



West of Wales Shoreline Management Plan 2

Cardigan Bay and Ynys Enlli to the Great Orme Coastal Groups

Introduction and Glossary

Section 1 Introduction

Section 2 Environmental Assessment

Section 3 Basis for Development Plan

June 2012
Final
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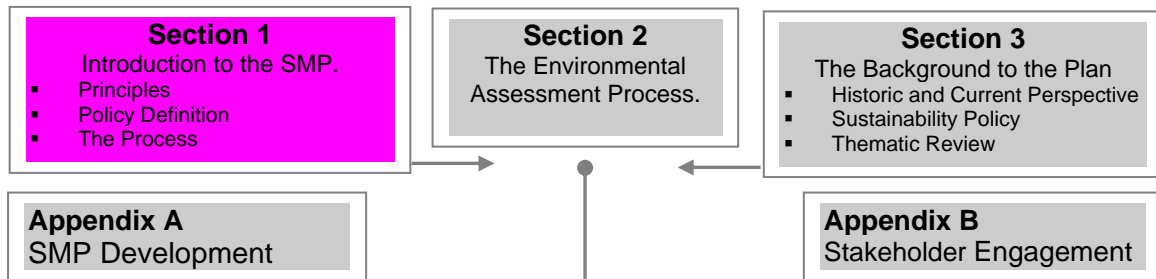
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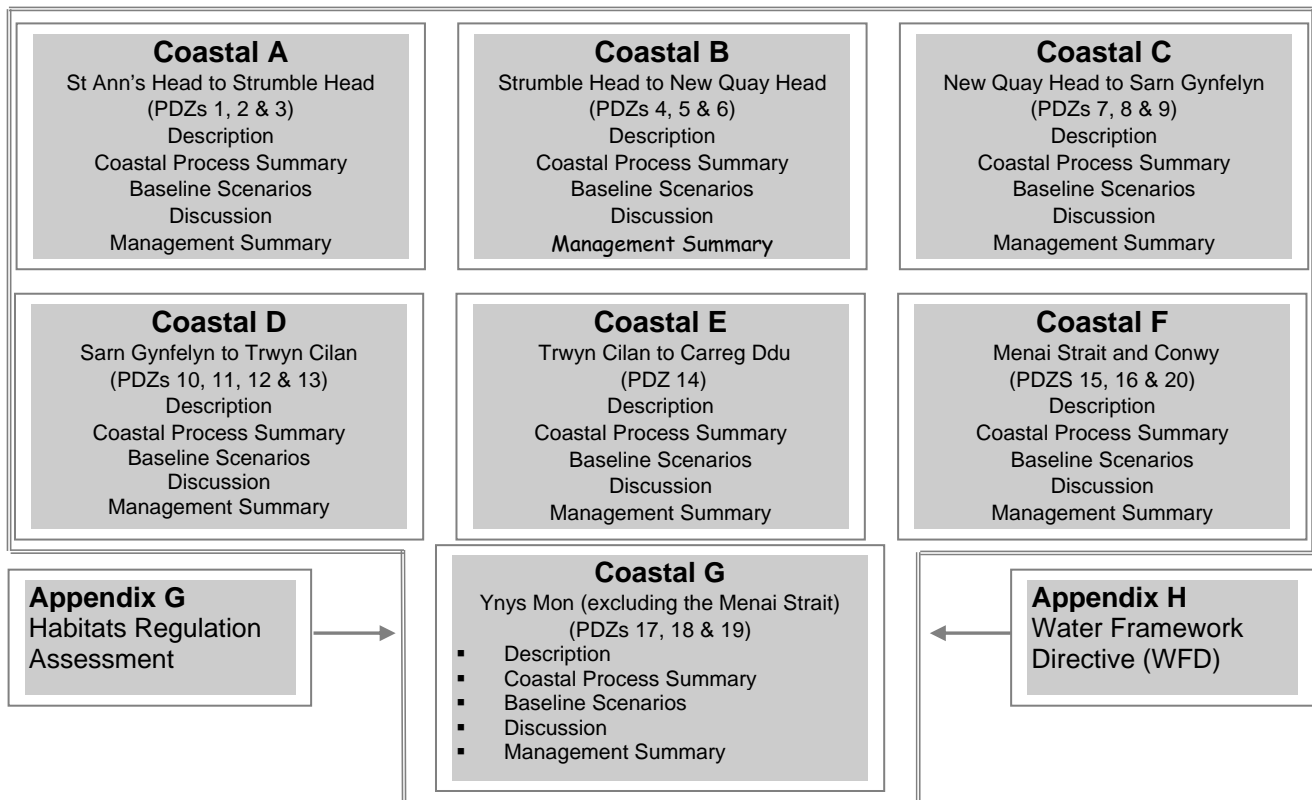
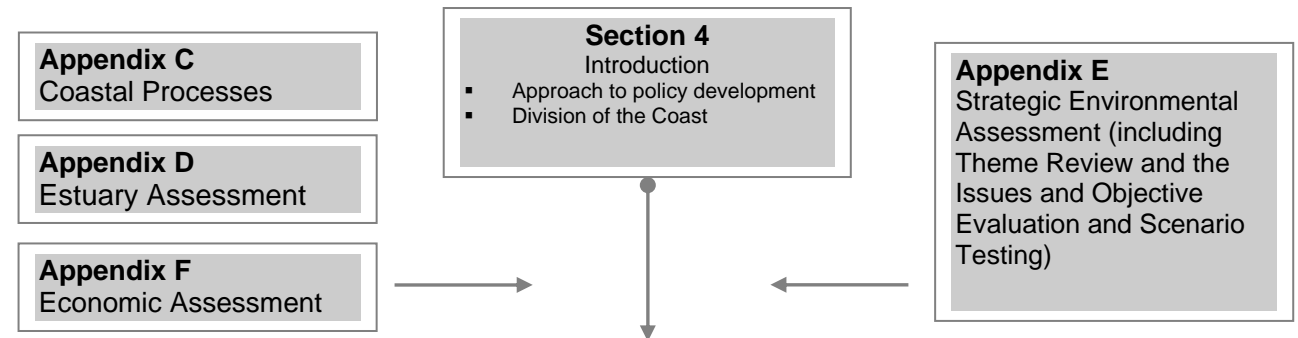
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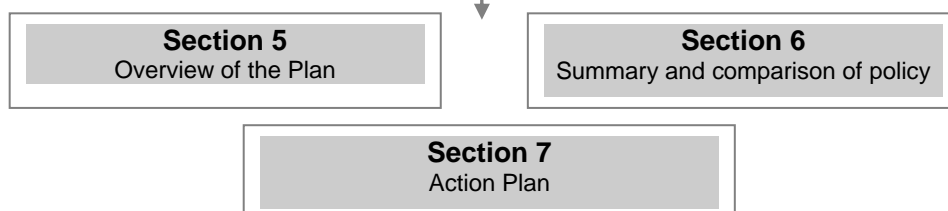
INTRODUCTION AND PROCESS



