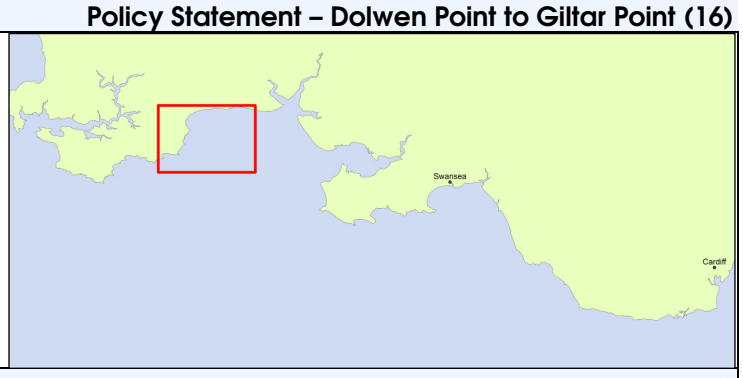
Dolwen Point to Giltar Point (16)



Recommendations:

Long Term Plan

This frontage is characterised by rocky cliffs, small bays and pocket beaches. The natural beauty of this shoreline has led to a number of tourist resorts developing along the shoreline including: Amroth, Wiseman's Bridge, Saundersfoot and Tenby and it is along these developed frontages that defences have been constructed, which only result in localised impacts, since the indented coast interrupts littoral drift.

The plan is to retain the natural coast by minimising further intervention, while maintaining the tourist value of the area by managing the risk of coastal erosion and flooding to existing coastal communities for as long as is sustainable and affordable. Managing the risk of coastal erosion and flooding to tourist resorts is likely to become increasingly difficult and expensive in the medium and long term, due to future climate change/ sea level rise, and is subject to the future availability of public funding for coastal erosion and flood risk management.

Location (Policy Unit)		Preferred SMP2 policy and proposed approach to implementing the Plan		
		0-20 years	**20-50 years**	**50-100 years**
16.1	**Dolwen Point to Amroth east**	The policy is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**, which will maintain its high geological, ecological and landscape value.		
16.2	**Amroth**	The number of socio-economic assets at risk from coastal erosion and flooding along this frontage are unlikely to be sufficient to justify public coastal erosion and flood risk management funding to upgrade existing defences or to provide new defences. The short to medium term policy is therefore to **hold the line** by maintaining existing defences for as long as possible. The risk of coastal flooding to properties and assets will increase over time as a result of climate change/ sea level rise. Alternative adaptation measures (such as improved flood warning systems, individual property/ asset flood resilience/ protection measures or relocation/ abandonment of properties/ assets) are likely to be required from the short-term.		Once the defences reach the end of their effective life and it is no longer technically or socio-economically viable to continue maintenance, the policy will change to **no active intervention**, which will allow the shoreline to naturally evolve and retreat.
16.3	**Amroth (west) to Wiseman's Bridge (east)**	The policy is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**, which will maintain its high geological, ecological and landscape value.		
16.4	**Wiseman's Bridge**	The short term policy is to **hold the line** for as long as possible by maintaining existing defences to continue to manage coastal erosion risk and to allow time for consultation to be undertaken and an exit strategy to be developed which may involve relocation of assets, if possible. It will not be possible to obtain public funding to upgrade defences, in response to sea level rise and therefore coastal flood risk to properties and other assets will increase over this period.	Once the defences fail or are no longer viable, the policy will change to **no active intervention**, allowing the coastline to respond naturally.	
16.5	**Wiseman's Bridge to Coppet Hall**	There is little justification for continuing to reduce the risk of coastal erosion and flood risk along this frontage. However, with minimal maintenance, the defences are likely to remain for several years, which would allow time for the coastal path to be realigned. The short term policy is therefore to **hold the line**, but not to undertake any improvement or extension of existing defences.	The long term policy is for **no active intervention**, undertaking no further maintenance of defences. However, even without maintenance the defences would be expected to remain for much of the SMP time-scale.	
16.6	**Coppet Hall to Saundersfoot**	The long term policy is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**.		
16.7	**Saundersfoot**	Saundersfoot is a key tourist resort on the South Pembrokeshire coast, supporting a number of tourist facilities. The short term policy is to continue to **hold the line** by maintaining existing defences. However during this period flood and coastal erosion risk to properties, assets and infrastructure will increase. It is unlikely that public coastal erosion and flood risk	The medium term policy is to **hold the line** by maintaining existing defences (typically residual life 20-50 years and 50-100 years) to manage the risk of coastal erosion for as long as is sustainable and affordable. Flood and coastal erosion risk to properties, assets and infrastructure will continue to increase over time. It is unlikely that public coastal erosion and flood risk management funding will be available to upgrade existing	Subject to further detailed investigation, consultation and the future availability of funding the long term policy for Saundersfoot may be **managed realignment** which could involve the provision of flood resilience measures for properties, assets and infrastructure in the centre of Saundersfoot properties and assets in areas such as the Strand. Private funding could be used to maintain/ upgrade existing

