

A Guide to the Lavernock Point to St Ann's Head Shoreline Management Plan 2

What is a Shoreline Management Plan?

The Lavernock Point to St Ann's Head Shoreline Management Plan (SMP2) provides a large-scale assessment of the risks associated with coastal erosion and flooding along the coast and estuaries along the south coast of Wales, see Figure 1.1 below. It defines high level policies to help manage these risks to people and to the developed, historic and natural environment in a sustainable manner.

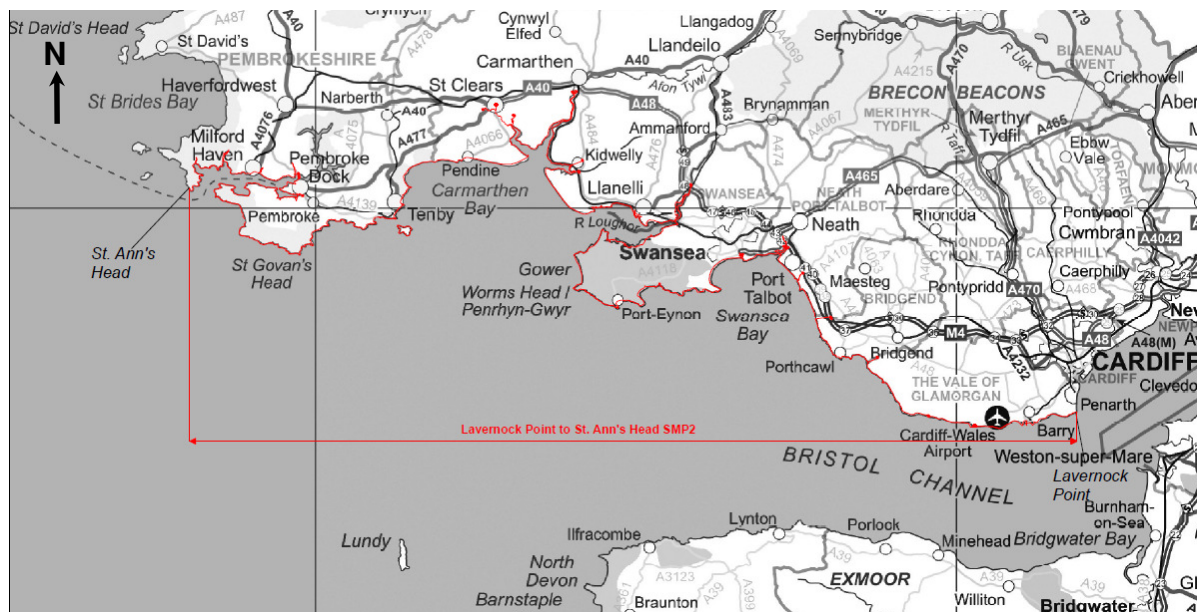


Figure 1.1: Lavernock Point to St Ann's Head SMP2 Study Area

Which parts of the SMP2 should you look at?

Annex 1 of the Lavernock Point to St Ann's Head SMP2 **Main Document** comprises SMP2 Policy Statements, which define the preferred SMP2 policies for each Policy Unit (length of coast/ estuary). This is the most important document for you to review since it defines the future policies for coastal erosion and flood risk management along the coast. To find the Policy Unit (length of coast/ estuary) that you are interested in please refer to Figure A.1 and Table A.1 at the back of this guide.

The Main Document provides an overview of how the SMP2 has been developed. Annex 2 of the Main Document provides a glossary of terms used in the SMP2.

Further more detailed information is provided in the SMP2 Supporting Appendices

The SMP2 supporting appendices provide background information to ensure that there is clarity in the decision-making process and that the rationale behind the preferred SMP2 policies is both transparent and auditable. This information in the supporting appendices is largely of a technical nature and is provided in twelve parts. The layout of SMP2 documents is defined in the SMP2 Guidance (Defra, 2006).

An **explanation of the SMP2 process** is provided in Appendix A – SMP2 Development which reports the history of development of the SMP2, providing more detail on the policy decision-making process.

The **consultation/ stakeholder engagement process** is presented in Appendix B – Stakeholder Engagement. The stakeholder engagement process undertaken during the development of the SMP was intended to build trust and understanding between all parties involved. All communications from stakeholders are provided in this appendix together with information arising from the consultation process.

