfavourable	
8330 Submerged or partially submerged sea caves	Unknown	
1364 Grey seal <i>Halichoerus grypus</i>	Favourable	
1441 Shore dock <i>Rumex rupestris</i>	Favourable	
1095 Sea lamprey <i>Petromyzon marinus</i>	Unfavourable	
1099 River lamprey <i>Lampetra fluviatilis</i>	Unfavourable	

1102 Allis shad <i>Alosa alosa</i>	Favourable	
1103 Twaite shad <i>Alosa fallax</i>	Favourable	
1355 Otter <i>Lutra lutra</i>	Favourable	
North West Pembrokeshire Commons (part on boundary) UK0030229		
4030 European dry heaths	Unfavourable: Recovering	Under-grazing; invasive species.
7140 Transition mires and quaking bogs	Unfavourable: Un- classified	
4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>	Unfavourable: Recovering	
1831 Floating water-plantain <i>Luronium natans</i>	Unfavourable: Un- classified	
North Pembrokeshire Woodlands (part) UK0030227		
91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Unfavourable: Declining	Decline in traditional woodland management, forestry, fragmentation by coniferous afforestation.
91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	Favourable: Maintained	
1308 Barbastelle <i>Barbastella barbastellus</i>	Favourable: Un- classified	
Pembrokeshire Bat Sites and Bosherton Lakes (Orierton) UK0014793		
3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i>	Unfavourable: Un- classified	Water quality (including silt, water pollution (direct or diffuse), run-off, nutrient enrichment, eutrophication etc), water quantity (drought). Physical deterioration of roost buildings. Habitat loss and disturbance in key feeding areas. Otter population vulnerable to water quality, human disturbance,
1304 Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	Favourable: Un- classified	
1303 Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Favourable: Un- classified	
1355 Otter <i>Lutra lutra</i>	Unfavourable: Un- classified	

		entanglement in fishing gear and habitat loss.
Preseli (part on boundary) UK0012598		
4010 Northern Atlantic wet heaths with <i>Erica tetralix</i>	Unfavourable: Unclassified	Under-grazing, acidification.
4030 European dry heaths	Unfavourable: Unclassified	
7150 Depressions on peat substrates of the <i>Rhynchosporion</i>	Favourable: Maintained	
7230 Alkaline fens	Favourable: Unclassified	
1044 Southern damselfly <i>Coenagrion mercuriale</i>	Favourable: Maintained	
1065 Marsh fritillary butterfly <i>Euphydryas (Eurodryas, Hypodryas) aurinia</i>	Unfavourable: Unclassified	
1393 Slender green feather-moss <i>Drepanocladus (Hamatocaulis) vernicosus</i>	Favourable: Maintained	
Afon Teifi (Part) UK0012670		
3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Favourable: Maintained	Water quality (including silt, water pollution (direct or diffuse), run-off, nutrient enrichment, eutrophication etc); water management (including drainage, dredging or alterations to the water table), flow rate. Future potential to affect abstractions and discharges. Migratory fish vulnerable to obstacles to migration,
3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i>	Favourable: Unclassified	
1096 Brook lamprey <i>Lampetra planeri</i>	Unfavourable: Unclassified	
1099 River lamprey <i>Lampetra fluviatilis</i>	Unfavourable: Unclassified	

