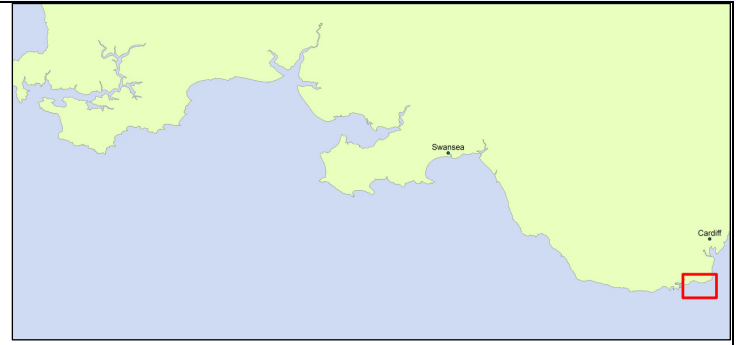


## Lavernock Point to Barry Island (1)



### Recommendations:

#### Long Term Plan

Much of this frontage is undefended and the long term aim is to continue to minimise intervention along this geologically designated coastline, whilst recognising the need to manage the risk of coastal erosion and flooding to the main settlements. Enable natural evolution of the coastline to retain its ecological, geological and landscape value.

It is unlikely that defence improvements at Swanbridge would attract public funding, but time needs to be allowed to allow consultation with the local community to consider alternative measures such as: improved flood warning,, individual property flood protection/ resilience, relocation of properties, provision of an alternative access road to Swanbridge East and other adaptation and mitigation measures. Some residential properties in St Mary's Well Bay may be at risk from coastal erosion in the short term. However due to the sheltered nature of this coastline and generally slow rates of cliff erosion other, unprotected cliff top assets, such as residential properties along the coast at Sully and Hayes Point, the seaward edges of various holiday camps, industrial estate and archaeological features are only likely to be affected in the medium to long term. This will allow time for alternative measures to be considered, developed and implemented.

This Plan does not preclude private funding of defence maintenance, improvement or replacement, since existing defences are not thought to be having a significant impact on the wider shoreline. However, it is likely that defences will become technically more difficult to sustain over time, due to sea level rise (as a result of future climate change) and associated beach narrowing. Privately funded defences that would advance the existing line are considered to be technically unsustainable and are not recommended as there could be detrimental impacts on the littoral drift in the wider area.

Location (Policy Unit)		Preferred SMP2 policy and proposed approach to implementing the Plan		
		0-20 years	20-50 years	50-100 years
1.1	Lavernock Point to St Mary's Well Bay	There are currently no defences along this frontage and limited socio-economic assets, therefore the policy is to allow the coast to evolve and retreat naturally, through <b>no active intervention</b> .		
1.2	St Mary's Well Bay to Swanbridge	This coastline is currently undefended and there are limited socio-economic assets at risk due to the slow rate of cliff erosion. The policy is to allow the coast to evolve and retreat naturally, through <b>no active intervention</b> , which will maintain the natural landscape and geological value of this coastline. .		
1.3	Swanbridge East	There are a number of residential properties at risk, but it will become technically more difficult and expensive to replace or upgrade existing coastal erosion and flood defences in the medium and long term which is unlikely to attract public funding. The policy is therefore to <b>hold the line</b> through maintenance of existing defences, for as long as possible, but not to replace or improve structures once they have failed. The defences are in poor condition (<20 years residual life), therefore works would be required in the short term, but the standard of protection is likely to reduce over time as a result of climate change with an associated increased risk of coastal flooding and erosion.	In the medium term, as defences fail, the intent is to allow the coast to evolve and retreat naturally, through <b>no active intervention</b> . The remains of the defences will have to be maintained in a safe condition.  This does not, however, preclude the potential for private funding of defence maintenance. However, over time the existing defences will become unsustainable and more expensive to maintain in their current alignment and the risk of coastal flooding will continue to increase as a result of future climate change/.sea level rise. Private funding of defence improvement/ replacement is acceptable, subject to obtaining the necessary consents, licences and approvals.	
1.4	Swanbridge West	There is a seawall at the western end (<20 years residual life), but defences at the eastern end of this frontage failed some time ago. The number of residents, non-residential property and infrastructure at risk is unlikely to be sufficient to attract public funding of flood and coastal erosion defences. The short term aim is therefore to maintain existing defences for as long as possible, through a policy of <b>hold the line</b> . Once defences have failed they would not be replaced.	In the medium term, as the remaining defences fail, the intent is to allow the coast to evolve and retreat naturally, through <b>no active intervention</b> . The remains of the defences will have to be maintained in a safe condition.  This does not, however, preclude the potential for private funding of defence maintenance. However, over time the existing defences will become unsustainable and more expensive to maintain in their current alignment and the risk of coastal flooding will continue to increase as a result of future climate change/ sea level rise. Private funding of defence improvement/ replacement is acceptable, subject to obtaining the necessary consents, licences and approvals.	
1.5	Sully to Bendrick Rock (including Sully Island)	This frontage is currently undefended and designated for its geological exposures, including significant fossil records. The long term aim is therefore to allow the coast to continue to evolve and retreat naturally, through <b>no active intervention</b> . The slow rate of erosion means that cliff top assets are unlikely to be affected for a number of years, allowing time for any mitigation measures or relocation to be considered.		