		management funding will be available to upgrade existing defences in response to future climate change/ sea level rise, due to the limited number of socio-economic assets at risk. Private funding could be used to maintain/ upgrade existing defences or to implement adaptation measures, subject to obtaining the necessary consents, licences and approvals. Alternative adaptation measures are likely to be required from the short-term such as improved flood warning systems, individual property/ asset flood resilience/ protection measures or relocation/ abandonment of properties/ assets. A detailed study is required to investigate alternative options for future coastal erosion and flood risk management (including surface water flooding) and management of the amenity beach and facilities at Saundersfoot.	defences in response to future climate change/ sea level rise, due to the limited number of socio-economic assets at risk. Private funding could be used to maintain/ upgrade existing defences or to implement adaptation measures, subject to obtaining the necessary consents, licences and approvals. This policy is subject to a further detailed study to investigate the future risk under a range of future climate change/ sea level rise scenarios and the development and assessment of a range of alternative options for future coastal erosion and flood risk (including surface water flooding) management including adaptation measures such as improved flood warning systems, individual property/ asset flood resilience/ protection measures or relocation of properties/ assets and management of the amenity beach and facilities at Saundersfoot. The study should include environmental assessment and socio-economic appraisal to investigate whether alternative funding is available for defence upgrading/ improvement. Defence upgrading/ improvement would be subject to obtaining the necessary consents, licences and approvals. It is unlikely that public coastal erosion and flood risk management funding will be available to upgrade existing defences in response to future climate change/ sea level rise, due to the limited number of socio-economic assets at risk.	defences, subject to obtaining the necessary consents, licences and approvals.
16.8	**Saundersfoot to Monkstone Point**	The policy along this largely undeveloped shoreline is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**, which will maintain its geological and landscape value.		
16.9	**Monkstone Point to First Point**	The policy along this undefended shoreline is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**, which will maintain its geological and landscape value.		
16.10	**Tenby North Beach (First Point to Castle Hill)**	Due to the tourist value of the town and the consequences following defence failure the policy is to **hold the line** through maintaining and upgrading existing defences to manage the risk of erosion (and landslides) to the cliff below Norton and Crackwell Street and the residential, amenity, tourist facilities. The undefended shore should be monitored to manage the risk of outflanking. It is assumed that the harbour structures will be maintained, which afford some shelter to the local shoreline. If required, flood resilience measures could be adopted for the harbour buildings. They may adapt by utilising the upper storey for storage and essentially abandoning the ground floors or finding a use which is unaffected by flooding.		
16.11	**Tenby South Beach (Castle Hill to The Burrows, including St Catherine's Island)**	The long term policy is to **hold the line** through maintaining and upgrading existing defences to minimise the risk to numerous residential, amenity, tourist facilities and the harbour, which are potentially at risk from coastal erosion.		
16.12	**The Burrows, Tenby South Beach**	In order to continue to minimise the risk of erosion and flooding to hinterland assets, the policy is to manage the dunes as the primary defence, under a policy of **managed realignment**. This would enable the dune system to function naturally, but allow measures to be implemented to reduce the risk of a breach in the dunes.		
16.13	**Caldey Island**	The long term policy along this undefended shoreline is to allow the shoreline to naturally evolve and retreat along this frontage through **no active intervention**, which will maintain its geological and landscape value. As part of this policy, it is assumed that an access to the island would be maintained, although public funding can not be guaranteed.		
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 16.1, 16.3, 16.5, 16.8, 16.9, 16.11 and 16.13 – these are considered to be of low sensitivity and therefore unlikely to change. Policy units 16.2, 16.4, 16.6, 16.7, 16.10 – a hold the line policy does not guarantee public coastal erosion and flood risk management funding to maintain defences, or to upgrade existing defences in response to future climate change/ sea level rise. A key uncertainty along this shoreline is therefore the future availability of public funds to provide a suitable standard of protection to the various tourist resorts along this frontage, particularly given predicted rises in sea level. Should sea level rise be greater than anticipated it may not be economically viable to maintain an adequate standard of protection into the long term, even if the existing defences are maintained. Policy unit 16.6 – there is currently an earth embankment fronting the car park, future policy here therefore depends upon the long term plans for this area, which is currently used to provide overspill car parking for Saundersfoot during the tourist season. Policy unit 16.12 – the successful implementation of this policy will depend on how the dunes evolve in the future and therefore monitoring is recommended.				