PLAN AND POLICY DEVELOPMENT



OVERVIEW



GLOSSARY OF TERMS

Term	Definition
AONB	Area of Outstanding Natural Beauty: A statutory designation by the Countryside Commission. The purpose of the AONB designation is to identify areas of national importance and to promote the conservation and enhancement of natural beauty. This includes protecting its flora, fauna, geological and landscape features.
Adaptation	Implies that there may be some actual change in the way a feature, such as a habitat or a community, functions. In supporting adaptation, management has to recognise certain principles: <ul style="list-style-type: none"> • That adaptation may take time and may evolve slowly so that change to the overall community does not happen immediately. • That management should not encourage a progressively more vulnerable situation to develop, where there is a sudden change from one condition to another. • That specific aspects of a feature, such as individual properties or elements of habitat may change or be lost, but without substantial loss to the value of the community or the overall ecological function of the feature.
Anthropogenic	Impacts that originate from humans.
AA	Appropriate Assessment. Also referred to as a Habitats Regulations Assessment (HRA). The AA is an independent check of the potential impacts of policies being put forward by the SMP with specific reference to designated European nature conservation sites (such as SACs, SPAs, etc.)
ATL	Advance the Line. Policy decision to build new defences seaward of the existing defence line where significant land reclamation is considered.
Beach nourishment	Supplementing the natural volume of sediment on a beach, using material from elsewhere. Also known as beach replenishment /recharge/feeding.
Benefits (related to issue)	The service that a feature provides. In other words, why people value or use a feature. For example, a nature reserve, as well as helping to preserve biodiversity and meet national legislation, may also provide a recreation outlet much like a sports centre provides a recreation function.
Berm crest	A nearly horizontal plateau on the beach face or backshore, formed by the deposition of beach material by wave action or by means of a mechanical plant as part of a beach recharge scheme.
BAP	Biodiversity Action Plan. An element of UK environmental legislation, aimed at enhancing and protecting biodiversity within key habitat areas.
Brackish water	Freshwater mixed with seawater.
Breaker zone	The zone within which waves approaching the coastline start breaking, typically in water depths of between 5m and 10m.
CCW	The Countryside Council for Wales (part of the Welsh Assembly Government)
CSG	Client Steering Group. The CSG is comprised of representatives from the key operational bodies and statutory consultees involved with coastal and estuarine management within the SMP area. They provide an overseeing steer and guidance role to technical consultants and generally oversee the consultation and approvals activities required within the SMP2 programme.

Term	Definition
Coastal squeeze	Narrowing of the intertidal zone as sea level rises and natural retreat is prevented by natural or man-made barriers (such as resistant cliffs or a seawall).
Defra	Department for Food, Environment and Rural Affairs
Defra Procedural Guidance	The Shoreline Management Plan (SMP) Procedural Guidance produced by Defra to provide a nationally consistent structure for the production of future generation Shoreline Management Plans.
Downdrift	In the direction of the nett longshore transport of beach material.
Ebb-tide	Period when tide level is falling. Often taken to mean the ebb current that occurs during this period.
Ecosystem	Refers to the combined physical and biological components of an environment. An area within the natural environment in which physical (abiotic) factors of the environment, such as rocks and soil, function together along with interdependent (biotic) organisms, such as plants and animals, within the same habitat.
Enhance (improve)	The value of a feature increases.
EIA	Environmental Impact Assessment. A process by which certain planned projects must be assessed before a decision to proceed can be made. It involves the collection, publicising and consideration of environmental information, which fulfils the assessment requirements of Directive 97/11/EC.
EMF	Elected Members Forum. The EMF is comprised of elected council members from within the SMP area. They are consulted with at key stages of the SMP programme. Endorsement of the preferred plan is sought from the EMF prior to public consultation.
Epoch	The three periods of time in which the Shoreline Management Plan is reviewed in. The first epoch is 0-20 years, the second epoch is 20-50 years and the third epoch is 50-100 years.
ESA	Environmentally Sensitive Area. A non-statutory designation for an area where special land management payments are available through agreement with Defra to provide farming practices which are beneficial to the environment.
Feature	Something tangible that provides a service to society in one form or another or, more simply, benefits certain aspects of society by its very existence. Usually this will be of a specific geographical location and specific to the SMP.
Fetch	Distance over which the a wind acts to produce waves, also called fetch length (the greater the fetch, the larger the wind-driven waves will be).
Flood-tide	Rising tide, part of the tidal cycle between low water and the next high water.
Flood Zone	A geographical area officially designated subject to potential flood damage. The Environment Agency uses Flood Zone 2 and Flood Zone 3.
Foreshore	The intertidal area below highest tide level and above lowest tide level.
Geomorphology/ Morphology	The branch of physical geography/geology which deals with the form of the Earth, the general configuration of its surface, the distribution of the land, water, etc.
GIS	Geographic Information System. A database of information that is geographically orientated , usually with an associated visual system.

