



## **West of Wales Shoreline Management Plan 2**

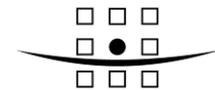
### Section 4. Coastal Area C

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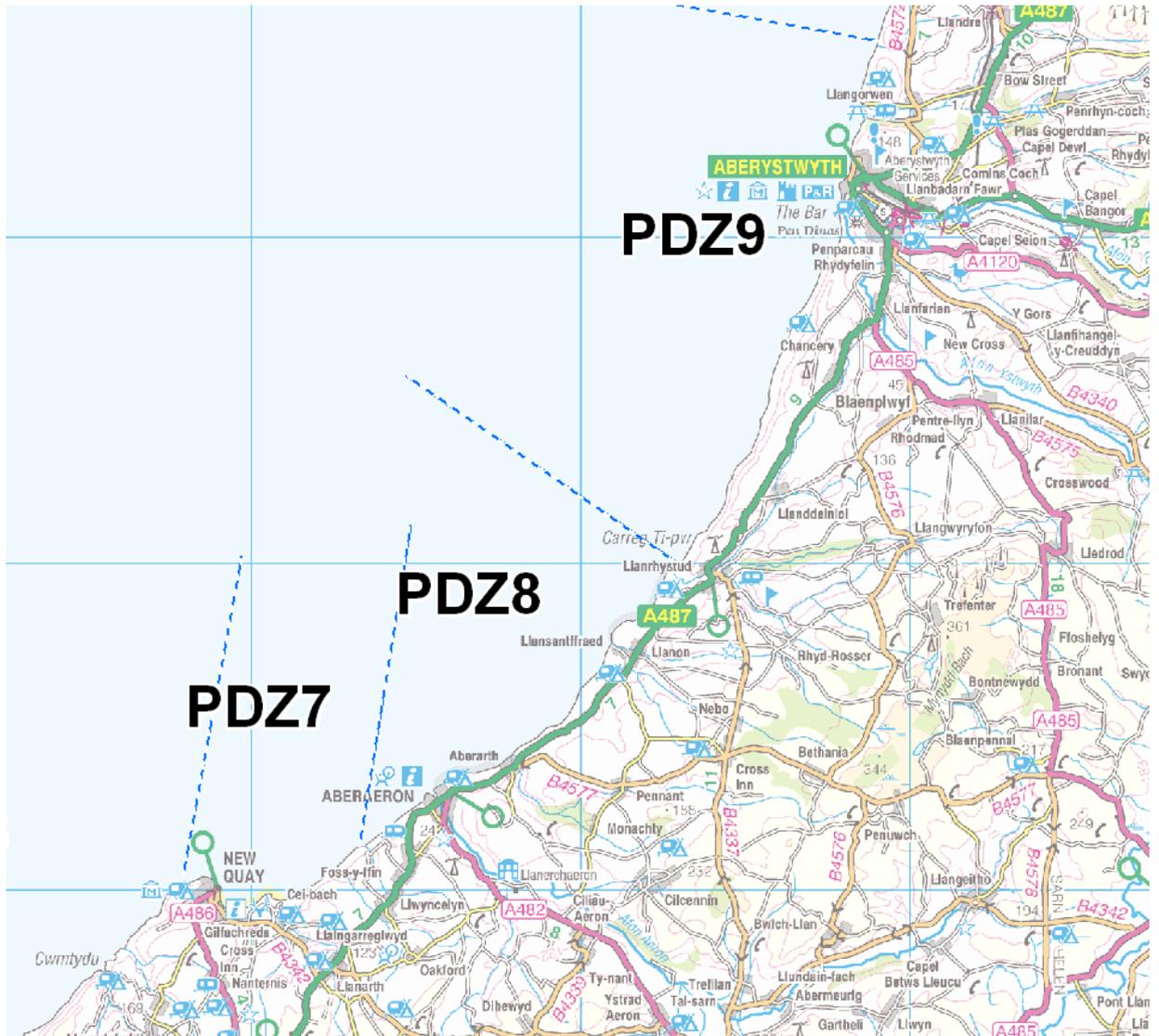
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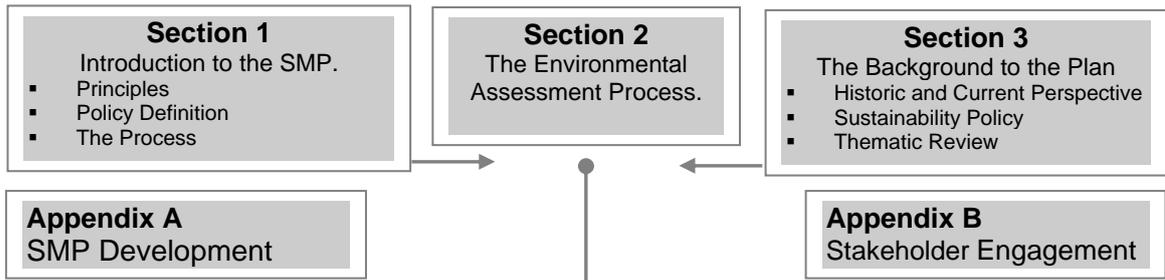
# Coastal Area C,