1106 Atlantic salmon <i>Salmo salar</i>	Unfavourable: Unclassified	overfishing and damage to habitats outside the site.
1163 Bullhead <i>Cottus gobio</i>	Unfavourable: Unclassified	
1355 Otter <i>Lutra lutra</i>	Favourable: maintained	
1831 Floating water-plantain <i>Luronium natans</i>	Favourable: maintained	
1095 Sea lamprey <i>Petromyzon marinus</i>	Unfavourable: Unclassified	
Afonydd Cleddau (Part) UK0030074		
3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	Favourable: Maintained	Water quality (including silt, water pollution (direct or diffuse), run-off, nutrient enrichment, eutrophication etc); water management (including drainage, dredging or alterations to the water table). Over-exploitation of fisheries and non-native species of animal or plant. Otters vulnerable to human disturbance, habitat loss, crossing highways, injury from fishing equipment.
7110 Active raised bogs	Unfavourable: Un-classified	
91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	Unfavourable: Un-classified	
1096 Brook lamprey <i>Lampetra planeri</i>	Unfavourable: Un-classified	
1099 River lamprey <i>Lampetra fluviatilis</i>	Unfavourable: Un-classified	
1163 Bullhead <i>Cottus gobio</i>	Unfavourable: Un-classified	
1355 Otter <i>Lutra lutra</i>	Favourable: Maintained	
1095 Sea lamprey <i>Petromyzon marinus</i>	Unfavourable: Un-classified	
Yerbeston Tops (All) UK0030305		

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	Unfavourable	Loss of habitat, under-grazing.
1065 Marsh fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia	Unfavourable	

Terrestrial sites were preliminary assessments pending completion of full condition report. Source: Previous CCW data

[SAC and SPA information from the JNCC website http://jncc.defra.gov.uk/page-1403](http://jncc.defra.gov.uk/page-1403)

Natural Resources Wales, indicative condition assessment for marine SACs (2017-2018) <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/find-protected-areas-of-land-and-seas/indicative-feature-condition-assessments-for-european-marine-sites-ems/?lang=en>

SPAs

Table 93

SPA & SPA Important Species	Condition	Vulnerabilities/ potential threats
Carmarthen Bay (Part) UK9014091		
Common Scoter (<i>Melanitta nigra</i>)	Not assessed	Fisheries management indirectly affecting food supply; water quality and pollution; sea-surface or aerial activity creating disturbance of feeding and/or resting scoter flocks; disturbance from major infrastructure development (e.g. offshore energy generation); aggregate exploitation causing changes to the sediment structures or sediment transport regime; major harbour infrastructure and maintenance regimes; on a broader scale long-term climatic change.

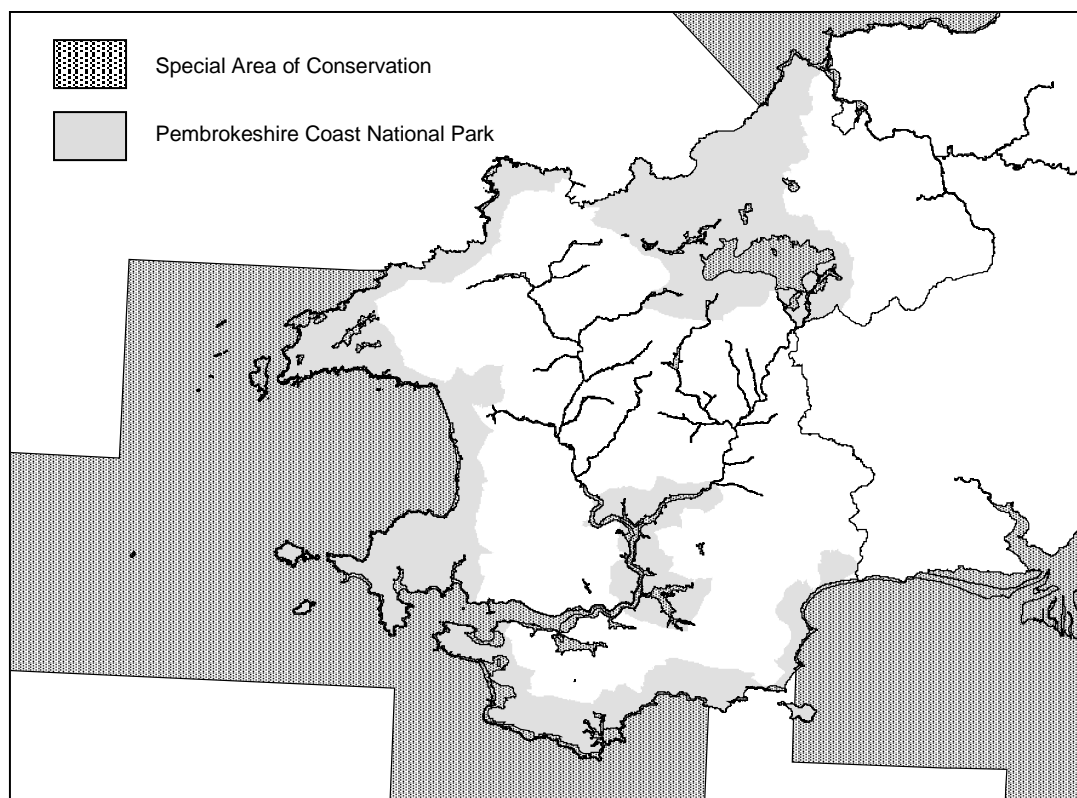
Three more sites are outside of the plan area:

UK9014062 Ramsey and St. David's Peninsula SPA SM728284 area 830.51 ha

UK9014041 Grassholm SPA SM598092 area 1774.42 ha

UK9014051 Skomer, Skokholm and the Seas off Pembrokeshire SPA SM728092 area 166800.74 ha

Figure 15: Pembrokeshire Special Area of Conservation (not including the two harbour porpoise SCI)



Comparators

61% of SAC species features and 80% of SAC habitats features reported were reported in unfavourable condition in Wales in 2006 (Rural Development Plan for Wales, 2007-2013). In 2007 there were 11 international sites, with 71 features.

38% of SAC features in favourable condition

58% of SAC features in unfavourable condition

4% of SAC features – no data or unknown.

Overall the SAC features in the area were in an unfavourable condition.

Source: Previous CCW assessment (see SA of PCC LDP 1, based on 2007 assessment).

The condition of SAC and SPA species features on sites in Wales, as reported in 2013, remains mostly unfavourable (55%), with the exception of birds and mammals of which 86% and 68% were in favourable condition, respectively (SoNaRR, 2016).

Between 2002 and 2008, fewer than half of the species on the interim Section 7 list were considered to be stable or increasing in. Wales (along with the UK as a whole) did not meet the 2010 international and national biodiversity targets (SoNaRR, 2016).

Source within the SoNaRR report: NRW, 2015. Current data on SAC and SPA Annex I habitats and Annex II species. Internal data source. Natural Resources Wales.

Targets

Previous targets were that 95% of international sites to be in favourable condition by 2010, and also that all sites to be in favourable condition by 2026 (Rural Development Plan for Wales, 2007-2013).

Recent targets show that Wales (along with the UK as a whole) did not meet the 2010 international and national biodiversity targets.

National and Local Nature Reserves

The County has a range of national and local Nature Reserves which are entirely within the County (excluding the National Park designation).

Table 94

NNR Name
Corsydd Llangloffan
Pengelli Forest (part)
Total
Other Wildlife Site Reserves
Garn Turne Rocks
Goodwick Moor
Llangloffan Fen

Pembroke Upper Mill Pond (LNR) 9.018 ha
Part of Pengelli Forest
Westfield Pill
Teifi Marshes

Source: Wildlife Trust Website <https://www.welshwildlife.org/nature-reserves/pembrokeshire/>

SSSIs

There are over 33 Sites of Special Scientific Interest (SSSI) partly within or on the boundary of the County. These include those SSSIs designated for geology or partly for geology. Condition assessment of the SSSI features has not been carried out for all sites; however half of those features which have been assessed (at 24 sites) are in unfavourable condition (CCW review, 2007). Some geological SSSIs are also nationally important Geological Conservation Review (GCR) sites. The GCR was designed to identify those sites of national and international importance needed to show all the key scientific elements of the Earth heritage of Britain. Regionally Important Geodiversity Sites (RIGS), though not legally protected, are selected for historical, educational and aesthetic reasons in addition to scientific qualities, however there are currently no RIGS groups in Pembrokeshire. The Local Geodiversity Action Plans (LGAP) enable broad local partnerships with common goals for geoconservation and the sustainable use of geodiversity resources. There are no LGAPs in Pembrokeshire.

