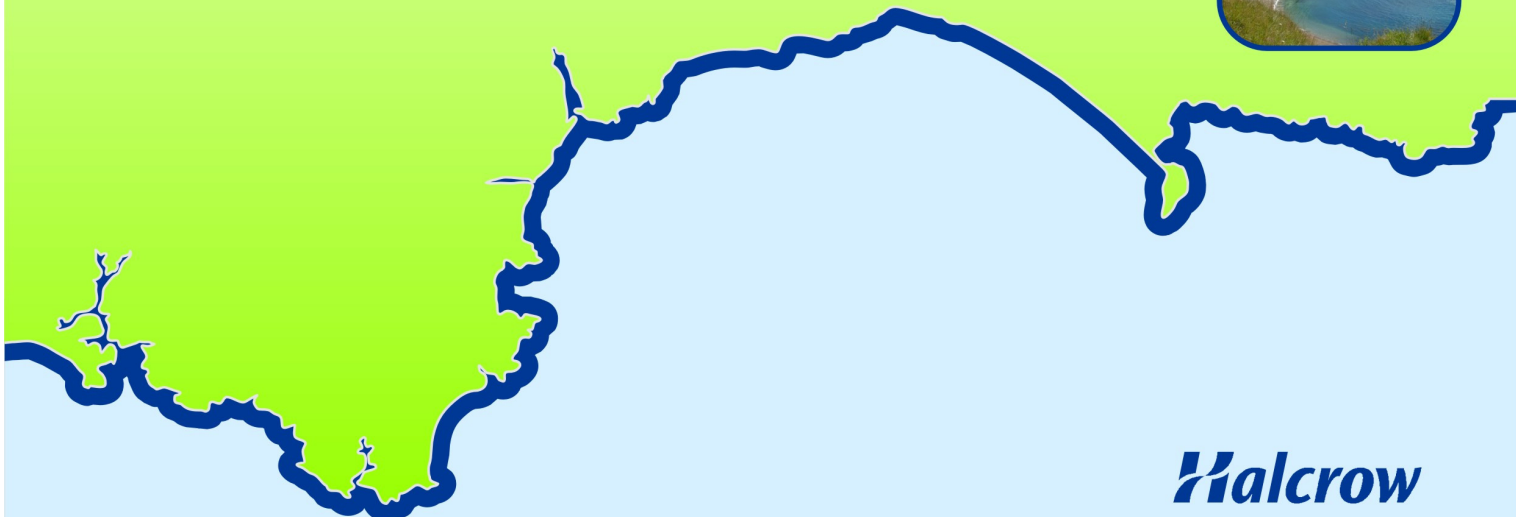


South Devon and Dorset Coastal
Advisory Group (SDADCAG)

Shoreline Management Plan Review (SMP2)
Durlston Head to Rame Head

Shoreline Management Plan (Final)
June 2011



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L – METADATA AND BIBLIOGRAPHIC DATABASES

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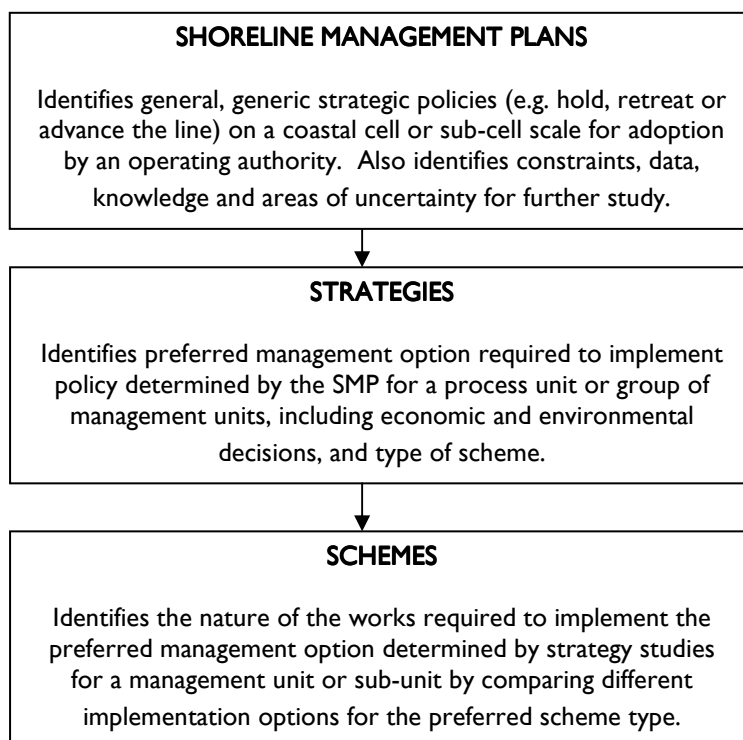
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I Introduction

I.1 The Shoreline Management Plan

A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with coastal evolution. It includes a policy framework to address these risks in a sustainable manner with respect to people and the developed, historic and natural environment. In doing so, an SMP is a high-level document that forms an important part of the Department for Environment, Food and Rural Affairs (Defra) strategy for flood and coastal defence (Defra, 2001). The SMP provide the policy framework from which more detailed strategies and schemes are developed to identify the best way of implementing policy. Figure 1.1 shows where SMP sits in terms of the overall context of flood and coastal erosion risk management in the UK.

Figure 1.1 *Stages in Implementing UK Coastal Management Policy and Legislation (adapted from Atkins 2004 and Defra 2001)*



This document provides the first revision to both the original Portland Bill to Durlston Head SMP and Portland Bill to Rame Head (Lyme Bay and South Devon) SMP, both of which were adopted in 1998. This change in extent between the first SMP and this SMP revision is in recognition of the potential for a breach of Chesil Beach from Lyme Bay through to Portland Harbour. To take account of this potential linkage the two previous SMPs are considered as one SMP in this revision.

Figure 1.2 shows the area covered by the South Devon and Dorset SMP whilst Figures 1.3a to 1.3e show the location of policy units along the SMP frontage.

The structure of the SMP documents, and how they relate to each other, is summarised in the flow chart below. Further details of this structure are provided in **Section 1.2**.

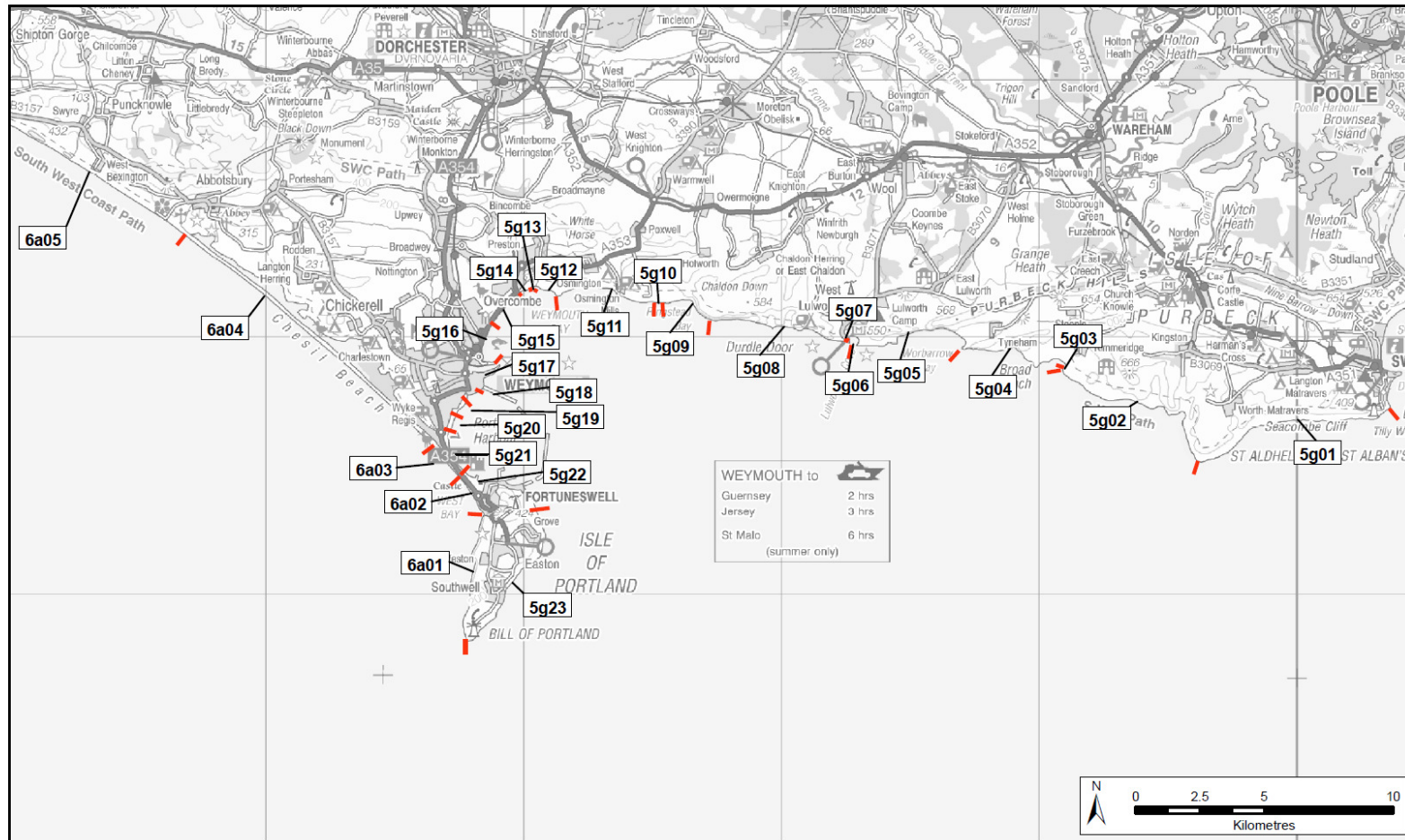


Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.2 - Location of South Devon and Dorset SMP2