Term	Definition
Groyne	Narrow, roughly shore-normal structure built to reduce longshore currents, and/or to trap and retain beach material. Most groynes are of timber or rock, and extend from a seawall, or the backshore, well onto the foreshore and rarely even further offshore.
HTL	Hold the Line. Policy decision to maintain or upgrade the level of protection provided by defences or natural coastline.
Heritage Coast	A non-statutory designation by the Countryside Commission for coasts of scenic quality, their largely undeveloped nature and their special wildlife and historic interest. Local authorities assist with the management of Heritage Coasts often with Heritage Coast officers.
Integrated	An approach that tries to take all issues and interests into account. In taking this approach, managing one issue adds value to the way another is dealt with.
LNR	Local Nature Reserves. A statutory designation for sites established by local authorities in consultation with Natural England. These sites are generally of local significance and also provide important opportunities for public enjoyment, recreation and interpretation.
Maintain	That the value of a feature is not allowed to deteriorate.
MA	Management Area. A collection of Policy Units that are interdependent and should therefore be managed collectively.
MDSF	Modelling and Decision Support Framework. Mapping linked computer tool used in the evaluation of assets at risk from flooding or erosion.
Mean sea level	The average level of the sea over a period of about 12 months, taking account of all tidal effects but excluding surge generated by meteorological effects. Variation in mean sea level may well occur in the longer term.
MHW	Mean High Water. The average of all high waters observed over a sufficiently long period.
MLW	Mean Low Water. The average of all low waters observed over a sufficiently long period.
MR	Managed Realignment. Policy decision to manage the coastal processes to realign the 'natural' coastline configuration, either seaward or landward, in order to create a future sustainable shoreline position
Natura 2000	European network of protected sites which represent areas of the highest value for natural habitats and species of plants and animals which are rare, endangered or vulnerable in the European Community.
NAI	No Active Intervention. Policy decision to not to invest in providing or maintaining defences or natural coastline.
New Approaches Programme	The Welsh Assembly Governments Programme for Flood and Coastal Risk Management in Wales. Following the Pitt review in 2008, this programme aims to help forward change in the way Wales manages flood and coastal risk b moving to a more holistic risk management approach.
NNR	National Nature Reserves. A statutory designation by Natural England. These represent some of the most important natural and semi-natural ecosystems in Great Britain and are managed to protect the conservation value of the habitats that occur on these sites.
Objective	A desired state to be achieved in the future. An objective is set, through consultation with key parties, to encourage the resolution of the issue or range of issues.

Term	Definition
Offshore zone	The zone beyond the nearshore zone where sediment motion induced by waves alone effectively ceases and where the influence of the seabed on wave action has become small in comparison with the effect of wind.
Policy	In this context, “policy” refers to the generic shoreline management options (No Active Intervention, Hold the Existing Line of Defence, Managed Realignment, Retreat or Advance the Existing Line of Defence, and Hold the Retired Line).
PDZ	Policy Development Zone. A length of coastline defined for the purpose of assessing all issues and interactions to examine and develop management scenarios. These zones are only used in the procedure of developing policy. Policy Units and Management Areas are then used for the Final definition of the policies and the management of the coast.
Policy Scenario	A combination of policies selected against the various feature/benefit objectives for the whole SMP frontage.
Policy Units	Sections of coastline for which a certain coastal defence management policy has been defined. These are then grouped into Management Areas for management purposes.
PV	Present Value. The value of a stream of benefits or costs when discounted back to the present day. For this SMP the discount factors used are the latest provided by Defra for assessment of schemes, i.e. 3.5% for years 0-30, 3.0% for years 31-75, and 2.5% thereafter.
Ramsar	Designated under the, “Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat” 1971. The objective of this designation is to prevent the progressive encroachment into, and the loss of wetlands.
RIGS	Regionally Important Geological/Geomorphological Sites. A non-statutory designation identified by locally developed criteria and are currently the most important places for geology and geomorphology outside statutorily protected land such as SSSI's.
SAC	Special Area of Conservation. This designation aims to protect habitats or species of European importance and can include Marine Areas. SACs are designated under the EC Habitats Directive (92/43EEC) and will form part of the Natura 2000 site network. All SACs sites are also protected as SSSI, except those in the marine environment below the Mean Low Water (MLW).
SM	Scheduled Ancient Monuments. A statutory designation under the Ancient Monuments and Archaeological Areas Act 1979. This Act, building on legislation dating back to 1882, provides for nationally important archaeological sites to be statutorily protected as Scheduled Ancient Monuments.
SEA	Strategic Environmental Assessment. In SMP terms an SEA is an independent audit of the SMP process and the policies it puts forward. SEA assesses policies for potential impacts against a series of environmental themes.
Setback	Prescribed distance landward of a coastal feature (e.g. the line of existing defences).
SLA	Special Landscape Area. A non-statutory designation for an area usually identified by local authorities as having a strategic landscape importance.
SMA	Sensitive Marine Area. A non-statutory designation for nationally

Term	Definition
	important locations around the coast that require a cautious and detailed approach to management. They are identified by Natural England for their important benthic populations, spawning or nursery areas for fish, fragile intertidal communities, or breeding, feeding, and roosting areas for birds and sea mammals.
SMP	Shoreline Management Plan. A non-statutory plan, which provides a large-scale assessment of the risks associated with coastal processes and presents a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable manner.
SNCI	Site of Nature Conservation Importance. A non-statutory designation defined by the Wildlife Trusts and Local Authorities as sites of local nature conservation interest. These form an integral part in the development of planning policies relating to nature conservations issues.
SPA	Special Protection Area. A statutory designation for internationally important sites, being set up to establish a network of protected areas of birds.
SSSI	Sites of Special Scientific Interest. A statutory designation notified by Natural England representing some of the best examples of Britain's natural features including flora, fauna, and geology.
Storm surge	A rise of sea elevation caused by water piling up against a coast under the force of strong onshore winds such as those accompanying a hurricane or other intense storm. Reduced atmospheric pressure may contribute to rise.
Sustain	Refers to some function of a feature. A feature may change, but the function is not allowed to fail.
Swell (waves)	Remotely wind-generated waves. Swell characteristically exhibits a more regular and longer period and has longer crests than locally generated waves.
Tidal prism	The volume of water within an estuary between the level of high and low tide, typically taken for mean spring tides.
Tide	The periodic rise and fall in the level of the water in oceans and seas. The result of gravitational attraction of the Sun and Moon.
Topography	Configuration of a surface including its relief and the position of its natural and man-made features.
Transgression	The landward movement of the shoreline in response to a rise in relative sea level.
Updrift	The direction opposite to that of the predominant longshore movement of beach material.
VMCA	Voluntary Marine Conservation Areas. A statutory designation to protect the marine conservation importance of a site and to provide a focus for liaison, co-operation and education for a sustainable marine environment.
WAG	The Welsh Assembly Government
Water table	The upper surface of groundwater; below this level, the soil is saturated with water.
WFD	Water Framework Directive. European legislation which seeks to improve the quality of both freshwater and coastal water bodies.
Wave direction	Mean direction of wave energy propagation relative to true North.
Wave refraction	Process by which the direction of approach of a wave changes as it moves into shallow water.

