



West of Wales Shoreline Management Plan 2

Section 4. Coastal Area B

November 2011

Final

9T9001

HASKONING UK LTD.
COASTAL & RIVERS

Rightwell House
Bretton
Peterborough PE3 8DW
United Kingdom
+44 (0)1733 334455 Telephone
Fax
info@peterborough.royalhaskoning.com E-mail
www.royalhaskoning.com Internet

Document title West of Wales Shoreline Management Plan 2
Section 4. Coastal Area B
Document short title Policy Development Coastal Area B
Status Final
Date November 2011
Project name West of Wales SMP2
Project number 9T9001
Author(s) CS Earlie
Client Pembrokeshire County Council
Reference 9T9001/RSection 4CABv4/303908/PBor

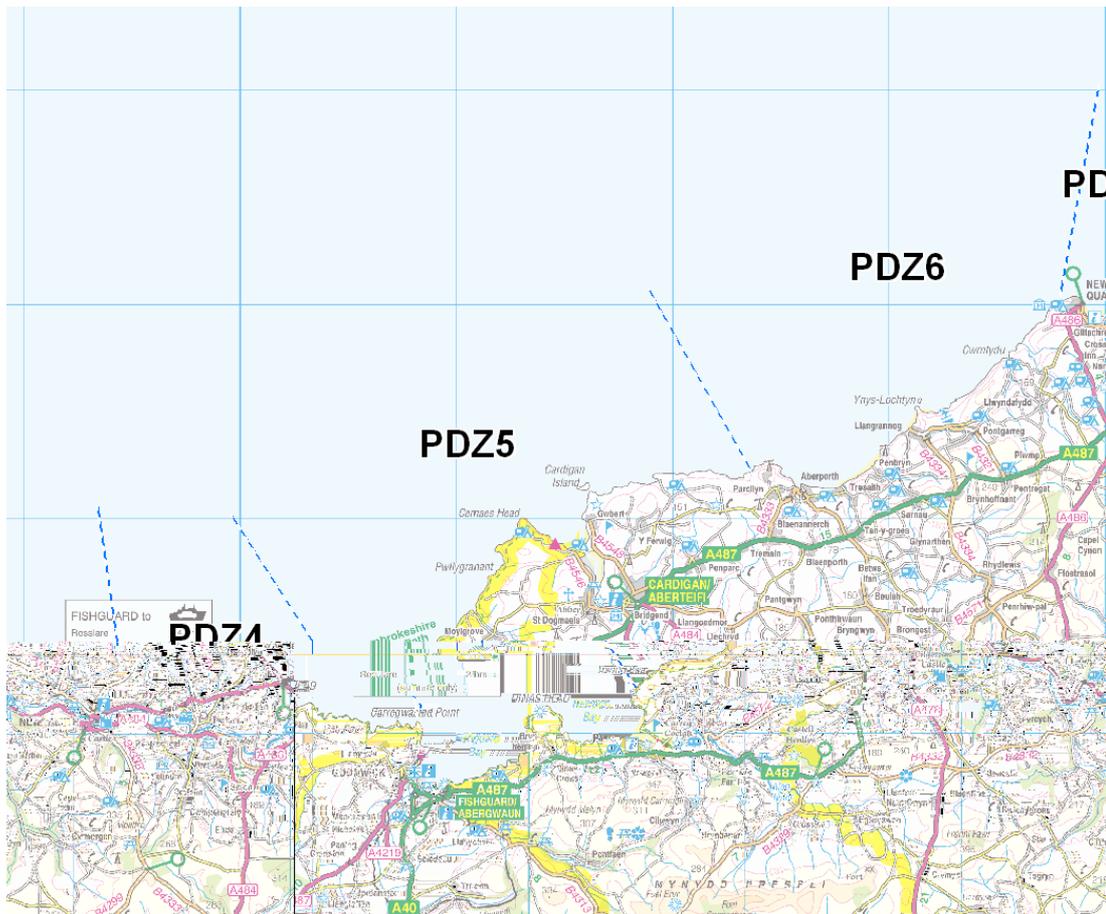
Drafted by Claire Earlie, Gregor Guthrie and Victoria Clipsham
Checked by Gregor Guthrie
Date/initials check 11/11/11
Approved by Client Steering Group
Date/initials approval 29/11/11