— SMP Extent

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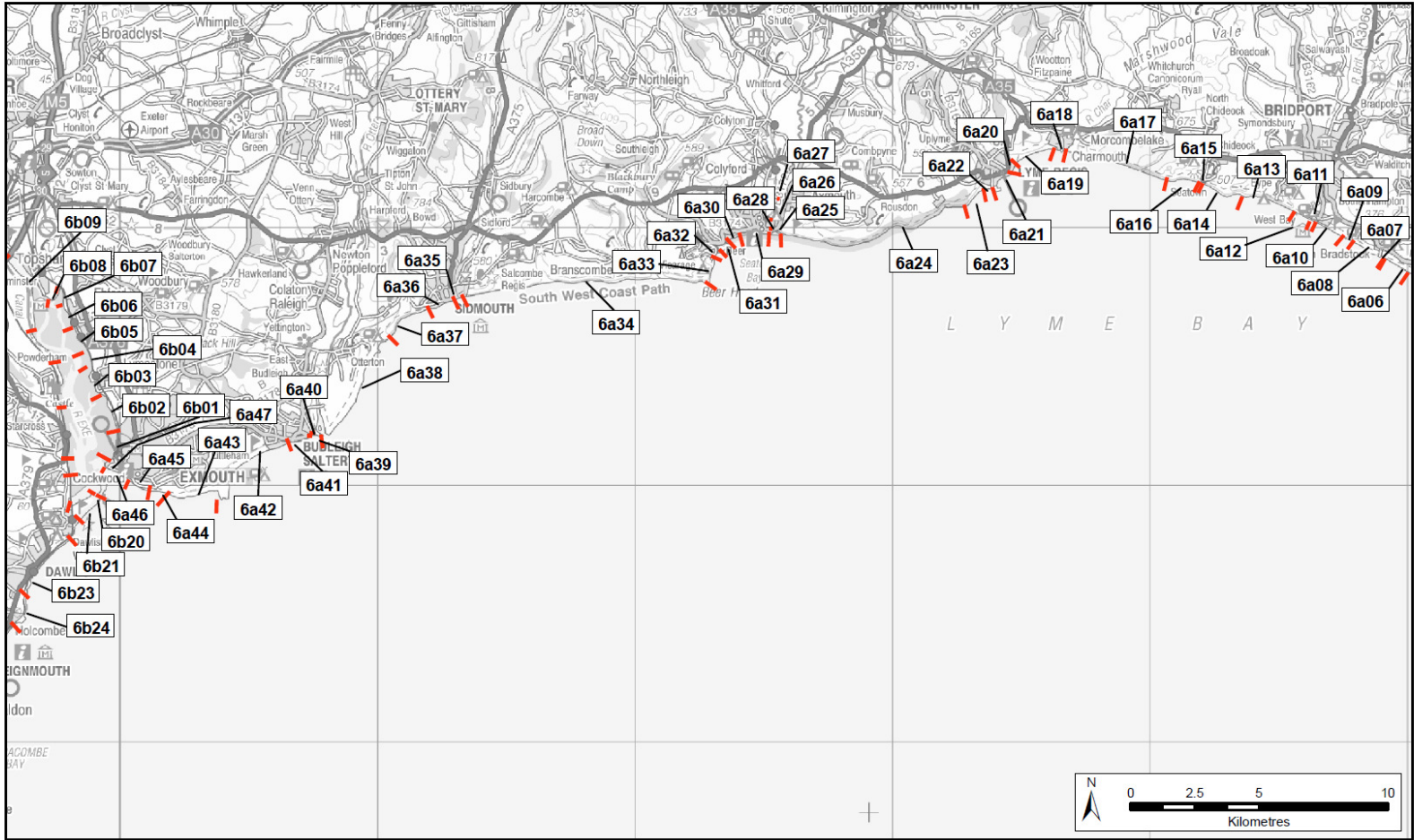


Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.3a - Overview Map (1 of 5)

— Policy Unit Boundary

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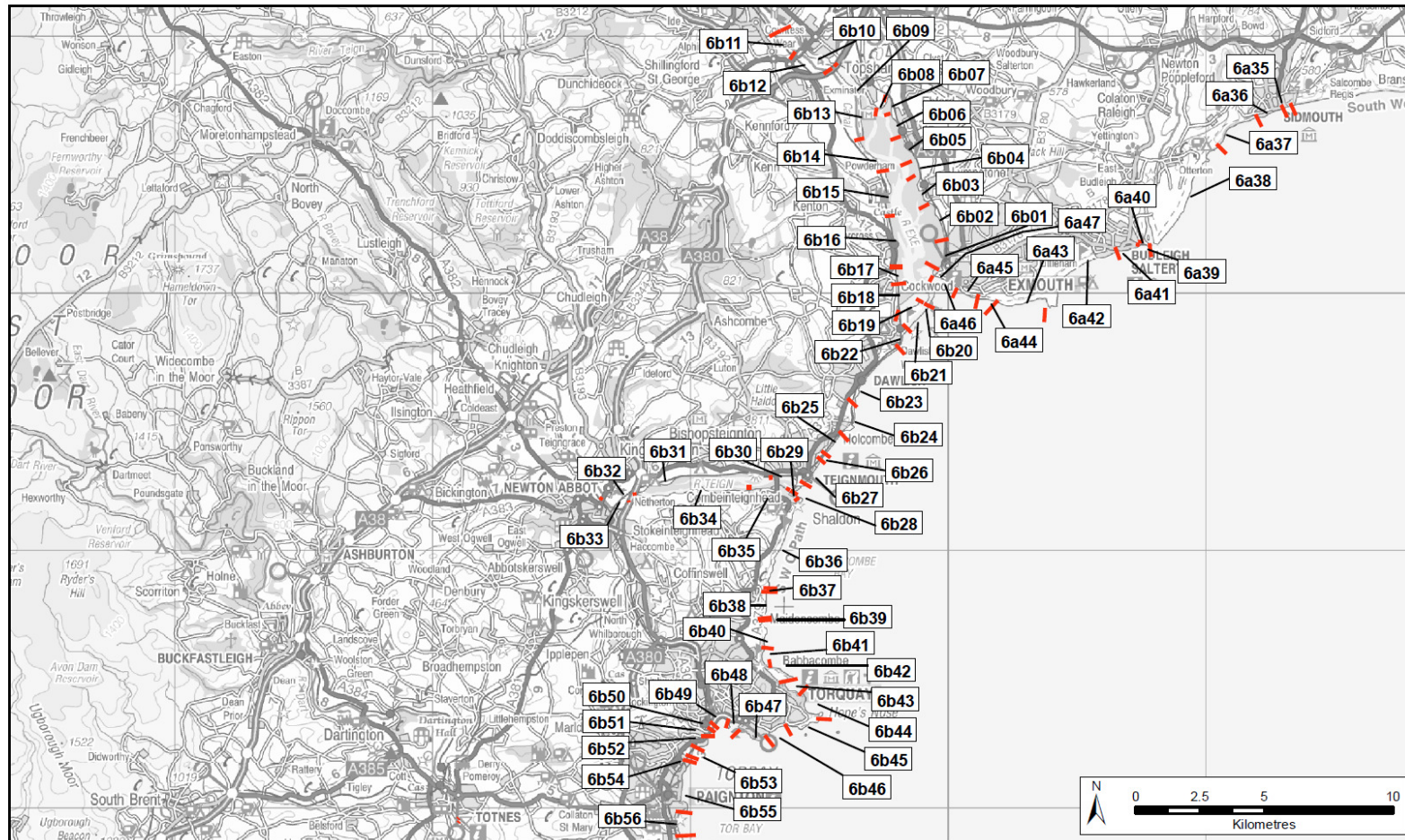


Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.3b - Overview Map (2 of 5)

— Policy Unit Boundary

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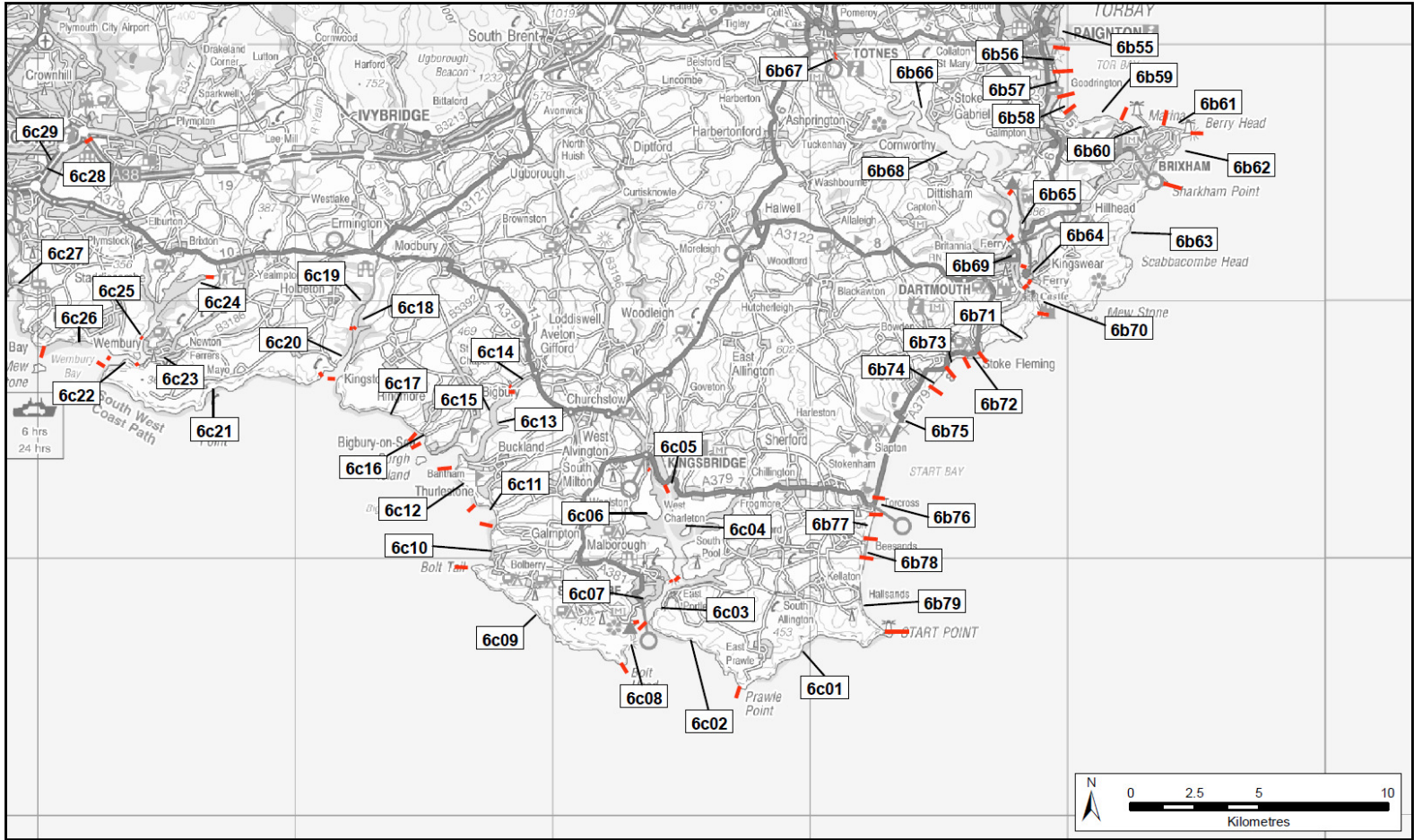


Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.3c - Overview Map (3 of 5)

— Policy Unit Boundary

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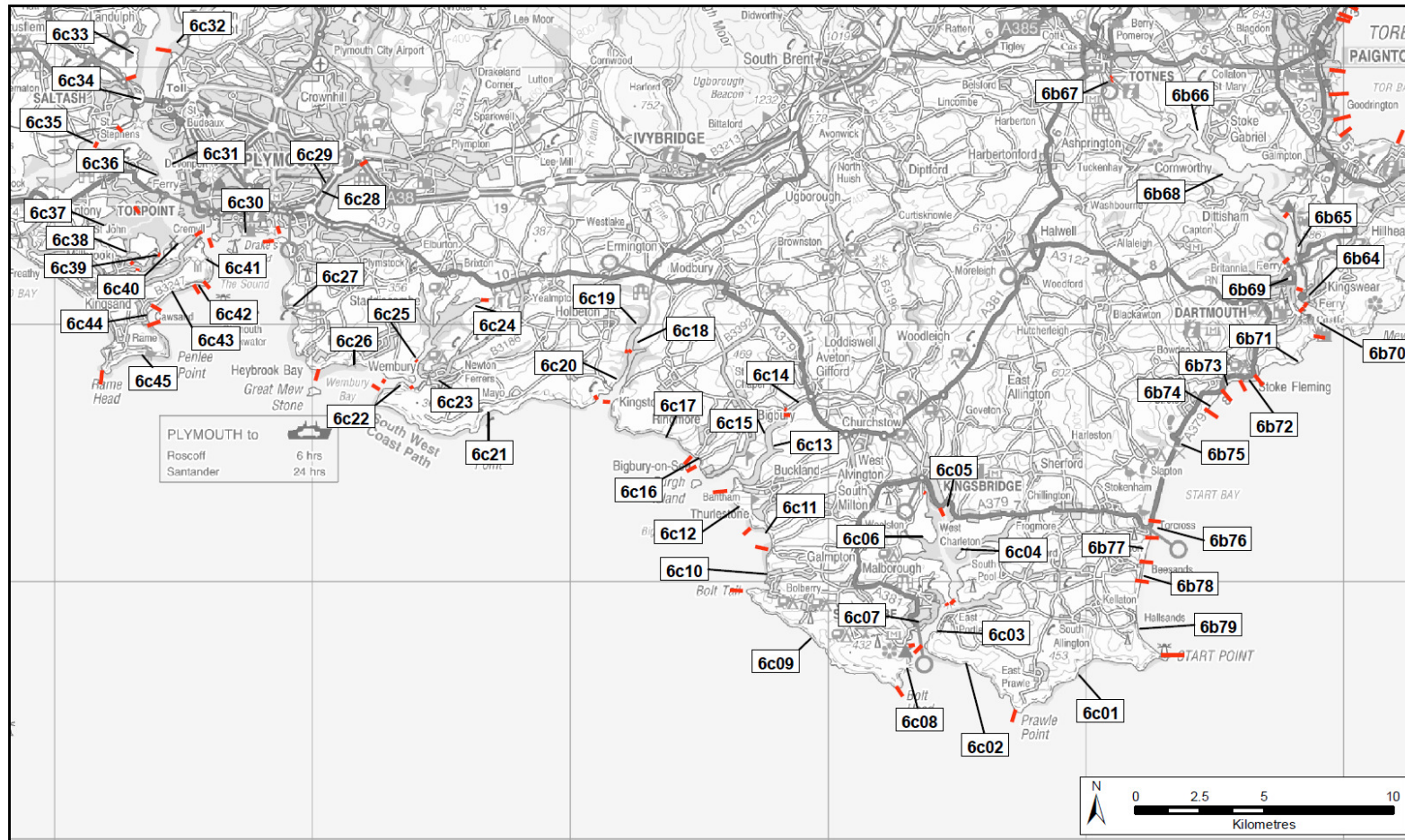


Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.3d - Overview Map (4 of 5)

— Policy Unit Boundary

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Durlston Head to Rame Head Shoreline Management Plan Review
Figure 1.3e - Overview Map (5 of 5)

— Policy Unit Boundary

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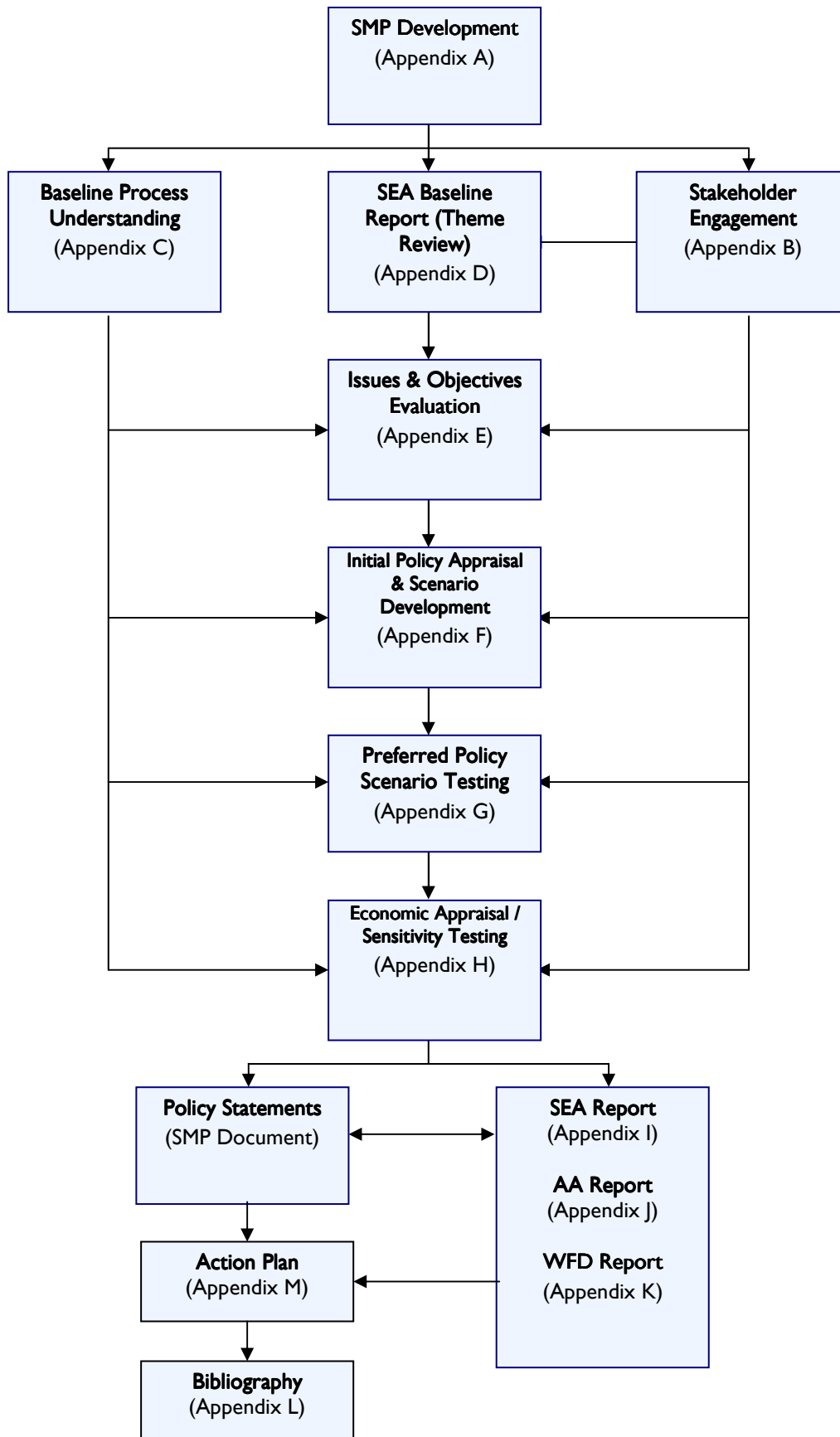


Figure 1.4 Flow chart showing how the SMP documents are structured

1.1.1 Guiding Principles

The SMP is a non-statutory policy document for coastal flood and erosion risk management planning. It takes account of other existing planning initiatives and legislative requirements, and is intended to inform wider strategic planning¹. The SMP does not set policy for anything other than coastal defence management.

The SMP promotes management policies for the coastline into the 22nd Century, to achieve long term objectives, while being technically sustainable, environmentally acceptable and economically viable. It is, however, recognised that given the differences between short and long term objectives, changes to management policy in the short term may be unacceptable. Thus, the SMP provides an approach for meeting objectives through appropriate management change, i.e. a 'route map' for decision makers to move from the present situation towards the future.

The policies that comprise this Plan have been defined through the development and review of shoreline management objectives, representing both the immediate and longer term requirements of stakeholders, for all aspects of the coastal environment. Together with a thorough understanding of the coastal processes operating on the shoreline and also processes within the estuaries that are also covered by the Plan, these objectives provide a thorough basis upon which to appraise the benefits and impacts of alternative policies, both locally and Plan area wide. In this way, the selection of policy takes equal account of all relevant features in identifying the best sustainable management solutions.

There were two original SMPs that are now covered by this South Devon and Dorset SMP2. These covered the (1) Portland Bill to Durlston Head, and (2) Portland Bill to Rame Head (Lyme Bay and South Devon) coastline (identified as coastal process sub-cells 5g, 6a, 6b and 6c in a 1994 study for MAFF, now Defra) as part of a series of SMPs covering the whole of England and Wales. Since that time many lessons have been learned. Reviews funded by Defra (2001, 2003) have examined the strengths and weaknesses of various Plans and revised guidance has been issued. Some of this guidance is targeted at achieving greater consistency in the assessments and presentation of these Plans, but there are more fundamental issues that have been identified, which this and other SMPs must address.