Comparators, targets and trend

There was a target for 95% of Welsh SSSIs to be in favourable condition by 2015 and all sites to be in favourable condition by 2026 (Environment Strategy, 2006).

The Nature Recovery Action Plan for Wales sets out how Wales will address the Convention on Biological Diversity's Strategic Plan for Biodiversity and the associated Aichi biodiversity targets for Wales. The Nature Recovery Action Plan will identify actions that can be delivered in the short term and set a course to deliver longer term commitments beyond 2020.

WG are committed to the vision of the **Convention on Biological Diversity's** (CBD) Strategic Plan for Biodiversity 2011 -2020:

'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.' with its mission *'to take urgent action to halt the loss of biodiversity'*.

562 of the total 1,016 Sites of Special Scientific Interest (SSSI) (as of 2010) have individually qualifying species and 54 have species assemblages which qualify. Many of the same species are also found on sites that qualify for their habitat. The list of species and habitats of principal importance in Wales (the interim Section 7 list) includes 557 species (NRW, SoNaRR, 2016).

Previous reporting stated that SSSIs cover over 264,000 ha in Wales. There are over 1,021 SSSIs. Terrestrial SSSIs - 70% are in unfavourable condition, 29% favourable condition and 1% partially destroyed (2003 data). "Favourable features are expected to stay favourable, and unfavourable ones to stay unfavourable" (SSSIs in Wales, 2005). (Rural Development Plan for Wales, 2007-2013).

29% of terrestrial (land-based) SSSI habitat features (such as woodland or heath) on SSSIs were classed as being in favourable condition. Inclusion of intertidal features, such as shorelines and estuaries, increases this to 35%.

1% of terrestrial SSSI habitat features were classed as partially destroyed, while the remaining 70% were classed as in unfavourable condition. Adding in the inter-tidal features reduces this to 64%. (CCW, Sites of Special Scientific Interest (SSSIs) in Wales, 2005). Terrestrial sites were also classified according to whether they were recovering or declining. 47% favourable or recovering, 52% unfavourable/declining, 1% partially destroyed (CCW, Sites of Special Scientific Interest (SSSIs) in Wales, 2005).

Local Biodiversity Action Plan and Nature Recovery Action Plan for Pembrokeshire

The Pembrokeshire Nature Partnership has drafted a Nature Recovery Action Plan for Pembrokeshire which updated the Local Biodiversity Action Plan to align with National policy.

The previous local biodiversity plan (parts 1 and 2) were for certain species and habitats which also included the Section 42 list produced by the WAG. This has been replaced by the Section 7 list of species and habitats in the Environment (Wales) Act and the Nature Recovery Action Plan for Pembrokeshire details those species and habitats known to occur in Pembrokeshire.

Source: Pembrokeshire County Council

<https://www.pembrokeshire.gov.uk/biodiversity/pembrokeshire-nature-partnership-plans-and-guidance>

Comparators, targets and trend

Table 95: Trends in selected conservation features			
Condition	UK All Species (3,816 assessed)	Wales Priority Species (249 assessed)	Pembrokeshire Selected Features (23 assessed)
Declining	40%	33%	30%
Stable	31%	43%	35%
Improving	29%	24%	22%
Data Deficient	--	--	13%

Modified from State of Nature Report (2016) and State of Wildlife in Pembrokeshire Report (2016).

By most measures and at all scales from the global to the local, the diversity and abundance of wildlife is in continued decline. The State of Nature report (2016) estimated that 7% of Wales' remaining species are at risk of extinction and that 33% of Wales' priority species are still in decline. Pembrokeshire is no exception. In 2016, the Pembrokeshire Biodiversity Partnership assessed that 30% of our selected features were in decline, with a further 13% which could not be assessed due to paucity of data⁴.

