

Shoreline management and coastal adaptation in Carmarthenshire.

Abstract

This paper examines how Carmarthenshire County Council is managing our coastline. It provides a summary of the national and local policy approach pertaining to shoreline management and the activities delivered by the Authority in the management of our coastline. This paper then comments on the robustness of current preparedness and future requirements.

Introduction

Carmarthenshire County Council (CCC) has 90km of coastline which is both an asset in terms of biodiversity, ecosystems, leisure and tourism but also a liability in terms of management, maintenance and inspections. 15km (17%) of the Carmarthenshire coastline is hard engineered to protect against flooding and coastal erosion.

Recent analysis by the Flood Defence and Coastal Defence (FDCP) business unit highlights that we have 19 communities¹ who are at risk of tidal flooding and coastal erosion in Carmarthenshire. This further equates to

- 2300 residential home at risk;
- Over 2600 properties in total at risk and
- 70 key services.

It is for this reason, flood risk is specifically identified within the corporate risk register. NRW flood maps highlighting the coastal flood risk areas can be viewed [here](#).

Policy and legislation

Strategic Planning: The national picture

In consideration of the risks, there has been a shift in thinking in recent years, especially within the Flood and Coastal Erosion Risk Management (FCERM) sector, to risk management and adaptation and away from prevention. However, there is very limited evidence of the implementation of adaptation at the scale needed to fully prepare for climate risks facing the UK across cities, communities, infrastructure, economy and ecosystems².

The National Infrastructure Commission Wales (NICW) has begun to evaluate how flood risk and adaptations are delivered across Wales and how we communicate that risk to Welsh communities. This NICW report in focusing on the future, 2050 to 2100 and will be published in the Autumn of 2024.

¹ Community at Risk Register (CaRR), NRW, 2015.

² [Progress in adapting to climate change - 2023 Report to Parliament - Climate Change Committee \(theccc.org.uk\)](https://www.theccc.org.uk/reports-and-publications/progress-in-adapting-to-climate-change-2023-report-to-parliament-climate-change-committee/)

Strategic planning - the local picture

CCC is currently preparing a Revised Local Development Plan, 2018-2033. This revised plan will evaluate the risk to the development sites put forward from 2018. In addition, flood risk analysis and flooding mapping on some key strategic developments its being scaled up to include wider areas.

This report also notes that the following is also being delivered:

- There is flood mapping and guidance published by NRW which is updated every 6-months with input from CCC when applicable.
- Flood risk is on the corporate risk register,
- As part of the new Flood Risk Management Plan and Local Strategy (2024-2029), the risk to Carmarthenshire's coastal communities is being assessed at a strategic level.
- As a part of the flood and coastal erosion risk management (FCERM) capital works programme, communities at greatest risk of flooding are receiving more focused analysis, education and engagement.
- The only coastal community that has been recently assessed with regards to the impacts of climate change and sea level rise is Bynea in east Llanelli. The early analysis suggests that this area will begin to see more frequent significant flooding within the next 30-years.

The shoreline management plan

The Shoreline management plan (SMP) is the key policy document for the management of the coastline.

The SMP provides a large-scale assessment of the risks associated with coastal erosion and flooding along the coast and estuaries of Carmarthenshire. It defines high level policies to help manage these risks to people and to the developed, historic and natural environment in a sustainable manner.

First generation SMP (SMP1) was completed along the South Wales coast in 2000 and 2001. The second generation SMP was finalised and published in October 2011 (SMP2) and refreshed in 2021.

The SMP in Carmarthenshire

The SMP2 covers the Carmarthenshire coast from Hendy in the east to Dolwen point in the west. The policy has divided the Carmarthenshire coast into 4 key areas namely:

- The Lougher Estuary - (Hendy to Pwll),
- Pembrey Burrows (Burry Port to Kidwelly),
- The Three Rivers (Kidwelly to Laugharne) and
- Ginst to Dolwen Point (Pendine beach and village).

Within each of these four areas, our coastline is further divided into policy units (smaller areas of our coastline). Each policy unit is assigned one of four strategic policy positions (highlighted in [Appendix A, table-1](#)) and will also have a short narrative pertaining to its management ([Appendix A, table-2](#)).

In addition to the higher-level policy notes, there are also specific actions for each policy unit area. These come under the headings of research, monitoring and data collection, asset management, communication, planning and land management, emergency response environmental mitigation and habitat creation.

The current position

Across the 90km of Carmarthenshire coastline, 4 SMP areas and 46 policy units, there are a total of 87 actions. These are documented in [Appendix-B](#).