¹ The planning reforms under the Planning and Compulsory Purchase Act 2004 identify a requirement for Regional Spatial Strategies (the new regional level statutory planning document) and Local Development Documents (the new local level statutory planning document). These are required to contribute to the achievement of sustainable development and are supported by a range of government planning policy advice and guidance, in particular Planning Policy Statements (PPSs) and their predecessors Planning Policy Guidance Notes (PPGs). This advice and guidance shapes and directs planning at the regional and local level. Under the Act, Regional Planning Guidance for the South-West (RPG10) is being replaced by the South West Regional Spatial Strategy (RSS), the draft of which was approved by the Regional Assembly and submitted to the minister in April 2006. The South West RSS recognises the need for an integrated approach to managing the coastal zone, recognising the links between the natural and historic environment, social, recreational and economic value of the coastal area, and flood and erosion risk management. Policies CO1: Defining the Coastal Zone, CO2: Coastal Planning, FI: Flood Risk are relevant, with Policy CO1 presuming against development of the undeveloped coast, and Policy CO2 advocating a sustainable, and consistent cross-border approach to coastal planning and management. These policies require local planning authorities to take account of SMPs both during the preparation of their Local Development Documents and in the determination of planning applications. The final RSS was due for publication in the Summer of 2009. **It should be noted that on 6th July 2010 the Secretary of State for Communities and Local Government announced the revocation of regional strategies (including Regional Spatial Strategies) with immediate effect. However, reference to the RSS is retained in this and the other SMP documents for reference as it was a valid planning document during the development and appraisal of policy options for this SMP and was only revoked following completion of the policy appraisal and preferred policy selection process.**

One significant issue is the inappropriateness of certain policies which, when tested in more detail with a view to being implemented, may be found to be unacceptable or impossible to justify either economically or technically. It is therefore important that the SMP is realistic, given known legislation and constraints, both human and natural, and not promise what cannot be delivered. There would be no value in a long term Plan which proposes policies that are driven by short term politics and which cannot be justified once implementation is considered several years in the future. Equally, whilst the affordability of each policy has been considered, its adoption by the local authorities involved does not represent a commitment to fund their implementation. Ultimately, the economic viability of policy implementation must be considered in the context of budgetary constraints (whether private or government funding), and it cannot be guaranteed that budgets will be available for all policies. It is also important to recognise that implementation measures would need to meet the approved and adopted policy set out in the Plan, or it would be extremely unlikely that either funding or planning approval would be granted.

The SMP must also remain flexible enough to adapt to changes in legislation, politics and social attitudes as well as helping to shape them by providing a route map for future change. The SMP therefore considers objectives, policy setting and management requirements for three main epochs; the present day (short term), the medium term and the 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 Plan should demonstrate that defence decisions made today are not detrimental to achievement of that vision.

1.1.2 Objectives

The objectives of the SMP are as follows:

- to define, in general terms, the risks to people and the developed, historic and natural environment as a result of coastal evolution and behaviour within the SMP area over the next century;
- to identify the preferred policies for managing those risks, together with the reasoning behind the choice of those policies;
- to identify the consequences of implementing the preferred policies;
- to inform planners, developers and others of the risks of coastal evolution and of the preferred policies when considering future development of the shoreline, land use changes and wider strategic planning;
- to comply with international and national nature conservation legislation and biodiversity obligations;
- to set out procedures for monitoring the effectiveness of the SMP policies; and
- to highlight areas where knowledge gaps exist.

1.1.3 The SMP policies

The shoreline management policies considered are those defined by Defra (2006):

Hold the existing defence line	maintain or change the level of protection provided by defences in their present location.
Advance the existing defence line	build new defences on the seaward side of the existing defence line to reclaim land.
Managed realignment	allowing the shoreline position to move backwards (or forwards) with management to control or limit movement.

No active intervention a decision not to invest in providing or maintaining defences.

1.2 Structure of the SMP

This SMP is the result of numerous studies and assessments performed over a period of time. To cater for the widest readership, the SMP is presented in two parts:

- the Management Plan (this document); and
- a series of supporting documents presented as appendices to the Management Plan.

1.2.1 The Management Plan

The Management Plan sets out the preferred policies for managing the risks of coastal evolution over the next century. It is intended for general readership and is the main tool for communicating intentions. Whilst the justification for decisions is presented, it does not provide all of the information behind the recommendations; this is contained in the supporting documents.

The Management Plan is presented in six parts:

- **Section 1 (this part)** – gives details on the principles, structure and background to its development.
- **Section 2** – presents the basis for meeting the requirements of the EU Council Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the Strategic Environmental Assessment Directive).
- **Section 3** – presents the basis for development of the management plan, describing the concepts of sustainable policy and providing an understanding of the constraints and limitations on adopting certain policies.
- **Section 4** – presents a broad overview of the overall vision and long term plan for each larger policy scenario area, discussing their rationale behind the selection of the preferred policies discussed in detail in Section 5, as well as the broad implications and requirements to implement and manage the policies of the SMP.
- **Section 5** – provides a series of statements that give details of how the policies might be implemented and the local implications of these policies in terms of: management activities; property, built assets and land use; landscape; nature conservation; historic environment; and amenity and recreational use.
- **Section 6** – provides an action plan which is a programme for future activities that are required to progress the plan between now and its next review.

Although it is expected that many readers will focus upon the local details in Section 5, it is important to recognise that the SMP is produced for the South Devon and Dorset coast as a whole, considering issues beyond specific locations. Therefore, these statements must be read in the context of the wider-scale issues and policy implications, as reported in Sections 2, 3 and 4 and the appendices to the Plan.

1.2.2 The Supporting Documents

The supporting documents provide all of the background information to the Management Plan. These are provided 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.

This information is largely of a technical nature and is provided in ten parts and two databases.

- **Appendix A: SMP Development:** This reports the history of development of the SMP, describing more fully the policy decision-making process.
- **Appendix B: Stakeholder Engagement:** Stakeholders have had an important role in shaping the plan. All communications from the stakeholder process are provided here, together with information arising from the consultation process.
- **Appendix C: Baseline Process Understanding:** Includes baseline coastal process report, defence assessment, No Active Intervention (NAI) and With Present Management (WPM) process assessments and summarises data used in the assessments.
- **Appendix D: SEA Environmental Baseline Report (Theme Review):** This report 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 SMP.
- **Appendix E: Issues & Objective Evaluation:** Provides information on the issues and objectives identified as part of the Plan development, including an appraisal of their importance.
- **Appendix F: Initial Policy Appraisal and Scenario Definition:** The impacts of a range of policy scenarios upon shoreline evolution have been evaluated, which has formed a key part of determining the acceptable sustainable policies and their combination into ‘scenarios’ for testing.
- **Appendix G: Preferred Policy Scenario Testing:** A summary of the assessment and appraisal of the preferred policies, via (i) assessment of shoreline interactions and response against preferred policy; and (ii) assessment and achievement of the objectives against the baseline scenario (No Active Intervention) and the preferred policies. The assessments are based on the findings of Appendices E and F.
- **Appendix H: Economic Appraisal and Sensitivity Testing:** This report provides a high-level assessment of the economic justification of each preferred policy, which is reported in terms of “justified”, “not justified” and “marginal”.
- **Appendix I: Strategic Environmental Assessment Report:** This appendix pulls together the various items undertaken in developing the Plan that specifically relate to the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive), such that all of the key information is readily identifiable either within this one document, or in other parts of the SMP documentation (e.g. Appendix D).
- **Appendix J: Appropriate Assessment** – presents the Appropriate Assessment of SMP policy impacts upon European designated sites (Special Protection Areas and Special Areas of Conservation) as well as Ramsar sites, where policies might have a likely significant effect upon these sites. This is carried out in accordance with the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations).
- **Appendix K: Water Framework Directive Assessment** – presents assessment of potential impacts of SMP policies upon coastal, transitional, freshwater water bodies and groundwater bodies, in accordance with the requirements of EU Council Directive 2000/60/EC (the Water Framework Directive).
- **Appendix L: Meta-database and Bibliographic database:** All supporting information used to develop the SMP is referenced for future examination and retrieval.

- **Appendix M: Action Plan Summary Table:** Presents the Action Plan items included in Section 6 of this document in tabular format for ease of monitoring and reporting action plan progress.

These appendices are presented on a CD provided with the Shoreline Management Plan.

1.3 The Plan Development Process

1.3.1 Revision of the SMP

The original Portland Bill to Durlston Head and Portland Bill to Rame Head (Lyme Bay and South Devon) SMPs were adopted in 1998. Part of the SMP process is to regularly review and update the SMPs, as necessary, taking account of new information and knowledge gained in the interim. This is the first revision of these two plans, which for the purpose of this SMP, has combined the two original SMP areas into one, based upon recommendations made by Defra (2006), and has taken account of:

- latest studies (e.g. Futurecoast (Halcrow, 2002), various reports on climate change (e.g. UKCIP02²), Risk Assessment of Coastal Erosion (RACE)) and mapping (e.g. Environment Agency Flood Zone Mapping)³ and emerging National Coastal Erosion Risk Mapping;
- issues identified by most recent defence planning (i.e. coastal defence studies and schemes that cover parts of the SMP area undertaken since completion of the original SMP, including, but not limited to, the Exe Estuary Coastal Management Study; Slaptonline Coastal Zone Management Study, West Bay Harbour Improvement Scheme, Portland Harbour North-West Shore Strategic Study, and EA South Wessex Beach Management Plans);
- changes in legislation such as the EU Habitats and Birds Directives and the Marine and Coastal Access Act 2009.
- changes in national defence planning requirements (e.g. the need to consider 100 year timescales in future planning, modifications to economic evaluation criteria, etc.); and
- the results of coastal monitoring activities.

Further reviews will be carried out in future years, when deemed necessary. Future reviews may include changes to policies, particularly in light of more detailed studies of the coastline.