West of Wales Shoreline Management Plan 2

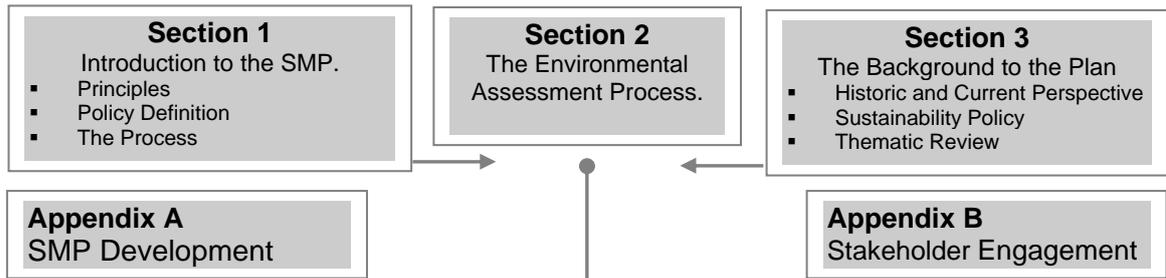
Coastal Area B

Including Policy Development Zones (PDZ) 4, 5 and 6.

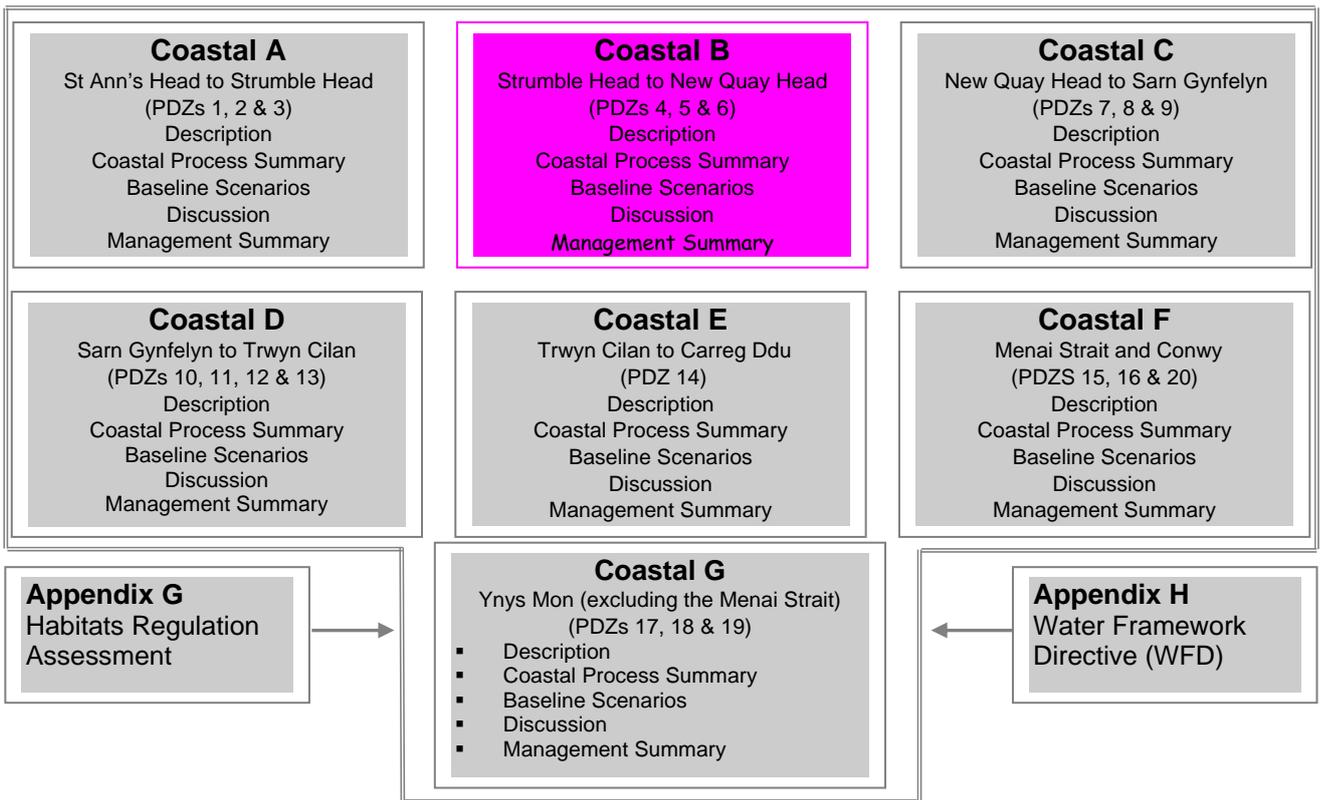
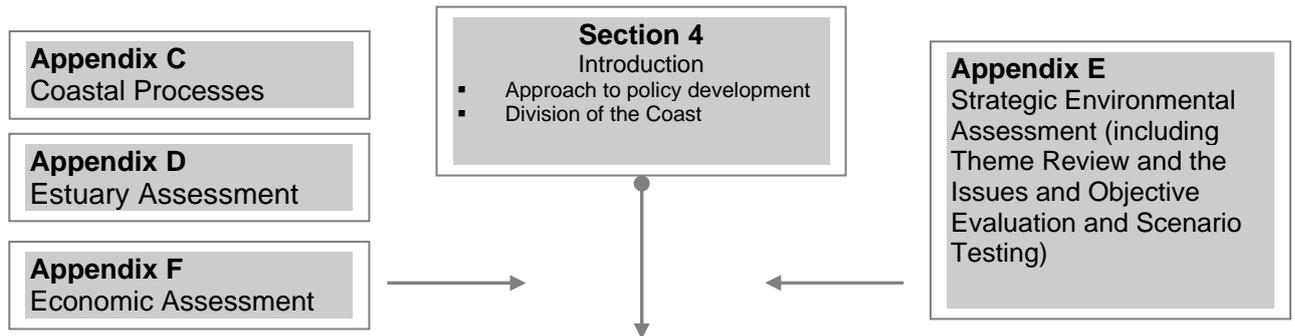
Strumble Head to New Quay Head