- Of these 87 actions, CCC own or have joint responsibility for 43, just under 50%.
- Of CCCs 43 actions, 8 have been completed, 18%
- 33% of CCCs actions are currently ongoing, are business as usual or are being implemented.
- A little under half (49%) of CCC's actions require actioning and have not commenced, predominately due to resource implications.

Reporting

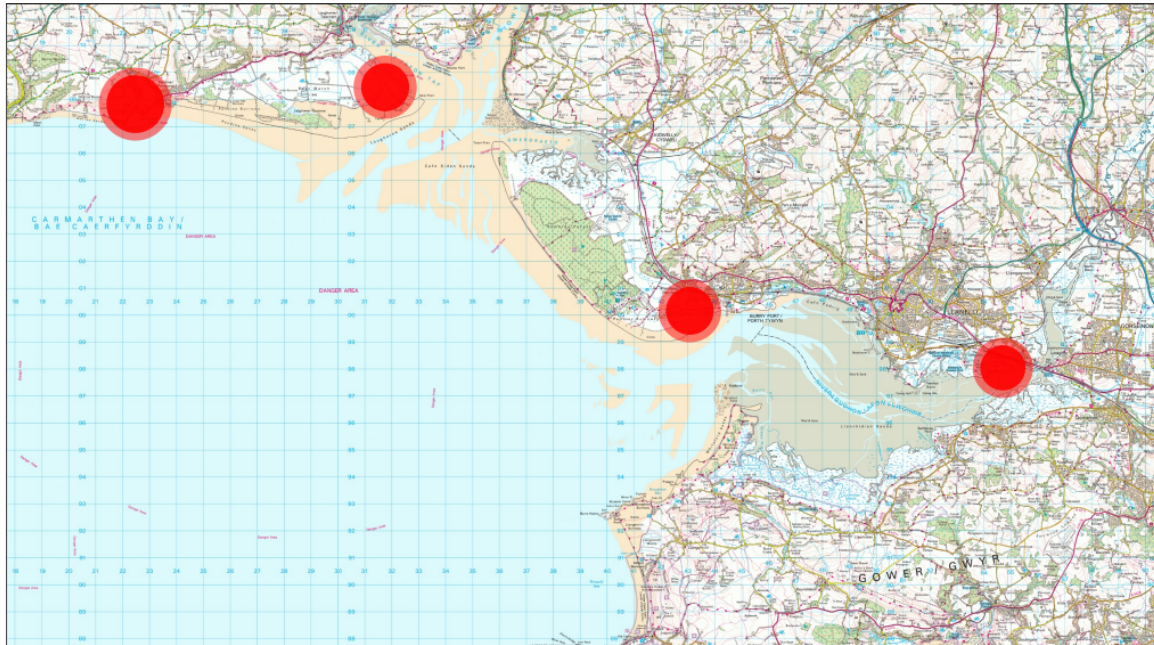
Annual returns on the SMP2 actions are submitted to the Swansea and Carmarthen Bay Coastal Engineering Group (SCBCEG). The SCBCEG oversee all actions in the south-west Wales region and report to NRW and WG accordingly. All Local Authorities and risk management authorities are members of the SCBCEG. They have recently employed one full time officer to drive these regional actions forward and also work closely with the Welsh Coastal Monitoring Centre (WCMC) to deliver regional actions.

Changes to policy

The original short-term (0-20 year) policies within the SMP are now transitioning to the medium term (20-50 year) policies. The implementation of the medium-term policies will see changes at the following areas as denoted in table-3 below.

Table-3 - The SMP policies and the policy areas that are changing

Area	Short Term policy	Medium or Long term policy	Narrative / details
Morfa Bacas, Bynea, Llanelli	Hold the line	Managed realignment	A change from the short-term policy of hold the line. The coastal path has been significant damage here in recent years and a diversion, as per the policy requirements, has been planned and is being implemented. There are further actions from the SMP2 Refresh to be implemented here also.
Burry Port Marine west to the Nose	Hold the line	managed realignment	The medium and long term policy is managed realignment, a change from the short term policy of hold the line. Unlike Morfa Bacas, this area is experiencing significant deposition as the sand eroded from Cefn Sidan migrates east. The primary asset here is the coastal path and the golf course. Triggers need to be agreed when further actions will be implemented at this location
South Laugharne to Ginst Point	Hold the line	managed realignment	The medium and long term policy is to construct a set back defence through managed realignment, and then hold this set back line by maintaining and upgrading this defence, as required to create a large area of compensatory intertidal habitat on this area of the land, which was reclaimed from the sea during the Medieval period, and is currently susceptible to flood and erosion risk. NRW are leading on this.
Pendine Village	Hold the line	Hold the line Long term management realignment	The short and medium term policy is to hold the line, but the current long term policy is to implement managed realignment, through provision of a setback defence. This is subject to further detailed studies to investigate potential merits/ impacts of managed realignment as part of a wider redevelopment of Pendine. This policy currently appears to conflict with the Authorities aspirations for the area and possibly needs amending.