Changes from present management / SMP1 policy[1]

The majority of policies remain unchanged from either the present management or SMP1 policy. The key differences are:

Policy unit 16.2 – the SMP1 policy was hold the line, but it is currently uncertain whether this could be economically justified and therefore the recommended policy is to hold for as long as possible but recognising in the long term that this is likely to change to no active intervention.

Policy units 16.4, 16.5 and 16.6 – these were covered by one policy in SMP1, which stated that further economic appraisal was required, but the long term policy would be retreat (equivalent to NAI) or hold the line. The issues associated with the recommended policies are highlighted above.

Policy unit 16.7 – the SMP1 policy was hold the line, but it is currently uncertain whether this would be technically and economically justified in the future and therefore the recommended policy is to hold for as long as possible but recognising in the long term that this is likely to change to no active intervention.

Dolwen Point to Giltar Point (16)

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

Issue	Appraisal
Receptor: Property, population and human health The key settlements along this frontage are Amroth, Saundersfoot and Tenby, although there are also small settlements at Wiseman's Bridge and Coppet Hall. Penally is situated landward of The Burrows Tenby South Beach. There are isolated properties along the cliff tops, and a small village and monastery on Caldey Island. Undeveloped sections of coastline are typically undefended, whilst the majority of developed areas are defended.	
Will SMP policy maintain coastal settlements and manage the impact of coastal flood and erosion?	+ The plan will continue to manage the risk of coastal erosion and flooding to Tenby by maintaining existing defences. Risk to Saundersfoot will be managed in the short and medium term by maintaining existing defences, and in the long term risk to key assets will be reduced through use of individual flood resilience measures. – In the short and medium terms, the plan is to continue to maintain existing defences at Amroth; however it is unlikely that there would be sufficient assets at risk to justify public coastal erosion and flood risk management funding of defence upgrading or replacement. Once the existing defences fail the shoreline will be allowed to naturally evolve and retreat which will result in the loss of frontal properties. Properties are likely to be lost due to coastal erosion at Wiseman's Bridge where defences will be maintained in the short term, before being allowed to fail in the medium and long term. x No risk to Caldey Island community due to its location in the centre of the island.
Will SMP policy directly increase the actual or potential coastal erosion or flood risk to communities?	– Increased flood and erosion risk at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot following failure of existing defences.
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 undeveloped areas throughout, although there will be continued maintenance of defences in areas where there are significant assets at risk. However, even where there are hard defences, the underlying geology is sufficiently resistant that little natural coastal change would be expected.
Could there be a detrimental impact on the fabric of coastal communities?	– The loss of defences at Wiseman's Bridge will have an adverse impact on coastal properties and assets including residential properties, a public house and caravan and camping park. – At Amroth, there is likely to be a wider scale impact on the community over time with an increased risk of coastal flooding to properties and assets, depreciation in property values, problems in obtaining insurance and reduced future investment in the town. A number of properties or assets will be at increased risk of coastal erosion and flooding in the long term, following failure of the existing defences. – The community at Saundersfoot may also be affected in the long term once the defences fail and managed realignment is implemented. If private defences along the Strand are not maintained, there would be an increased risk of flooding, depreciation in property values and problems in obtaining insurance. There may also be reduced future investment in the town.
Receptor: Land use, infrastructure and material assets In addition to the coastal settlements, there are also a number of caravan and camping sites located along the cliff top. Currently risks are relatively low due to the slow rates of cliff erosion along this coastline. The Penally Ministry of Defence training camp and rifle range is located at the southern end of Tenby Burrows and the Pembroke to Carmarthen railway line runs inshore along the landward extent of Tenby Burrows.	
Will SMP policy maintain key industrial, commercial and economic assets and manage the impact of coastal flooding and erosion?	– There will be potential loss of assets at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot.
Will the SMP policy ensure critical services and infrastructure remain operational, for as long as required?	x Other than the railway line there are no critical services or infrastructure along this section of coast, other than those which serve the local communities. – Whilst defences remain at Amroth, local services will be unaffected; however, in the long 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

[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.