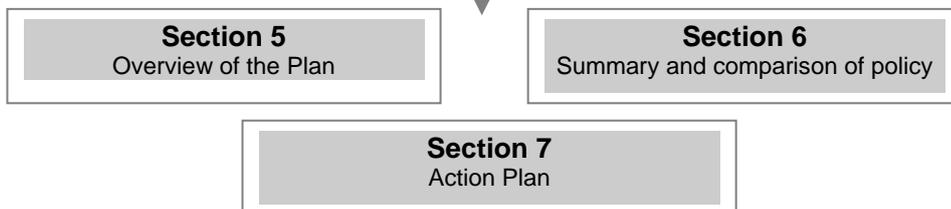
INTRODUCTION AND PROCESS



PLAN AND POLICY DEVELOPMENT



OVERVIEW



CONTENTS

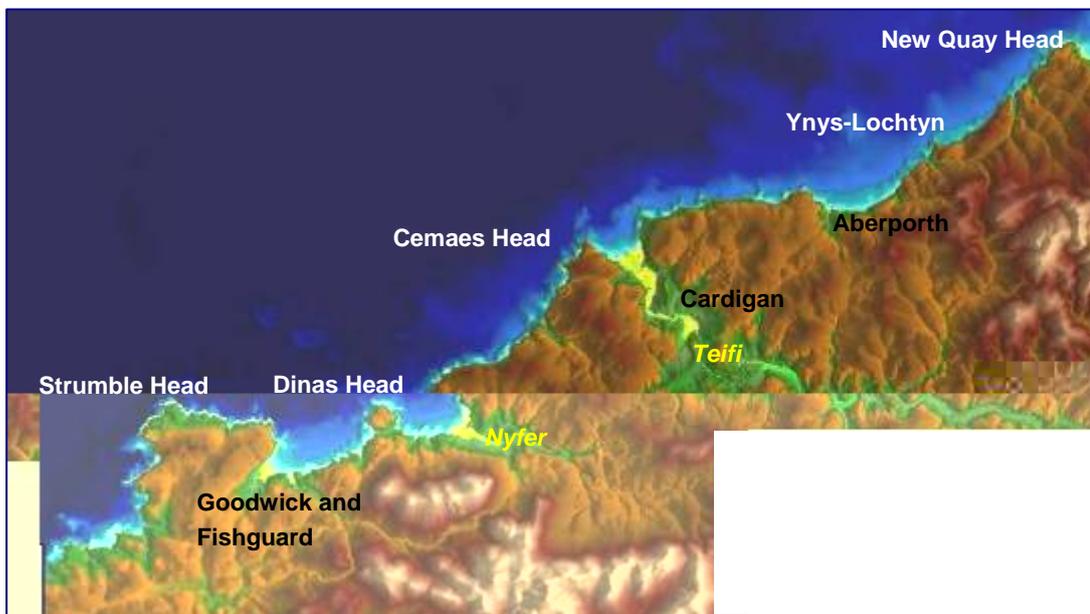
	Page
4B.1 GENERAL DESCRIPTION	1
1.1 Character	1
1.2 Physical Process Overview	3
1.3 Present Management and Key Issues and Objectives	5
PDZ4 FISHGUARD BAY AND NEWPORT BAY	
1 Local Description	14
2 Coastal Processes	17
3 Management Scenarios	23
4 Summary Comparison and Assessment of Baseline scenarios	30
5 Discussion and Detailed Policy Development	34
6 Management Summary	37
Summary Area Statements	39
PDZ5 THE TEIFI	
1 Local Description	68
2 Coastal Processes	71
3 Management Scenarios	76
4 Summary Comparison and Assessment of Baseline scenarios	83
5 Discussion and Detailed Policy Development	89
6 Management Summary	92
Summary Area Statements	94
PDZ6 SOUTH CEREDIGION	
1 Local Description	129
2 Coastal Processes for the General Coastal Area	130
3 Management scenarios for the General Coastal Area	131
4 Management Summary	157
Summary Area Statements	158

4B.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, although mainly dominated by its rocky coastline is very varied in its character. The rocky cliffs and headlands of the coast provide the harder anchor points, between which softer material has become eroded to form small bays and beaches which have then trapped sediment. The principal physical features are: the main headlands of Strumble Head at the southern end of the frontage; the massive central structure around Cemaes Head and the high cliffs west of Aberporth; cut through by the wide Teifi Estuary; and then through to New Quay Head to the north. Much of the coast, particularly over the southern section and through to Aberporth and Ynys-Lochlyn, comprise the harder rugged upper Ordovician rocks of the Bala (Ashgill) series, with Ynys-Lochlyn forming the transition to the softer Silurian series to the north.



Geology and Geomorphology of South Cardigan Bay.

The south Cardigan Bay area was heavily influenced during periods of glaciation. The Nyfer and the Teifi are drowned river valleys or rias. These areas, thought to have previously been Proglacial lakes, which breached through to the sea, have created wide sediment infilled estuaries. During periods when the Irish Sea Ice Sheet ground up against the high cliffs of the area, the scoured rock platform of the nearshore area was created; this process also sculpted the large bays of Fishguard, Newport and Aberporth, with their more gradually sloping nearshore areas.