A review of the impacts of the preferred SMP2 policies on coastal evolution and behaviour is provided in Appendix E: Policy Development and Appraisal, Section E1.3.

#### Policy sensitivities and key uncertainties (further detail is included in Appendix K)

Policy units 1.3 and 1.4 – policy has been defined based on the assumption that future public funding of coastal erosion and flood risk management will be limited and therefore will need to be focussed on large residential areas which are at high risk from coastal erosion and flooding. The timing of policy change is dependent upon the residual life of existing defences, the maintenance regime adopted and the rate of future sea level rise. The risk of coastal flooding will increase in the short term since a policy of hold the line at this location does not include improving or raising existing

defences in response to future climate change/ sea level rise. It is possible that a source of private funding could be used to hold the existing line in the medium and long term by replacing, maintaining and improving existing defences. However any defence improvement/ replacement would be subject to obtaining necessary consents, licences and approvals and would need to consider the impact of these defences on alongshore drift and adjacent shorelines.

Policy unit 1.5 – although slow rates of cliff erosion are anticipated, there are a number of assets potentially at risk, should rates of coastal erosion increase as a result of climate change/ sea level rise or if the frequency of cliff falls increases. Therefore it is recommended that the rate of coastal erosion along this frontage is monitored, and this policy is reviewed during SMP3, which may identify the need for erosion-slowing measures, under a policy of managed realignment.

**Changes from present management / SMP1 policy<sup>1</sup>**

Policy units 1.1, 1.4, 1.5 – no change from SMP1 policy

Policy units 1.2, 1.3 - SMP1 proposed a long-term policy of hold or advance along defended sections (with retreat along cliffed coastlines). However, these have now changed to no active intervention (with hold the line for as long as possible with existing defences). This is because it is unlikely that public funding will be available to improve or replace defences along these frontages due to the limited number of socio-economic assets at risk. However privately funded defence improvements/ replacement could be permitted, to hold the existing line, subject obtaining the necessary consents, licences and approvals.

**Lavernock Point to Barry Island (1)**

(this is a summary of impacts, for full details see **Appendix G - SEA Report**)

