
Pembrokeshire Coast National Park

Management Plan (2014-2019)

Local Development Plan 2
(2015-2031)

Background Paper No *: Climate Change

March 2018

**PEMBROKESHIRE COAST NATIONAL PARK
AUTHORITY**

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International & National

Emissions targets

1. Greenhouse gas emissions trends put the world on course for global temperature change in excess of 2°C, the level considered to constitute dangerous climate change.
2. Due to past emissions, it is argued that climate change in coming decades cannot be avoided. The UK and Pembrokeshire are expected to experience higher average summer temperatures, lower average precipitation in summer and higher average precipitation in winter. The UK Government produced a UK Climate Change Risk Assessment in 2017. A regional report is available for Wales.
3. The Paris Agreement (2015) reflects international ambition to limit the rise in global mean surface temperature to well below 2°C above pre-industrial levels, with efforts to hold it to 1.5°C, based on the knowledge that temperature increases of more than 2°C will result in very costly adaptation measures, huge impacts on water availability, food security and ecosystems and unacceptably high risks of irreversible events, such as the melting of the Greenland ice sheet and associated rise in relative sea level (a 1 metre rise is already predicted over the next century).
4. Under the Climate Change Act 2008, the UK Government is legally required to reduce greenhouse gases by 80% of 1990 levels by 2050. UK emissions were 38% below 1990 levels in 2015. The first carbon budget (2008 to 2012) was met and the UK is currently on track to outperform on the second (2013 to 2017) and third (2018 to 2022). However, it is not on track to meet the fourth (2023 to 2027).
5. The Welsh Government's Climate Change Strategy for Wales (October 2010) states its intention to reduce greenhouse gas emissions in areas of devolved competence by 3% per year from 2011, against a baseline of the average emissions between 2006 and 2010. The 3% target includes all 'direct' greenhouse gas emissions in Wales except those from heavy industry and power generation, but including emissions from electricity use

in Wales by end-user. Welsh Government has set target ranges for sectoral emissions reduction. Welsh Government has also committed to reduce greenhouse gas emissions in Wales by at least 40% by 2020 (on a 1990 baseline). It published Energy Wales: A Low Carbon Transition Delivery Plan in 2014 which sets out priorities for action and key delivery milestones.

Well-being of Future Generations Act 2015

<http://gov.wales/docs/ds/jlg/publications/150428-guide-to-the-fg-act-en.pdf>

6. The Well-being of Future Generations Act 2015 concerns the embedding of the principle of sustainable development into all of the work carried out by public bodies and places a requirement on all public bodies to set out how they will progress the 7 well-being goals set out in the Act. As overarching sustainable development framework for Wales it is essential that sustainability appraisal of Pembrokeshire Coast National Park Authority's replacement Local Development Plan has full regard for the Act and its goals. The Local Development Plan Manual Edition 2 also considers that a sound Local Development Plan must have regard for the Well-being goals of the Act. This will be done through the Sustainability Appraisal of the replacement Local Development Plan and the Equalities Impact Assessment.
7. The [Sustainability Appraisal Scoping Report](#) has examined the compatibility and coverage between the Sustainability Appraisal Objectives and the 7 well-being goals of the Well-being of Future Generations Act 2015. The Sustainability Appraisal Objectives are largely compatible with the Well-being goals, with the majority of the goals being contributed to by at least 7 of the Sustainability Appraisal Objectives. The exception is "A more equal Wales", which has very minimal coverage within the Sustainability Appraisal criteria. The [Equalities Impact Assessment](#) will ensure that this well-being goal is more effectively considered during the Local Development Plan review.
8. The Vision and Objectives Background Paper gives an appraisal of the Local Development Plan vision and objectives against Welsh Government's Well-being goals and those in the Well-being Plan for Pembrokeshire (draft September 2017). Overall, they show a positive complementarity across all the goals. The Local Development Plan objectives particularly support Welsh Government's goals of 'A prosperous Wales', 'A resilient Wales', 'A Wales of vibrant communities' and 'A globally-responsible Wales'.