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CCC's current operational coastal management tasks

Operationally, the coastline is managed by both Outdoor Recreation Service and the Flood Defence and Coastal Protection business units. Their duties include:

- Pre and post storm and high tide inspection of assets in areas of highest risk.
- Management and maintenance of B-Lines and coastal safety signage.
- Provision of Beach Lifeguarding Service during peak season on Cefn Sidan (through RNLI)
- Beach inspections / conservation management of the Carmarthenshire Bay SSSI.
- Monitoring the rate of sand dune erosion on Cefn Sidan.
- Formal inspect all 177 of CCC's coastal assets annually.
- Delivery of a programme of asset repairs and maintenance works.
- Delivering a programme of capital works (see [Appendix-C](#))
- Inspect and maintain Aids of Navigation and supervise Trinity House on their annual inspections.
- Procure bi-annual topographical surveys of our coast.
- Develop social science initiatives.
- General management of our coastal environments e.g. vegetation, bins and paths etc.
- Commission studies into coastal erosion
- Manage capital works including repairs to the MCP and coastal path
- Deliver the majority of Carmarthenshire's 43 actions in the Shoreline Management Plan
- Develop and submit annual reports on the delivery of the SMP2;

- Vice Chair of the Regional Coastal Engineering Group (SCBCEG)
- Discharging the duties of the competent harbour Authority and managing North Dock and Burry Port Harbour.

Financials and resources

To manage the Carmarthenshire coastline there currently three dedicated budgets.

1. £60k annual revenue budget managed by the FDCP business unit.
2. £49k on the capital ledger for 2023/24 and
3. £18k annual revenue budget for the provision of lifeguarding services managed by the Outdoor Recreation Service.

The Outdoor Recreation Service have an annual revenue budget of £226k to cover all management activities along the MCP in Llanelli.

There are no specific coastal risk management, strategy or adaption officers or engineers in the Authority.

In summary

The Shoreline management plan is the primary policy document for managing the coast and it has been in place for almost a quarter of a century with three amendments and reviews over this period.

The SMP2 set out the management policy pertaining to the coast and actions to manage the coast.

In total, there are 87 actions pertaining to the Carmarthenshire coast. 43 (49%) are for CCC to deliver.

Currently 18% of CCC's actions are complete, 32% are ongoing and 49% require action.

Climate change will result in significant pressures and increased risks to our coastal communities. Both locally and nationally, there is a move to adaption and resilience and away from defence and prevention, but there is a little evidence of adaption on the scale needed, to be prepare for these future risks.

While significant progress is being made in managing Carmarthenshire coast, the risk to our coastline is increasing as our climate changes and we will need to review the resource requirement of that work to ensure that we mitigate against the risk

There is currently little or no evidence both nationally and locally of forward planning for the impacts of climate change and sea level rise. As such, the communication of these risks and engagement with our coastal communities at greatest risk from climate change and sea level rise is almost non-existent.

Actions for consideration

The primary aim of this paper, and the immediate priority is to start raising awareness, both internally and externally, about how climate change will impact on the citizens and businesses of Carmarthenshire. Post consultation with the Outdoors Recreation Services and the Flood Defence and Coastal Protection business unit, the following actions are suggested to help us move forward in how we manage our coastline and interact with those communities at greatest risk.

These are not resourced, so we also request support in exploring funding sources to deliver these actions and support the ongoing shoreline management works.

R&D

1. Develop and implement a programme of works that will seek to understand the impacts of climate change and sea level rise on our coastal communities.
2. Develop the citizen science projects participation along the Carmarthenshire coast to monitor how our coastline is evolving.

Spread and Scale

3. Incorporate representatives from strategic planning and regeneration departments into the local and regional coastal group meetings.
4. Strategic planning to consider policies that will allow our coastal communities to adapt to our changing coastline (Pembrokeshire have done some excellent work on this already).

Communication of risk

5. Raising awareness with public and private organisations of the SMP principles, content and recommendations (this document is a start).
6. Engage with landowners/ developers of industrial (and former industrial) sites to ensure future plans for sites are incorporated into wider shoreline management planning and are informed by SMP policy. This should also consider implications related to contamination risks.
7. Engage and work with local communities to ensure that they remain fully informed of the changing risk from coastal erosion and flooding.
8. Learn lessons from Fairbourne and other coastal adaption schemes on the role of the residents in the adaptation of their communities.