Issue	Appraisal
<b>Receptor: Property, population and human health</b>	
The main settlements along this frontage are Swanbridge and Sully, although there are a number of isolated properties. Most of the coast is undefended, existing defences at Swanbridge are in poor condition.	
Will SMP policy maintain coastal settlements and manage the impact of coastal flood and erosion?	<ul style="list-style-type: none"> <li>- In the short term, the Plan is to continue to manage the risk of coastal erosion and flooding to Swanbridge village; however it is unlikely that there would be sufficient economic justification for public investment to replace or improve existing defences at this location in the medium or long term. Existing defences will be maintained in the short term then allowed to fail. This is likely to result in the loss of residential and non-residential properties along the coast.</li> <li>- At Sully, there may be a loss of cliff top residential properties, in the medium and long term.</li> <li>- Some isolated residential properties in St Mary's Well Bay may be at risk from coastal erosion from the short term.</li> </ul>
Will SMP policy directly increase the actual or potential coastal erosion or flood risk to communities?	<ul style="list-style-type: none"> <li>- Along the majority of this shoreline there are currently no defences. There will, however, be an increased risk of coastal erosion and flooding at Swanbridge, following further failure of existing defences and as a result of future sea level rise.</li> </ul>
Is SMP policy sufficiently flexible to take account of dynamic coastal change?	<ul style="list-style-type: none"> <li>+ The SMP policy recognises dynamic coastal change, with policies of no active intervention throughout, with the exception of continued maintenance of the existing defences in the short term at Swanbridge. However, once these fail, the shoreline would be allowed to respond naturally to coastal change.</li> </ul>
Could there be a detrimental impact on the fabric of coastal communities?	<ul style="list-style-type: none"> <li>- Some residential properties in St Mary's Well Bay may be at risk from coastal erosion from the short term</li> <li>- The loss of defences at Swanbridge are only likely to directly impact a limited number of coastal properties.</li> <li>- At Sully, there is likely to be a wider scale impact on the community in terms of obtaining property insurance, depreciation in property values and future investment in the village. There are a number of properties at risk from erosion, although risk is limited to properties adjacent to the cliff edge.</li> </ul>
<b>Receptor: Land use, infrastructure and material assets</b>	
In addition to the coastal settlements of Swanbridge and Sully there are also caravan and camping sites and industrial units located along the cliff top. Current risks are relatively low due to slow rates of coastal erosion, but developments adjacent to the cliff edge may be affected in the medium to long term.	
Will SMP policy maintain key industrial, commercial and economic assets and manage the impact of coastal flooding and erosion?	<ul style="list-style-type: none"> <li>- There will be potential loss of assets at St Mary's Well Bay, Swanbridge, Sully and along the industrial site between Sully to Bendrick Rock.</li> </ul>
Will the SMP policy ensure critical services and infrastructure remain operational, for as long as required?	<ul style="list-style-type: none"> <li>X There is no strategic infrastructure along this frontage.</li> <li>- Whilst defences remain at Swanbridge, local services will be unaffected; however, from the medium term there would be an increased risk of flooding and erosion, as defences are allowed to fail. Many of these assets will, however, be lost at the same time as the properties they serve.</li> <li>- There is a potential risk to the access road to Swanbridge East, and permanent closure of the road is likely from the medium term, but an alternative route, from the west, is available.</li> </ul>
Will there be an impact on marine operations and activities?	<ul style="list-style-type: none"> <li>X There are no large scale marine operations along this frontage.</li> </ul>
Will SMP policy impact coastal flooding or erosion on agricultural activities?	<ul style="list-style-type: none"> <li>X There are no agricultural activities along this shoreline.</li> </ul>
Will the SMP policy ensure that MoD (Qinetiq) ranges remain operational?	<ul style="list-style-type: none"> <li>X There are no MoD (Qinetiq) assets along this shoreline.</li> </ul>

<sup>1</sup> The SMP1 documents should be referred to for more details as unit boundaries do not always align with SMP2 policy units and the policies refer to different time periods.