9. Planning Policy Wales indicates that Wales is likely to experience the following changes to the climate and impacts arising from climate change:
- Increase in winter rainfall and in the frequency of intense rainfall;
 - Increase in the length of the growing season;
 - Rising sea levels;
 - More extreme weather, such as severe storms;
 - Hotter average temperatures;
 - An increase in the number of hot and dry summers and an increase in the number of extremely hot days; and
 - Milder winters and a reduction of snowfall; (paragraph 4.5.4)

10. Impacts:

- An increase in flash flooding due to heavy rain and an increase in river and coastal flooding and erosion;
- Increased pressure on sewer systems;
- Increase in winter storm damage;
- Change in habitats and species;
- Changes to the landscape;
- Summer water shortages and increased incidence of low flow rivers;
- Increased risk of subsidence in subsidence prone areas;
- Increased thermal discomfort in buildings; and
- Health problems in summer, including heat related deaths linked to high air pollution. (Paragraph 4.5.4)

11. Planning Policy Wales states that a twin-track approach is needed to tackling climate change, recognising:

- The causes of climate change: the need to cut emissions of greenhouse gases that cause climate change; and
- The consequences of climate change: the need to address the impact of the changes in the climate that are already locked into the climate system which will occur as a result of past emissions. (Paragraph 4.5.5)

12. Planning for the consequences of climate change means recognising that changes to our climate over the next 30 or 40 years caused by past emissions are largely unavoidable. Failure to prepare for the inevitable impacts through adaptation measures will lead to further vulnerability for communities through damage to property, infrastructure and the economy.

We need to plan for these impacts, reducing the vulnerability of our natural environment and built environment to climate change. (Paragraph 4.5.8)

13. Priorities for rural areas are to secure sustainable rural communities with access to affordable housing and high quality public services; a thriving and diverse local economy where agriculture-related activities are complemented by sustainable tourism and other forms of employment in the working countryside; and an attractive, ecologically rich and accessible countryside in which the environment and biodiversity are conserved and enhanced (paragraph 4.6.3).

Flood Risk

14. Understanding flood and coastal erosion risk and prioritizing investment is a fundamental principle of the Flood Risk Regulations 2009, the Flood and Water Management Act 2010 and the Welsh Government's National Strategy for flood and coastal erosion risk management in Wales.
15. The National Strategy identifies that flooding and coastal erosion are already a significant risk for many communities and with climate change we can expect those risks to increase, with more frequent floods, more severe floods, rising sea levels and faster rates of erosion of the coast. It is also likely that communities not currently affected by these issues will be in the future.
16. The Welsh Government sets out 4 over-arching objectives for the management of flood and coastal erosion risk in Wales:
 - Reducing the consequences for individuals, communities, businesses and the environment;
 - Raising awareness of and engaging people in the response;
 - Providing an effective and sustained response; and
 - prioritising investment in the most at risk communities.
17. The Welsh Government has moved from the more traditional means of dealing with flooding and coastal erosion to adopt a risk-management approach recognizing that a variety of options, sometimes complex and interlinked, are necessary to tackle the issues. Looking ahead and planning for the future is critical.
18. A risk-management approach includes a range of actions including the following linked to land-use planning:

- considering and implementing measures to ensure appropriate development is designed to be safe and resilient to flood, or coastal erosion, risk in the preparation of Local Development Plans and the assessment of all planning applications;
- avoiding inappropriate development in flood and coastal erosion risk areas;
- speeding up the recovery process by incorporating greater resilience measures into the design of new buildings;
- increasing approaches that utilise the natural environment, like adopting soft engineering in place of traditional solutions, managing of the land to reduce storm runoff, creating more wetlands to store water or increasing beaches and salt marshes to absorb wave energy along the coast;
- deploying the sustainable drainage systems (SuDS) approach for surface water management for both new and existing developments;
- identifying and protecting areas suitable for inundation and water storage to prevent flooding elsewhere.; and
- identifying 'roll back' and managed realignment in coastal areas where appropriate.

19. In January 2015 the Welsh Government published updates to the TAN15 Development Advice Maps (Flood Maps) which are based on more up-to-date flood modelling data from Natural Resources Wales. A letter published at the same time also provides a requirement that coastal local planning authorities should have regard for the newly approved Shoreline Management Plan (2s) in their Local Development Plans and planning decisions.

Technical Advice Notes

20. Planning Policy Wales is supported by Technical Advice Notes on relevant topics. Those most applicable to climate change are:

TAN 5: Nature Conservation and Planning (2009)

21. This TAN provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. Chapter 2 sets out the key principles of planning for nature conservation. Chapter 3 provides advice about the preparation and review of development plans. Within these chapters the TAN recognizes the need to accommodate and reduce the effects of climate change by encouraging development that will reduce damaging emissions and energy consumption and that help habitats and species to respond to climate change; and to address the local implications of climate change, including potential effects of habitat change, the risks of coastal flooding and erosion and river basin flood management issues.