The main town of the area is Cardigan, which is identified as an important central hub, supporting the largely agricultural communities and industry of the area. Fishguard Harbour is an important regional transport link to Ireland, and the area of Fishguard and Goodwick is identified as a key area for generation and growth. The main transport network runs, from Fishguard, in land to the south to the existing central commercial hub of Haverfordwest and Milford Haven. The main coastal road runs from Fishguard, through Lower Town along the coast, through Newport to Cardigan and from there north, further in land, to the central areas of West Wales. Other main roads, linking in to

the coastal route at Cardigan from the southern coast and Central Wales, include that from the Teifi Valley from Carmarthen, Newcastle Emlyn and Lampeter and, to the south, from Tenby and Narbeth. To the north of Cardigan, access to the town of Aberporth and the smaller villages is from in land, rather than along the coast, via a local network of roads. These roads link with the main A487 which runs further in land, and connects Cardigan with Aberaeron and Aberystwyth.

The local beaches in the area attract and support tourism to the area. Tourism is one of the main economic drivers within the area, together with agriculture. Other businesses tend to focus on smaller high value-adding activities, based on the concepts of sustainable rural communities. There are several examples of this local initiative in practise, such as the regionally supported Afon Teifi Fairway Committee, looking to involve and manage the use of the Teifi Estuary through local partnership and community involvement, and the Environmental Network for Pembrokeshire and Transition Bro Gwaun.

Underpinning this rural based economy is the superb natural landscape and environment, access to and along the coast; and the cultural and historic heritage. The southern part of the area, excluding the local area of Fishguard, is within the Pembrokeshire National Park and the majority of the coast falls inside the Heritage Coast designation. The northern section of the coast including the Teifi estuary lies within the Cardigan Bay SAC, with parts of the southern section being designated SSSI. Parts of Fishguard, the whole of Newport and the Teifi are designated Historical Landscape areas and there are a significant number of SAMs. The clusters of listed buildings in Lower town Fishguard, Newport Parrog, Cwm-yr-Eglwys, St Dogmaels and Cardigan again reflect this important cultural heritage.

1.2 Physical Process Overview

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

EXPOSURE:								
Water levels	<p>There is very little variation between the north and southern extents of this coastal area with respect to tidal ranges. Fishguard and New Quay experience ranges of 4m and 4.3 respectively. The Extreme Water Levels calculated for Fishguard and Cardigan demonstrate a small increase in levels for a 1 in 10 yr event and 1 in 200 yr event, as 0.35m and 0.52m respectively.</p>							
	Tide m. AOD				Extreme Levels (return period) m AOD			
Location	MLWS	MLWN	MHWN	MHWS	10 yr	50 yr	100 yr	200 yr
Fishguard	-1.64	-0.04	0.96	2.36	3.21	3.38	3.49	3.56
Port Cardigan	-1.74	-0.44	0.96	2.26	3.50	3.77	3.90	4.02
Aberporth	-1.84	-0.54	0.96	2.46				
New Quay	-1.84	-0.54	0.96	2.46				
Waves	<p>This coastal area is reasonably protected from the southerly Atlantic swells and faces north and north west across the Cardigan bay. The dominant wave direction is from the west northwest as the Atlantic swell waves diffract around St David's Head and Strumble Head.</p>							
GEOMORPHOLOGY:								
	<p>This area is dominated by hard rock processes, characterised by resistant rocky shore platforms and hard rock cliffs. Much of the coastal area is subject to similar processes, however, in the northern section, (north of Ynys Lochtyr) the geology changes from Ordovician to younger Silurian rock. The more open, less embayed shoreline is characterised by the shingle beaches to the north of Llangrannog and Cwmttydu, compared with sandier beaches to the south of Tresaith, Aberporth, Teifi, and Newport. The southern boundary of the area is composed of sedimentary sandstones, interspersed with intrusive igneous rocks forming headlands. The headland of Strumble Head is of volcanic origin and is now capped with glacial till, whereas Dinas Head is formed of sandstone. Dinas Head separates the two large bays, where the Afon Gwaun enters Fishguard Bay and where the Afon Nyfer enters Newport Bay. Much of the rest of the coast is predominantly hard rock with the exception of the wide Teifi Estuary. Each of the main estuaries is considered to be a sediment sink. Although there are local areas of glacial till over the southern section of the coast, the main areas where coastal slope instability is an issue are at Mwnt, and along the shoreline north of Aberporth.</p>							
Drift	<p>Within the bays the shoreline is generally swash aligned, with drift alignment more typical within the two main estuaries. There is little longshore interaction between bays, making each area a local sediment cell.</p>							
Erosion/ Accretion	<p>The hard rock cliffs are eroding, but at a very slow rate. Even where there are softer sections of the coastline, erosion is relatively low, although locally this can induce slope instability where there are higher exposures of till. There is significant change in terms of erosion and accretion within the Teifi, though this is seen primarily due to local changes in the estuary dynamics.</p>							