Dolwen Point to Giltar Point (16) (this is a summary of impacts, for full details see **Appendix G SEA Report**)	
Issue	**Appraisal**
	serve. Similarly, at Wiseman's Bridge, Coppet Hall and Saundersfoot there would be risk to local services and assets once the defences fail, including the pub at Wiseman's Bridge and the car park at Coppet Hall. − There is erosion and flood risk to the shore front road at Amroth, and permanent closure of the road is likely in the long term, but there are other routes available. The SMP policy should allow sufficient time for these to be considered. Local routes will also be at risk at Wiseman's Bridge and Coppet Hall. − There is a risk of coastal erosion and flooding to the railway should a breach occur in the Tenby Burrows dune system, however the dune system is reasonably wide at present and under the preferred policy monitoring and dune management will be implemented to mitigate this risk.
Will there be an impact on marine operations and activities?	+ It is assumed that Tenby Harbour will continue operating, although the structures are not covered by flood and defence funding. However, this is dependent upon the future management strategy for the harbour and is beyond the scope of the SMP. Maintenance of the critical transport link to Caldey Island is also assumed to continue.
Will SMP policy impact coastal flooding or erosion on agricultural activities?	− Risk of loss of small areas of cliff top agricultural land, subject to future rates of coastal erosion. Areas lost would not be expected to be significant.
Will the SMP policy ensure that MoD (Qinetiq) ranges remain operational?	− Possible flood risk to Penally training camp and rifle range from fluvial or tidal sources, or should a breach develop in the dune system, although little damage would be expected to the site's infrastructure and assets. However the dune system is reasonably wide at present and monitoring and dune management will be implemented to mitigate this risk.
Receptor: Amenity and recreational use This coastline includes a number of caravan and camping sites and the entire area is a popular tourist destination with key tourist resorts and facilities at Saundersfoot and Tenby. From the eastern extent of Amroth, the coastline is within the Pembrokeshire Coast National Park which attracts many people to enjoy the scenery and outdoor activities. The Pembrokeshire Coast Path follows the coastline from Amroth.	
Could the SMP policy have an impact on tourism in the area?	− There is a potential risk to the coastal edge of cliff top holiday parks, which will increase over time. − Failure of existing defences at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot, and their ongoing deterioration would have a negative visual impact, as well as the potential loss of assets. This could affect the tourist value of the coastline. However defence remnants will be maintained in a safe condition. + Undeveloped stretches of coastline will be allowed to remain undisturbed, thereby maintaining the natural landscape, which provides the main tourist interest.
Will SMP policy affect coastal access along, or to, the coast?	− There is a small risk to the Pembrokeshire Coast Path, due to cliff erosion or localised cliff falls. This risk is expected to increase over time. There is potential for the footpath to be relocated or realigned slightly inshore, if there is sufficient notice. There may also be access issues at Amroth, Coppet Hall and Saundersfoot once existing defences are allowed to fail.
Receptor: Historic environment There are a number of cliff top scheduled monuments including iron age forts such as Napps Camp as well as Rhode Wood Shaft Mounds SM, Tenby Castle SM and Tenby Town Wall SM, and a number of Scheduled Monuments on Caldey Island associated with cliff occupation. There are listed buildings in Saundersfoot, Tenby and Caldey as well as the Grade II listed former railway tunnel along the Miner's Walk. Other locally important archaeological assets include wreck sites, peat deposits, evidence of prehistoric occupation, tramway/railway, coal workings and industrial remains.	
Will SMP policy maintain the fabric and setting of key historic listed buildings, cultural heritage assets and conservation areas?	− There is a risk of erosion of cliff top Scheduled Monuments, although risk is considered minimal and is dependent on erosion rates. As these are located on undeveloped frontages, the recommended policy is to allow continued natural erosion. There is also risk to the listed tunnels on the Miner's Walk as existing defences fail, and the cliffs erode. + Maintenance of defences at Saundersfoot and Tenby would continue to protect archaeological assets and listed buildings on Caldey Island are sufficiently far inland to be unaffected. − There will be risk to any archaeological assets at Amroth, Wiseman's Bridge and Saundersfoot following failure of existing defences.
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.	● Along currently undefended sections there is no 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 devised, where appropriate. + Maintenance of defences in Tenby and Saundersfoot (in the short to medium term) will ensure continued protection of assets. Where