Current understanding of how the coast and estuaries function is presented in Appendix C - Baseline Processes Understanding. This appendix also includes **No Active Intervention (NAI) and With Present Management (WPM) baseline scenario assessments** which were the initial assessments undertaken to consider how the coast/ estuaries are likely to behave if: existing defences are not maintained and are allowed to fail, whilst undefended shores are allowed to evolve naturally (NAI); or if present coastal erosion and flood risk management is continued until technically impossible (for example, if existing defences fail), or when current practice becomes ineffective (WPM). Consideration of the impacts of **future climate change along the coast and within estuaries** is included in Sections C.2.2 and C.2.3 of the NAI/ WPM baseline scenario assessment (which is part of Appendix C - Baseline Processes Understanding). **SMP2 boundaries** are defined in Annex B: Assessment of SMP2 Boundaries. A **review of existing defences**, including **photos along the SMP2 frontage** are provided in Annex C: Defence Assessment. A summary of **marine aggregates and port maintenance dredging** is provided in Annex D: Marine Aggregates and Port Maintenance Dredging. A review of **marine renewable energy proposals** along the SMP2 frontage is included in Annex E: Marine Renewable Energy Proposals. A summary of **how the SMP2 relates to Integrated Coastal Zone Management** is provided in Annex F.

Environmental baseline conditions are provided in Appendix D: SEA Scoping Report which identifies and evaluates the environmental features of the coastline (human, natural, historical and landscape) in terms of their significance and how these need to be accommodated by the SMP2. **Issues and Objectives** used to assess alternative SMP2 policies are provided in Annex B: Issues and Objectives Tables.

A list of alternative SMP2 policies which were considered is included in Appendix E – Policy Development and Appraisal. Appendix E presents the consideration of generic policy options for each frontage, identifying possible alternative policies, and their combination into 'scenarios' for testing. This appendix also presents the appraisal of impacts upon shoreline evolution.

Environmental appraisal of alternative SMP2 policies and the preferred SMP2 policies are included in Appendix G – Environmental Report (Strategic Environmental Assessment) (undertaken to fulfil the requirements of the EU Council Directive 2001/42/EC the Strategic Environmental Assessment Directive), Appendix H – Statement to inform a Habitats Regulations Assessment (presents an assessment of the SMP2 in relation to the UK Habitats Regulations) and Appendix I – Water Framework Directive Assessment (provides an assessment of the potential impacts of the SMP2 with respect to the Water Framework Directive 2000/ 60/ EC which provides a framework for the protection of inland surface, transitional, coastal and ground waters).

Socio-economic Appraisal of the preferred SMP2 policies is provided in Appendix J – Economic Appraisal which presents the socio-economic analysis undertaken in support of the Preferred Plan.

Background on the selection of the preferred SMP2 policies is provided in Appendix F – Preferred Policy Scenario Testing.

The **sensitivity of the preferred SMP2 policies** with respect to a range of issues is addressed in Appendix K – Policy Sensitivity Analysis

A database of **supporting information used to develop the SMP2**, has been provided in **Appendix L: Metadata and Bibliographic Database** which is referenced for future examination and retrieval.

The purpose of the SMP2 and how it fits with other processes, plans and policies

The SMP2 is a high level non-statutory policy document which sits at the top of a hierarchy of Strategy and Scheme plans that maritime Local Authorities and the Environment Agency Wales will use to manage coastal erosion and flood risks, as shown in the Table 1.1 and Figure 1.2 below.

Table 1.1: Stages in assessing coastal flood and erosion risk management (Defra, 2006)

Stage	SMP (or CFMP¹)	Strategy	Schemes
Aim	To identify policies to manage risks	To identify appropriate schemes to put the policies into practice	To identify the type of work that is needed to put the preferred scheme into practice. Schemes could include a variety of activities such as building a seawall or developing a flood warning service.
Delivers	A wide-ranging assessment of risks, opportunities, limits and areas of uncertainty	Preferred approach, including economic and environmental decisions	Compares the different options for putting the preferred scheme into practice
Output	Policies	Type of scheme (such as a seawall)	Design of work
Outcome	Improved long-term, strategic management for the coast	Management measures that will provide the best approach to managing floods and the coast for a specified area	Reduced risks from floods and coastal erosion to people and assets

¹ CFMP (Catchment flood management plan) is a high level policy plan, dealing with flood risk from rivers, equivalent to an SMP