Sources:

The State of Nature Partnership (2016). State of Nature 2016: Wales.

http://www.wildlifetrusts.org/sites/default/files/stateofnature2016_wales_english_1_sept_pages.pdf

Pembrokeshire Biodiversity Partnership (2016). State of Wildlife in Pembrokeshire Update: April 2016.

<https://www.pembrokeshire.gov.uk/biodiversity/pembrokeshire-nature-partnership-projects-and-reports>

[Wales Biodiversity Partnership: https://www.biodiversitywales.org.uk/](https://www.biodiversitywales.org.uk/)

Issues/constraints/gaps

Main threats to LBAP/priority species are habitat loss, degradation due to agriculture, management practice and infrastructure development. The main threats to habitats are habitat loss, degradation due to agriculture, management practice and infrastructure development. Climate change, global warming, sea level rise are also threats to biodiversity.

The most common threat to species in Wales is habitat loss / degradation due to agriculture. Intensive management, losses of field margins and inappropriate grazing regimes have all taken their toll on priority species habitats.

Other issues are specific to the designated sites.

Trees, Woodland and Hedgerows

There is a generally sparse coverage of woodland in Pembrokeshire (WAG, 1999). The area covered by ancient woodlands is approximately 1284.61 ha (Pembrokeshire County Council Map Layers). There are over 200 Tree Preservation Orders (excluding the National Park). There can be more than one tree per TPO.

Hedgerows are important for biodiversity providing wildlife corridors and important landscape features. There is no data on the length of hedgerows in the County. However a Pembrokeshire Towns: a Green Infrastructure Action Plan (2018) which identifies opportunities for green infrastructure in specific settlements.

A Tree Cover in Pembrokeshire report (2013) highlights the tree resource in Pembrokeshire.

Source: Natural Resources Wales <https://naturalresources.wales/media/682946/pembrokeshire-tcwtc3-technical-annex.pdf>

Comparators, targets and trend

Extent of tree cover in Wales is 13.7 % (Forestry Commission, 2006).

Broadleaved woodland has historically been declining.

Invasive species

There are invasive non-native species (INNS) present in the County, for example Japanese knotweed, winter heliotrope, Himalayan balsam and giant hogweed, however the extent of cover is not known.

The GB Invasive Non-native Species Strategy provides a framework on how to minimise the risks posed by INNS. The strategy sets out key aims and actions for addressing the threats posed by INNS. The current strategy covers 2015 to 2020 and replaces the first strategy published in 2018.

The Pembrokeshire Nature Partnership have also produced an Invasive Non-native Species Action plan

Sources:

GB Invasive Non-native Species Strategy:

<http://www.nonnativespecies.org/index.cfm?sectionid=55>

Pembrokeshire Nature Partnership: https://www.pembrokeshire.gov.uk/Objview.asp?object_id=3651

Data Gaps

Overall up to date condition of SSSIs and other biodiversity sites.

Length and location of hedgerows.

Conservation objectives for Natura 2000 sites.

Implications

Development can have both direct and indirect impacts on biodiversity at all levels. The LDP needs to have regard to biodiversity, fauna and flora, by conserving and enhancing habitats and species, meeting statutory requirements and minimise fragmentation of habitats, habitats loss and impacts from pollution, noise and light. Planning can be beneficial to biodiversity for example through incorporating ways of enhancing habitats in the design and creating new benefits. Planning can also be used to retain wildlife corridors. The SA objective should be updated in relation to the Environment (Wales) Act duty.