Dolwen Point to Giltar Point (16) (this is a summary of impacts, for full details see **Appendix G SEA Report**)	
Issue	**Appraisal**
	defences will be allowed to fail, at Amroth and Saundersfoot (in the long term) and at Wisemans Bridge (in the medium term), the aim is to maintain existing defences for a period, which would allow time for monitoring and adoption of suitable mitigation measures, as required.
Receptor: Landscape character and visual amenity The shoreline is within the Pembrokeshire Coast National Park, noted for its spectacular landscape of rugged cliffs, sandy beaches, wooded estuaries and wild inland hills.	
Will SMP policy maintain a range of key natural, cultural and social features critical to the integrity of the coastal landscape?	● For much of this shoreline there is no proposed change from existing policy, therefore minimal change to the landscape, particularly in the short term. This will allow the undeveloped areas of coastline to continue developing naturally and maintain their beauty. − From the medium term, abandonment of defences may adversely affect the visual landscape locally, at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot, as the defences deteriorate and fail. The only requirement to remove the remains of defences would be if they represented a health and safety risk.
Could SMP policy lead to the introduction of features which could be unsympathetic to the character of the landscape?	+ There is no intent to provide any additional defences.
Receptor: Biodiversity, flora and fauna This coastline contains a range of designations. The foreshore and intertidal areas westwards to Tenby South Beach are designated as part of Carmarthen Bay and Estuaries SAC, SPA and Ramsar site. There are SSSIs at Marros-Pendine Coast SSSI, Saundersfoot – Telpyn Coast SSSI, Waterwynch Bay to Saundersfoot Harbour SSSI, Tenby Cliffs and St Catherine's Island SSSI, Lydstep Haven to Tenby Burrows SSSI, Penally Marsh SSSI and St Margaret's Island SSSI.	
Will SMP policy enable a sustainable approach to habitat management?	+ 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?	● For policy units where NAI is proposed there could be natural loss of cliff top habitats and areas of woodland, designated as part of many of the designated sites, but the low erosion rates means losses are likely to be small. Newly exposed cliff faces could be colonised by interesting new species. Although the cliffs provide bird breeding habitat, ongoing erosion could maintain this through exposure of new cliff faces. (This may not be true for policy units where HTL is proposed). − As sea level rises, there would be intertidal narrowing, leading to submergence and loss of habitat, particularly where resistant cliffs, the vegetated dunes at Tenby Burrows or the various defences prevent retreat. ● Tenby Burrows dune system is likely to maintain its overall integrity although there could be foredune erosion as sea level rises, and localised patterns of erosion and accretion. This could lead to change in habitat. There may be risk of a breach at the southern end, dependent on erosion. + Failure of existing defences at Amroth and Saundersfoot in the long term, and at Wiseman's Bridge and Coppet Hall in the medium to long term, may enhance the designated sites by allowing the local area to revert to natural coastal processes. − Little risk to Penally Marsh SSSI although risk is dependent on dune development. Risk would increase should a breach in the dunes form.
Will SMP policy <u>accelerate</u> intertidal narrowing (coastal squeeze) and will this affect designated habitats?	+ Along much of the coastline, natural processes would be allowed to continue. 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 the designated cliff and cliff top vegetated habitats. − There may be coastal squeeze at Amroth, Wisemans Bridge, Coppet Hall, Saundersfoot and Tenby as a result of maintenance of existing defences. + At Amroth and Saundersfoot, allowing defences to fail in the long term could allow the coast to evolve naturally, with no artificial backshore constraints. This is also the case at Wiseman's Bridge and Coppet Hall from the medium term.
Will there be a net loss of BAP habitat within the SMP timespan as a result of SMP policy?	− Loss of clay exposure with and with out paddock evidence in the short, medium and long term due to natural evolution of the coastline.
Receptor: Earth heritage, soils and geology This frontage is within Carmarthen Bay and Estuaries SAC, SPA and Ramsar sites. The following SSSIs are also designated for the earth heritage and geological interest: Marros – Pendine Coast SSSI, Saundersfoot – Telpyn Coast SSSI, Waterwynch Bay to Saundersfoot Harbour SSSI and Tenby Cliffs and St Catherine's Island SSSI.	
Does SMP policy work with natural processes and enhance or maintain natural features?	+ The plan is for no active intervention along much of this shoreline, thereby working with natural coastal processes. At Amroth,