<p>LONG TERM EVOLUTION: (unconstrained)</p>	<p>In all areas where there is recession of the glacial till cliffs and within the sand and shingle backed bays, erosion will increase in the future due to accelerated Sea Level Rise (SLR). In the hard rock areas the shore platforms will become narrower. In the till embayments the additional release of beach sediments should allow the beaches to accrete with SLR if there is room for this to happen, and the shoreline profile will retreat. In some specific areas such as Cwm-yr-Eglwys, Newport, Poppit, Gwbert and along the coast north of Aberporth, there is potential for significant erosion.</p>
<p>FLOOD RISK</p>	<p>There are several key areas where flooding is an issue; at Fishguard and Goodwick, in particular Lower Town Fishguard; at Cardigan; and upstream in the Teifi valley. The main coastal road is at risk from flooding at Goodwick and through Lower Town Fishguard.</p>

1.3 Present Management and Key Issues and Objectives

Existing management practice

The following table sets out SMP1 policy (defined over a 50 year period) and where relevant, where more recent decisions have been made.

SMP 1			Subsequent Management Approach
No.	Management Unit	Policy	
Pembrokeshire SMP1			
21FH/D	Strumble Head to Fishguard Harbour	DN/DN	
21FH/C	Fishguard Harbour	HTL/HTL	
21FH/AB	Goodwick	HTL/HTL	
21LTFC	Penyraber	DN/deferred	
21LTF/A&B	Lower Town Fishguard	HTL/HTL	
21DIWB	Old Fort (quay) to Pwllgwaelod	DN/DN	
21DIW/A	Pwllgwaelod	DN/R	
21CYE	Pwllgwaelod to Dinas Head	DN/DN	
22CYE/B	Dinas Head to Cwm-yr-Eglwys	DN/DN	
22CYE/A	Cwm-yr-Eglwys	HTL/HTL	
22NBS	Cwm-yr-Eglwys to Newport Parrog	DN/DN	
22NPP	Newport Parrog	HTL/HTL	
22NYF	Nyfer Estuary	SHTL/SHTL	
22NPS	Newport Sands	SHL/R	
22CHM/B	Newport Sands to Ceibwr Bay	DN/DN	
22CHM/A	Ceibwr Bay	DN/DN(SHTL)	
22 TRA	Ceibwr Bay to Cemaes Head	DN/DN	
23CHT/B	Cemaes Head to Penrhyn Castle	DN/DN	
23CHT/A	Penrhyn Castle to IRB Station	HTL/HTL	
23POP	Poppit Sands		ATLF Business Plan 2009
23DOG	West Inner Teifi Estuary	DN/DN	ATLF Business Plan 2009
23 EBT	East Inner Bank Teifi Estuary	SHTL/SHTL	ATLF Business Plan 2009
23GWBIt	Gwbert	HTL/HTL	ATLF Business Plan 2009
Ceredigion SMP1			
1.1	Cemaes Head	HTL	
1.2	Poppit	DN	ATLF Business Plan 2009
1.3a	Teifi inner south	DN	ATLF Business Plan 2009
1.3b	Teifi inner north	HTL	ATLF Business Plan 2009
1.4	Gwbert	HTL	ATLF Business Plan 2009
2.1	Cardigan south	HTL	
2.2	Cardigan north	HTL	
3.1	Mwnt Cliffs	DN	
3.2	Mwnt	DN	
4.1	Aberporth Cliffs	DN	
4.2	Aberporth	HTL	
43	Tresaith	R	
4.4	Penbryn	DN	
5.1	Llangrannog Cliffs	DN	
5.2	Llangrannog	HTL	
6.1	Cwmttydu Cliffs	DN	
6.2	Cwmttydu	HTL	