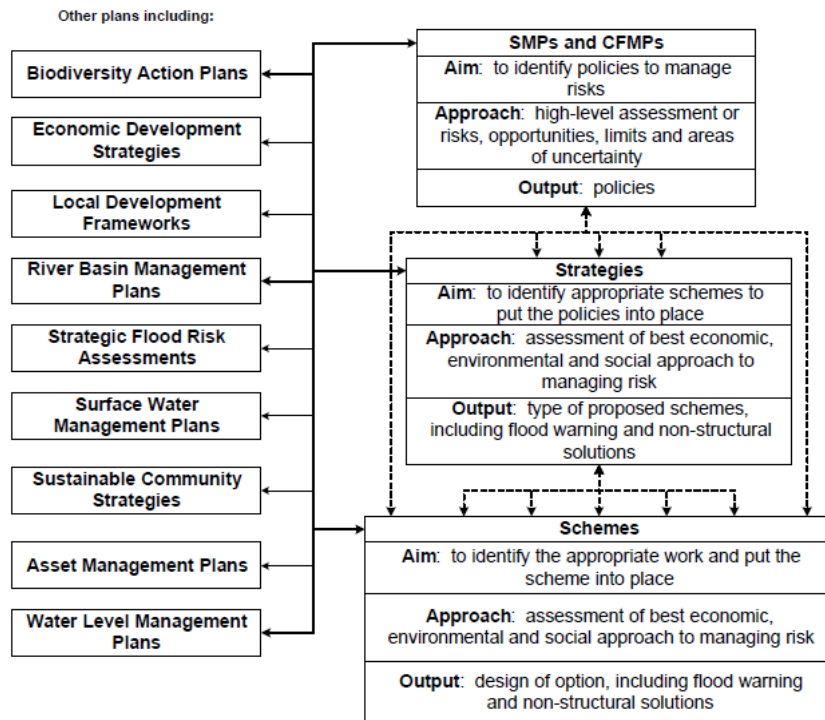


Figure 1.2: Hierarchy of decision-making with links to other processes, plans and policies (Flood and Coastal Erosion Risk Management Appraisal Guidance, EA, March 2010). This figure shows how SMPs, strategies and schemes are linked. Each SMP can lead to a number of strategies and, potentially, directly to schemes. Similarly a number of schemes may be derived from any one strategy.

Changes since SMP1

First generation SMPs (SMP1s) were completed along the South Wales coast in 2000 and 2001. SMPs are subject to review every 5 to 10 years. The second generation SMP (SMP2) has considered the following key changes since the SMP1s were completed:

- Flood risk is likely to increase in future, due to climate change. However there are currently significant uncertainties with climate change predictions over the next 20, 50 and 100 years.
- Sea level rise and more extreme weather may mean it is no longer sustainable to continue to defend against flood and erosion risk by building bigger and higher defences. It may be necessary to consider managing future flood risks by improving flood warning, emergency response and community resilience. Where erosion is a threat we may have to consider adapting by making plans to move away from the coast. Therefore the way in which defences are managed will need to change in future to enable us to adapt to climate change.
- Some communities may be more sensitive to climate change impacts than others. The SMP will highlight those communities at greater risk from coastal erosion and flooding and identify what actions will be required to manage those risks.
- Changes in environmental legislation.

SMP2 Format

To maintain a consistent direction with other English and Welsh SMP2s the coastline has been considered from east to west. The coast and estuaries have been split up into Policy Scenario Areas 1 to 21, see Figure A.1 overleaf (a length of coast which interact in terms of coastal processes, has similar key issues, or land uses, or for which the management objectives are broadly the same), which have further been split up into Policy Units (a length of shoreline with similar characteristics in terms of coastal processes and assets at risk that can be managed efficiently), see Table A.1.

The following shoreline management policies have been considered for each Policy Unit for each epoch: short term (up to 20 years), medium term (20 to 50 years) and long term (50 to 100 years):

- **Hold the existing defence line** by maintaining or changing the standard of protection. This policy includes scenarios where work or operations are carried out seaward of the existing defences (such as beach recharge, rebuilding the toe of a structure or building offshore breakwaters) to improve, maintain or change the standard of protection provided by the existing defence line. This policy also includes operations landward of the existing defences (such as the construction of secondary flood walls) where they form an essential part of maintaining the current coastal defence system.
- **Advance the existing defence line** by building new defences on the seaward side of the original defences. This policy is limited to those policy units where significant land reclamation is considered.
- **Managed realignment** by allowing the shoreline to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences). Managed realignment has been assigned to all dune areas since it is not sustainable to artificially fix a line of dunes.
- **No active intervention**, where there is no investment in coastal defences or operations. This includes ceasing maintenance where there are existing defences, and allowing them to fail.