TAN 6: Planning for Sustainable Rural Communities (2010)

22. This TAN sets out the key role the planning system has to play in supporting the delivery of sustainable rural communities through appropriate scale and location of development. Alongside this it recognizes that the planning system must respond to the challenges faced by climate change. The overall goal for the planning system is to support living and working rural economies in order that they are economically, socially and environmentally sustainable. One of the key element of this is to improve the sustainability of the existing settlement pattern and supporting development which will enhance the sustainability of the community, and achieve a balance of housing and employment to encourage people to live and work in the same locality. This is linked to the need for development, other than that defined as local needs to be located where public transport is available.
23. The document also sets out in detail the tests needed to be fulfilled when considering rural enterprise workers' housing in the countryside.

TAN 8: Renewable Energy (2005)

24. This TAN relates to the land use planning considerations of renewable energy. It considers the provision of electricity from renewables as an important component of the UK energy policy, meeting national energy targets and promoting energy efficiency in all development. The TAN focusses on onshore wind energy as this is considered to hold the greatest potential for renewable energy generation within Wales and sets out a locational strategy for major wind energy developments via the identification of Strategic Search Areas. The TAN also describes other renewable energy technologies and the planning considerations associated with them.
25. In terms of the TAN's implications for the review, the TAN states in paragraph 5.2 that Local Development Plans should promote high standards of energy efficiency, energy conservation and the use of renewable energy as a part of the national and international response to climate change, and this should be reflected in the strategy of development plans.

TAN 12: Design (2016)

26. This TAN promotes sustainability through good design in all development. The TAN defines design, outlines the elements of a good design process, describes the five objectives of good design (Access, Character, Environmental Sustainability, Community Safety, Movement) and runs through the key elements of good design in a number of scenarios, for example when dealing with the historic environment, public buildings, residential development etc. It also provides guidance on local planning policy and development management and the requirements for planning applications and Design and Access Statements.

TAN 14: Coastal Planning (March 1998)

27. This document recognizes that opportunities for development on the coast may be limited by physical circumstances, such as risk of flooding, erosion and land instability. The document was published in the late 1990s and therefore does not contain the most up-to-date thinking in terms of climate change and associated risks posed by sea level rise and increased storminess.

TAN 15: Development and Flood Risk (2004)

28. This document recognizes climate change and the likelihood of increased flooding as a result. It requires development to be guided to locations with little or no risk of flooding and also to make provision for future changes in flood risk where they can be anticipated. A precautionary framework is set out showing the types of development that may be permitted in areas liable to flood. It also refers to the need to involve Natural Resources Wales (formerly the Environment Agency) and refer to the up-to-date flood risk maps produced by that organisation during the planning process.

29. Development types are categorized in terms of vulnerability and a hierarchy of preference is given to minimize flood risk into the future for new development and not to increase the risk for existing developments.

30. Since the TAN was published in 2004, the Welsh Government has provided several policy clarification letters containing updated advice:

- January 2014 – advising on insurance for existing properties in high risk flood areas (Flood Re), which is only available to properties built prior to 2009. Properties built after this date are subject to uncapped risk reflective premiums and in order to minimise the impact, new developments should only be

permitted in flood risk areas where it can be made safe, resistant and resilient to flooding. It advises that Natural Resources Wales assumes a lifetime of 100 years for residential developments and 75 years for non-residential development. Climate change needs to be part of the consideration over the lifetime of development.

- January 2015 – advised of updated Development Advice Maps and the availability of second generation Shoreline Management Plans representing the preferred approach to managing coastal risk agreed by local authorities and Natural Resources Wales. Local Development Plans are required to have regard to the Shoreline Management Plans to align long-term policies and help avoid inappropriate development.
- August 2016 – provides guidance on how projected increases to peak river flows and sea levels, resulting from climate change, should be incorporated into flood consequence assessments. Sea level rise is shown over the period 2009 to 2116, divided into epochs and with a cumulative rise of 1094mm. Developments with a 75-year lifespan would need to be resilient to a sea level rise of 731.5mm and 1094mm for residential developments. The letter also advises on the need to consider increased frequency, duration and severity of storms and impacts of extreme wave action.