Dolwen Point to Giltar Point (16) (this is a summary of impacts, for full details see **Appendix G SEA Report**)	
Issue	**Appraisal**
	Wiseman's Bridge, Coppet Hall and Saundersfoot, allowing existing defences to fail will allow natural coastal processes to continue in the medium and long term. − Adverse impact to exposures in the short to medium term at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot.
Will SMP policy maintain or enhance the visibility of coastal geological exposures, where designated?	+ 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 much of the geological interest . The long term aim of allowing existing defences to fail at Amroth, Wiseman's Bridge, Coppet Hall and Saundersfoot may also enhance the SSSI status of the shoreline. + Maintenance of existing defences at Amroth, Wiseman's Bridge, Coppet Hall, Saundersfoot and Tenby for a period would not adversely affect the current exposures since this is a continuation of existing policy.
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?	x There are no known contamination issues along this shoreline.
Will SMP policy adversely affect water bodies in the coastal zone?	● Biological quality elements in the majority of the frontage in the Carmarthen Bay water body will not be significantly as a result of the combined NAI and HTL policies, and the WFD objectives are not at risk. HTL is largely proposed with resistant geology and will not result in accelerated loss of intertidal habitats. Where this is not the case, HTL frontages are short and geomorphologically isolated. Considering policy scenario area 16 as a whole the consequences for biological quality elements are not significant. ● The Pembrokeshire Carboniferous Limestone groundwater body and large number of river water bodies will be unaffected.

Impact colour key	+ Positive	● Neutral	− Negative	x Not applicable

Dolwen Point to Giltar Point (16)						
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	1.1	All	Undertake study to investigate the future evolution of Carmarthen Bay and adjacent estuaries to confirm impacts of future climate change. This will require the collection of data relating to bathymetric change, wind and wave regime, tidal regime, rainfall, river discharge, sediment sources, transport pathways and sediment fluxes in the long term since there is currently a lack of such data to enable a full understanding of the interactions between physical processes and coastal morphological change.	WAG	Coastal Group (Wales Coastal Monitoring Centre)	0 to 100 years
	1.2	All	Develop a long term sustainable plan for the Pembrokeshire Coast Path to identify sections which are currently at risk from coastal erosion/ flooding and those which are likely to be at risk in future under a range of future climate change/ sea level rise scenarios. Develop adaptation/ mitigation measures to maintain a continuous coastal footpath.	WAG	PCC (PCNPA)	0 to 20 years
2. Studies for Policy Units	2.1	16.2	Monitoring and documenting of geological SSSI and GCR features which are potentially at risk.	WAG	PCC	0 to 5 years
	2.2	16.4	At Wiseman's Bridge undertake community engagement to develop a coastal erosion and flood risk management plan, which is ideally supported by the local community. This will involve consideration of: alternative coastal erosion and flood risk management options (including wider ranging adaptation options), alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management and developing a plan to implement NAI in 20 to 50 years.	WAG	PCC	0 to 5 years
	2.3	16.5	Community engagement will be undertaken to develop a new alignment for the coastal footpath where it is not possible to justify continued public investment in coastal erosion risk management along this frontage.	WAG	PCC	0 to 5 years
	2.4	16.7, 16.10 and 16.11	Undertake a scoping assessment to identify when a feasibility study of the upgrading/improvement options to existing defences need to be carried out and/or identify the criteria/factors that would trigger this feasibility study. The timing of this feasibility study will be influenced by factors such as: existing frequency of flooding, type of receptors at risk, depths and velocity of flooding and residual asset life. Consider alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management.	WAG	PCC (PCNPA)	0 to 20 years
	2.5	16.7	At Saundersfoot undertake a detailed inspection and a study of existing defences to identify residual life and overtopping performance. Undertake community engagement and a study to identify the potential consequences of a range of future climate change scenarios on coastal erosion and flood risk (including the consequences of future sea level rise on surface water drainage systems) along this frontage, including consideration of the impacts of allowing various defences to fail, assessment of alternative management options (alternative defence maintenance regimes, improved flood warning systems, individual property/ asset flood resilience/ protection measures). The study may also include detailed socio-economic analysis and an assessment of the ability of the community to respond to future increased flood and erosion risk. This will enable a strategy to be developed for future coastal erosion and flood risk management at Saundersfoot. Community engagement will be undertaken to a coastal erosion and flood risk management plan (including consideration of wider ranging adaptation options and alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management)	WAG	PCC (EAW)	0 to 5 years
	2.6	16.10 and 16.11	Monitoring and documenting of geological SSSI and GCR features which are potentially at risk.	WAG/ CCW	CCW	0 to 100 years
	2.7	16.11	Undertake study of stability of cliffs including consideration of historic landslides and assessment of future risk.	WAG	PCC (Wales Coastal Monitoring Centre)	0 to 20 years
	2.8	16.12	Develop management strategy for Tenby South Beach dunes to confirm management objectives and triggers for intervention, in order to confirm the best approach to deliver the managed realignment policy. Engage existing landowners (golf club) and undertake community engagement during the development of the management	WAG	PCC	0 to 5 years

