

The Knap to Watch House Beach (3)



Recommendations:

Long Term Plan

The plan is to allow natural evolution of this coastline, which is important for both geological and landscape features, whilst continuing to manage coastal erosion and flood risk to the residential area and associated infrastructure located at the Knap at the eastern end of this frontage. There is a risk to isolated properties and archaeological assets, although this is likely to be in the longer term, allowing some time for mitigation measures or relocation of assets to be considered.

At The Knap, there are a number of assets at potential risk from coastal erosion and flooding, including residential properties, a strategically important sewage pumping station that serves Barry and remains of a Roman building (which is a designated Scheduled Monument). The shingle ridge currently acts as a natural defence, but is experiencing erosion. Allowing it to roll landwards may improve its defence function long term, although secondary protection to assets may be required, subject to the availability of public funding of coastal erosion and flood risk management. There may also be environmental and landscape benefits from this approach.

Location (Policy Unit)		Preferred SMP2 policy and proposed approach to implementing the Plan		
		0-20 years	20-50 years	50-100 years
3.1	The Knap (Cold Knap Point to Bull Cliff)	Whilst considering options for implementation of managed realignment, the short term policy is to continue to hold the line through maintenance of the existing promenade structure.	The medium and long term policy is managed realignment , to allow the shingle ridge to evolve more naturally but to continue to minimise the risk of coastal erosion and flooding to residential properties and critical infrastructure, for example, through provision of a secondary defence, subject to the availability of public funding of coastal erosion and flood risk management. This would mean that the promenade would be allowed to fail, or be overwashed; alternatively the structure may need to be removed.	
3.2	Bull Cliff	There are no existing defences and the policy is to allow the coast to evolve and retreat naturally through no active intervention . It is recommended that the risk to residential properties along Marine Drive from coastal erosion and cliff falls is monitored to inform the next SMP review.		
3.3	Bull Cliff to Watch House Beach	There are no existing defences and the policy is to allow the coast to evolve and retreat naturally, through no active intervention .		

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 unit 3.1 - further studies are needed to investigate the technical, socio-economic and environmental feasibility of managed realignment in the medium and long term, which is subject to the availability of public funding of coastal erosion and flood risk management. The sustainability of the shingle ridge is uncertain, particularly in response to future climate change and sea level rise; therefore, future monitoring is required to assess the defence function of the ridge, including determining the risk of a breach. A hold the line policy does not guarantee public funding to maintain the existing standard of protection with respect to coastal erosion and flood risk in response to future sea level rise. Implementation of a managed realignment scheme is subject to the availability of public funding of coastal erosion and flood risk management. There are potential surface water drainage issues at this site both currently and as a result of future sea level rise.

Policy unit 3.2 - there could be a risk to cliff top properties in the long term, depending on future rates of coastal erosion and localised cliff falls. It is therefore recommended that the risk to the residential area along Bull Cliff should be monitored to inform the next SMP review. This may indicate sufficient justification for minor low-cost works, to slow, but not halt erosion, thereby allowing sufficient time for exit strategies to be developed. The impact on the SSSI designated coastal cliffs of such works would, however, need to be carefully considered.

Policy unit 3.3 – low sensitivity and no significant uncertainties, no change in SMP2 policy is anticipated.

Changes from present management / SMP1 policy¹

Policy unit 3.1 – no change. Review the feasibility of hold the line in the short term, with hold or retreat in the long term.

Policy units 3.2 and 3.3 – no change. SMP1 policy was for hold line along railway frontage and retreat along remainder. Retreat is assumed to mean natural erosion and the risk to the extent of the railway included in the SMP2 policy unit is considered minimal since it is some distance inshore. Current management comprises no active intervention.

¹ 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.