The SA objectives address issues such as:

- Protecting designated sites and enhancing the interest features
- Conserving and enhancing habitats in urban and rural areas
- Avoid further habitat fragmentation and encourage improved connectivity through the planning process, promoting green infrastructure provision.
- Integrating protection and creation of habitats into the design of new developments from the outset
- Promoting biodiversity gain through planning
- Promote ecosystem resilience
- Protecting biodiversity also impacts the economy, through increased visitors

13. Cultural heritage and historic environment, including landscape

Baseline summary

Pembrokeshire (excluding the area of National Park Designation) has 1636 listed buildings, 248 scheduled monuments, 20 Historic Parks and Gardens, 24 Conservation Areas and 1 Townscape Heritage Initiative (Haverfordwest THI, Pembroke Dock has ended) which make up the special natural characteristics and cultural heritage of the area which require protection and enhancement.

The Historic Environment Record (HER) which used to be known as the SMR (Sites and monuments record). Scheduled Ancient Monuments represent a small percentage of total historic assets.

Listed buildings

1636 Listed buildings are recorded within Pembrokeshire Planning Authority area.

Grade I 23 listed buildings
Grade II* 110 listed buildings
Grade II 1503 listed buildings
(Conservation Team, PCC, 2018)

However, a buildings at risk survey was undertaken in 2014. The report identifies that 151 are at risk, 212 are vulnerable and 1267 are not at risk (Buildings at Risk Survey, PCC, 2014).

Sources: HAA web site 23 July 2018 www.haabase.com

Cadw web site report (all Pembrokeshire minus NPA record of 280 <http://cadw.gov.wales/historicenvironment/recordsv1/cof-cymru/?lang=en>

PCC web site 2018 and Q Gis layer

PCC web site, <https://www.pembrokeshire.gov.uk/listed-buildings-and-conservation-area>

Scheduled Monuments (SMs)

248 scheduled monuments (Cadw Historic Environment Record). There is a lack of information on the condition of SMs, however many SMs are in a poor condition.

Source: Cadw website advises last published volume was 2007 and in preparation for the introduction of the statutory register, Cadw has undertaken a thorough review of the boundaries of all registered historic parks and gardens. Before the commencement

of the statutory register in 2018, Pembrokeshire County Council will consult with owners and occupiers on the results of those reviews and any boundary adjustments that may be required. After the register comes into force, information about registered sites will be made available on Cof Cymru, Cadw's online resource for national historic assets.

Source: <http://cadw.gov.wales/historicenvironment/protection/historicparksandgardens/?lang=en>

Historic Parks and Gardens

There are currently 20 Historic Parks and Gardens in the County (excluding the National Park area) which cover a total of 0.40% (4.12 km² or 412 ha). A review is underway prior to the statutory register of Historic Parks and Gardens coming into force later in 2018.

- 111 Main Street, Pembroke
- Blackaldern
- Castell Malgwyn
- Castle Hall
- Cilwendig
- Ffynone
- Fishguard Bay Hotel
- Great Harmeston
- Haroldston
- Haverfordwest Priory
-
- Kilgetty
- Lamphey Bishops Palace and Lamp
- Landshipping
- Manorwen
- Merrixton House Farm
- Molleston Baptist Chapel
- Monkton Old Hall and Vicarage
- Orierton
- Plas Glyn-y-mel
- Scolton Manor

Conservation areas

There are 24 areas which cover 0.53 0.34% of the County (599.64 ha)

Conservation Area, size (hectares)

- Carew 1.92
- Carew Cheriton 4.33
- Cosheston 11.35
- Eglwysrwrw 5.21
- Fishguard 18.37
- Goodwick 32.46
- Haverfordwest 49.43
- Honeyborough 4.54
- Lamphey 30.89
- Llangwm 16.53
- Llawhaden 19.94
- Lower Town 19.30

- Mathry 4.81
- Milford Haven 49.44
- Narberth 12.57
- New Moat 0.20 hectares
- Neyland 17.86
- Pembroke 97.75
- Pembroke Dock 144
- Penally 9.58
- Scotsborough House 0.80
- St Dogmaels 26.25
- St Florence 7.53
- Wiston 14.58
- Sum = 599.64

Country Parks

There are two country parks in the area: Llys-y-fran Country Park and Scolton Manor (combined area of 140.001 ha).