			strategy. Consider alternative funding options where it is not possible to justify public investment in coastal erosion and flood risk management.			
3. Strategy			-			
4. Scheme work			-			
5. Monitoring (data collection)	5.1	All	Undertake beach and coastal defence asset monitoring to inform future studies and SMP reviews. In particular cliff erosion and rock falls and beach levels 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	PCC (Wales Coastal Monitoring Centre)	0 to 100 years
	5.2	All	Continue with existing beach profile monitoring programme and provide information to the 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
	5.3	All	Undertake periodic defence inspection, including condition assessment and photographs, Confirm defence crest levels.	WAG	PCC (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 100 years
	5.5	16.12	Continued regular monitoring of the risk of coastal erosion and flooding to railway infrastructure, which may require mitigation measures to be developed, assessed and implemented (subject to obtaining necessary consents, licences and approvals).	Network Rail	Network Rail	0 to 20 years
	5.6	All	Monitor risk to the coastal footpath and investigate potential re-routing of the path where appropriate.	WAG	PCC	Ongoing
6. Asset management	6.1	All	Ensure that extents of public and privately owned defences are defined and mapped to inform future management decisions.	WAG	PCC (Wales Coastal Monitoring Centre)	0 to 20 years
	6.2	All	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	PCC (Wales Coastal Monitoring Centre)	0 to 20 years
7. Communication	7.1	All	Undertake consultation with the local community, key stakeholders and general public during the development of alternative solutions and wherever appropriate to ensure an acceptable approach is developed and adopted.	WAG	PCC	0 to 20 years
	7.2	All	Undertake monitoring and management of Action Plans to ensure SMP policies are put into practice.	WAG	Coastal Group	0 to 100 years
8. Interface with planning and land management	8.1	16.2, 16.4, 16.7, 16.12	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	PCC planning/ PCNPA	Ongoing
	8.3	All	Establish an officer working group in order to consider the possible effects of sea level rise on the transport infrastructure in Pembrokeshire in order to identify specific vulnerabilities and possible mitigation. The group should identify the timescale for such impacts under a range of sea level rise values from 0.5m to 2m and make recommendations as to mitigation and adaptation measures.	WAG	PCC/ PCNPA	0 to 20 years
9. Emergency response	9.1	16.2, 16.4, 16.5, 16.7, 16.10, 16.11, 16.12	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 breach or overtopping).	WAG	PCC	0 to 20 years
10. Adaptation/ resilience			-			
11. Flood forecasting and warning	11.1	All	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	12.1	All	Welsh Assembly Government instructed Environment Agency Wales to scope out the scale of potential coastal habitat gains and losses for Wales. The scoping exercise was completed in February 2011 and identified potential options for implementation of a National Habitat Creation Programme for Wales. How this programme is to be delivered and funded has yet to be decided.	WAG	TBC	Ongoing
* Note: It is recommended that the lead partner/s investigate the potential for local partnerships and alternative sources of funding.						