<b>Lavernock Point to Barry Island (1)</b> (this is a summary of impacts, for full details see <b>Appendix G - SEA Report</b> )	
<b>Issue</b>	<b>Appraisal</b>
<b>Receptor: Amenity and recreational use</b> This coastline includes a number of caravan and camping sites and Swanbridge is a popular tourist destination.	
Could the SMP policy have an impact on tourism in the area?	<ul style="list-style-type: none"> <li>- There is a potential risk to the coastal edge of holiday parks, which will increase over time. There is also an increased risk of coastal erosion and flooding to the Captain's Wife public house.</li> <li>- Without further investment in defences at Swanbridge, there will be continued deterioration and erosion of defences, which could have a negative visual impact and associated adverse impact on the tourist value of the village. It may also impact future investment in the village.</li> <li>+ The remainder of the coast will be allowed to remain undisturbed, thereby maintaining the natural landscape, which is an element of the tourist interest.</li> </ul>
Will SMP policy affect coastal access along, or to, the coast?	<ul style="list-style-type: none"> <li>- The risk to the coastal footpath from cliff erosion or localised cliff falls is low but is expected to increase over time. There is potential for the footpath to be relocated or realigned inshore, if there is sufficient notice. There may also be coastal access issues at Swanbridge as defences fail.</li> <li>- In the long term, the causeway to Sully Island may become impassable, as a result of sea level rise. This is due to natural processes and is not considered a direct impact of the proposed policy.</li> </ul>
<b>Receptor: Historic environment</b> There are a range of non-designated locally and nationally important sites, such as wreck sites between the mainland and Sully Island, historic footprints on the rock platform, and a Bronze age barrow. Between Lavernock Point and St Mary's Well Bay there are also nationally important WW2 structures. Sully Island Fort is a Scheduled Monument, as is the anti-aircraft battery west of Lavernock Point.	
Will SMP policy maintain the fabric and setting of key historic listed buildings, cultural heritage assets and conservation areas?	<ul style="list-style-type: none"> <li>- There is a potential risk of coastal erosion or submergence of locally important archaeology, including historic footprints on the rock platform and wreck sites between the mainland and Sully Island. The level of risk is dependent on future rates of coastal erosion and sea level rise.</li> <li>- There are WW2 structures, of national importance, at risk from coastal erosion. Parts of these sites are already eroding and the access road may also become at risk from erosion. The structures themselves tend to be set back 10m to 20m from the coastal edge.</li> <li>- Although Sully Fort Scheduled Monument on Sully Island is unlikely to be directly at risk, the site on which the monument sits may be at increasing risk towards the long term.</li> <li>X There will be no risk to the anti-aircraft battery Scheduled Monument, west of Lavernock Point due to its location inland.</li> </ul>
Will the SMP provide sustainable protection of archaeological and palaeo-environmental features or ensure adequate time for monitoring, assessment and mitigation measures to be devised in response to ongoing and future erosion.	<ul style="list-style-type: none"> <li>● There is no intent to provide new defences along currently undefended frontages, since this would not be economically justified and is considered unsustainable. However, erosion rates tend to be low which should allow time for monitoring, assessment and mitigation measures to be devised, where appropriate.</li> <li>+ Where defences exist, at Swanbridge, the aim is to maintain these in the short term, which again would allow time for monitoring and other measures, as required.</li> </ul>
<b>Receptor: Landscape character and visual amenity</b> There are no specific landscape designations along this frontage; however, the area is noted for its unprotected cliffs and dramatic rocky foreshores.	
Will SMP policy maintain a range of key natural, cultural and social features critical to the integrity of the coastal landscape?	<ul style="list-style-type: none"> <li>● For much of this shoreline there is no proposed change to the existing policy, therefore minimal change to the landscape, particularly in the short term.</li> <li>- From the medium term, deterioration and failure of defences may adversely affect the visual landscape locally at Swanbridge. The remains of defences would need to be maintained in a safe condition to manage risk to the public and beach users.</li> </ul>
Could SMP policy lead to the introduction of features which could be unsympathetic to the character of the landscape?	<ul style="list-style-type: none"> <li>+ There is no intent to provide any defences along lengths of shore which are currently undefended.</li> </ul>
<b>Receptor: Biodiversity, flora and fauna</b> There are two designated sites, namely Penarth Coast SSSI and Sully Island SSSI.	
Will SMP policy enable a sustainable approach to habitat management?	<ul style="list-style-type: none"> <li>+ There are no new defences proposed in currently undefended areas, therefore this is considered a sustainable approach to natural evolution of the coastline and its habitats.</li> </ul>
Will SMP policy maintain or enhance any international, national or local sites of natural conservation interest?	<ul style="list-style-type: none"> <li>● The intertidal area is backed by naturally occurring high ground. Sea level rise may result in natural intertidal narrowing and a reduction in intertidal habitat for wading birds. This will depend upon the rate of future sea level rise and coastal erosion.</li> <li>● There could be natural loss of cliff top scrub and grassland, designated as part of Penarth Coast SSSI, but the low rate of coastal erosion means losses are likely to be small.</li> <li>+ Designated sites would not be expected to be adversely affected by maintaining defences in the short term at Swanbridge.</li> </ul>
Will SMP policy <u>accelerate</u> intertidal narrowing (coastal squeeze) and will this affect designated habitats?	<ul style="list-style-type: none"> <li>- In the short term there may be limited intertidal narrowing, i.e. coastal squeeze, in the vicinity of Swanbridge.</li> <li>+ From the medium term, once defences fail at Swanbridge, the intent is to allow the coast to evolve naturally, with no artificial backshore constraints. In</li> </ul>