Term	Definition
WPM	With Present Management. The WPM scenario essentially describes the current regime of management which exists for a given frontage. WPM scenario assumes that defences will be maintained in their present position and other management practices, e.g. beach re-nourishment, will continue as at present.

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1 INTRODUCTION



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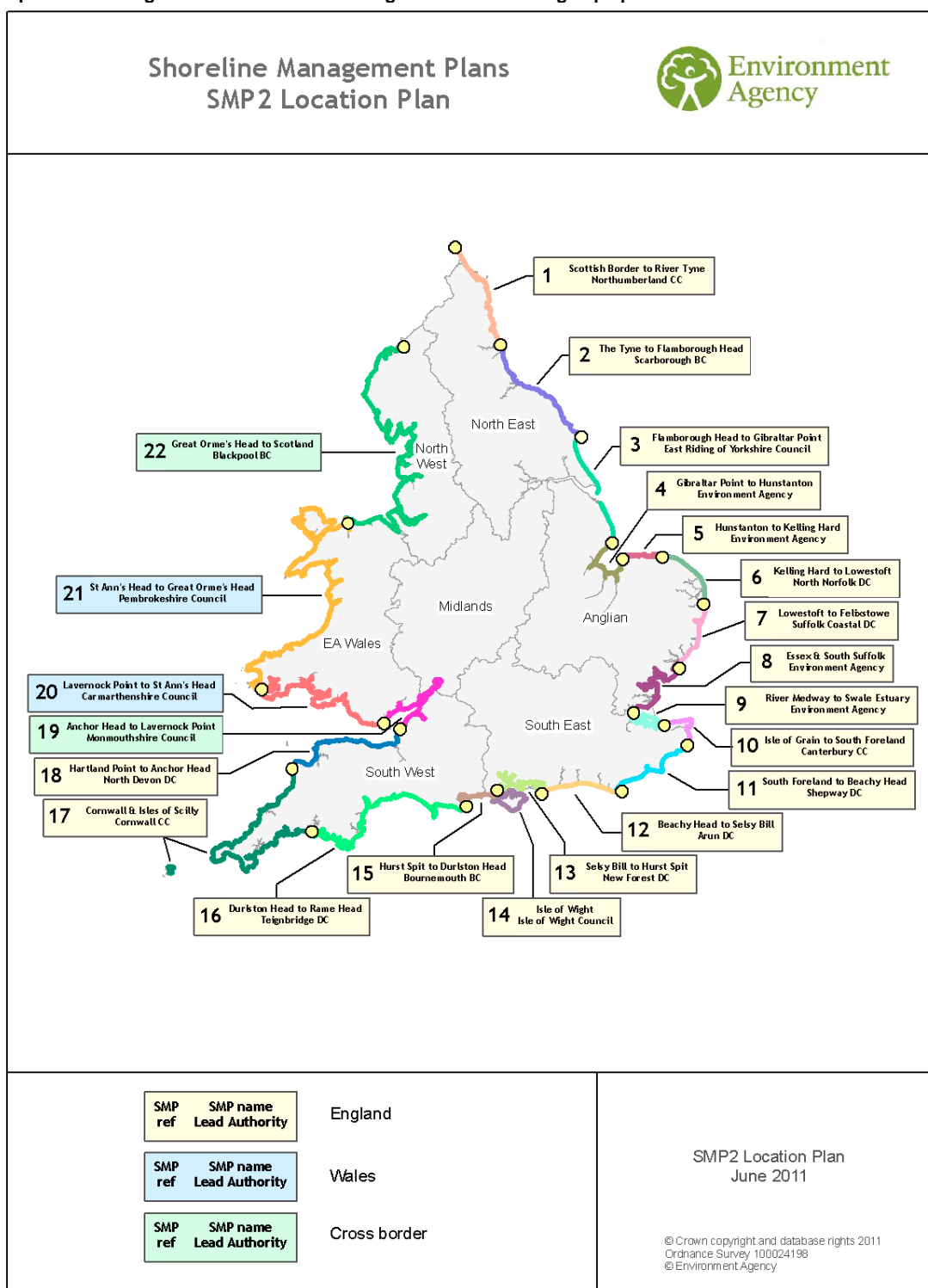
1 INTRODUCTION

1.1 The Shoreline Management Plan

The base date for this Shoreline Management Plan is 2010.

A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with coastal evolution and presents a policy framework to address these risks to people and the developed, historic and natural environment in a sustainable manner. In doing so, a SMP is a high-level document that forms an important part of the strategy for flood and coastal defence for the Welsh Assembly Government (WAG). The guidance issued by the Department for Environment, Food and Rural Affairs (Defra) (Defra, 2006) forms the basis for the preparation of SMPs in Wales. This guidance has been interpreted in light of the Welsh Assembly Government policies which were announced by the Minister in July 2007 under the New Approaches Programme. (WAG Guidance 2007) but which remain consistent with the Defra SMP guidance. Locations of the SMP's across the country are shown in Figure 1.1.

Figure 1.1: Environment Agency Strategic Overview SMP's 2nd Generation
<http://www.defra.gov.uk/environment/flooding/documents/who/cgsmp2.pdf>



The plan provides both a broad scale assessment of these risks but also quite specific advice to operating authorities in their management of defences. Through this and through the identification of issues covering a wide spectrum of coastal interests, the SMP supports the Government's aims, as set out in Defra's strategy "Making Space for Water" (Defra 2005):

- To reduce the threat of flooding and coastal erosion to people and their property; and
- To deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.

In the development of the SMP, the aims of the Welsh Assembly Government's New Approaches Programme (2007) to reduce risks are also taken into consideration:

- Encourage the provision of adequate and cost effective flood warning systems;
- Encourage the provision of adequate, technically, environmentally and economically sound and sustainable flood and coastal defence measures;
- Discourage inappropriate development in areas at risk from flooding or coastal erosion;
- Amend the guidance given in the Flood and Coastal Defence Project Appraisal Guidance Volume 3 Economic Appraisal to reflect the fact that justification for the public investment should be based on consideration of all option benefits, both quantifiable and unquantifiable, with particular regard to the impacts on people, which is taken into account in the appraisal of options and selection process.