This plan does not account for proposed future developments, only those that were constructed or were being progressed during the time that the SMP was being developed. At the time of writing, there are a number of proposed developments for the South Devon and Dorset frontage that have been considered in developing policies, including:

- Within Portland Harbour, there is a new 600 berth marina being constructed along with land-based commercial property associated with the National Sailing Academy at Osprey Quay in preparation for the 2012 Olympic Games, for which Weymouth and Portland will be hosting the sailing events;
- Also within Portland Harbour, new residential apartments are being constructed. This development again being linked to the 2012 Olympic Games;
- At Weymouth, there are proposals to construct a marina extending out into Weymouth Bay from the present north harbour arm;

² The latest UKCIP report was not available at the time of reporting.

³ Please note 2008 flood zone data has been used during the development of this plan. The Environment Agency continually updates the flood map plans. To see the latest, please go to www.environment-agency.gov.uk

- Construction of a gas storage facility at Portland, which will require defences where the proposed pipeline makes landfall;
- Extension of Brixham harbour breakwater to facilitate development in this part of Tor Bay;
- Redevelopment and regeneration of the East End Waterfront in Plymouth (Coxside and Cattedown area).

The potential impacts that these developments will have on the coastline will be examined in the next review of the SMP. However, this does not stop these proceeding ahead of the next SMP review if it can be shown that they are sustainable and do not have adverse impacts on the adjacent sections of coastline.

1.3.2 Production of the SMP2 Review

Development of this revision of the SMP has been led by a client steering group comprising selected members of the South Devon and Dorset Coastal Advisory Group, including technical officers and representatives from Teignbridge District Council, Weymouth & Portland Borough Council, West Dorset District Council, Devon County Council, Dorset County Council, the Environment Agency, English Heritage, the National Trust and Natural England.

The SMP process has involved approximately 750 stakeholders, whose views sought throughout the process and who were kept informed of the SMP review. Many of these stakeholders participated at key decision-making points throughout the process via Key Stakeholder Forums (KSF). A number of rounds of KSF meetings have been held to help to identify and understand the issues, review the objectives and set direction for appropriate management scenarios, and to review and comment upon the preferred plan policies.

The SMP is based upon information gathered largely between October 2007 and December 2008, provided by numerous parties contacted during this period.

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, and evaluating these to determine the relative importance of objectives;
- analysis of coastal and estuarine processes and evolution for baseline cases of not defending and continuing to defend the coastline as at present;
- agreement of objectives with the Key Stakeholders, to determine possible policy scenarios;
- development of policy scenarios based on key objectives and primary drivers (identified and developed through discussion with the Key Stakeholders) for sections of the frontage;
- examination of the coastal evolution in response to these scenarios and assessment of the implications for the human, historic and natural environment;
- determination of the preferred plan and policies through review with the South Devon and Dorset Coastal Advisory Group, prior to compiling the SMP document;
- consultation on the proposed plan and policies;
- consideration of consultation responses and finalisation of the SMP for formal adoption; and
- adoption of the SMP by the local authorities and dissemination.

2 Strategic Environmental Assessment

2.1 Background

Strategic Environmental Assessment (SEA) is the systematic appraisal of the potential environmental consequences of high level decision-making, such as policies, plans, strategies and programmes, before they are approved. The purpose of SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes, with a view to promoting sustainable development.

The requirement to undertake SEA of certain plans and programmes entered European Law in 2001 under Directive 2001/42/EC; transposed into UK law in 2004 by The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 1633)⁴. This SEA has been carried out with cognisance of, and in the spirit of, the following legislation and guidance:

- National Environmental Impact Assessment and Strategic Environmental Assessment Policy, Procedures and Guidance (Environment Agency, 2004 Environment Agency management system controlled documentation).
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 2: Strategic Planning and Appraisal (Defra, 2001).
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 5: Environmental Appraisal (MAFF, 2000).
- The Strategic Environmental Assessment Directive: Guidance for Planning Authorities. Practical guidance on applying European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' to land use and spatial plans in England ODPM (2003).
- Conservation of Habitats and Species Regulations 2010.
- Marine and Coastal Access Act 2009.
- A Practical Guide to the Strategic Environmental Assessment Directive (ODPM 2005)

There is no legal requirement to undertake SEA for SMPs because they are not deemed to be required by legislation, regulation or administrative provision. However, SMPs do set a framework for future planning decisions, and have the potential to result in significant environmental effects. Further to this, Defra guidance (Defra, September 2004⁴) is that SEA is applied to SMPs and this is Environment Agency policy.

In developing the South Devon and Dorset SMP, the environment has been considered alongside social, technical and economic issues.

The SEA process undertaken for the South Devon and Dorset SMP is documented in **Appendix I**. This report demonstrates how the SEA process has been carried out during the development of the South Devon and Dorset SMP and outlines how the SEA Directive's requirements have been met.

The approach for this SMP (see **Appendix I**) was to ensure that the environmental assessment process is fully integral to the SMP development, as recommended in the Defra SMP Guidance (2006)⁵. Environmental assessment was therefore carried out in conjunction with and as part of the SMP stages, described in the guidance.

⁴ Nason, S (2004). *Guidance to operating authorities on the application of SEA to Flood Management Plans and Programmes*. Defra, 16th September 2004.

⁵ Defra (2006): *Shoreline Management Plan Guidance Volumes 1 and 2*

2.2 Screening and Scoping

Screening determines whether there is a need for SEA for the Plan or Programme being initiated. In this case there is no legal requirement to apply the ‘SEA Regulations’ to SMP, but best practice guidelines, and those of Defra, support the preparation of a voluntary SEA for SMPs.

No formal Scoping Report was prepared during the development of the SMP, however, the scoping process (i.e. identification of the environmental receptors likely to be impacted by SMP policies) was undertaken during the production of the SEA Environmental Baseline Report (Thematic Review) – see **Appendix D** of the SMP.

Consultation was carried out at the scoping stage with key stakeholders (see **Appendix B ‘Stakeholder Engagement’**) including statutory consultees to obtain relevant baseline environmental information and to understand key concerns and issues. The stakeholders were consulted on both the SEA Environmental Baseline Report (Thematic Review) and Issues and Objectives Tables together. The responses received during this consultation phase fed into the prioritisation and importance of SEA receptors in the option appraisal process.

2.3 Establish SEA Objectives

A list of SEA objectives for the SMP was developed following identification of key environmental features or assets along the coastline, and through a review of aerial photography, maps and consultation with key external organisations and internal staff. SEA objectives were identified for the SMP to appraise the preferred policy options during the assessment process.

The objectives developed for the SMP, which were used to develop and appraise sustainable policies, are provided in Table 2.1.

Within the environmental objectives, a distinction has been made between those that arise from legal (shown in ***bold italics***) and those that do not represent legal obligations. The relevant SEA receptor to which the objectives relate, are shown in brackets.

Table 2.1 SEA Objectives

	Objective	Features covered by the objective
Social	To avoid loss of property due to erosion and/or manage risk of flooding to people and property ⁶ (Population and human health)	Houses Community
	To avoid loss due to erosion of, and manage risk of flooding to, key community, recreational and amenity facilities (Population and human health)	Key vulnerable community facilities (e.g. surgeries, hospitals, aged persons homes, schools, shops, churches, libraries etc) Key amenity facilities (e.g. public open space, car parks etc) Key recreational facilities (e.g. bathing beaches, swimming pools, Country Parks, Castles and Forts) Access to community/amenity facilities <i>Other than in exceptional circumstances, Public Rights of Way (e.g. the South West Coast Path National Trail) will not be considered in the detailed policy appraisal</i>

⁶ Reference to flooding or erosion will be removed where not applicable

	Objective	Features covered by the objective
Economic	To avoid loss due to erosion of, and manage risk of flooding to, industrial, commercial and economic assets and activities (Population, material assets)	Shops, offices, businesses, factories, warehouses, golf courses, areas identified for regeneration, nursery grounds, caravan parks, stone and mineral extraction sites, military establishments and others key areas of employment
	To minimise the impact of policies on marine operations and activities (Material assets)	Ports and harbours, Boatyards Moorings, Yacht and Sailing Clubs. Lifeboats, Ferry terminals Coastguard, lifeboat and lifeguard Access to the sea and navigation
	To ensure critical road and rail linkages are maintained (Material assets)	A -, B - and minor roads (where linkage is a key issue) Railway lines and stations
	To ensure critical services remain operational (Material assets)	Pumping stations, sewage works, wind turbines, landfills, power stations, sub-stations Access for emergency services
Environmental	<i>To support natural processes and maintain visibility of geological exposures throughout internationally and nationally designated Earth Heritage sites</i> (Geology and Soils)	World Heritage Site Geopark Geological SSSIs
	<i>To support natural processes and maintain the integrity of internationally designated nature conservation sites and the favourable condition of their interest features</i> (Flora, fauna and biodiversity)	SPAs, SACs (to include Marine SACs) and Ramsar Sites
	<i>To avoid adverse impacts on, conserve and, where practical, enhance the designated interest of nationally designated nature conservation sites.</i> (Flora, fauna and biodiversity)	SSSIs, NNRs, Areas of Special Protection
	<i>To avoid adverse impacts on, conserve and, where practical, enhance the designated interest of locally designated conservation sites</i> (Flora, fauna and biodiversity, geology)	Statutory LNRs Non-statutory wildlife sites RSPB reserves County Wildlife Trust reserves RIGS There is also a generic statutory duty (NERC Act 2006) to have regard for the conservation of biodiversity, which applies to all public bodies and which extends beyond designated sites.
	<i>To prevent pollution from contaminated sources</i> (Geology and soils, water)	Known and historic landfill sites (www.environment-agency.gov.uk), anecdotal evidence of disused mines and potentially contaminated land, bathing water, surface and ground water
	<i>To avoid loss of scheduled and other internationally and nationally important heritage assets and features.</i> (Cultural heritage)	World Heritage Sites Scheduled Monuments Registered Parks and Gardens Listed Buildings Marine Wreck Sites Built Conservation Areas Non-designated historic and archaeological sites and landscapes that have been identified by archaeologists as nationally important
	<i>To conserve and enhance AONBs</i> (by	Areas of Outstanding Natural Beauty (AONB) - The

	Objective	Features covered by the objective
	maintaining the highest quality of undeveloped coastal and estuarine landscape as a defining feature of the AONB) and avoid conflict with AONB Management Plan or Heritage Coast Objectives. (Landscape)	South Devon AONB Management Plan policy seeks to respond positively to the challenges of coastal change and sea level rise by planning for the future; and to consider natural processes and “soft defences” in long term coastline management wherever appropriate, accompanied by the realignment of coastal infrastructure to more sustainable locations where there is space to accommodate it”. Heritage Coast
	To avoid loss due to erosion of and/or manage risk of flooding to agricultural land (Population, soils)	Grades 1 – 3A Farmland
	To ensure MoD ranges remain operational. (Population, material assets)	Ministry of Defence ranges and land

2.4 Environmental Baseline

Baseline data was collected to provide a baseline against which the significant environmental effects of the plan could be measured and assessed. The current state of the environment is described in the SEA Environmental Baseline ‘Theme Review’, presented in **Appendix D**, and is summarised in Table 2.2.