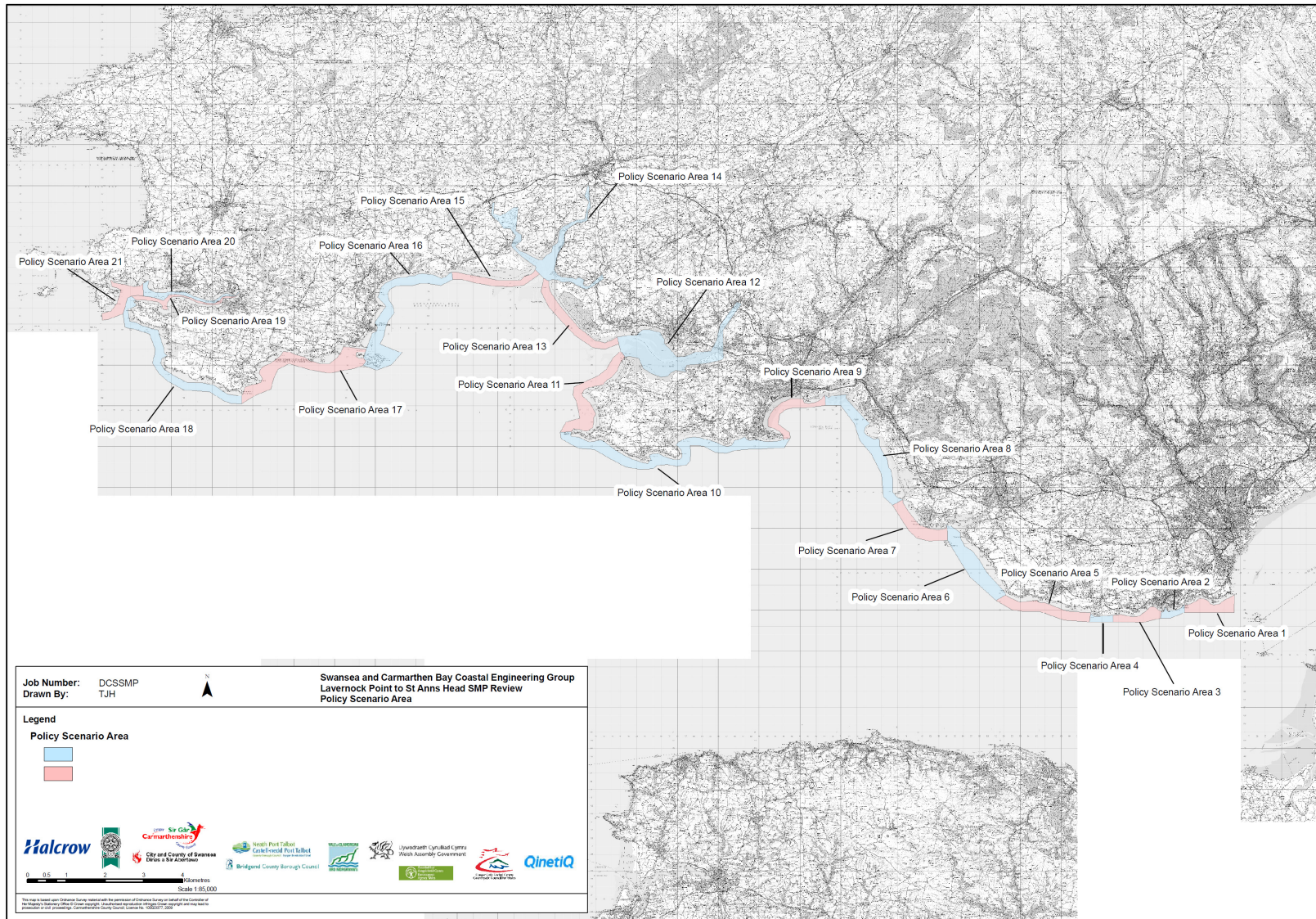


Figure A1: Policy Scenario Areas

Table A1: Extent of Policy Scenario Areas and Policy Units

Policy Scenario Area		Policy Units	
1	Lavernock Point to Bendrick Rock	PU 1/1	Lavernock Point to St Mary's Well Bay
		PU 1/2	St Mary's Well Bay to Swanbridge
		PU 1/3	Swanbridge East
		PU 1/4	Swanbridge West
		PU 1/5	Sully to Bendrick Rock
2	Barry Island and Docks	PU 2/1	Barry Docks (Bendrick Rock to West Breakwater)
		PU 2/2	Jackson's Bay and Nell's Point
		PU 2/3	Whitmore Bay, Barry Island
		PU 2/4	Friars Point
		PU 2/5	Barry Harbour (Breakwater to Watch House Bay)
		PU 2/6	Cold Knap Point
3	The Knap to Watch House Beach	PU 3/1	The Knap (Cold Knap Point to Bull Cliff)
		PU 3/2	Bull Cliff
		PU 3/3	Bull Cliff to Watch House Beach
4	Aberthaw	PU 4/1	Aberthaw (Watch House Beach to Limpert Bay)
5	Limpert Bay to Nash Point	PU 5/1	Limpert Bay to Cwm Col-huw
		PU 5/2	Llantwit Major (Cwm Col-huw)
		PU 5/3	Cwm Col-huw to Nash Point
6	Nash Point to Porthcawl	PU 6/1	Nash Point to Ogmore River
		PU 6/2	Ogmore River to Newton (Merthyr Mawr)
7	Porthcawl to Sker Point	PU 7/1	Newton
		PU 7/2	Newton Point to Rhych Point (Trecco Bay)
		PU 7/3	Rhych Point to Porthcawl Point (Sandy Bay)
		PU 7/4	Porthcawl (Porthcawl Point to Hutchwns Point)
		PU 7/5	Hutchwns Point to Sker Point (Rest Bay)
8	Sker Point to Swansea Docks	PU 8/1	Sker Point to Afon Cynfig (Kenfig and Margam Burrows
		PU 8/2	Port Talbot steelworks
		PU 8/3	Port of Port Talbot
		PU 8/4	Port of Port Talbot to Baglan Burrows (Aberavon Beach)
		PU 8/5	Baglan Burrows
		PU 8/6	Neath Estuary
		PU 8/7	Crymlyn Burrows
		PU 8/8	Former BP tank farm
9	Swansea Bay	PU 9/1	Swansea Docks and Channel