During the development process of the West of Wales SMP, there have been other enactments which significantly influence management of flood and coastal erosion risk and other aspects of coastal management. These include:

- The Marine and Coastal Access Act (2009); and
- The Flood and Water Management Act (2010).

Welsh Government has also been developing its National Strategy for flood and coastal erosion risk management alongside the above Acts.

Where appropriate the West of Wales SMP has taken account of these developments, together with other information developed during the SMP process.

This SMP2 document, developed on behalf of Pembrokeshire County Council, Ceredigion County Council, Gwynedd County Council, Ynys Mon County Council, Powys County Council, Conwy County Council and Environment Agency Wales and supporting Client Steering Group (CSG) of the Countryside Council for Wales, Network Rail, Pembrokeshire National Park Authority, Snowdonia National Park Authority, sets out the results of the first revision to the original SMPs for the area of coast extending from St Ann's Head to the Great Orme, including Ynys Mon (Figure 1.1). This SMP2 collates information from the original SMPs for sub-cells 8d (part) 9a, 9b, 10a, 10b and 10c and subsequent strategies and studies.

Figure 1.2: SMP Coastline from St Ann’s Head to the Great Orme



1.1.1 SMP Principles

The SMP is a non-statutory policy document for coastal defence management planning. It takes account of other existing planning initiatives and legislative requirements, and is intended to inform wider strategic planning. It does not set policy for anything other than food and coastal erosion risk management. However, from this perspective, it aims to provide the context to, and consequence of, management decisions in other sectors of coastal management. Following the adoption of the SMP, the operating authorities will develop strategy studies or facilitate local plans which identify how the plan will be implemented. This would be integrated with other plans for broader issues for management and the SMP would be taken into account within the statutory planning process.

The SMP promotes management policies for a coastline into the 22nd Century that achieve long-term objectives without committing to unsustainable defence. It is, however, recognised that due to present day objectives and acceptance, wholesale changes to existing management practices may not be appropriate in the very short-term. Consequently, the SMP provides a timeline for objectives, policy and management changes; i.e. a 'route map' for decision makers to move from the present situation towards the future. In setting out the approach to management, the SMP has to be realistic about what is likely to be funded. Some of the original objectives cannot be achieved either due to funding issues or because doing so would lead to problems of sustaining defences in the future. In such areas, the SMP highlights this. In other areas it is recognised that funding for implementation of the plan will depend upon funding mechanisms that go beyond grant available solely from flood and coastal erosion risk management.

The first SMPs for the West of Wales were completed in the early 2000's. Since that time, more detailed strategy studies have been undertaken over large sections of the coastline and these, together with academic research and monitoring by the responsible authorities, have improved our understanding of how the coast behaves. In addition many lessons have been learnt with respect to how the SMP should be conducted and indeed how we should be viewing the management of the shoreline. Defra (2001, 2003) undertook a review of the results from SMP1, considering their strengths and weaknesses. This has led to revised guidance. Some of this guidance is targeted at achieving greater consistency in the assessments and presentation of the plans, but there are more fundamental issues that have been identified, which this and other SMP2s must address.

One significant issue is the inappropriateness of certain policies which, when tested in more detail with a view to being implemented, may have been found to be unacceptable or impossible to justify; either in terms of economics or from a perspective of what communities need from the coast. It is, therefore, important that the SMP must be realistic given known legislation and constraints. There will be no value in a long-term plan which has policies driven by short-term politics or works that prove to be detrimental when considered several decades into the future.

Equally, the plan must also remain flexible enough to adapt to changes in legislation, politics and social attitudes. The plan, therefore, considers objectives, policy setting and management requirements for 3 main epochs; from the present day, medium term and long term, corresponding broadly to time periods of 0 to 20 years, 20 to 50 years and 50 to 100 years respectively. There is a need to have a long-term sustainable vision, which may change with time, but the SMP must demonstrate that defence decisions made today are not detrimental to achievement of that vision.

This plan covers an area of significant environmental value, but also has a strong history of human settlement and present use. These uses and interests are not inherently opposed. In reality it is the natural attraction combined with the historical coastal use, which gives this area its distinct and considerable value to man in the present day. While individual core objectives or aims may, therefore, be set, and indeed are set, with respect to each specific aspect of the area, the aim of the SMP2 must be to develop policy where, as far as possible, these specific objectives are not set in conflict. The underlying principle for the development of the plan has been to consider the specific circumstances of the differing sections of the coast and through this understanding, attempt to deliver the greatest benefit to the totality of coastal communities in an area.

The following list of principles reflects the aspirations of all stakeholders. These are used together with stakeholder objectives identified for each area of the coast and aid policy development and identification of specific objectives. These objectives have been developed by consulting the CSG, Elected Members Forum (EMF) and key stakeholders, and are presented as aggregated objectives for each area. It is important to note that these come from the values that stakeholders place on the issues and features in each area. Some of these objectives therefore conflict with others. Because of this, the SMP will not be able to achieve all of these objectives. It should be noted that these principles have been set out in no particular order.

- To contribute to sustainable communities and development.
- To minimise reliance on defence and increase the resilience of communities.
- To support an integrated approach to spatial planning, in particular recognising the interrelationships between:
 - Centres of development and surrounding communities.
 - Human activity and the natural and historical environment as being essential for community identity, well being and vitality and its significance for tourism and economic regeneration.
- To maintain and support the main centres of economic activity.
- To sustain the vitality and support adaptation of smaller scale settlements.
- To avoid damage to and seek opportunity to enhance the natural environment.
- To support the cultural heritage and the use of the Welsh language.
- To maintain or enhance the high quality landscape.
- To sustain sustainable accessibility in terms of maintaining national and regional connectivity.