TAN 18: Transport (2007)

31. It is acknowledged in the Technical Advice Note that road traffic growth is a cause of increased local air pollution and greenhouse gas emissions contributing to global warming and climate change. Integration of land use planning and development of transport infrastructure has a key role in addressing the environmental aspects of sustainable development, in particular climate change. The Welsh Government wishes to achieve its sustainable development policy objectives by setting out a series of actions which seek to encourage greater travel by walking, cycling and public transport, aided by locating development which is accessible to these modes of travel and managing parking and traffic management.

31. The Technical Advice Note also includes details of accessibility planning advising that it has the potential to contribute to a number of Welsh Government priorities, including addressing climate change and social inclusion.

People, Places, Futures - The Wales Spatial Plan

32. Designed to ensure that decisions are taken with regard to their impact beyond the immediate sectoral or administrative boundaries; that there is co-ordination of investment and services through understanding the roles of and interactions between places; and that the core values of sustainable development run through everything that happens.
33. The Plan identifies the Pembrokeshire – Haven area as one where the energy sector, including renewables, is an opportunity which should be exploited. Actions include identifying opportunities to maximise economic potential of existing and proposed energy infrastructure and developing the potential of tidal and wave power as an economic opportunity for the area.

Wales National Marine Plan

34. In December 2017, Welsh Government published a consultation draft Wales National Marine Plan, which will guide decisions on the sustainable use of Welsh seas. Specifically, the Plan is intended to: integrate policy with the rest of the UK, guided by the UK Marine Policy Statement; support the vision for clean, healthy, safe and biologically diverse seas; guide future sustainable development; support “blue growth” by directing key decisions taken on the future use of marine space and natural resources.
35. The consultation draft Plan identifies indicative Strategic Resource Areas. Relevant authorities are expected to guide sectors towards these areas and ensure their sustainable use (in accordance with the principles of sustainable development and sustainable management of natural resources).

Regional

Wales Spatial Plan - Pembrokeshire Haven Key Settlement Framework 2021 26-01-07

36. Settlements will exhibit key characteristics including being a sustainable area addressing climate change, through the strategic management of land, sea and air. Key priorities include adapting to climate change:

- Adapt to change already committed and mitigate against future changes.
- Establish a group to look at the impact of climate change to inform our plans and policies in an informed and coordinated way.
- Reduce our use of energy in existing and new development.
- Diversify our energy sector including renewable and bio-fuel production.
- Develop renewable energy technologies to address climate change.
- The application of funding and support programmes to identify and actively manage green corridors including the stewardship of agricultural land to support the ecological connectivity between habitats.
- Research and information for Pembrokeshire Haven as an exemplar of sustainable development in responding to climate change.

Local

Pembrokeshire Coast National Park Management Plan 2015-19

37. Recognises climate change as a key factor affecting achievement of National Park purposes and duty. Sets out the aims of reducing greenhouse gas emissions, reducing reliance on fossil fuels and adapting to climate change. Key policies are CC1: Reduce greenhouse gas emissions and CC2: Adapt to climate change and support a low carbon economy.

Single Integrated Plan for Pembrokeshire 2013 to 2018

38. Includes a priority to Pembrokeshire will address the challenge of climate change (paragraph 5.4.1). Actions for this priority are: Meet Welsh Government recycling /composting targets
- Meet Welsh Government carbon reduction targets
 - Promote sustainability through a comprehensive education programme
 - Create resilient communities able to cope with climate change
 - Use the Local Development Plan to promote sustainable development
 - Promote low impact economic activity in local communities

Pembrokeshire Well Being Plan

37. Locally the Single Integrated Plan covers the period 2013 to 2018. Pembrokeshire's Wellbeing Assessment was approved by the Pembrokeshire Public Services Board in April 2017 with the Well-being Plan for Pembrokeshire itself anticipated for publication by May 2018. The Plan will replace the Single Integrated Plan. Account has been taken of the national wellbeing objectives through the Sustainability Appraisal and Equalities Impact Assessment of the Local Development Plan Preferred Strategy. The Deposit Local Development Plan is due for publication circa May 2018. A consultation draft Well-being Plan for Pembrokeshire was published in September 2017, setting out how the Pembrokeshire Public Services Board can add value to existing programmes and partnerships. The draft Well-being Plan identifies two well-being objectives and four workstreams. Emerging Local Development Plan policies will contribute to these, in particular to the workstreams concerned with housing and transport. The Vision and Objectives Background Paper provides a commentary on the complementarity of the Local Development Plan and the Wellbeing Plan.