<b>Lavernock Point to Barry Island (1)</b> (this is a summary of impacts, for full details see <b>Appendix G - SEA Report</b> )	
<b>Issue</b>	<b>Appraisal</b>
	places natural intertidal narrowing may still occur as the resistant cliffs may not retreat at the same rate as the sea level rises. This is dependent upon future rates of sea level rise and coastal erosion.
Will there be a net loss of BAP habitat within the SMP timespan as a result of SMP policy?	<ul style="list-style-type: none"> <li>+ Potential extension of <i>Sabellaria alveolata</i> reefs at Lavernock Point in the short, medium and long term.</li> <li>+ Natural extension of the intertidal habitats at Sully Bay in the short, medium and long term.</li> <li>- Loss of exposed peat and clay exposures due to sea level rise in the short, medium and long term.</li> </ul>
<b>Receptor: Earth heritage, soils and geology</b> This stretch of coastline features nationally important cliff exposures as is designated as: Penarth Coast SSSI, Sully Island SSSI and Hayes Point to Bendrick Rock SSSI.	
Does SMP policy work with natural processes and enhance or maintain natural features?	+ For the majority of the frontage natural process will continue. From the medium term, the SMP plan is for no active intervention along the entire frontage, thereby working with natural coastal processes.
Will SMP policy maintain or enhance the visibility of coastal geological exposures, where designated?	<ul style="list-style-type: none"> <li>+ Where the shoreline is currently undefended, there is no intention to build new defences, therefore geological exposures in the cliffs will be maintained, which will maintain the status of Lavernock SSSI, Sully Island SSSI and Hayes Point to Bendrick Rock SSSI. The long term aim of allowing existing defences to fail, may also enhance the SSSI status of the shoreline.</li> <li>• At Bendrick Rock, sea level rise may, in the long term, reduce visibility of fossil footprints, which are noted in the SSSI designation.</li> </ul>
<b>Receptor: Water</b> There are numerous coastal, freshwater, transitional (areas of water near river mouths, which are partially saltwater but are influenced by freshwater) and groundwater bodies in the SMP2 area that have the potential to be affected by SMP2 policies.	
Will SMP policy manage the risk of pollution from contaminated sources?	x There are no known contamination issues along this shoreline.
Will SMP policy adversely affect water bodies in the coastal zone?	<ul style="list-style-type: none"> <li>• The majority of this frontage is undefended and the continuing NAI policy will allow natural coastal processes to continue, with no disadvantage to any biological quality elements. Short term HTL in two policy units will affect only short frontages and as the Bristol Channel Inner North water body is already at good status, the WFD objectives not at risk.</li> <li>• The single river water body associated with the policy scenario area will be unaffected. There is no associated groundwater body.</li> </ul>