1.1.2 SMP Process Objectives

The objectives of the West of Wales SMP2, which are based on the Shoreline Management Plan Guidance Volume 1: Aims and Requirements (Defra, 2006a), will aim to:

- Set out risks from flooding and erosion to people and developed, historic and natural environment within the SMP2 study area;
- Identify opportunities to maintain and improve the environment by managing the risks from floods and coastal erosion;

- Identify the preferred policies for managing risks from floods and erosion over the next century;
- Identify the consequences of putting the preferred policies into practice;
- Set out procedures for monitoring how effective these policies are;
- Inform others so that future land use, planning and development of the shoreline takes account of the risk and the preferred policies;
- Discourage inappropriate development in areas where the flood and erosion risks are high; and
- Meet international and national nature conservation legislation and aim to achieve the biodiversity objectives.

In addition, the Welsh Assembly Government identified further interpretation of the aims of SMP2, which are to:

- Encouraging the provision of adequate and cost-effective flood warning systems;
- Encouraging the provision of adequate, technically, environmentally and economically sound and sustainable flood and coastal defence measures;

1.1.3 Policies

The Shoreline Management Plan seeks to provide an optimised plan, one which provides balanced sustainability, i.e it needs to consider people, nature, historic and socio-economic realities. The SMP2 process is one of review of the policies developed under SMP1; the process is, therefore, not one starting from first principles. However, this does involve questioning these initial policies; in particular considering the implications over the 100 year horizon. A guiding principle is, therefore, that the SMP2 needs to define a long term sustainable plan. This plan represents the long term vision, considering the interactions and implications across the whole SMP area. This preferred plan is achieved through the development of policies for individual areas over discrete timescales.

The generic shoreline management policies that deliver the plan, considered are those defined by Defra; they are represented by the statements:

- **No Active Intervention (NAI):** where there is no investment in coastal defence or operations
- **Hold the Line (HTL):** by maintaining or changing the standard of protection. This policy should cover those situations where work or operations are carried out in front of the existing defences (such as beach recharge, rebuilding the toe of a structure, building offshore breakwaters and so on) to improve or maintain the standard of protection provided by the existing defence line.
- **Managed Realignment (MR):** 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).
- **Advance the Line (ATL):** by building new defences on the seaward side of the original defences. Using this policy should be limited to those policy units where significant land reclamation is considered.

Further information to clarify these policies is provided below:

No Active Intervention

The policy of NAI has developed from two distinct sets of circumstances. In the first, the SMP has identified the need for the coast to be allowed to develop naturally. Typically, it may be that erosion of a frontage is providing sediment to other sections of the coast and, therefore, it may be important that the coast is allowed to continue to erode if sustainable intervention is to be achieved elsewhere. Where this or some similar condition applies, this is discussed in the SMP. The other situation where the policy of NAI is defined may arise, is where it is unlikely that operating authorities would provide funding for defence. It may be that works have a benefit/cost ratio which is not high enough, or there may not be priority funding. Where appropriate, the SMP introduces caveats to make this distinction. The SMP has identified that privately funded works may still be permissible, however, there may be conditions associated with this such that private works do not result in negative impacts on other interests.

Hold the Line

A policy of HTL intends that defences and beach management activities are maintained or improved to provide protection from coastal flood and erosion to important assets or features at the coast. Such assets might include centres of development and redevelopment, industry and commerce, agriculture, etc. The method of maintaining or improving the line of defence may consider local adjustments to the alignment of defences or that existing structures are replaced or new defences constructed, depending on the local conditions and requirements identified. Privately funded works may be permissible, although there may be conditions associated with this such that private works do not result in negative impacts on other interests. Where applicable, the Draft SMP states that no public funding would be available for maintenance of privately-owned defences, although private owners may deem the works affordable. Although the broad economic viability of the proposed policies has been assessed in this SMP, a proposed policy of Hold the Line or Managed Realignment does not guarantee public funding through the Flood and Coastal Erosion Risk Management (FCERM) budget for maintenance or capital works. It is also the case that policy options that are considered economically viable may not achieve national priority funding through the finite FCERM budget.

Managed Realignment

The intention of a policy of MR is to either create or allow the conditions for the coast to realign and/ or retreat. For example, this policy may be considered for issues relating to flood storage capacity, sediment transport, economic viability (i.e. shorter lengths of secondary defences), or for environmental reasons to meet the legal obligation to maintain the extent of coastal wildlife habitat in the face of sea level rise, such as intertidal habitat creation for offsetting coastal squeeze. However, it may not be technically feasible or sustainable to maintain existing defences on the current defence line, and despite secondary defences being proposed, the implementation of MR policies may adversely affect or result in the loss of property, agricultural land, heritage or other assets, depending on the location of secondary defences. Managed realignment can take a wide variety of forms. In some areas it may simply be setting back defences to a more sustainable location. In other areas it may mean that one section of the coast is fixed, or even drawn forward so that adjacent areas may be managed more naturally without loss of value. In yet other areas, there may be no sensible fixed line to realign to but still an intent to allow the coast to retreat in a controlled manner. The policy of Managed realignment has, therefore, to be read in conjunction with the text of the SMP so that how realignment is to be achieved may be understood. Within the coast of West

Wales there are a number of sites where managed realignment could be considered but the resulting development of inter-tidal saltmarsh and mudflats would result in the loss of coastal grazing marsh. Managed Realignment at these sites can only be progressed once the legally-required compensatory habitats have been created. Therefore, existing defences need to be maintained until compensation habitat has been created elsewhere. Recent environmental advice indicates that coastal grazing marsh habitats take in the order of 50 years to be recreated depending on the site-specific features and their function e.g. roost and feeding sites. Further more detailed studies will be required to confirm the future management of these sites due to the uncertainty of realignment or timing of realignment.

Advance the Line:

An ATL policy may be adopted where advancement of the shoreline would assist in creating a more robust defensive position and provide additional opportunity for increased intertidal width and/or land reclamation.

This defines the level of detail required by the SMP. However, in developing these generic policies there is also a basic requirement to state the intent of the policy such that it is the intent, not the definitions given above, that drive future management. This is an important context both with respect to policy definitions and in terms of the epochs over which policy applies.