		PU 9/2	Swansea Docks to Singleton Park

Policy Scenario Area		Policy Units	
		PU 9/3	Singleton Park to Norton
		PU 9/4	Norton to Mumbles Head
10	Mumbles Head to Worms Head	PU 10/1	Mumbles Head to Rothers Sker
		PU 10/2	Langland Bay
		PU 10/3	Snaple Point to Caswell Bay
		PU 10/4	Caswell Bay
		PU 10/5	Caswell Bay to Three Cliffs Bay
		PU 10/6	Three Cliffs Bay
		PU 10/7	Tor Cliffs
		PU 10/8	Oxwich Bay
		PU 10/9	Oxwich Point to Horton
		PU 10/10	Port Eynon Bay
		PU 10/11	Port Eynon Point to Worms Head
11	Worms Head to Whiteford Point	PU 11/1	Worms Head to Hillend Burrows
		PU 11/2	Hillend Burrows to Burry Holms
		PU 11/3	Burry Holms to Twlc Point
		PU 11/4	Twlc Point to Hills Tor (Broughton Bay)
		PU 11/5	Hills Tor to Whiteford Point (Whiteford Burrows)
12	Loughor Estuary	PU 12/1	Whiteford Point to Llanrhidian Marsh
		PU 12/2	Crofty to Penclawdd
		PU 12/3	Gowerton (Dan-y-lan to Island Bridge)
		PU 12/4	Loughor (Island Bridge to Bwlchymyndd)
		PU 12/5	River Loughor East Bank (Bwlchymyndd to NTL, south of Pontardulais)
		PU 12/6	River Loughor West Bank (NTL, south of Pontardulais to Loughor Bridge)
		PU 12/7	Morfa Bacas (Loughor Bridge to Wildfowl and Wetlands Centre)
		PU 12/8	Wildfowl and Wetlands Centre to Penrhyn Gwyn
		PU 12/9	Machynys (Penrhyn Gwyn) to the northern end of Llanelli Beach
		PU 12/10	Pwll railway frontage (Llanelli Beach to Tywyn Bâch)
		PU 12/11	Burry Port east (Tywyn Bâch to the slipway)
		PU 12/12	Burry Port west (the slipway to Burry Port Marina)
		PU 12/13	Burry Port Marina to The Nose
13	Pembrey Burrows	PU 13/1	Pembrey Sands (The Nose to South of Tywyn Point)
14	Three Rivers Estuarine	PU 14/1	Tywyn Point to Banc-y-Lord