The Knap to Watch House Beach (3) (this is a summary of impacts, for full details see Appendix G SEA Report)	
Issue	Appraisal
Receptor: Property, population and human health The only key settlements along this frontage are at The Knap, Bull Cliff Marine Drive and the modern housing development at Rhoose Point, although there are also a number of isolated properties. Most of the coast is undefended, but there is a promenade along the back of the shingle beach at The Knap.	
Will SMP policy maintain coastal settlements and manage the impact of coastal flood and erosion?	<ul style="list-style-type: none"> + Risk to the residential area at The Knap would continue to be managed by maintaining the existing promenade and monitoring the shingle ridge in the short term, and either naturally by monitoring the shingle ridge, or through construction of secondary defences in the medium and long term, subject to the availability of public funding of coastal erosion and flood risk management. - There may be a risk to properties on Marine Drive, Bull Cliff dependent on the rate of future coastal erosion/ cliff falls. The recommended policy allows for this risk to be monitored and low-cost works to be implemented to slow the rate of erosion. x Houses at Rhoose Point are sufficiently far inland not to be at risk from coastal erosion during the SMP period.
Will SMP policy directly increase the actual or potential coastal erosion or flood risk to communities?	+ Along much of the frontage the recommended policy is a continuation of existing management techniques. At The Knap, the medium and long term policy may manage the risk of coastal erosion and flooding if secondary defences are constructed.
Is SMP policy sufficiently flexible to take account of dynamic coastal change?	+ The SMP policy recognises dynamic coastal change, with policies of no active intervention along much of the coastline. The policy at The Knap is dependent upon future evolution of the shingle ridge.
Could there be a detrimental impact on the fabric of coastal communities?	<ul style="list-style-type: none"> x Along most of this shoreline, there will be no impact on coastal communities due to the undeveloped nature of the shoreline. + At Marine Drive, Bull Cliff, there may be a risk to some properties; however risk would be limited to a single residential street and would not affect the community as a whole.
Receptor: Land use, infrastructure and material assets In addition to the coastal settlements of at The Knap and Rhoose Point, there is also a sewage pumping station serving Barry, and two camping and caravan sites.	
Will SMP policy maintain key industrial, commercial and economic assets and manage the impact of coastal flooding and erosion?	+ Risks to key assets would be managed, either naturally or through provision of defences.
Will the SMP policy ensure critical services and infrastructure remain operational, for as long as required?	<ul style="list-style-type: none"> + Along the majority of the shoreline there would be a minimal impact on services and infrastructure including the sewage pumping station. - There may be some loss of land at the caravan park east of Rhoose Point and at the Fontygary Holiday and Leisure Park at the western end of the frontage. The risk is dependent on rates of cliff erosion, but only small areas of land are expected to be affected. x There are no critical rail or road linkages at risk.
Will there be an impact on marine operations and activities?	x There are no large scale marine operations along this frontage.
Will SMP policy impact coastal flooding or erosion on agricultural activities?	x There are no agricultural activities along this shoreline.
Will the SMP policy ensure that MoD (Qinetiq) ranges remain operational?	x There are no MoD (Qinetiq) assets along this shoreline.
Receptor: Amenity and recreational use There are two caravan and camping sites along this frontage, as well as Porthkerry Country Park.	
Could the SMP policy have an impact on tourism in the area?	<ul style="list-style-type: none"> - There is a potential risk to the coastal edge of holiday parks, which will increase over time. This is dependent on the rates of coastal erosion, but would not be expected to result in loss of significant amounts of land. - Porthkerry Country Park may be affected as the shingle bank rolls-back in response to sea level rise. However, the area lost would be minimal. Increased overtopping may lead to periodic flooding of small areas of low-lying land. + Much of the coast will remain undisturbed, thereby maintaining the natural landscape, which is an element of the tourist interest.
Will SMP policy affect coastal access along, or to, the coast?	- 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 slightly inshore, if there is sufficient notice.
Receptor: Historic environment There are two cliff top Scheduled Monuments, namely The Bulwarks Fort at Porthkerry and the Roman remains at The Knap.	
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"> - There is a potential risk of erosion of The Bulwarks Fort, as the cliffs erode naturally. However the risk is dependent on future rates of cliff erosion and localised cliff falls. - The Roman remains may be at risk, dependent on evolution of the shingle ridge and whether secondary defences are constructed to manage coastal erosion and flood risk.
Will the SMP provide sustainable protection of archaeological and	● Bulwarks Fort is located on an undefended frontage where there is no