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

Under SMP1 the focus for management is naturally along the relatively short sections where there are existing settlements. Over the larger, more remote sections of coast the policy is for Do Nothing, or No Active Intervention. In some areas, such as the Nyfer Estuary and Newport Sands, areas within the Teifi and at Tresaith, the possibility of retreating the line of defence was raised. This approach has to be considered more broadly in SMP2 with the additional indications of Sea Level Rise. A lot of the emphasis in SMP1 was in attempting to maintain important natural aspects of the shoreline, whilst still sustaining economic growth and prosperity. Achieving this balance is considered when establishing the key drivers for management of the area.

Key Management Issues

To achieve the spatial planning aims for the area it will be important to maintain the support centres of the area at Fishguard and Goodwick, with the intention to support regeneration within these towns, and at Cardigan. Whilst these centres are seen as vital for the region, sustaining their development must take account of significant flood risks. Of equal significance, given the intent to develop the economy on the basis of strong local rural communities, is the need to maintain these communities in a manner that allows future security without increasing risk and over-dependence on increasingly fragile defence systems. Now is the opportunity to consider how communities can adapt whilst developing, so that in the future their growth is placed on a more secure future. A change in approach to flood and coastal erosion risk takes planning, which takes time.

There are several local communities, such as Cwm-yr-Eglwys, Newport Parrog, the communities within the Teifi and the small communities to the north along the Ceredigion coastline, where there is increasing conflict between defence and the evolution of the shoreline. Many of the communities have a close interrelationship with the shoreline, either in terms of the important beaches supporting tourism and recreation, or that linked to water use, such as on the Teifi, at Lower Town Fishguard and even at Cardigan. With anticipated Sea Level Rise the use of the water front will need to adapt.

In sustaining both the regional and community based economies, maintaining transport links will be essential. This may become an issue at Goodwick, with the main road to the port running, in effect, along a causeway and at Lower Town Fishguard, where the main coastal road runs across the valley of the Gwaun. More locally, this is also a concern at St Dogmaels, on the eastern side of the Teifi, along Coronation Drive and the road to Gwbert, and in locations such as Llangrannog and Cwmttydu.

Alongside these issues are those of maintaining the cultural and historic values of the area, with its important historic context and historic environment; underpinning all of this is the maintenance of the important natural environment.

The main management issues are therefore quite specific and often local, although potentially having a broader impact beyond the coastal area. These issues are summarised as:

- The risk of extensive flooding to the main towns.
- Local but significant issues of increased flooding and the problems of addressing this in a manner that still supports the important use of the waterfront.
- Potential loss of or significant impact on local communities.
- The disruption to the transport system.

- The potential loss of small bays and beaches due to 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.

The general character and values of the area, with respect to shoreline management, can be brought together in considering the core issues of the different areas.

The area is strongly dependant on: the two hubs of Fishguard and Goodwick, where the intention is focussed on economic regeneration and their strategic transport links; and the more traditional rural support centre of Cardigan, acting also as the southern gateway to the centre of West Wales. Each area has its principle area of influence, with Fishguard more closely associated with the villages of Lower Town Fishguard and Newport Bay, and Cardigan with the Teifi valley and the string of small communities to the north, with Aberporth being a sub-support centre. The link between these two areas is the main coastal road. There is, associated with this, the more overarching value of the natural and heritage issues of the area.