Townscape Heritage Initiative

Townscape Heritage Initiative schemes aim to stimulate economic regeneration through historic building conservation. There is one scheme in the plan area in Haverfordwest. A former Townscape heritage Initiative at Pembroke Dock ended in 2014. The Pembroke Dock THI restored and renovated the historic buildings of the waterside town such as the Garrison Chapel and Market Hall in the former Royal Naval Dockyard

The Haverfordwest Townscape Heritage Initiative is a partnership project jointly funded by Pembrokeshire County Council, The Heritage Lottery Fund, Cadw and the Department of Enterprise, Innovation and Networks at the Welsh Assembly Government.

Under the scheme over £2.5m in grant aid was spent refurbishing historic properties in the town's Conservation Area focusing on High Street, Market Street, Hill Lane and Goat Street during Phase 1, and repair or refurbishment was undertaken to 23 properties. Phase 2 will focus on Castle Square, Market Street and High Street and grant aid of £2.65m is being made available.

Local landscape and built heritage distinctiveness

Overall, much of Pembrokeshire outside of the National Park is formed by traditional rolling lowland in agricultural use where traditional hedgerows and hedgebanks are a distinctive feature, and the LANDMAP assessment has identified that traditional field boundaries should be retained and managed appropriately. Traditional hedgerows also provide important links for biodiversity.

The built heritage includes locally distinctive non-listed buildings and building materials which are present throughout the County and contribute to the diverse townscapes and landscapes.

Landscape

Pembrokeshire's landscape ranges from parts of the coastline to open hills, valleys and woodland and secluded tree-lined rivers and estuaries to areas with industrial development and populated villages and towns. The LDP review will have to integrate development pressures with the need to conserve the special characteristics of the area.

The coastal sections of Pembrokeshire excluding the National Park area, is a small length of coastline to the east of Amroth, parts of the Milford Haven Waterway, and parts of the Teifi Estuary. There are four historic landscapes (landscapes of outstanding or special historic interest) which are partly within the plan area, namely Pen Caer, Lower Teifi Valley, Mynydd Preseli and Milford Haven Waterway.

Previous industrial processes such as quarrying, mining and agricultural practices have also impacted the landscape.

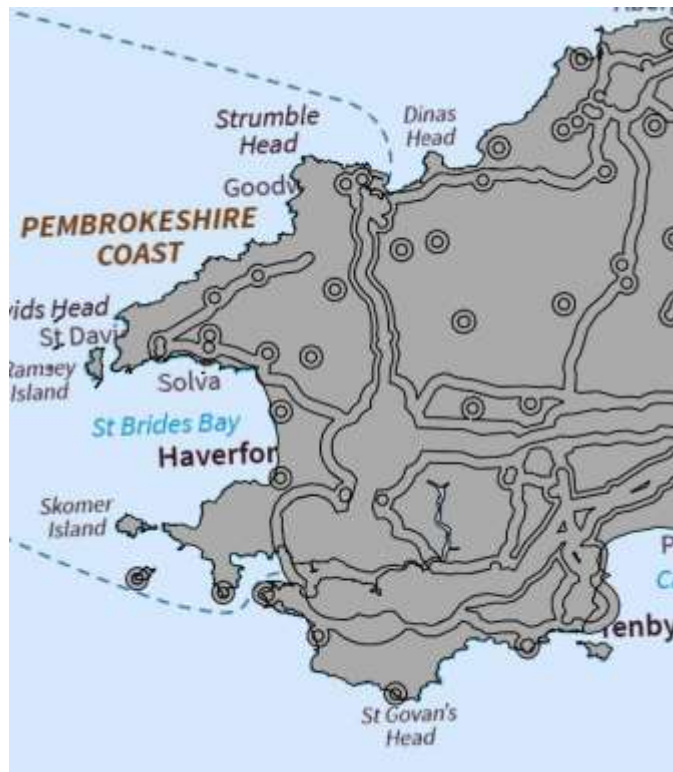
A LANDMAP assessment carried out by Natural Resources Wales (formerly CCW) has been quality assured and is available on the geo-portal for Wales website <http://lle.gov.wales/home>