Table 2.2 *Environmental Features within the SMP Area*

SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633	Environmental Features
Flora, Fauna and Biodiversity	<p>The study area supports a variety of habitats including seacliffs, mudflats, saltmarsh, estuaries, sand dunes, reedbeds, marshland, woodland, heathland, grassland and lagoons. The quality of these natural habitats along the coastline is reflected in the designation of the following international nature conservation sites: -</p> <ul style="list-style-type: none"> • Dorset and East Devon Coast (‘Jurassic Coast’) World Heritage Site (WHS) • 2 Special Protection Areas (SPA) and Ramsar sites • 12 Special Areas of Conservation (SAC) • 2 proposed SACs <p>The strategy area is also designated nationally (Sites of Special Scientific Interest, National Nature Reserves and an Area of Special Protection) and locally for its nature conservation value.</p> <p>Opportunities exist to create wetland habitat in low-lying parts of the study area.</p>
Soils and Geology	<p>The geological interest of the coastline includes stratigraphic features, which are reflected in a range of designated earth heritage sites of local, regional, national and international importance. The international earth heritage designations comprise the Dorset and East Devon (‘Jurassic Coast’) WHS and the English Riviera Geopark.</p> <p>Natural erosion is a key driver in maintaining the geological interest of the ‘Jurassic Coast’ by exposing rock sequences in the cliff faces and releasing fossils to the beach.</p> <p>The geomorphology of the area is varied and includes shingle banks, sand dunes and saltmarshes. The major shingle features of national importance are Chesil Beach</p>

<p>SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633</p>	<p>Environmental Features</p>
	<p>and Slapton Sands, which enclose the large natural lagoons of The Fleet and Slapton Ley respectively. Dawlish Warren is a significant sand dune structure, located in the Exe Estuary at the mouth of the river.</p>
<p>Air and Climatic Factors</p>	<p>The long term effects of rising sea levels expected due to climate change could have significant implications for future flood risks to the natural, historic and built environment across large areas of low-lying land in the SMP area.</p>
<p>Water</p>	<p>Within the SMP area, there are 22 Transitional and Coastal Waterbodies, 94 River Waterbodies, 1 Lake Waterbody and 15 Groundwater Bodies. There are over 70 designated bathing waters in the SMP areas. These all have the potential to be affected by SMP policies.</p>
<p>Landscape</p>	<p>The coast is composed predominantly of sea cliffs, punctuated by estuaries, rias, cobble beaches, isolated stacks, raised beaches and lagoons. These features owe their variety and interest to the relief and orientation of the coastline, the different properties, lithology and structure of the rocks and coastal processes. The coastline of Dorset is internationally renowned for the rock strata exposed along the cliffs and coastal landforms such as Lulworth Cove, Durdle Door and Chesil Beach. Other landscape types include highly developed urban centres and undeveloped agricultural land, much of which exhibits ancient (Medieval) field patterns.</p> <p>The high value of the landscape in the SMP area (with the exception of Portland) is recognised by the designation of five Areas of Outstanding Natural Beauty designated to conserve natural beauty but safeguard agriculture, forestry and industry; and four Heritage Coasts.</p>
<p>Cultural Heritage, including architectural and archaeological heritage</p>	<p>The Cornwall and West Devon Mining WHS falls within the SMP area and gives recognition to the historic landscape and buildings associated with the copper and tin mining.</p> <p>In addition, the SMP area contains a complex array of statutory historic buildings (e.g. 184 Scheduled Monuments, Listed Buildings), 26 Registered Parks and Gardens, non-statutory buildings and find spots, historic settlements, maritime archaeology (e.g. over 500 wreck sites), Conservation Areas, historic landscapes and numerous unscheduled sites of importance, some of which are nationally important.</p>
<p>Material Assets</p>	<p>Material assets along the coastline of the SMP area comprises a combination of predominantly moderate quality agricultural land, beaches, A- and B-roads, urban areas (see population below), fishing ports and harbours, stone and mineral extraction sites and historic/active landfill sites.</p>
<p>Population and Human Health</p>	<p>Safety, security and social/physical well-being for occupants of properties within areas at coastal flood or erosion risk. Population and properties are concentrated in Portland, Weymouth, Bridport, Lyme Regis, Seaton, Sidmouth, Budleigh Salterton, Exmouth, Exeter, Dawlish, Newton Abbot, Teignmouth, Shaldon, Torquay, Paignton, Brixham, Dartmouth, Kingsbridge, Salcombe, Saltash, Torpoint and Plymouth, and other smaller towns/villages. Recreation and tourism in the study area is largely centred on the coastline. Land based activities generally rely on the natural environment and comprises swimming, beaches, walking, fishing, fossil collecting, bird watching and rock climbing. Water sports are also a popular pursuit.</p>

2.5 Assessment Methodology

The process of assessment involves the identification of potential environmental effects and an evaluation of the significance of the predicted environmental effects.

The methodology and appraisal used to identify and predict environmental effects on the SEA receptors and environmental features identified, arising from the SMP is outlined in **Appendix I**.

2.6 Consultation

Consultation has been central to the development of the SEA in order to arrive at a SMP that is acceptable to as many parties as possible and to engage those parties in the process. Effective external stakeholder and public engagement has been essential for data collection, identification of key issues, definition of SEA objectives, development of policy scenarios and the selection of the preferred SMP.

A wide range of statutory and non-statutory consultees and stakeholder groups have been involved throughout the development of the SEA and the SMP, primarily through the undertaking of Key Stakeholders Forum (KSF) events at key points throughout the process. This involvement has:

- been undertaken throughout development of the SMP and SEA;
- given stakeholders an opportunity to comment on the environmental appraisal of options;
- allowed representations made by the stakeholders to be taken into account in the selection of policy options; and
- given the public the opportunity to comment on the preferred policies.

The KSF meetings included representatives from, amongst others, local authorities, nature conservation bodies, industry and heritage organisations as well as local residents and land owners. Elected Members were also involved in the development of the SMP, being consulted at key points in the process. In this way, the views of those whom the SMP policies affect were involved in its development, ensuring that all relevant issues were considered and all interests represented.

The interests of landowners and residents have been represented through the involvement of Elected Members, and the views of all stakeholders were sought.

Full details of all stages of stakeholder engagement undertaken during development of the SMP are presented in **Appendix B**.

2.7 Reporting

The results of the SEA process are documented in **Appendix I**, which identifies, describes and evaluates the likely effects of the SMP as well as any reasonable alternatives. Appendix I documents the SEA process, sets out how alternative policy options were appraised against environmental objectives and identifies and evaluates likely environmental effects, both positive and negative, of preferred policy options. It sets out how adverse effects will be mitigated and describes recommended follow up actions.

2.7.1 Environmental Appraisal of Alternative Policy Options

Appendix F (Annex F.3) identifies the environmental impacts of each of the alternative policy options developed through an assessment of the SEA receptors set out in the SEA Directive, and has helped to identify the preferred environmental policy scenario for each coastal process unit. The generic impacts associated with each alternative SMP option is shown in Table 2.3.

Table 2.3 Potential generic implications of each SMP option

SMP option	Potential positive impacts	Potential negative impacts
Hold the Line (HTL)	<ul style="list-style-type: none"> • Protection of communities (residential, industrial, agricultural and commercial assets) and infrastructure • Protection of habitat landward of existing defences • Protection of freshwater resources (e.g. abstractions and boreholes) • Protection of material assets located behind defences • Protection of recreational, cultural and historical assets landward of the defences and provision of opportunities to improve the condition of heritage features/sites • Protection of potential sources of contamination 	<ul style="list-style-type: none"> • Coastal squeeze (loss of intertidal habitat) • Interruption of coastal processes • Potential increase of flood and coastal erosion risk elsewhere along coastline • Promotion of unsustainable land use practices • Ongoing commitment to future investment for maintenance and improvement of defences • Change in landscape character and reduced visual amenity and views of sea if defences raised or new defences constructed
Advance the Line (ATL)	<ul style="list-style-type: none"> • Provision of additional space for communities • Protection of communities and infrastructure from coastal flooding/erosion • Protection of habitat landward of original defences • Protection of freshwater resources (e.g. abstractions and boreholes) • Protection of material assets located behind defences • Protection of recreational, cultural and historical assets landward of the defences • Protection of potential sources of contamination 	<ul style="list-style-type: none"> • Reduction in extent of intertidal habitat • Change in function of the existing habitats • Increased coastal squeeze • Interruption of coastal processes • Potential increase in rate of coastal erosion either side of the advanced line • Uncertainty of effects • Reduced visual amenity and change in landscape
Managed Realignment (MR)	<ul style="list-style-type: none"> • Landward migration of coastal habitat under rising sea levels to realigned defence • Creation of wetland habitat in line with UKBAP and local BAP targets • Creation of habitat for juvenile fish and other aquatic organisms (benefits to environment and 	<ul style="list-style-type: none"> • Increased flooding/erosion of realigned area • Change in condition or reduction of terrestrial/freshwater habitat landward of defences • Impact upon aquifers and abstractions • Loss of some assets in hinterland of defences (e.g. residential,

SMP option	Potential positive impacts	Potential negative impacts
	<p>fishing communities)</p> <ul style="list-style-type: none"> • Reduction of flood/erosion risk to some areas • Promotion of natural coastal processes and contribution towards a more natural management of the coast • Creation of high tide bird roosts and feeding areas • Maintenance of geological exposures and earth heritage features 	<p>industrial, agricultural and commercial assets)</p> <ul style="list-style-type: none"> • Loss of recreational, heritage and cultural features • Uncertainty of effects
No Active Intervention (NAI)	<ul style="list-style-type: none"> • Landward migration of coastal habitats under rising sea levels • Promotion or continuation of natural coastal processes • Potential discovery of unknown archaeology • Maintenance of geological exposures and earth heritage features 	<ul style="list-style-type: none"> • Uncontrolled flood/erosion risk • Uncertainty of effects and time for adaptation • Increased risk of inundation to landward habitats under rising sea levels • Impact upon aquifers and abstractions • Loss of communities or community assets • Loss of and damage to heritage and cultural features • Risk of flooding/erosion of contaminated areas • Deteriorating defences become unsightly • Hazard to public access and loss of public rights of way.