Impact colour key	+ Positive	• Neutral	- Negative	x Not applicable
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Lavernock Point to Barry Island (1)						
ACTION PLAN						
Action	Action Ref	Policy Unit	Action Description (to be approved)	Potential source for funding (subject to approval)	Responsibility Lead partner * Supporting partners)	When by (subject to funding)
<b>1. Studies for Scenario Area</b>						
<b>2. Studies for Policy Units</b>						
	2.1	1.1, 1.2, 1.3 & 1.4	Undertake community engagement to develop coastal erosion and flood risk management plans which are ideally supported by the local community. This will involve consideration of alternative coastal erosion and flood risk management options (including wide ranging adaptation options) and alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management. Issues to be considered may include: the access road to Swanbridge East, holiday parks at Lavernock Point and St Mary's Well Bay and residential properties at St Mary's Well Bay, improved flood warning, individual property flood protection, resilience, relocation of properties, provision of an alternative access road to Swanbridge East and other adaptation and mitigation measures.	WAG	VoG	0 to 5 years
	2.2	1.5	Undertake study to assess future risk of coastal erosion to residential properties at Sully residential development at Hayes Point and the industrial estate to the east of Barry Docks.	WAG	VoG	0 to 20 years
<b>3. Strategy</b>						
<b>4. Scheme work</b>						
<b>5. Monitoring (data collection)</b>						
	5.1	All	Undertake beach and coastal defence asset monitoring to inform other studies and future SMP reviews. In particular cliff erosion rates and location of rock falls should be monitored. The information should not only be used in future coastal management, but also to assist in stakeholder liaison by the use of data in public education campaigns.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 20 years
	5.2	All	Continue with existing beach profile monitoring programme and provide information to Wales Coastal Monitoring Centre for storage and analysis. Use beach profile data to identify any future risk of undermining and overtopping of existing defences.	WAG	Coastal Group (Wales Coastal Monitoring Centre)	0 to 100 years
	5.3	All	Undertake periodic defence inspection, including condition assessment and photographs. Confirm defence crest levels.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 100 years
	5.4	All	Undertake further studies, and associated modelling, to better understand sediment regimes in the SMP area and inform future coastal management.	WAG	Coastal Group	0 to 20 years
	5.5	All	Monitor risk to the coastal footpath and investigate potential re-routing of the path where appropriate.	WAG	VoG	Ongoing
<b>6. Asset management</b>						
	6.1	1.3 & 1.4	Define and map extents of public and privately owned defences to inform future management decisions.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 20 years
	6.2	1.3 & 1.4	Undertake an appraisal of asset inspection and beach profile monitoring data to assess the existing and future risk of undermining and overtopping of existing structures.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 20 years
<b>7. Communication</b>						
	7.1	All	Undertake monitoring and management of Action Plans to ensure SMP policies are put into practice.	WAG	Coastal Group	0 to 100 years
	8.1	1.3 & 1.4	Continue with risk-based improvements to flood risk maps to provide an appraisal of likely future projected sea level rise.	WAG	EAW	0 to 20 years
	8.2	All	Ensure SMP policies and flood and erosion risks are accounted for in the next revision of land use plans in order to help manage residual risks from coastal erosion and flooding, and to inform future planning decisions.	WAG	VoG planning	0 to 20 years
<b>9. Emergency response</b>						
	9.1	1.3 – 1.5	Development, monitoring and review of emergency response plans to prepare for storm events which are likely to exceed existing defence standards of protection or lead to failure of existing defences (for example following beach or overtopping).	WAG	VoG	0 to 20 years

SUPERSEDED

contact SUBCEG for current action plan

<b>10. Adaptation/ resilience</b>	10.1	1.3 – 1.5	Development of adaptation / resilience measures as defences continue to deteriorate and fail at Swanbridge, and if risk of coastal erosion to residential properties at Sully increases. Identify future risk of coastal erosion to coastal road users, and owners of residential properties at St Mary's Well Bay, holiday park and properties at Lavernock Point.	WAG	VoG (EAW/ private property/ landowners)	0 to 20 years
<b>11. Flood forecasting and warning</b>	11.1	1.3 & 1.4	Continue with risk-based improvements to flood risk maps and inundation modelling to provide improved flood warning service.	WAG	EAW	0 to 20 years
<b>12. Habitat creation and environmental mitigation</b>			-			

\* Note: It is recommended that the lead partner/s investigate the potential for local partnerships and alternative sources of funding.