Including Policy Development Zones (PDZ) 7, 8 and 9.

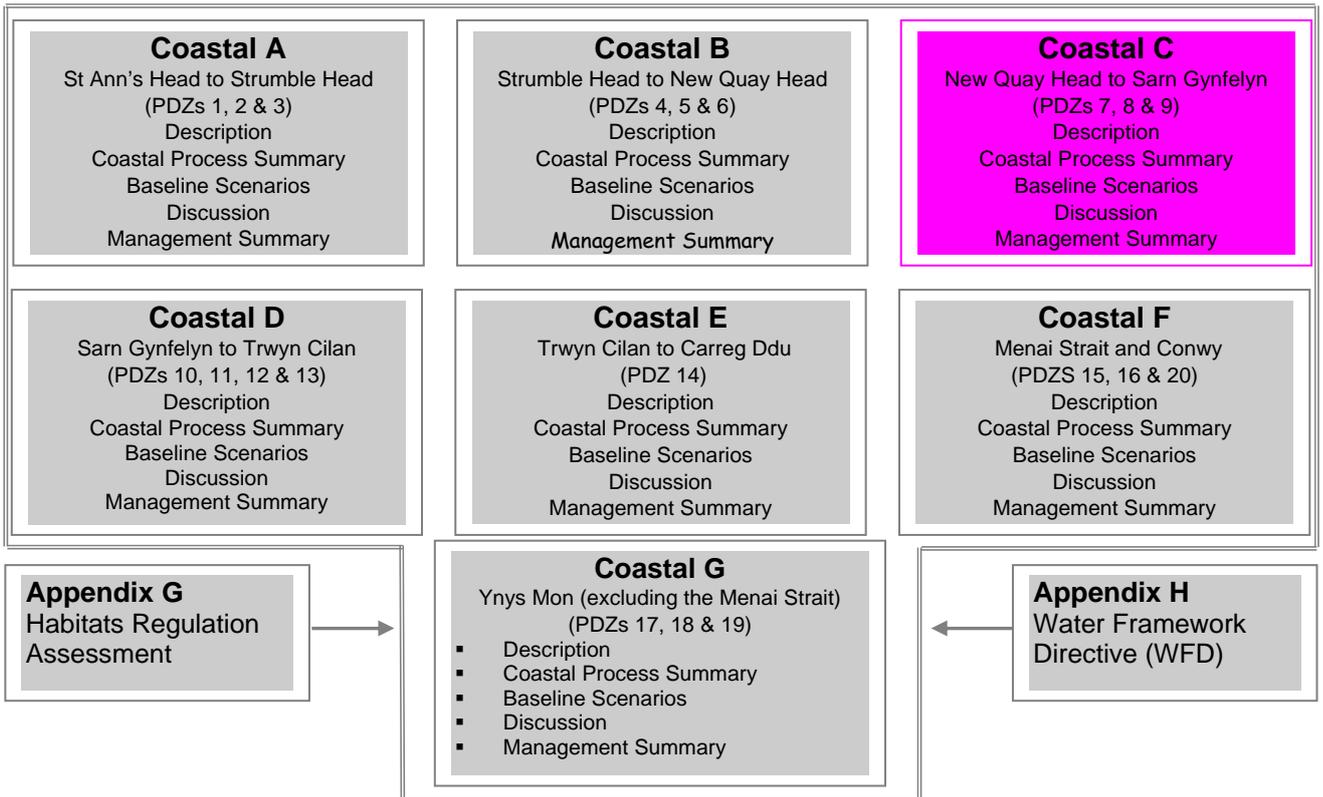
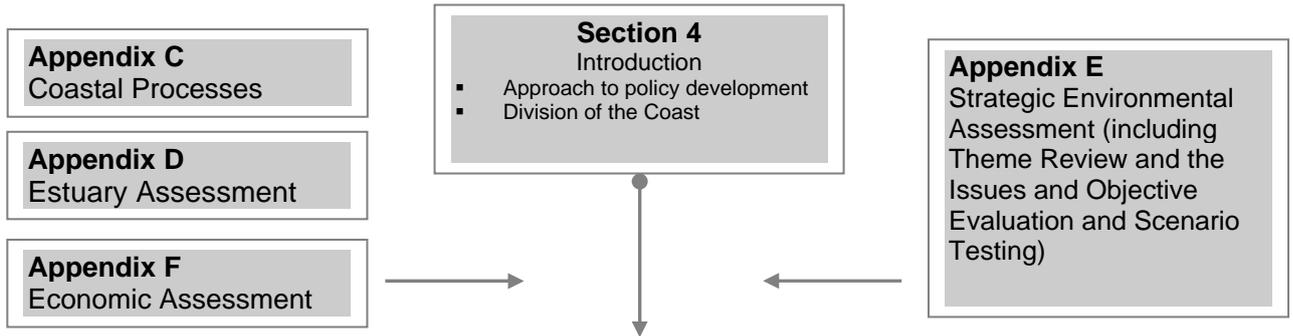
New Quay Head to Sarn Gynfelyn