At a more local level, the coastal form plays an important role in reinforcing the division of the area. To the south is the port and harbour development in the Fishguard and Lower Town area, and the main village centre of Newport slightly set back from the coast. In the centre is the remote, undeveloped coast of the central massive headland, cut through by the Teifi, and in the north, are the local villages and communities very much on the front-line of coastal interaction. This is then reflected in the more local character of each area:

- To the south, the important commercial use is less significantly impacted by erosion, but significantly affected by the increased risk of flooding. This is true for the relatively sheltered areas of Newport and Cwm-yr-Eglwys; in the former, risk is posed to the important sea frontage of the Parrog; in the latter this flood risk threatens significant heritage and cultural features such as the church and graveyard.
- In the centre are complex interrelated issues associated with management of nature conservation, tourism and commercial use of the Teifi, alongside the issues of managing flood risk and waterfront use within Cardigan.
- In the north, the important small but quite distinct communities are each directly dependent on their seafronts for tourism and local water use. These are at risk from erosion, flooding and coastal slope instability.

Policy Development Zones

Within each area the local issues relate to the overall concept of maintaining active and thriving small communities, in the important context of the natural environment.

To address these specific characteristics, the coast is divided into three Policy Development Zones (PDZs), as set out below.

- PDZ4** **Fishguard Bay and Newport Bay:**
Strumble Head to Pen y Bal (including the Nyfer Estuary)
Chainage: 137km to 172km
- PDZ5** **Teifi:**
Pen y Bal to Pencribach (including the Teifi Estuary and Cardigan Island)
Chainage: 172km to 218km.
- PDZ6** **South Ceredigion**
Pencribach to New Quay Head
Chainage: 218km to 245km.

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"> • Reduce risk to life. • Protect properties from flood and erosion loss. 	All All
To minimise reliance on defence and increase resilience of communities.	<ul style="list-style-type: none"> • Minimise the need for increasing effort and management of coastal defences. • Avoid reliance on defence particularly where there is a risk of catastrophic failure or future need unplanned change of use. 	All All
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"> • Maintain access to the communities and villages. • Maintain Aberporth as an important local centre 	All PDZ6
- 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"> • Maintain recreational use of beaches and bays. • Maintain access to the coast including car parking and facilities. • Maintain access for boat use and associated water sport activity. • Maintain navigation and RNLI station within the Teifi. 	All All All PDZ5
To maintain and support the main centres of economic activity.	<ul style="list-style-type: none"> • To maintain Fishguard and Goodwick as a viable commercial centre and support opportunities for regeneration. • To maintain the use and development of Fishguard Harbour. • To maintain the important commercial, social and cultural centre of Cardigan. • To support the opportunities for waterside development within Cardigan. 	PDZ 4. PDZ 4 PDZ 5 PDZ 5
To sustain the vitality and support adaptation of smaller scale settlements.	<ul style="list-style-type: none"> • Maintain character and integrity of coastal communities. • To support the commercial fishing industries particularly at Fishguard, Lower Town and within the Teifi. 	All PDZ 4 & 5
To support the cultural heritage and the use of the Welsh language.	<ul style="list-style-type: none"> • Maintain agricultural based communities. • Identify risk and reduce risk of loss of heritage features where possible. • Maintain historic landscape. • Prevent disturbance or deterioration to historic sites and their setting. 	All 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"> 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. 	PDZ 5 & 6
	<ul style="list-style-type: none"> Maintain or enhance the condition or integrity of the national (SSSI) designated sites and interest features within the context of a dynamic coastal system. 	All
	<ul style="list-style-type: none"> Maintain and enhance educational and scientific understanding of geology and geomorphology. 	All
To maintain or enhance the high quality landscape.	<ul style="list-style-type: none"> Avoid damage to and enhance the natural landscape.. Maintain the human landscape and character of communities. 	All All
To sustain sustainable accessibility in terms of maintaining national and regional connectivity.	<ul style="list-style-type: none"> Maintain international transport route at Fishguard. Maintain transport route between Fishguard and Cardigan and gateway to West Wales. 	PDZ 4 PDZ4 & 5

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