Overall evaluation of the visual and sensory layers of low, moderate, high and outstanding value of landscape illustrates that the majority of Pembrokeshire is classified as moderately important, with areas of high importance east of the Cleddau river and in coastal areas, including Strumble head and on the Preseli Mountains. Areas of low visual and sensory value are found at built areas and previously developed land. This value does not account for historic, cultural or biodiversity value.

Tranquillity and light pollution

Tranquillity is essentially a subjective issue given that it is a measure of the experience of calmness in the surrounding environment. A definition has been created so that mapping can occur – *“places which are sufficiently far away from the visual or noise intrusion of development or traffic to be considered unspoilt by urban influences”*.

Pembrokeshire tranquillity zones



A map showing tranquillity across Wales can be viewed at this website:
<http://lle.gov.wales/catalogue/item/TranquilAreasWales/?lang=en>

Large urban conurbations in south east England, north west England, the west Midlands and south east Wales are described as 'significantly disturbed'. Light pollution has also increased significantly.

Source:

Lle Welsh Government and Natural Resources Wales geo-portal, accessed 2018.

Urban and accessible greenspace

Common land covers some 5653 ha of Pembrokeshire or 3.5% of the land area (including Pembrokeshire Coast National Park). There are 249 commons, of which 113 are less than one hectare in size. The largest, Mynydd Preseli is 2132ha. Seventeen percent of the total numbers of commons in Wales fall within Pembrokeshire. There are 42 Village Greens covering an area of some 52ha.

Source: <https://www.pembrokeshire.gov.uk/common-land>

An assessment of proportion of people within 300m of natural green space (Urban greenspace standards, 'Climbing Higher' Policy) has not been carried out, however the County is predominantly rural, therefore most of the population are relatively close to natural green spaces. An urban open space survey is currently being developed within the Council and data will be added when available.

A Green Infrastructure report (2018) for Pembrokeshire provides a framework to recognise the value of green infrastructure, making improvements to these areas to provide a range of environmental and regeneration benefits. Towns included within the study were:

Fishguard and Goodwick
Haverfordwest
Milford Haven
Narberth
Newport
Neyland
Pembroke
Pembroke Dock
Saundersfoot
St Davids
Tenby.

An action plan outlines all the green infrastructure opportunities identified within each town and presents key projects which are more deliverable in the short term and would bring demonstrable benefits.

Implications

The LDP should seek to safeguard and enhance our cultural heritage, including architectural and archaeological heritage. The plan should also seek to promote cultural tourism in the area, and in reference to Welsh culture and Welsh language.

The LDP will need to sustainably protect landscapes, while promoting the public's right of access to open countryside. The plan should also have regard for sustaining and enhancing the character of townscapes through appropriate design and development. Development impacts landscapes at a broad and local scale.

Distinctiveness of areas can be encouraged by planning through the protection and promotion of the desirable characteristics of particular neighbourhoods.

The high quality of Pembrokeshire's landscape makes a significant contribution to the high quality of life in the County. The current plan highlights the on-going work that is being completed on measuring landscape quality, for instance through LANDMAP. The Plan also notes that targets will be developed for safeguarding listed buildings.

The plan will also have regard for the Pembrokeshire Coast National Park designation, particularly the significant landscape and cultural asset which this designation contributes.

The SA objectives should promote high quality design in keeping with its context in the landscape to support local distinctiveness, though recognise the role of innovation in the built environment. The promotion of sustainable construction methods is also encouraged. The objectives should also increase sustainable access and opportunities for enjoyment of the landscape, geological, built and archaeological heritage where appropriate.