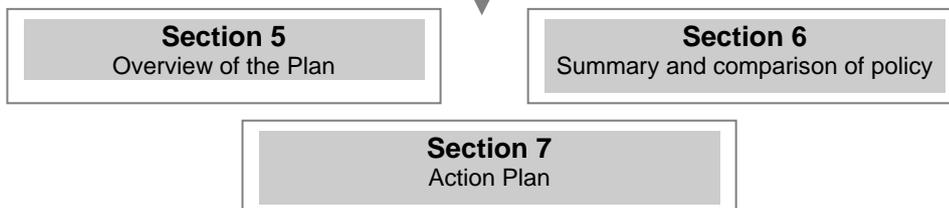
**INTRODUCTION AND PROCESS**



**PLAN AND POLICY DEVELOPMENT**



**OVERVIEW**



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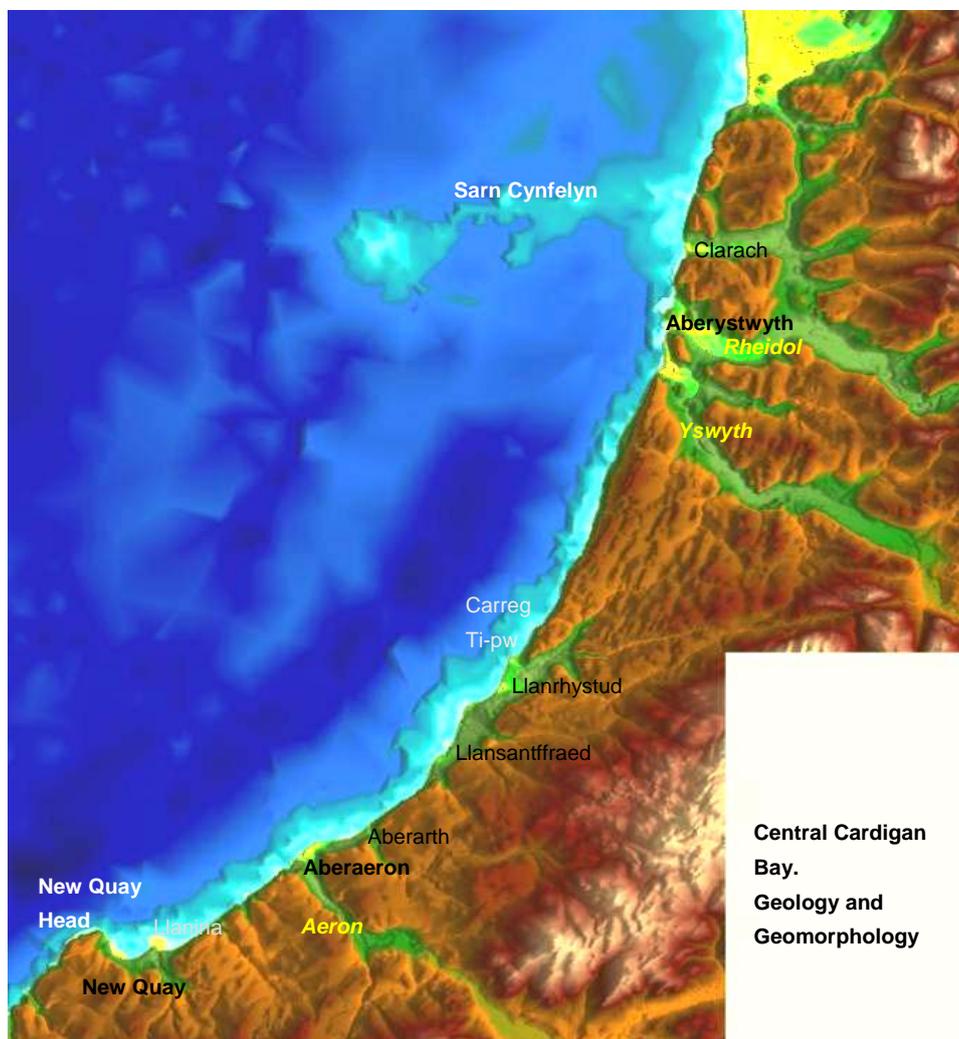