Policy Scenario Area		Policy Units	
Complex		PU 14/2	Banc-y-Lord to Commissioner's Bridge
		PU 14/3	Kidwelly (Commissioner's Bridge to Kidwelly Quay)
		PU 14/4	Gwendraeth Fach Eastern Bank (Kidwelly Quay to NTL at A484 bridge)
		PU 14/5	Gwendraeth Fach Western Bank (NTL at A484 bridge to railway bridge)
		PU 14/6	Kidwelly railway bridge (western bank) to Carmarthen Bay Holiday Centre
		PU 14/7	Carmarthen Bay Holiday Centre
		PU 14/8	Carmarthen Bay Holiday Centre to south of Ferryside
		PU 14/9	Ferryside
		PU 14/10	River Towy Eastern Bank (North of Ferryside to Aalton river bend)
		PU 14/11	River Towy Western Bank (Aalton river bend to North of Llansteffan)
		PU 14/12	Llansteffan
		PU 14/13	South of Llansteffan to Wharley Point
		PU 14/14	Wharley Point to Black Scar
		PU 14/15	River Taf Eastern Bank (Black Scar to NTL south of St Clears)
		PU 14/16	St Clears South
		PU 14/17	River Taf Western Bank (St Clears to Laugharne)
		PU 14/18	Laugharne
		PU 14/19	South of Laugharne to Ginst Point
		15	Ginst Point to Dolwen Point
		PU 15/2	Pendine village
16	Dolwen Point to Giltar Point	PU 16/1	Dolwen Point to Amroth
		PU 16/2	Amroth
		PU 16/3	Amroth to Wiseman's Bridge
		PU 16/4	Wiseman's Bridge
		PU 16/5	Wiseman's Bridge to Coppet Hall
		PU 16/6	Coppet Hall to Saundersfoot
		PU 16/7	Saundersfoot
		PU 16/8	Saundersfoot to Monkstone Point
		PU 16/9	Monkstone Point to First Point
		PU 16/10	Tenby North Beach (First Point to Castle Hill)
		PU 16/11	Tenby South Beach (Castle Hill to The Burrows, including St Catherine's Island)

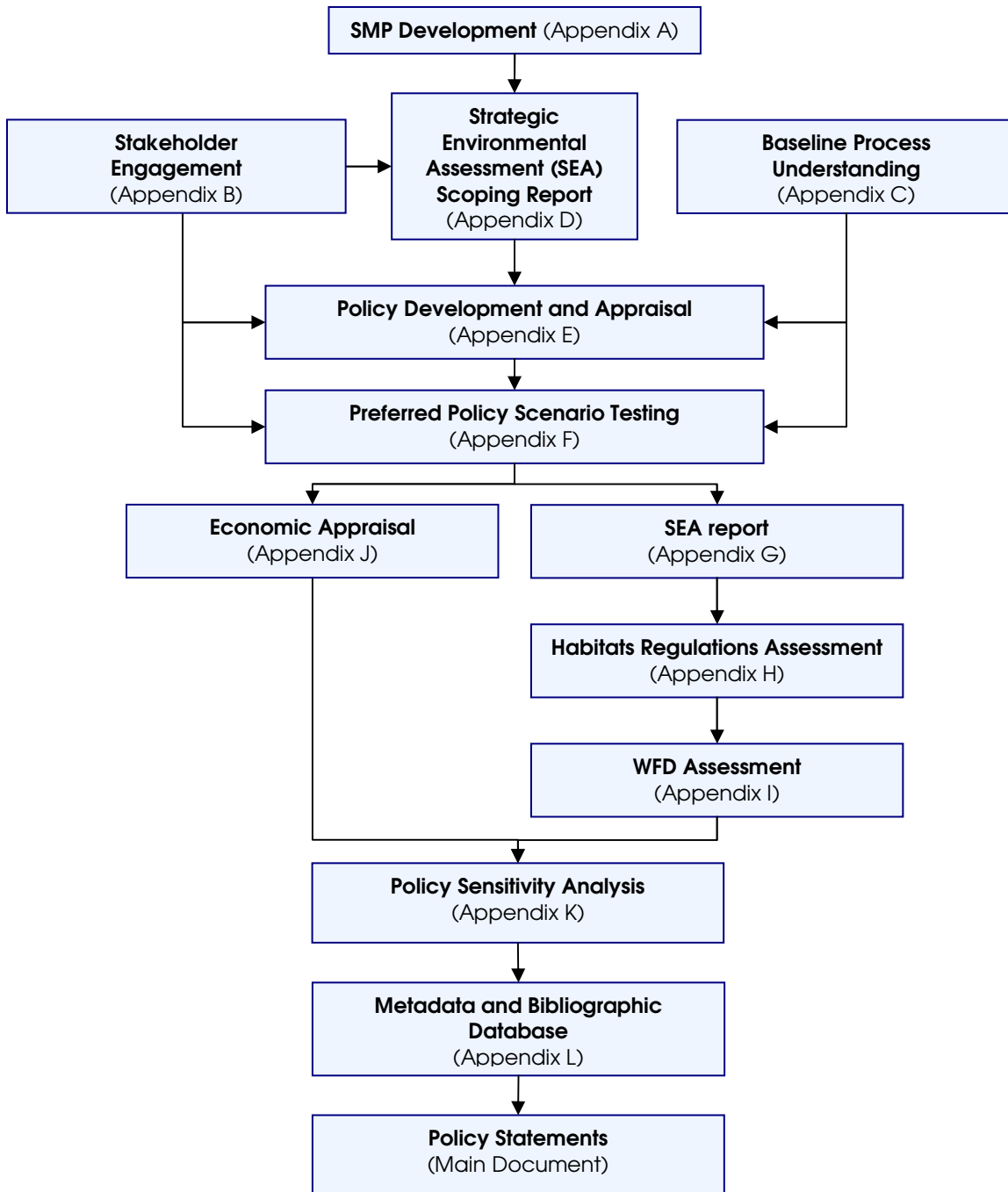
Policy Scenario Area		Policy Units	
		PU 16/12	The Burrows, Tenby South Beach
		PU 16/13	Caldey Island
17	Giltar Point to St Govan's Head	PU 17/1	Giltar Point to Lydstep Haven
		PU 17/2	Lydstep Haven
		PU 17/3	Lydstep Point to Freshwater East
		PU 17/4	Freshwater East
		PU 17/5	Trewent Point to Broadhaven
		PU 17/6	Broadhaven to St Govan's Head
18	St Govan's Head to Thorn Island	PU 18/1	St Govan's Head to Frainslake Sands
		PU 18/2	Frainslake Sands and Freshwater West
		PU 18/3	Freshwater West to Thorn Island
19	Thorn Island to Cleddau Bridge	PU 19/1	Thorn Island to Angle Point
		PU 19/2	Angle Bay (Angle Point to Sawdern Point)
		PU 19/3	Sawdern Point to Pembroke River
		PU 19/4	Pembroke River
		PU 19/5	Pembroke River to Martello Tower, Llanreath
		PU 19/6	Martello Tower, Llanreath to Cleddau Bridge
20	Cleddau Bridge to Little Castle Head	PU 20/1	Cleddau Bridge to Neyland Marina
		PU 20/2	Neyland Marina to Hazelbeach
		PU 20/3	Hazelbeach to Newton Noyes Pier
		PU 20/4	Milford Haven (Newton Noyes Pier to Fort Hubberston)
		PU 20/5	Hakin to Gelliswick Bay
		PU 20/6	Gelliswick Bay
		PU 20/7	Gelliswick Bay to Sandy Haven
		PU 20/8	Sandy Haven
21	Little Castle Head to St Ann's Head	PU 21/1	Little Castle Head to Pickleridge (The Gann)
		PU 21/2	Pickleridge (The Gann to Black Rock)
		PU 21/3	Dale (Black Rock to Dale south)
		PU 21/4	Dale to St Ann's Head