2.7.2 Environmental Effects of the Plan

An environmental assessment of the preferred policy options is presented in Annex I.1 of **Appendix I** and the results are summarised in the Policy Statement tables in Section 5 of this document.

2.7.3 Water Framework Directive

A retrospective Water Framework Directive (WFD) assessment has been prepared and can be viewed in **Appendix K 'Water Framework Directive Assessment'** of the SMP. This WFD-related retrospective assessment takes into consideration the potential effects of SMP policy options on the ecological quality elements of the coastal and transitional water bodies directly affected by the SMP, and the associated river water bodies.

For many of the policy units, it is considered unlikely that the proposed policies will affect the current or target Ecological Status (or Potential) of the relevant WFD waterbodies. However, there are 10

Management Areas where the proposed policies have the potential not to meet one or more the Environmental Objectives. These being:

- Preston Beach (Rock Groyne) to Portland Harbour (North Breakwater) (includes Weymouth Harbour) 5g16 and 5g17 – potential to fail WFD 2 & 3.
- Small Mouth to Grove Point 5g21 and 5g22 – potential to fail WFD 3.
- Chiswell to Chesil Beach 6a02 and 6a03 – potential to fail WFD 3.
- Chesil Beach and The Fleet 6a04 – potential to fail WFD 2 & 3.
- Exe Estuary (East bank) 6b01 to 6b11 – potential to fail WFD 3.
- Exe Estuary (West bank) 6b12 to 6b18 – potential to fail WFD 3.
- Teign Estuary 6b30 to 6b35 – potential to fail WFD 3.
- Dart Estuary 6b64 to 6b70 – potential to fail WFD 3.
- Mount Batten Breakwater to Devil's Point (including Plym Estuary) 6c28 to 6c30 – potential to fail WFD 2 & 3.
- Tamar Estuary (East bank) 6c31 – potential to fail WFD 2 & 3.

These Management Areas have the potential to fail the Environmental objectives for several different reasons. Potential impoundment of Weymouth Harbour, potential loss of the Fleet waterbody, loss of intertidal habitats in the mid to long term due to coastal squeeze, where the vital and extensive infrastructure of developed populated areas is to be defended (i.e. Reason of Overriding Public Interest (ROPI)), are all reasons for failure of WFD2. The policies for the Exe, Teign and Dart Estuaries have the potential to fail Environmental Objective WFD 3 owing to tide locking affecting adjacent waterbodies, leading to prolonged periods of increased water depth. However, the Hold the Line policies are unavoidable to protect heavily populated areas.

None of the Groundwater Bodies is considered at risk of saline intrusion with regard to its chemical status. Further strategies and studies in this area will have to take this into regard in future to ensure the Environmental Objectives are not compromised.

There are no High Status sites in the SMP area, so Environmental Objective WFD1 (no changes affecting High Status sites) is not applicable for this assessment.

There are several recommendations to look into where SMP boundaries could change to match those of the WFD waterbody boundaries, notably at Portland Bill, Beer Head, Hopes Hose, Dart Estuary, Blackstone Point, Salcombe Harbour & the Avon and Erme Estuaries. However, SMP Management Area boundaries are based on coastal processes and social and economic reasons and are realistically unlikely to change.

2.7.4 Habitat Regulations Assessment

As many of the proposed SMP policies would be implemented within or adjacent to international conservation sites, a Habitats Regulations Assessment (**Appendix J**) has been undertaken in accordance with the requirements of the EC Habitats Directive (92/43/EEC) and European Union Birds Directive (79/409/EEC) and their implementation in the UK under the Conservation of Habitats and Species Regulations 2010 ("Habitats Regulations").

The SMP has the potential to adversely affect the integrity of seven European sites, as follows:

- Exe Estuary SPA and Ramsar site;
- Plymouth Sound and Estuaries SAC;
- Tamar Estuaries Complex SPA;
- Dawlish Warren SAC (in the short term);
- Chesil Beach and the Fleet SAC
- Sidmouth to West Bay SAC

In most cases, the predicted adverse effects will be as a result of coastal squeeze, resulting in the progressive loss of habitats and their associated species as a result of sea level rise against coastal defences. There also remains uncertainty about the potential effects of holding the line in some policy units on internationally vegetated cliff habitats and this will be largely dependent on the extent that a 'Hold the Line' policy reduces erosion of the cliff face.

Where potentially adverse effects have been identified, a study will be undertaken as soon as possible to quantify habitat losses and gains and this action will be carried forward by the SMP Action Plan. Compensatory intertidal and dune habitat will be sought through the Regional Habitat Creation Programme (RHCP) to retain the ecological functionality of the European sites (where possible). Compensatory habitat for loss of cliff exposure will be provided by restoration (i.e. removal of defences) within the designated site.

Where a 'Hold the Line' policy applies within Dawlish Warren SAC in the short-term, the continued presence of defences will sustain the 'unfavourable' condition of the site. Given that the medium- to long term policies as applicable to Dawlish Warren SAC are yet to be determined, the potential for adverse effects on the integrity of the SAC in the medium and long term is uncertain. The Exe Estuary Flood and Coastal Risk Management Strategy will seek to find an acceptable solution for the SAC in the medium and long term.

2.8 Implementation and Monitoring

The key principles of monitoring are to ensure that the mitigation measures are implemented and effective and to monitor the potentially significant environmental effects identified during the assessment.

Appendix I discusses the proposed monitoring of the predicted environmental effects of the plan, which have been reflected and incorporated into the **SMP Action Plan (Section 6 and Appendix M)**.

Where the preferred policies for any Policy Unit have specific monitoring/study requirements to clarify uncertainties, this is identified in the relevant 'Policy Unit Statement' (**Section 5**). Detailed monitoring could be undertaken within the existing South-East and South-West Strategic Regional Coastal Monitoring Programmes or undertaken as part of coastal defence strategy studies. The latter will also define mitigation requirements.

3 Basis for Development of the Plan

3.1 Historical Perspective

The shoreline throughout much of the area covered by this SMP is naturally eroding and has been doing so for centuries. Man has sought to limit this natural process in many areas of the this coast where development has occurred, which has been taking place as sea levels have slowly risen and land levels have gradually dropped, the latter being the ongoing, very long term consequences of the last ice-age. The erosion seen today along this coast is therefore nothing new. Flooding is also nothing new; with flood events being recorded along this coast throughout history.

Over historic time-scales, the coast has experienced a number of very large storm events that have resulted in the well recorded loss or damage to coastal communities, which are evidence of natural changes that can occur along this coast in a very short period above the underlying longer-term changes that are typically slower and more gradual. One such example is the 'great gale' of November 1824 that caused flooding and erosion resulting in the loss of property and life between Cornwall and Hampshire, and notably the destruction of the village of East Fleet as a result of large waves breaking over the Chesil Beach onto the village.

Many of these events took place well before parts of the shorelines affected were defended to the extent they are at present, although in some places, the impacts of these natural events has been compounded by human intervention, such as the mining of shingle from parts of the Chesil Barrier system causing low beach levels, or the dredging of nearshore bank systems allowing larger waves to reach the shoreline (e.g. as occurred at Hallsands). Therefore, although humans may have impacted upon the change occurring at the shoreline, they have not, in the main, caused it.

Equally, there is no reason to suggest that this natural change is not still taking place, nor that we should assume that it will not continue to take place in the future. Human intervention will not halt this natural process; coastal defence works carried out over the last century have not prevented natural change from occurring, they have simply delayed its full implications from being felt. Coastal defence works are one approach to resisting erosion and shoreline retreat, but it is only sustainable for a limited time. The decision to be made now is how we are going to manage this shoreline change in the future.

3.2 Sustainable Policy

3.2.1 Coastal Processes and Coastal Defence

Climate Change

The coastline is undergoing constant change due to large scale impacts of climate change, namely sea level rise, and the day-to-day effects of waves and tidal currents. It is the implications of climate change that will determine sustainable shoreline management into the future.

Sea level attained a level close to its present position about 5,000 years ago, and the modern hydrodynamic regime has been operating since that time. The role of sea level rise in shoreline evolution is thought to have been limited over the last 2,000 years, due to the low rates of change (averaging less than a millimetre per year), but we are now entering a period of accelerating sea level rise, which could result in the destabilisation of present coastal systems.

Recent climate studies have indicated that there are significant changes occurring within our climate; with bigger storms, increasing rainfall and rising sea levels. The amount of physical change for any one length of

coast depends on the degree of exposure of the coast and the underlying geology. Increasing rainfall in between longer periods of drier weather can lead to increased cliff recession potential above that observed historically.

It is extremely important that the long term policies in the SMP recognise these future issues and reflect likely future constraints to management planning. Thus, the SMP acts as early warning to those other plans and initiatives that are vital to the communities and infrastructure within the coastal zone.

Changes at the coast

We are also now living with a reduced resource of sediment on many of our coasts, as the sediment supply associated with the onshore transport of offshore sediments has diminished. This problem has been particularly exacerbated on this frontage where there is very limited contemporary sediment feed into, what are, largely relict beaches (i.e. beaches that receives no fresh supply of sediment), and upon which there has been substantial development.