## 4C.1 GENERAL DESCRIPTION

### 1.1 Character

*(Further detail for the area is covered in Appendix D with individual features of the coast identified in Appendix E.)*

This coastal area, of central Cardigan Bay, is a region of economic growth, supporting individual smaller developing settlements. The main hard rock features are New Quay Head to the south and the relatively hard but quite massive high ground south of Aberystwyth and the cliffs of Constitution Hill and those north of Clarach. At the northern end of the area is the large glacial moraine feature of Sarn Gynfelyn. In areas, particularly to the south between New Quay and Aberaeron, there are high relatively soft cliffs such as those at Glifach-yr-Halen and in the central section there are the plateau and low cliffs around Llansantffraed and Llanrhystud. The impact of glaciation is very



evident in the area with most obviously the Sarn to the north but also the local areas of strong stony foreshore where glacial deposits remain. Such features as Llanina Point form short local sarns, with the broader fans over the intertidal sea bed between Aberaeron and Llanrhystud. These all act to have major impact of the shape of the shoreline and provide it with its very distinctive landscape. The variation in this physical structure and the understanding of the underlying and quaternary geology is reflected in the designation of large length of this area as GCR and SSSIs.

The southern section of the coast, north to Aberarth, and the northern section from Clarach north are designated as a Marine SAC. While the central section is not so designated, the several SSSIs along the frontage, together with the landscape all emphasise the important natural heritage of the area.

The main town in the area is Aberystwyth. The town is identified as one of the key economic and administrative hubs of central Wales, supporting, in this area, the smaller yet, economically autonomous settlements of New Quay, Aberaeron. These smaller centres, in turn, provide important local services to the villages of Llanina and Cei Bach (associated with New Quay) and Aberarth, Llansantffraed, Llan-non and Llanrhystud (reliant upon Aberaeron). Aberaeron is recognised as a regional administrative centre and has national status in terms of its Georgian harbour front. Aberystwyth, Aberaeron and New Quay are all nationally important tourist destinations, supporting this important industry more generally within West of Wales. There are major caravan sites and holiday centres between New Quay and Llanina, at Glifach-yr-Halen, Aberaeron, Llan-non, Llanrhystud, Morfa Bychan and at Clarach, again emphasising the importance of tourism to the area. This links through to the use of the coast; the use of the beaches and the various water uses, boating and diving. New Quay, Aberaeron and Aberystwyth are all important harbours, with an active fishing industry. The harbours are important also within the broader network of sailing along west coast of Wales, providing important anchorage or moorings in a critical location. Between the three harbours there are some 300 moorings and the fishing, as well as being exported from the area, is important to local tourism in providing local produce.

Agriculture is a further important aspect of the area, particularly in the lower lying area between Aberaeron and Llanrhystud, although much of the cliff crest is also important pasture land along the whole zone. Again, as well as being the heart of the rural communities, local produce is a significant selling point for tourism.

The main coastal road (A487) that runs along the coast from Cardigan through to Porthmadog, passes through all of the settlements along the coast. This important transport link is a further important feature in this coastal area. Aberystwyth, Llanrhystud, Aberaeron and New Quay also have important inland links from Central and southern Wales. However, only at Aberarth and Aberaeron, where the road runs over the bridge at the back of the harbour, does the coast road run close to the shoreline. More significant in terms of direct interaction with shoreline management is the risk to the main road to New Quay, running to the back of the coastal slope by George Street, the minor road through to Llanina, and the main promenade and access to the centre of Aberystwyth. These are significant transport routes at the local level.

There are only a few Scheduled Ancient Monuments (SAMs) within the area at the coast: Aberstrincell or Graiglas Limekilns near Llanrhystud and the medieval Aberystwyth Castle and small area of the later harbour works. However, in terms of listed buildings, a large proportion of properties along the Aberystwyth sea front, much of the property in Aberaeron and significant numbers of properties within New Quay and Aberarth are listed. This is alongside properties in other villages and the old quay wall at Wallog.