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Issue	Appraisal
palaeo-environmental features or ensure adequate time for monitoring, assessment and mitigation measures to be devised in response to ongoing and future erosion.	<p>intent to provide new defences, as 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 developed, as appropriate.</p> <p>+ At The Knap, although there may be risk in the medium and long term, in the short term the existing promenade would be maintained, which again would allow time for monitoring and other measures, as required.</p>
Receptor: Landscape character and visual amenity There are no specific landscape designations along this frontage, although the Valeways Millennium Heritage Trail follows the coastline along this frontage, a trail linking many of the Vale of Glamorgan's scenic and historic locations.	
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"> ● For much of this shoreline there is no proposed change from existing policy, therefore minimal change to the landscape, particularly in the short term. - In the medium and long term, the character and visual amenity could be affected if secondary defences are constructed along The Knap.
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"> - The construction of secondary defences landward of the shingle ridge at The Knap could affect the natural beauty of the landscape however the policy has been devised to enable the existing shingle ridge to roll back naturally in response to sea level rise.
Receptor: Biodiversity, flora and fauna There is one designated site along this frontage, namely Cliff Wood – Golden Stairs SSSI located west of Bull Cliff and partially within Porthkerry Country Park.	
Will SMP policy enable a sustainable approach to habitat management?	<ul style="list-style-type: none"> + 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.
Will SMP policy maintain or enhance any international, national or local sites of natural conservation interest?	<ul style="list-style-type: none"> ● Cliff erosion could lead to some natural loss of wooded cliff. However, the low rates of coastal erosion mean that losses are likely to be small. Natural cliff erosion could also lead to some loss of cliff top flora.
Will SMP policy <u>accelerate</u> intertidal narrowing (coastal squeeze) and will this affect designated habitats?	<ul style="list-style-type: none"> + The coast along the designated frontage would be allowed to evolve naturally, with no artificial backshore constraints. In 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. However, the resistant nature of the cliffs is such that intertidal narrowing would not be expected to increase cliff erosion rates and therefore this would not affect Cliff Wood – Golden Stairs SSSI.
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"> - Loss of intertidal underboulder community at Porthkerry, Rhoose Point and Watch House Point in the short, medium and long term due to sea level rise.
Receptor: Earth heritage, soils and geology There are no designated sites for geological exposures or earth heritage along this frontage; however the region is noted for the plunging cliffs and rocky intertidal foreshores, including the shingle bank at The Knap.	
Does SMP policy work with natural processes and enhance or maintain natural features?	<ul style="list-style-type: none"> + Much of the coastline is undefended, and the recommended policy is for the coastline to continue evolving naturally. At The Knap, the intention is to allow the shingle ridge to evolve as naturally as possible, whilst continuing to manage the risk of coastal erosion and flooding to residential and non-residential properties and assets.
Will SMP policy maintain or enhance the visibility of coastal geological exposures, where designated?	<ul style="list-style-type: none"> + Where the shoreline is currently undefended, there is no intention to build new defences, therefore geological exposures in the cliffs will be maintained. - Should defences be required at The Knap, they would be constructed inshore of the shingle ridge, enabling it to respond naturally to future sea level rise.
Receptor: Water 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?	<ul style="list-style-type: none"> 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"> + The Bristol Channel Inner North water body is already at good status. From Cold Knap Point to Bull Cliff (PU 3.1) short term HTL will have no adverse consequences for biological quality elements and MR thereafter would support their improvement. Elsewhere the NAI will continue allow natural coastal evolution. ● The Thaw & Cadoxton Jurassic Lias groundwater body and single river water body will be unaffected.

Impact colour key	+ Positive	● Neutral	- Negative	x Not applicable
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The Knap to Watch House Beach (3)						
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)
1. Studies for Scenario Area						
2. Studies for Policy Units						
	2.1	3.1	Undertake a study to investigate the feasibility of managed realignment at The Knap which will include: community engagement, consideration of the defence function of the shingle ridge, predicting future development of the shingle ridge, whether the construction of secondary defences is necessary to manage the risk of coastal erosion and flooding to properties inshore, consideration of current and future management of surface water drainage and investigating alternative funding options. Consider alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management.	WAG	VoG (EAW)	0 to 5 years
3. Strategy						
4. Scheme work						
5. Monitoring (data collection)						
	5.1	All	Undertake beach and coastal defence asset monitoring to inform further studies and future SMP reviews. In particular cliff erosion rates should be monitored. This information should not only be used in future coastal management, but also to assist in stakeholder liaison by use of data in public education campaigns.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 100 years
	5.2	3.1 & 3.2	Undertaken detailed monitoring programme of the shingle ridge, its function as a defence and likelihood of a breach.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 20 years
	5.3	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 the future risk of undermining and overtopping of existing defences.	WAG	Coastal Group (Wales Coastal Monitoring Centre)	0 to 100 years
	5.4	3.1	Undertake periodic defence inspection, including condition assessment and photographs. Confirm defence crest levels.	WAG	VoG (Wales Coastal Monitoring Centre)	0 to 20 years
	5.5	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 100 years
	5.6	All	Monitor link to the coastal footpath and investigate potential routing of the path where appropriate.	WAG	VoG	Ongoing
6. Asset management						
	6.1	3.1	Delineate 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	3.1	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
7. Consultation						
	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	3.1	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 revisions 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
9. Emergency response						
	9.1	3.1 & 3.2	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 overtopping or a breach in the shingle ridge, or potential increased rate of cliff erosion.	WAG	VoG	0 to 20 years

SUPERSEDED

Contact SUBCEG for current action plan

10. Adaptation / resilience			-			
11. Flood forecasting and warning	11.1	3.1	Continue with risk-based improvements to flood risk maps and inundation modelling to provide improved flood warning service.	WAG	EAW	0 to 20 years
12. Habitat creation and environmental mitigation			-			

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

SUPERSEDED
Contact SCB/FG for current action plan