Plans and actions

- Produce a CCC coastal action plan. Share out the SMP2 actions and clarify responsibilities for operational and strategic actions; instigate internal performance management.
- Identify triggers for policy transitions, as the start of a journey toward trigger-based management and associated monitoring and regular review.
- Develop a more robust system to manage SMP2 actions and coastal plans;
- Develop a sustainable solution for the management of Burry Port Harbour and North Dock in Llanelli.

Partnership working

- Continue working with the WCMC to identify any additional data collation and analysis needs to support shoreline management decisions.
- Work with NRW to support the forecasting of habitat compensatory needs over the short to medium term. Consider and evaluate the potential benefits of in-situ restoration and habitat enhancement at a local level to support wider Sustainable Management of Natural Resources (SMNR) and Wellbeing priorities.
- Work with Cadw and the Welsh Archaeological Trusts to ensure that new or revised information on historical assets that may influence delivery of the SMP is identified and considered in future assessments.
- Work with NRW to identify any potential constraints associated with presence of PRow on structures. There is a need to consider who and how to take this forward.

Appendix A -

Table 1 - the coastal management policies assigned to the coastline in by the Shoreline Management Plan-2

Policy	Description
Hold the line (HTL)	Keep the shoreline in the same place
Advance the line (ATL)	Create more land by moving the defence into the sea
Managed realignment (MR)	Allow the shoreline to move back in a managed way
No active intervention (NAI)	Allow nature to take its course

Table-2 - an extract from the SMP-2 detailing the policy unit, its management policy and a narrative on its agreed management.

12.7	Morfa Bacas (Loughor Bridge to Wildfowl and Wetlands Centre)	Existing defences will be maintained through a policy of hold the line to manage risk of flooding and erosion. Future options for the Millennium Coastal Path will be considered.	The medium and long term policy is managed realignment by setting back existing defences to allow the frontage to evolve naturally with minimum intervention, whilst continuing to manage the risk of coastal erosion and flooding to built assets on low-lying land inshore including railway infrastructure. It is recommended that the Millennium Coastal Path is realigned inshore along this frontage.
12.8	Wildfowl and Wetlands Centre to Penrhyn Gwyn	Maintain and upgrade existing set back defences, through a policy of hold the line to continue to manage the risk of coastal erosion and flooding to the extensive developed low-lying hinterland of Llanelli (which includes residential properties, industrial development, potentially contaminated land and associated infrastructure), subject to the future availability of public funding for coastal erosion and flood risk management. This policy should enable the fronting saltmarsh to develop naturally to a point and will manage the risk of erosion and release of potentially contaminated material into the estuary.	
12.9	Machynys (Penrhyn Gwyn) to the northern end of Llanelli Beach	Maintain and upgrade existing defences under a policy of hold the line , subject to the future availability of public funding for coastal erosion and flood risk management. The policy will continue to manage the risk of coastal erosion and flooding to the extensive developed low-lying hinterland of Llanelli and Machynys, which includes residential properties, industrial development, potentially contaminated land and associated infrastructure. This policy will manage the risk of erosion and release of potentially contaminated material into the estuary.	
12.10	Pwll railway frontage (Llanelli Beach to Tywyn Bâch)	The policy is to hold the line by maintaining and upgrading existing defences in order to continue managing the risk of coastal erosion and flooding to railway infrastructure, subject to the future availability of funding. Due to the proximity of a low water channel immediately adjacent to the existing defences, the defences are likely to come under increasing pressure as sea level rises and therefore it is likely that they will need to be upgraded and improved in the short term (<20 years). It is assumed that these defences would also manage the risk of coastal erosion and flooding to assets in the low-lying hinterland,	

Appendix B - SMP-2 Actions in Carmarthenshire



Appendix B.docx

Appendix C - CCC's coastal capital works programme 2010-2023

Year	Details	Funding	Team
2023	Sea outfall at Ferryside upgraded post storm damage	WG Grant	FDCP
2023	Sea outfall at Llansteffan upgraded due to the changing beach topography.	WG Grant	FDCP
2023	Coastal protection scheme being designed for Burry Port East	FDCP Revenue	Engineering Design, FDCP and Outdoor Recreation Service
2021	Study into the dune and coastal erosion at Cefn Sidan	FCP Revenue	FDCP and Outdoor Recreation Service
2021	Study into the resilience of the Banc Y Lord tidal embankment, Pembrey Airport	FDCP Revenue	FDCP and Outdoor Recreation Service
2020-2023	Options assessment, design and build of a diversion of the coastal path at Morfa Bacas, Bynea, Llanelli	Sustrans and Outdoor Recreation Service	Outdoor Recreation Service
2010-2015	Rock armour upgrades at Pendine, at Burry Port, Llanelli and Machynys.	CCC Capital	Streetscene