## 1.2 Physical Process Overview

(Further detail on coastal processes and geomorphology is provided in Appendix C.)

<b>EXPOSURE</b>								
Water levels:	<p>Normal spring tidal range in the area is some 4m, with extreme water levels being some 2m above spring tide level. Variation along the coast is relatively low, increasing slightly to the north. The values below for extreme water levels are taken from SMP1 for Aberystwyth and New Quay. The previous analysis would suggest that values generally over the zone are more closely aligned with Barmouth than to Cardigan.</p>							
Location	Tide m. AOD				Extreme Levels (return period) m AOD			
	MLWS	MLWN	MHWN	MHWS	10 yr	50 yr	100 yr	200 yr
Cardigan	-1.74	-0.44	0.96	2.26	3.5	3.77	3.9	4.02
New Quay	-1.84	-0.54	0.96	2.46	3.76	4.36	4.73	
Aberystwyth	-1.74	-0.64	1.06	2.56	3.76	4.36	4.73	
Barmouth	-1.74	-0.64	1.06	2.56	3.93	4.17	4.31	4.44
Waves:	<p>This coastal area changes and orientates toward the west. The dominant wave direction offshore is from the southwest to west, through the St Georges Channel. There is significant wave energy through to the northwest and north. Local information also highlights that waves from a north easterly direction can be significant in terms of coastal behaviour at New Quay. The SMP1 demonstrated that there can be variation in net wave direction on a decadal scale such that in any period of time there may be a slight shift around the normal southwest to west dominance at the shoreline. Aberystwyth, to the north of the area is exposed to a broader spread of wave direction and the slight shift in net direction can be significant at the shoreline.</p>							
<b>GEOMORPHOLOGY:</b>	<p>The majority of this coastline is dominated by soft boulder clay cliffs, and mudstone outcrops and headlands, relating to more slope driven processes rather than alongshore sediment drift. The hard points along the coast of New Quay head, Llanina Point, Aberaeron Harbour, Morfa Mawr, the mouth of the Afon Wyre, Carreg Ti Pw, Allt Wen, Aberystwyth Harbour, Castle Hill, Constitution Hill and Sarn Gynfelyn have created a stepped coastline, where the shore is eroding back in shallow bays. The coastal area as a whole is connected by a weak drift process, however at the more local scale, there can be significant areas of net drift reversal. In many areas the various bays become almost independent of each other. The southern most bay of New Quay is the most extreme example of this but it is also evident in areas such as Llanrhystud where, although part of a general overall northerly sediment drift system, locally, it is little affected by the works carried out at Aberaeron due local areas of drift reversal and natural sediment accumulation. The dominant feature is therefore the local sediment supply from the various sections of cliff at the more local scale. The geomorphology of Aberystwyth is controlled for the most part by the hard structures, defending the town and controlling the harbour.</p>							
Drift	<p>The sediment dynamics in this coastal area are somewhat complex, despite the linear appearance of the coast. New Quay almost sits within its own sediment dynamic system. Due to the tidal flood eddy created by New Quay head and the control at Llanina Point, this crenulated bay experiences frequent erosion of the backshore and accretion of sediment at the western end of the bay. Aberaeron and Aberarth, are part of a general</p>							

northerly drift system and are protected by their coastal defence works. North of Aberarth, the drift is northerly, however, the extent of this drift is limited by the slight headlands of Marfa Mawr and Llanrhystud Bay. The general northerly drift continues to Aberystwyth, however the presence of the stone piers and the rocky outcrops along the Aberystwyth frontage the drift is very limited to the small beaches. The drift system is delicately balanced and as such the variation in wave climate can be quite significant in that there can be periods of northerly drift and periods when there is little drift. This finely tuned balance also gives rise to significant areas affected by differentials in drift potential. As such areas such as Aberaeron North shore show quite significant drift rates but this reduces quite significantly at the northern end where the coast steps back and there is therefore a local area of accretion.

**Erosion/ Accretion:** Much of this coastline is slowly eroding landwards. The coastal slopes, particularly in the southern section of this area, at New Quay are vulnerable to cliff instability and experience erosion and land slips. Aberaeron and Aberarth are protected from coastal erosion by hard structures. The coast from Aberarth to Aberystwyth is an erosional coast, the rocky shore platforms wear down slowly allowing waves to attack the base of the cliffs, causing cliff failure. The coastline of Aberystwyth is also experiencing a fall in beach levels and resultant cliff instability to the north. With this continual patten of intermittent supply and intermittent or changeable drift, there are patterns of accretion and then periods of erosion. The sensitivity of the coast in terms of its local orientation gives rise to local areas of erosion and accretion.