In terms of the first, the definitions provided above are seen as relatively generic in that in each area of the coast the specific conditions have to be taken into account. In particular:

- With respect to Hold the Line and Managed Realignment, the SMP is fundamentally looking at the structure and use of the coast, not specifically at any standard of defence. This can lead to situations where a basic line of defence is held but that there would be an increasing risk of flooding. In some areas that risk, and the need to address this risk, is best described as Managed Realignment due to the need to change the way in which the flood risk is managed. In other areas, the need to maintain the basic position of defences is considered important even though the flood risk may still increase. Typically this may give rise to a policy of Hold the Line.
- In some areas the existing form of defence may be unsustainable although the overall intent is still to provide defence typically along a similar position as at present, with the aim to sustain the use of the coast.

Each case has to be considered on its own merits. This is described in the document, highlighting what the plan is trying to achieve.

In terms of policy change over time, the epochs are necessarily indicative. This will, in many areas, be very dependent on the rate of sea level rise. This is where it is so important to consider the long-term intent of the plan. Where specific policies change from HTL to MR, NAI or even ATL, this has to be seen as a continuous process, not one of step changes. The SMP sets out a process for adaptation, with guidance of how we need to deal with issues in the future. This influences how we approach management even in the present. Where change in policy is defined, what we do now should be aiming at, and putting us in a position to adapt to, pressures in the future. This can mean that if events occur, or where present issues are resolved earlier, such that there is opportunity to change earlier, the definition of policy within a specific epoch should not be seen as a constraint on changing the approach to management.

Where there are changes in policy over time, particularly from HTL to a more adaptive approach, there would be the need to ensure that this change is managed to ensure the safe use of the coast. Therefore, there may be a need to carry out works to maintain safety even though the policy is for NAI. Equally, where change is proposed because of the impact existing defences may have on the way in which we use the coast, or the way in which such defences influence other features of the coast, there may well be a need to physically remove existing defences. This will need to be taken into account at the local detailed level to achieve the intent set out in the plan.

In many areas, the plan has identified the need for local management plans for change. The SMP has to be seen as the start of this process and it would be inappropriate, given the high level of the SMP, for the SMP to prescribe a detailed approach to adaptation. The SMP provides guidance, highlighting the important strategic issues that need to be considered in developing local plans for management. .

1.2 Structure of the SMP

The preferred plan and policies presented in this SMP are the result of collating and interpreting information from all the available studies and assessments of how the coast behaves physically. There is, therefore, a need to draw these threads together to provide clarity for different readerships. To this end, the documentation to communicate and support the plan is provided in a number of parts. At the broadest level these are divided into two; the SMP itself, and a series of supporting appendices. In addition, information is collated in a database linked to a geographical information system (GIS), allowing information to be taken forward in implementing the plan for future users.

1.2.1 SMP Report Structure

This document provides the plan for the future and the policies required for this plan to be implemented. This is intended for general readership and is the main tool for communicating the intention of future management. Whilst the justification for decisions is presented, it does not provide all of the information behind the recommendations, this being contained in other documents. The plan is presented in seven parts:

- Section 1 Gives details on the principles, aims, structure and background to the development of the plan.
- Section 2 Provides details of how the SMP meets the requirements of an Appropriate Assessment (AA) and Strategic Environmental Assessment (SEA).
- Section 3 Presents the basis for development of the Plan, providing a broad overview of the Plan area, describing the concepts of sustainable policy and providing an understanding of the constraints and limitations on adopting certain policies.
- Section 4 It has been frequently stated that there is as much value in the thought process of developing the SMP as there is in the actual policies themselves. This section, therefore, aims to lead the reader through this process.

This SMP covers over 1000km of shoreline. Within section 4 a rationale is discussed as to how it may be subdivided without losing the value of considering the coast as a whole. The initial subdivision is by Coastal

Areas, of which there are 7 defined (Coastal Areas A through to G). These areas are further subdivided into Policy Development Zones; (PDZs). Within these zones the coast is described and the way in which the coast might behave is explained if:

- a) no further defence work was undertaken (the NAI scenario);
- b) present management is continued into the future (the WPM scenario).

These are defined as the two baseline scenarios in undertaking the review. Consideration of these scenarios develops an understanding of the pressures which may develop on the coast under different approaches to management. It allows an assessment to be made of whether, under each scenario, objectives are or are not achieved.

From this assessment, alternative approaches or scenarios are examined and from this the preferred draft **Plan** was developed. To achieve this **Plan** individual policies for sections of the coast are derived (Policy Units; PU). These units are finally grouped into areas of management (Management Areas; MA), pulling together policy units which have a basic interdependency. Following consultation on the draft Plan, the policies and approach to management have been further developed and the final Plan is discussed in Section 4.

For each MA, statements are prepared setting out a summary of the intent, the necessary actions over different time scales, and the impacts of the preferred policies. Starting from an initial seven Coastal Areas with 20 PDZ's in total, the coast is defined by 309 PU's which are drawn together as 62 MA's.

- Section 5 Brings together the overall plan, highlighting important issues in relation to the future management of the coast.
- Section 6 Provides a brief summary of policies. It is appreciated that many readers will focus upon the local conclusions of the SMP. However, it is important to recognise that the SMP is produced for the coast as a whole, considering issues beyond specific locations. Therefore, this summary should be read in the context of the wider-scale issues and policy implications, as reported and developed in Section 4 and supported by information in the Appendices.
- Section 7 Following consultation on the draft plan, an action plan has been developed, providing a programme for future activities which are required to progress the Plan between now and its next review in 5 to 10 years time. A summary of this action plan for each MA will be presented in Section 4 within the MA statements. This is developed in more detail within the action plan itself. The action plan is developed as a database that will be used by the various authorities in steering and monitoring progress of the Plan.

1.2.2 The Supporting Appendices

The accompanying documents provide all of the information required to support the Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable. It is recognised that the area covered by this SMP is large, covering issues that range in scale from quite local consideration of specific frontages to examination of larger longer sections of the coastline. The attitude developed by the steering group has been to draw together critical aspects of each section of the coast as a comprehensive storyline against which, and in such a manner that, decisions made within the SMP are transparent and easily understood. Essential to this approach has been to ensure that information derived from the SEA, HRA and WFD, as well as other areas of detailed analysis, is fully integrated within the broader picture of decision making within the SMP as a whole.