Renewable Energy Assessment

38. The targets for the renewable electricity generation and renewable heat generation for Policy 33 Renewable Energy (Strategy Policy) as set out in the Policy's reasoned justification and in Appendix 4 of the Local Development Plan were derived from a study entitled 'Development of a Renewable Energy Assessment and Target Information for the Pembrokeshire Coast Local Development Plan' (2008). This study considered the potential capacity for various types of renewable electricity and heat production technologies in the context of the National Park landscape, their economic potential and likely uptake, the potential for community based schemes and the limitations and opportunities of the electricity distribution network. Based on this information the study provided contribution estimates for each technology up to 2021 (Indicators 12a and 12b represent the total estimates).

Shoreline Management Plan 2

39. Since the adoption of the Local Development Plan the two Shoreline Management Plans (SMPs) covering the coast of Pembrokeshire have been completed:

- The South Wales SMP2 covers the area from Amroth to St Anne's Head (January 2012; finalised 2014); and
- The West of Wales SMP2 covers the area from St Anne's Head to Cardigan (November 2011; finalised 2014).

40. The Plans divide the whole coast into cells and set out a preferred management policy for each cell, divided into 3 epochs, collectively looking forward 100 years. The policy approach for each cell is based on the current use of the land and the need to protect assets, whilst taking into account the continued ability to do so, taking into account physical and financial requirements within the context of climate change, including sea-level rise and increase storminess.
41. Of the allocations made in the current Local Development Plan, one is currently within a flood zone in Saundersfoot. The site has been granted planning permission and is under construction for residential and commercial use. The development of the site is being undertaken in accordance with the requirements of TAN15.
42. There are also a number of locations where parts of existing towns and villages and road links are likely to be liable to an increasing flood risk.
43. The approach now advocated by the Welsh Government is to develop and improve flood forecasting, warning, awareness, response and recovery, as well as flood defences. The SMP2s will identify areas where investment in the physical infrastructure is needed to improve resilience to flooding. They also highlight the locations where a longer term policy will be needed to allow communities to adapt to a changing coastline, including in some isolated instances the need for abandonment of properties.
44. The areas within the National Park identified in the SMP2s as having immediate or longer term flood or erosion risk from the sea are:
 - a. Amroth (Increasing risk of flooding from present day. Eventual failure of defences in medium/long term)
 - b. Wiseman's Bridge (Need to develop an exit strategy which may involve relocation of assets in medium-term. Long-term public funding of defences is not viable).
 - c. Saundersfoot (Adaptation measures required from the short-term. Likelihood of increased frequency of flooding leading to managed realignment in the long-term.)
 - d. South Beach, Tenby (roll-back of the dunes will affect some assets in the medium to long-term)
 - e. Lydstep Haven (Existing defences have limited lifespan and the holiday park may require adaptation/relocation in the medium term.)
 - f. Freshwater East (roll-back of the dunes may affect some assets in the medium to long-term)

- g. Angle (Evolution and retreat of the coast will lead to increased flooding for some properties and assets. Adaptation of properties required. Private funding will be required to maintain/realign the road to Angle Point.)
- h. Dale (Hold the line for as long as possible by maintaining existing defences, but managed realignment necessary in the long-term.)
- i. St Brides (Increased risk to properties in the long-term.)
- j. St Brides to Little Haven road (may require realignment in the long-term.)
- k. Settlands road (potential loss of road in the long-term)
- l. Little Haven (Hold the line in the short-term with managed realignment necessary thereafter which is likely to result in loss of the existing road and some properties along the frontage.)
- m. Broad Haven (Increased pressure on existing defences will lead to increased frequency of flooding. Some managed retreat will be necessary along some of the frontage and potential loss of road to the north.)
- n. Nolton Haven (Natural evolution of the bay will protect the road, but some loss of property along the frontage).
- o. Newgale (loss of road, car park and properties as shingle bank rolls back from current time).
- p. Solva (Hold the line in the short-term but managed realigned will be necessary in the future with the need to remove some properties from the flood plain.)
- q. Whitesands (long-term realignment will result in loss of the car park).
- r. Abereiddi (managed realigned has commenced. Replacement car park facilities are being considered.)
- s. Newport Parrog (Managed realignment is necessary as existing defences are unlikely to be effective even in the short-term and no public funding available. A policy of no active intervention in the longer-term would restore a natural beach frontage.
- t. Nyfer Estuary (allow natural development of the estuary that would not preclude local private defence, if appropriate).