Shoreline Management Plan - Supporting Appendices

This report is one of a series of appendices that provide supporting information to the Shoreline Management Plan (SMP2). This information has been provided to ensure that the rationale behind the decision-making process which leads to the preferred SMP2 policies is clear, transparent and auditable. The SMP2 appendices are as follows:

A: SMP Development	Provides an explanation of the SMP2 process, a description of the policy decision-making process and outlines the chronology of SMP2 development
B: Stakeholder Engagement	Presents the SMP2 stakeholder engagement process along with all relevant communication. This process is intended to build trust and understanding between all parties involved in the formation of an SMP, with the aim of being inclusive, transparent and appropriate in its methods and application
C: Baseline Process Understanding	Defines current understanding of how the coast functions, focussing on information that will inform decisions on future management of the coast over the SMP timescale to ensure that policy choices, in terms of coastal processes, are technically-sound and sustainable. This appendix includes the following: <ul style="list-style-type: none"> - Coastal Process and Shoreline Behaviour of Estuary Dominated Systems (prepared by Professor Ken Pye) - Assessment of SMP2 Boundaries - Defence Assessment - Marine Aggregates and Port Maintenance Annex - Marine Renewable Energy Proposals Annex - Integrated Coastal Zone Management Annex - No Active Intervention (NAI) and With Present Management (WPM) Baseline Assessments including NAI Figures (which define coastal erosion and flood risk)
D: Strategic Environmental Assessment (SEA) Scoping Report	Provides the environmental baseline conditions of the study area against which the effects of the SMP can be assessed during the SEA. This appendix includes the following: <ul style="list-style-type: none"> - SEA Environmental Baseline Report (Theme Review) - Issues and Objectives Table - Legislation pertinent to the SEA process - Sites of Conservation Importance - List of Consultees
E: Policy Development and Appraisal	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
F: Preferred Policy Scenario Testing	Presents policy assessment and appraisal of objective achievement towards definition of the Preferred Plan, as presented in the Shoreline Management Plan document.
G: Environmental Report (Strategic Environmental Assessment, SEA)	To fulfil the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive).