As such, some core tasks, identified within the Shoreline Management Plan Guidance (2006), have been brought together within different sections and appendices of this SMP. In particular it was seen as being essential that:

- The development of the Issues and Objectives (normally included in SMPs as appendix E) should be included within the development of the SEA, such that SEA objectives become fully aligned with those developed as part of the SMP process.
- The discussion of shoreline interactions and responses together with the preferred policy appraisal (normally presented as appendix F and G respectively) are brought forward into the main text in section 4 to allow more detailed description in relation to the different scale of discussion necessary within the specific SMP. The base evidence relating to coastal processes, supporting these aspects of the plan, is contained within appendix C.

As a result, the structure of appendices does differ from that presented in other SMPs and this information, largely of a technical nature, is provided in the eight Appendices highlighted below.

- A. SMP Development: This reports the history of development of the SMP, describing more fully the plan and policy decision-making process.
- B. Stakeholder Engagement: Details of the stakeholder involvement process are provided here, together with information arising from the consultation process.
- C. Baseline Process Understanding: Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments.
- D. Estuary Assessment
- E. Strategic Environmental Assessment (including the Theme Review) The SEA provides a systematic appraisal of the potential environmental consequences of high-level decision-making. This also includes the table of issues and objectives identified through the consultation process and description of how these were used and tested in developing the SMP.
- F. Economic Appraisal: Presents the economic analysis undertaken in support of the Preferred Plan.
- G. Habitat Regulation Assessment – Appropriate Assessment: Sets out the support information for an AA of the SMP.
- H. Water Framework Directive (WFD): Presents the assessment as developed by the Environment Agency with respect to the SMP policies.

In addition, basic information and references are held within the GIS established during the development of the Plan. This is discussed below.

1.2.3 GIS and Databases

The SMP2 provides a future management framework. It is accepted that our understanding of the coast can be improved, addressing the many areas of uncertainty that we are presently confronted with. There will also be changing circumstances not only as the coast evolves but as our use of the coast changes. During the development of the SMP, information on issues, on processes and our assumptions with respect to different aspects, such as the condition of defences or erosion rates, have been recorded.

This information is held within databases linked through to a GIS. This system is provided in association with the actual plan so that, as new information emerges, this may be used to update the management system. The intent is two-fold. First, that information is recorded and may be compared with our existing knowledge such that better informed coastal management decisions can be made. Second, as SMP3 is developed, information is readily available to this review process.

One important feature of this information is in the responses and issues which were raised during the consultation process. This data is recorded in the issues, features and objectives database used for developing and appraising policy. Management of this information will help those managing the coast in the future to identify issues at a local scale, ensuring that views can be readily identified during the actual implementation of the Plan. The degree of effort all consulted have put in to developing the Plan is fully appreciated. The storage of issues information should help ensure that people's concerns are recognised in the future.

1.3 The Plan Development Process

1.3.1 The Need for Revision

The original SMP1s for sub-cells 8d (part) 9a,b,10a,b, and c were completed in 2002. It has always been recognised that part of the SMP process is that plans should be reviewed on a regular basis. The review undertaken through SMP2 has been part of this process.

Very much initiated by the findings of the SMP1, a considerable effort has been put in place over the last three years to ensure that we have been in a better position to make judgements with respect to the coast. There have also been changes in legislation and guidance. In this first revision, therefore, the development of the Plan has been able to draw upon and has had to take account of:

- Latest studies such as the Wales Spatial Plan (2004), the Wales Climate Change Strategy (2009),
- Issues identified by most recent defence planning (i.e. the several coastal defence strategy plans which have now been produced to cover most of the SMP area between St Ann's Head and the Great Orme)
- Changes in legislation (e.g. the EU Directives, guidance with respect to the Water Framework Directive (WFD), and the Development and Flood Risk Technical Advice Note (TAN 15));

- Changes in national flood and coastal defence planning requirements (e.g. the need to consider 100 year timescales in future planning, modifications to economic evaluation criteria etc.);
- Improved information from strategic flood risk assessments; and
- The emerging thinking on Integrated Coastal Zone Management and the Welsh Assembly Government New Approaches Programme.

The period between the development of SMP1 and SMP2 has, therefore, been one of quite rapid change. With the manner in which the SMP2 has now been organised and the further understanding that has been developed, shoreline management has to be seen as an ongoing process providing a platform for more local decision making. It is anticipated that subsequent reviews may be undertaken in 10 years time. This timescale would ultimately be driven by the scale of change on the coast itself.

1.3.2 Review and Development Procedure

The Client Steering Group for this SMP comprises representatives from the six local authorities and the associated partners. The operating authorities include; Pembrokeshire County Council (Lead Authority), Ceredigion County Council, Gwynedd County Council, Ynys Mon County Council and Conwy County Council. The associate partners include Environment Agency Wales, Countryside Council for Wales, the Welsh Assembly Government, Network Rail, National Trust, the Country Land Business Association and the National Parks Authorities of Pembrokeshire and Snowdonia. In addition to the above organizations, Cambria and Gwynedd Archaeology, the Royal Commission on the Ancient and Historical Monuments of Wales, Cadw and the Country Land and Business Association have also contributed through the CSG. Together with Royal Haskoning, the CSG have managed the necessary stages of the SMP2 process to produce this management plan.

The SMP development process has sought involvement from over 150 organisations or individuals, with principal periods of consultation being conducted during the winter for Initial Consultation, prior to policy being developed (December 2009 - Feb 2010) , with consultation on the draft Plan being undertaken over the period between 6th May 2011 and 8th August 2011.

The main activities in producing the SMP have been:

- Development and analysis of issues and objectives for various locations, assets and themes;
- Thematic reviews, reporting upon human, historic and natural environmental features and issues, evaluating these to determine relative values of the coast;
- Analysis of coastal processes and coastal evolution for baseline cases of not defending and continuing to defend as at present;
- Agreement of objectives with the CSG, EMF and through public consultation, and from this determining possible policy scenarios;
- Development of policy scenarios which consider different approaches to future shoreline management;
- Examination of the coastal evolution in response to these scenarios and assessment of the implications for the human, historic and natural environment; and
- Determination of the preferred plan and policies through review with the CSG, prior to compiling the SMP draft document.

This has been followed by:

- Consultation on the proposed plan and policies;
- Consideration of responses and finalising the SMP; and
- Dissemination of the findings and policy contained within the Plan
- The development of an action plan to take forward in the future strategy studies.