**LONG TERM EVOLUTION:**  
(unconstrained) The likely evolution of this coastline, if unconstrained would be to continue to erode landwards. With the fine balance in terms of coastal orientation and where the coast is held by local harder sections of foreshore this slow pattern of erosion, coupled to sea level rise may give rise to significant patterns of change .Within New Quay bay, if the hard point at Llanina point in the north becomes less effective with sea level rise, the crenulated shape will retreat further landwards, eventually becoming one large bay with Cei Bach bay. With Sea level rise the cliffs would be subject to higher energy wave attack and would grow unstable. This would provide some feed of sediment to the shallow bays, This will become an important source sustaining local sediment within specific sections of the shore. The large towns of New Quay, Aberaeron, and Aberystwyth would suffer considerable loss under this unconstrained condition.

**FLOOD RISK** There are substantial areas of flood risk to Aberaeron and Aberystwyth. There is more local risk at Aberarth and Clarach. With Sea level rise, the flood risk to the major towns becomes substantially greater. There would also be some increased risk to local areas of lower lying agricultural land at Tan-y-Bwlch and Llansantffraed. Of the main towns, only at New Quay is there little risk of direct flood risk but here wave over topping can affect the area of the harbour. Wave over topping is also an issue at Aberaeron and Aberystwyth.

## 1.3 Present Management and Key Issues and Objectives

### Existing management practice

The following table sets out SMP1 policy (developed over 50 year period), how the coast has been subdivided into management units and where relevant where more recent decisions have been made, or discussion is on going with respect to individual areas.

SMP 1			Subsequent Management Approach
No.	Management Unit	Policy	
Ceredigion SMP1			
7.1	New Quay Head	HTL	
7.2	New Quay Harbour	HTL	
7.3a	Sunnydale	R	
7.3b	Traeth Gwyn	R	
8.1	Cei Bach (Llanina)	R	
8.2	Cei Bach	HTL	
8.3	Cei Bach East	DN	
9.1	Aberaeron Cliffs	DN	
9.2	Aberaeron South	HTL	
10.1	Aberaeron Harbour	HTL	Recent strategy with a policy of HTL
11.1	Aberaeron North	HTL	
11.2	Aberarth	R (Locally HTL)	
11.3	Morfa Mawr	R	
11.4	Llanon	R/DN	
11.5	Llanrhystud Bay	R	
11.6	Llanrhystud North	DN	
12.1	Allt Wen Cliffs	DN	
13.1	Tan y Bwlch	HTL	Aberystwyth strategy R
13.2	Aberystwyth Harbour	HTL	Aberystwyth strategy HTL
13.3	South Marine Ter.	HTL	Aberystwyth strategy HTL
14.1	Aberystwyth Castle	HTL	Aberystwyth strategy HTL
14.2	Marine/ Victoria Ter.	HTL	Aberystwyth strategy HTL
15.1	Clarach Cliffs	DN	
15.2	Clarach	R	
15.3	Wallog	DN	

**Key: DN – do nothing, HTL – Hold the Line, SHTL – Selectively Hold the Line, R – Retreat, deferred – policy deferred subject to further monitoring or study.**

Despite the apparent preponderance of Hold the Line policies under SMP 1, in reality much of the zone remains undefended. Hard defence is limited quite locally to the main settlements. In other areas SMP1 recognised the need for change but also the significant impact this could have on local land use. As such the policy was for managed retreat. Over the longer lengths of high cliff, south of Aberaeron and south and north of Aberystwyth the policy has been for No Active Intervention. A recent strategy at Aberaeron has taken policy further and there has been a scheme for defence now completed along that frontage. At the time of developing SMP1, sea level rise was considered but only over a fifty year period. There is now a much better appreciation of sea level rise and this becomes one of the key factors in review of the SMP1 policy and how management may be taken forward over the next 100 years and beyond.

## Key Management issues

While many of the more immediate concerns relate to local management of such areas as Cei Bach, Aberarth, Llanon, Llansantffraed, Llanrhystud and Clarach, and even the cliff instability at New Quay, the large scale issues relate to the two main centres of development at Aberaeron and Aberystwyth.