H: Statement to inform a Habitats Regulations Assessment	An assessment of the SMP2 in relation to the UK Habitats Regulations. This document provides Stage One of the Habitats Regulations Assessment (HRA).
I: Water Framework Directive Assessment	An assessment of the potential impacts of the SMP2 with respect to the Water Framework Directive 2000/ 60/ EC which provides a framework for the protection of inland surface, transitional, coastal and ground waters
J: Economic Appraisal	Presents the economic analysis undertaken in support of the Preferred Plan.
K: Policy Sensitivity Analysis	A review of the sensitivity of the SMP2 policies with respect to a range of issues.
L: Metadata and Bibliographic Database	Provides references for all supporting information used to develop the SMP for future examination and retrieval.



Wales Coastal Erosion and Flood Risk Management - Roles and Responsibilities

The **European Union** has increasing influence over management of the coastal zone through legislation, directives such as the Water Framework Directive and Marine Strategy Directive and supporting programmes including the European Regional Development Fund Convergence Programme 2007-2013.

The **Department of the Environment Food and Rural Affairs (Defra)** retains the lead role for Integrated Coastal Zone Management, the sustainable management of coastal waters and for new legislation such as the Flood and Water Bill and Marine Bill.

Central government building regulations contribute to increased flood resilience and quicker recovery following flood events.

Welsh Assembly Government (WAG) has national policy responsibility for; flood and coastal risk management; nature and heritage conservation; sustainable economic and community development; and setting the national planning policy framework for the coast. WAG provides funding, through grant-in-aid, to the Environment Agency Wales and administers grants for capital projects to local authorities and internal drainage boards. WAG does not build or manage flood defences nor direct the authorities on which specific projects to undertake.

Flood Risk Management Wales is a committee of the Environment Agency Wales' executive arm for flood risk management in Wales which is responsible for managing the Environment Agency Wales' budget for flood risk management in accordance with agreed priorities. The committee has no jurisdiction over local authorities and their coast protection activities.

Environment Agency Wales is a WAG sponsored public body with responsibility to protect and enhance the environment and contribute to sustainable development. The Environment Agency Wales is the principal operating authority with powers to reduce the risks from tidal flooding by building and maintaining defences and other management measures, advising on coastal developments, providing flood forecasting and warning and improving public awareness of flood risk. The Environment Agency Wales also has a general supervisory duty in all matters relating to flood defence.

Local (Maritime) Authorities have permissive powers to reduce the risk of coastal erosion or encroachment from the sea by providing coast protection features such as defences. They also regulate planning and development control and promote economic development, coastal tourism and coastal management. Local authorities have a duty of community leadership and are the democratic bodies that have the lead responsibility for community engagement on coastal issues. They lead local and regional resilience forums in co-ordinating emergency plans, advising on risk and, with the emergency services, lead the response during flooding incidents. Local authorities deal with consequences of flooding such as support to affected communities, emergency housing and managing the clear-up operations and recovery stage.

Coastal Groups are voluntary groups made up of maritime authorities and other bodies with coastal defence responsibilities. They produce SMPs on behalf of local (maritime) authorities.

Internal Drainage Boards are independent bodies responsible for land drainage in areas of special drainage need, generally very low-lying land that requires active management of water levels.

Countryside Council for Wales. Statutory advisor to government on the environment and coastal waters as sources of natural and cultural riches, as a foundation for economic and social activity, and as a place for leisure and learning opportunities.

Coastal National Park Authorities have planning, development control and coastal management responsibilities in partnership with local authorities.

National Trust manages and has stewardship of many heritage assets and 230km of coastline.

Ministry of Defence may undertake coast protection or sea defence works, once the necessary consents and licences have been obtained.

Public sector landowners may undertake coast protection or sea defence works, once the necessary consents and licences have been obtained.

Private sector landowners may undertake coast protection or sea defence works, once the necessary consents and licences have been obtained.

Property developers may undertake coast protection or sea defence works, once the necessary consents and licences have been obtained.

Insurance industry has an important role with respect to their decisions on whether to maintain insurance cover as the new risk management approach to flooding and coastal erosion develops.

Residents. Those living in coastal areas should become more aware of the current and future risks from coastal erosion and flooding and take precautions to protect themselves and their property. Residents should also become involved in the decisions that affect their communities and any necessary actions.