- u. Newport Sands (managed realignment of the defences with stepped retreat reverting to no active intervention in the long-term. This would impact the car park and access road.)

45. The information contained in the Shoreline Management Plans will be used to identify Coastal Change management Areas in the Revised Local Development Plan. For more information see the Coastal Change Management Areas Methodology Background Paper.

Newgale Adaptation Plan (Final) (Pembrokeshire County Council, April 2015)

46. A report was commissioned by Pembrokeshire County Council and undertaken by Royal Haskoning DHV in December 2014 which concluded that management of the shingle bank at Newgale will be unsustainable in a timescale of 10-20 years. During this time the bank will become increasingly vulnerable to damage thereby posing a threat to the safety and security of residents in the lower part of Newgale village and to the road infrastructure linking to the St David's peninsula. Preservation of the road link in its current location is highly unlikely in the medium term and the County Council with partners is now exploring options for the future with an initial consultation on the possible options in the spring of 2016.

47. The Adaptation Plan sets out a number of objectives which seek to inform residents and visitors of the need for adaptation; adapt the transport infrastructure and manage the impact on the local and wider community. As a result a number of actions are proposed:

- Identification of properties at risk;
- Preparation of a community flood risk plan;
- Identification of transport adaptation options;
- Ongoing management of the shingle bank
- Ongoing community engagement.

48. A study was commissioned by Pembrokeshire County Council to examine how the community of Newgale and surrounding areas can adapt to the changes being brought as a result. Feeding into the Adaptation Plan is an assessment of realignment options for the road. Initially in 2015, thirteen options were identified and following a public consultation exercise, this was reduced to 10 and then further to 4. In February 2016 the County Council appointed consultants, Atkins, to undertake the WeITAG Stage 1

appraisal of the 4 remaining options, resulting in 2 preferred options
 Further assessment of both options is being undertaken (March 2018).

49. The work to assess the need for and establish a route for a new road link at Newgale currently has no timescale. The Plan will need highlight the issues that are emerging and monitor progress. A revision of the flooding and Coastal Inundation section of the Plan is also being undertaken.

Draft Local Flood Risk Management Strategy

50. Pembrokeshire County Council has prepared a draft Local Flood Risk Management Strategy which identifies the following:

Flood risk communities (in the National Park) which are serviced with NRW Flood Warnings

Flood Risk Community	Flooding Source	Properties at Risk	Risk Category
Tenby	River Ritec	29	High
Amroth	Tidal	7	Medium
Angle	Tidal	12	Medium
Dale	Tidal	42	Medium
Newgale	Tidal	3	Medium
Solva	River Solva	40	Medium
Solva	Tidal	25	Medium

51. **Spatial Strategy:** See Scale and Location of Growth Paper

52. **Travel:** See Scale and Location of Growth Background Paper

References

Planning Policy Wales (Edition 9, November 2016)

<http://gov.wales/docs/desh/publications/161117planning-policy-wales-edition-9-en.pdf>

Technical Advice Notes

<http://wales.gov.uk/topics/planning/policy/tans/?lang=en>

Wales Environment Strategy

[Welsh Government | Environment Strategy for Wales](#)

Last updated 05 July 2013 Currently under review

Wales Spatial Plan

[Welsh Government | Wales Spatial Plan](#)

Single Integrated Plan for Pembrokeshire

<https://www.pembrokeshire.gov.uk/public-services-board/local-service-board-archive>

Pembrokeshire Coast National Park Management Plan 2015 - 2019

<http://www.pembrokeshirecoast.org.uk/default.asp?PID=196>

Climate Change Act 2008

<http://www.legislation.gov.uk/ukpga/2008/27/contents>

South Wales Shoreline Management Plan

<http://www.southwalescoast.org>

West of Wales Shoreline Management Plan

http://www.westofwalesmp.org/content.asp?nav=23&parent_directory_id=10

Renewable Energy Road Map

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48128/2167-uk-renewable-energy-roadmap.pdf

Marine Renewable Energy Strategic Framework for Wales March 2011

Climate Change Background Paper March 2018

<http://gov.wales/topics/environmentcountryside/energy/renewable/marine/framework/?lang=en>

UK Climate Change Risk Assessment 2017 Evidence Report. Summary for Wales

<https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Wales-National-Summary.pdf>

Energy Wales: A Low Carbon Transition Delivery Plan 2014

<http://gov.wales/docs/desh/publications/140314energy-wales-delivery-plan-en.pdf>

Weblinks accessed 12 February 2018