At the local scale there tends to be increasing conflict between local defence and the natural evolution of the shoreline. Although the communities, particularly over the central section of the coastal area, have a close interrelationship with their shoreline, this is far more in terms of their general setting as coastal communities, on the coastal edge, as any major dependency for tourism on their beaches. There are local issues of coastal use and in relation quite specifically to the caravan park at Llanrhystud, the use of the beach and foreshore is an important feature. However, generally over the central area the nature of the coast is that the shoreline is more a natural backdrop rather than an area of intense use. This also applies to Aberaeron. The tourism of Aberaeron, relates far more to its historic character, its harbour, recreational water use and coastal setting than as a sea side holiday centre with traditional beach use.

This is quite different in other areas. New Quay and Aberystwyth, in addition to their historic quality and important harbours and water use, have important beaches and part of their attraction is the use of the beach quite specifically as an amenity and for tourism. At the more local level, at Clarach, development of the village and the holiday centres is fundamentally linked to having a good beach. With sea level rise the whole foreshore profile will attempt to roll back. Where there are beaches or shingle backshore areas, to be sustained this will wish to roll back in balance with the increased wave energy. Adapting to this or managing this will be important generally along the frontage but the way in which this could be achieved need also to recognise the different function of the shoreline in relation to each area. Along the central section of the zone, the backshore is as more in relation to the natural qualities of the coast, sustainable defence and coastal access, in other areas maintaining the beach use will be an essential feature of managing the increasing pressure for change. In all areas there may be a need to adapt.

At a larger scale there is the risk to local transport routes, such as identified at New Quay, Llanina and Aberystwyth but more especially of a regional perspective at Aberaeron and at Aberarth. In sustaining both the regional and community based economies, maintaining transport links will be essential.

There are also the important cultural and historic features of the coast, most especially linked to the historic aspects of the main towns but also management of the specific historic sites and features. These all add to the concept of place and community upon which the present economic structure is based. In this and important to the economy and the cultural context of the area is the agricultural use. However, all this has to be balanced with the essential quality of the natural landscape, nature conservation and the environment.

Notwithstanding all the above attributes and issues, possibly the greatest threat to the whole area is the sustainable management to the economic and administrative centres of Aberaeron and Aberystwyth in terms of sustainable management of the increasing flood risk. Both centres are essential to the economic growth of the area and in their function as support centres for the more locally based economy. The central areas of both towns are likely to be at high risk of tidal flooding as a result of sea level rise.

Therefore, the main management issues are both quite specific and often local, but with some issues potentially having a much broader impact beyond the coastal area. These issues are summarised generally over the whole coastal area as:

- The risk of extensive flooding to the main towns.
- The disruption to regional and local transport system.
- Local but significant issues of increased flooding and erosion. The problems of addressing this in a manner that still supports the important but specific use of the coast.
- Potential loss of or significant impact on local communities.
- The potential for coastal squeeze and the general impact on both tourism and nature conservation values.
- The loss of specific heritage features and deterioration in the historic environment.

In bringing these together there are important distinctions being made between different sections of the whole area.

Within the New Quay area the main focus is on sustaining the core centre of the town around its harbour and its two beach areas, maintaining this and the essential character and control of the bay through management of the Pier. The use of the harbour, water use and beach use are essential features of the area, with tourism both at a regional level and locally being very important. This is underpinned by the important landscape and natural environment, but also by the major holiday accommodation around the area. None of this detracts from New Quay being an important residential centre and an important community in its own right and as an important local centre supporting smaller associated communities. In addition the shell fish factor provides important employment and support to the fishing effort in the area.

The central section of the zone may be characterised differently, as comprising a series of local communities, living very much within the low agriculturally important coastal plain, the central core of the area being the town of Aberaeron. Aberaeron is centred on its historic harbour and commercial and recreational use of the harbour area. It is regionally important as an administrative and support centre and, as an iconic Welsh port, is an important tourism centre supporting tourism national and more locally. Local tourism is based as much on the rural context as its coastal context. The whole area and local communities reflect very much the Wales Spatial Plan Vision of *'High-quality living and working in smaller-scale settlements set within a superb environment, providing dynamic models of rural sustainable development, moving all sectors to higher value-added activities'*.

While equally supporting this vision locally, Aberystwyth acts as a major national administrative and cultural centre for the whole of West Wales. The harbour and sea front are important aspects of the town and support its function as an important tourism centre, containing as it does the largest tourism accommodation in the area. The harbour has been developed to as major recreation water use centre and this develops on its more traditional fishing industry. The beaches and sea front promenades contribute to character of the town and contain important historic features. The main low lying valley of the town has been developed as the core commercial business centre. Clarach to the north is an important holiday centre supporting tourism generally with strong links to Aberystwyth.

More generally over the whole area the superb landscape and natural coastline supports each of the local areas.

## Policy Development Zones

In terms of coastal processes, while recognising the general pattern of sediment drift and supply the three principle areas above function relatively independently, as much because of the large sections of undefended naturally eroding cliff maintaining the principal sources of sediment to each area to the north. The coastal area may sensibly be sub-divided into three Policy Development Zones (PDZs), as set out below:

- PDZ7**            **New Quay Bay:**  
New Quay Head to Gilfach yr Halen  
Chainage: 245km to 253km
- PDZ8**            **Aberaeron Plateau:**  
Gilfach yr Halen to Carreg Ti-pw  
Chainage: 253km to 270km.
- PDZ9**            **Aberystwyth:**  
Carreg Ti-pw to Sarn Gynfelyn  
Chainage: 270km to 294km.

Overarching objectives are defined based on the overall principles upon which the SMP is developed and drawing together the various specific detailed objectives set out in the features and issues table contained within Appendix E. These overarching objectives aim to guide the assessment of different management scenarios and the development of individual SMP policies

## Overall Objectives

Principles	Objectives	Relevant to
To contribute to sustainable communities and development	<ul style="list-style-type: none"> <li>Reduce risk to life</li> <li>Protect properties from flood and erosion loss.</li> </ul>	All All
To minimise reliance on defence and increase resilience of communities.	<ul style="list-style-type: none"> <li>Minimise the need for increasing effort and management of coastal defences</li> <li>Avoid reliance on defence particularly where there is a risk of catastrophic failure; to the south more typically in terms of coastal slope failure and to the north more in terms of flood risk and sea front development.</li> <li>Identify areas where sudden failure of the coastal slope could result in unacceptable risk</li> </ul>	All All PDZ 7
To support an integrated approach to spatial planning, in particular recognising the interrelationships between:		
- centres of development and surrounding communities.	<ul style="list-style-type: none"> <li>Maintain access to the communities and villages</li> <li>Maintain Aberystwyth, Aberaeron, New Quay as regional centres for the communities.</li> </ul>	All All
- human activity and the natural and historic environment: in being essential for community identity, well being and vitality and in being highly significant for tourism and economic regeneration.	<ul style="list-style-type: none"> <li>Maintain recreational use of beaches</li> <li>Maintain access to the coast including car parking and facilities</li> <li>Maintain access for boat use and associated water sport activity</li> </ul>	All All All
To maintain and support the main centres of economic activity	<ul style="list-style-type: none"> <li>To maintain Aberystwyth as a viable commercial centre and support opportunities for regeneration, as well as maintaining the function of Aberaeron and New Quay</li> <li>To maintain the use and development of New Quay, Aberaeron and Aberystwyth Harbours.</li> <li>To maintain the important national commercial, social and cultural centre of Aberystwyth.</li> </ul>	All All PDZ 9
To sustain the vitality and support adaptation of smaller scale settlements.	<ul style="list-style-type: none"> <li>Maintain character and integrity of coastal communities</li> <li>Maintain agricultural value of rural community</li> </ul>	All All
To support the cultural heritage and the use of the Welsh language.	<ul style="list-style-type: none"> <li>Identify risk and reduce risk of loss of heritage features where possible</li> <li>Maintain historic landscape</li> <li>Prevent disturbance or deterioration to historic sites and their setting</li> </ul>	All All All

Principles	Objectives	Relevant to
To avoid damage to and seek opportunity to enhance the natural environment.	<ul style="list-style-type: none"> <li>• Maintain or enhance the condition or integrity of the international (SAC, SPA) designated sites and interest features within the context of a dynamic coastal system.</li> <li>• Maintain or enhance the condition or integrity of the national (SSSI) designated sites and interest features within the context of a dynamic coastal system.</li> <li>• Maintain and enhance educational and scientific understanding of geology and geomorphology.</li> </ul>	All All All
To maintain or enhance the high quality landscape.	<ul style="list-style-type: none"> <li>• Avoid damage to and enhance the natural landscape.</li> <li>• Maintain the human landscape and character of communities</li> </ul>	All All
To sustain sustainable accessibility in terms of maintaining national and regional connectivity	<ul style="list-style-type: none"> <li>• Maintain access to larger settlements for smaller farming communities.</li> <li>• Maintain regional transport route</li> </ul>	PDZ 8 PDZ 8

**Note: All objectives would be assessed in each management scenario, not all objectives will necessarily be met.**