As already discussed, the erosion of the shoreline is nothing new; this is an ongoing process, but we are more aware of it than in the past. However, it is not just the shoreline that is naturally changing, but the whole coastal system, i.e. the backshore, beach and nearshore (sub-tidal) zone. Along much of the South Devon and Dorset coastline, this movement is occurring in a landward direction as sea levels rise and the shoreline responds to the increase in energy reaching it from the sea. This process is called transgression. Although attention is focussed upon the shoreline position, this process also produces a deepening of the seabed at any particular point. That change in seabed level is evidenced by narrower and steeper beaches along a lot of the frontage. Narrowing, lowering and loss of sandy and shingle beaches (e.g. at Dawlish) associated with large sea defences are typical of the effects of accelerating sea level rise and the result is that these defences stand adjacent to deeper water than would perhaps be otherwise expected. We should not expect the future to be any different and, as such, the foreshore level at existing defence locations may be anticipated to be much lower than present beach levels. Indeed, accelerated sea-level rise will increase the speed of change.

If we choose to continue to defend our shorelines in the same locations that we do at present, then the size of the defences will need to alter considerably; one consequence of deeper water is much larger waves at the defence. Defences will need to be wider to remain stable against bigger waves, have deeper foundations to cope with falling beach levels, and be greater in height to limit the amount of water passing over the top of them in storms. Measured data being gathered by the ongoing regional coastal monitoring programmes will be vital to monitoring future coastal change and inform future management decisions.

Sediment movement

A shoreline sediment system allowed to behave naturally without any disruption is considered to be sustainable. In some areas of the UK it can be demonstrated that long lengths of seemingly isolated coastline actually form one connected sediment system and that sediment movement from one source provides material to many locations further downdrift. Therefore, interference with the system at any point along the coast can have detrimental and sometimes unpredictable impacts considerable distances away.

However, the lack of coarse sediment (sand/shingle/cobble) linkage along the South Devon and Dorset SMP coastline due to the lack of contemporary sediment inputs to the system combined with the emergence of headlands, serve to inhibit the alongshore transport of sediment, to the extent that many of the beaches along this shoreline, notably Chesil Beach and Slapton Sands, are considered to be relict features. As such, the coastal processes and coarse sediment transport interactions along the SMP coastline can be considered within discrete units, and so the extent of any impact of any sediment interruption, be it from the formation of a natural landslide lobe or as a result of human intervention (i.e. constructing defences), is significantly reduced

in terms of consequence to within an individual sediment transport unit. This is not to say that defences cannot be introduced without causing adverse effect, rather that defence management needs to work with these processes and limit problems at other locations within individual process units, but that impacts beyond these limits are negligible and so of lesser importance.

Defence impacts

In general, there is less acceptance of coastal change than in the past and it is apparent, through the development of SMPs and strategy studies, that there is often a public misconception that coastal change can be halted through engineering works. There is often a demand to continue to “hold the existing defence line”, in order to protect assets, but this is coupled with an expectation that the shoreline will continue to look exactly as it does now. Due to the dynamic nature of our shoreline, this is incorrect in many, if not most, instances.

The South Devon and Dorset SMP coastline is, in places, heavily defended along both low-lying (flood risk) frontages and cliffed (coastal erosion risk) frontages. The defences used along this coastline comprise mainly linear seawalls at the rear of sand or shingle beaches which are, in places, also groyned to help retain beach material along these frontages. In some locations the beaches alone provide defence function to reduce the risk of flooding to large areas of low-lying land, including significant areas of development and infrastructure (for example Dawlish Warren spit across the mouth of the Exe Estuary). Along the cliffed frontages of the SMP area, the base of cliffs are, in places, protected from erosion through linear defences, limiting any erosion of the cliff edge. If the cliff edge were to erode, however, this could be the source of local beach building material leading to the development of a natural form of protection for the cliffs, although this is dependent upon the local geology which varies across the length of the SMP coastline.

If we were to continue to defend parts of this coastline into the future as we have done in the past along the lengths where significant cliff recession is expected to occur, the long term picture would be one of a very fragmented shoreline along these areas, characterised by a series of both natural and man-made armoured headlands (where settlements are defended) with embayments in between. Seawalls would result in a series of large promontories, in some cases extending 100 to 200m out from the adjacent (undefended) eroded shoreline by the end of the century. These promontories would be highly exposed to waves in deep water, requiring much more substantial defences to be constructed. These defences would also need to be extended landward to prevent outflanking of the present seawalls. There would be no beaches present along these frontages and any groynes present would have become redundant; water will remain present at the structures at all times.

It must be recognised that, in the very long term, continuing to defend such stretches of shoreline may be technically unsustainable and consideration should be given to relocation, or mitigation for loss of assets.

3.2.2 Economic Sustainability

One of the difficulties facing us, as a nation, is the cost of continuing to protect shorelines to the extent that we do now. Many of the defences that exist today have been the result of reactive management without consideration of the long term consequences such as the financial commitment required.

Studies over the past few years have established that the cost of maintaining all existing defences is already likely to be at least 50 per cent more than present expenditure levels because of the climate changes being predicted, which will accelerate the natural changes already taking place (Burgess & Townend, 2004). In simple terms this means that either more money needs to be invested in coastal defence, or defence expenditure has to be prioritised. While the first option would clearly be the preference of those living or owning land along the coast, it has to be put into the context of how the general UK taxpayer wishes to see their money used.

Given that the cost of providing effective and stable defences currently averages between £3 million and £5 million per kilometre, the number of privately owned properties that can be protected by this investment has to be weighed up against how else that money could be spent, for example in education, health and other social benefits.

Those areas where the UK taxpayer is prepared to continue to fund defence may well become even more selective and the threshold of when an area is no longer defended could well shift. While it is not known how attitudes might change, it is not unreasonable to assume that future policy-makers will be more inclined to resist investing considerable sums in protecting property in high-risk areas, such as the coast, if there are substantially cheaper options, such as constructing new properties further inland. Future investment in defences, or otherwise, will in part be guided by the Environment Agency's Long Term Investment Strategy (Environment Agency, 2009) and the definition by planning authorities of Coastal Change Management Areas to guide acceptable development in coastal areas at risk of flooding and erosion (Communities and Local Government website).

It is extremely important that the long term policies in the SMP recognise future economic issues and reflect likely future constraints, providing realism as to the future management of the shoreline.

With national financial constraints it is likely that protection will focus upon larger conurbations and towns, where the highest level of benefit is achieved for the investment made, i.e. more properties can be protected per pound of investment. In the case of the South Devon and Dorset SMP2, a number of areas will be affected by this, meaning that it will not be economically viable to replace defences. In these areas adaptation or resilience measures will be required to address the increased risk of erosion and/or flooding.

3.2.3 Environmental Sustainability

Environmental sustainability is difficult to define as it depends upon social attitudes, which are constantly changing.

Historically, communities at risk from coastal erosion relocated, recognising that they were unable to resist change. In more recent times many coastal defences have been built without regard for the impacts upon the natural environment. Today, because we have improved technology, we are less prepared to accept change, in the belief that we can resist nature. Inevitably attitudes will continue to alter; analyses of possible 'futures' are already taking place (the Foresight programme run by the Office of Science and Technology, www.foresight.gov.uk), considering the implications for many aspects of life, including approaches to flooding and erosion under different scenarios. It is not possible to predict how attitudes will change in the future; therefore the SMP is based upon existing criteria and constraints, whilst recognising that these may alter over time to accommodate changing social attitudes.

Quality of life depends on both the natural environment and the human environment, which are discussed below.

Natural environment

The special quality of the landforms, natural habitats, natural landscapes and geological/ geomorphological features on this coast is recognised in a number of national and international designations (protected under statutory international and national legislation) as well as national (e.g. Planning Policy Statement 9, which sets out policies on the protection of biodiversity/geological conservation), regional and local planning policies.

Large parts of the South Devon and Dorset coast are designated as AONBs in order to sustain this unique landscape by protecting the landscape and enhancing recreational opportunities in the area. In addition, four

Heritage Coasts are present within the study area, which have been designated for their exceptional scenic quality. Generally, landscape is difficult to value objectively as it is a mixture of the natural environment and social and cultural history. Therefore, defining a sustainable landscape is usually dependent upon both human and natural environmental factors.

Coastal management has the potential to change landforms and landscapes. In many areas, raising existing or constructing new coastal defences may be detrimental to both the landscape and seascape e.g. through the introduction of an artificial structure into a natural landscape or perhaps through the raising of defences which while restricting views can also obscure the horizon and enclose a previously open landscape. The deterioration of coastal defences from a NAI policy also has the potential to degrade existing landscape quality.

Where possible, opportunities have been explored to enhance the existing landscape/ seascape through the removal of defences and the creation of new areas of intertidal habitat.

There is a *legal* requirement to consider the implications of any 'plan or 'project' that may impact on a SPA or a SAC, through the European Union Habitats Directive (Council Directive 92/43/EEC) and Birds Directive (Council Directive 79/409/EEC). The Defra High Level Targets for Flood and Coastal Defence (Target 4 – Biodiversity) also require all local councils and other operating authorities to:

- avoid damage to environmental interest;
- ensure no net loss to habitats covered by Biodiversity Action Plans (the SMP acknowledges where certain types of BAP habitat within designated sites may be lost or gained);
- seek opportunities for environmental enhancement; and
- monitor any changes to habitats, including contributions to SSSI/SPA conservation targets, loss and gain of habitats, and to keep records.

During the development of SMP policy options, BAP habitats have been identified and appraised within the context of the designated sites. In developing policy options, opportunities for improvements to existing habitats or the creation of new habitats have been considered.

Coastal management can have a significant impact on habitats, both directly and indirectly. In places, coastal defences may be detrimental to conservation interests, e.g. those seen along the cliffed frontages that reduce the quality of geological exposures and geomorphology within the Jurassic Coast World Heritage Site, but in other locations defences may protect the interest of a site, e.g. freshwater sites or designated terrestrial habitats in the hinterland of defences. Coastal habitats may also form the coastal defence, e.g. Dawlish Warren spit across the mouth of the Exe Estuary. Therefore, coastal management decisions need to be made through consideration of both natural environmental features and risk management.

Although the conservation of ecological features in a changing environment remains important in terms of environmental sustainability, future management of the coast needs to allow habitats and features to respond and adjust to change, such as accelerated sea level rise. It is recognised that coastal habitats cannot always be protected in situ because a large element of their ecological interest derives from their dynamic nature and this is important to ensure the continued functionality of any habitat. This poses a particular challenge for nature conservation and shifts the emphasis from site 'preservation' to 'conservation'. Natural England is actively seeking to ensure that coastal erosion and flood risk management proposals are designed to ensure that SSSIs are conserved and, where possible, enhancement opportunities that benefit ecology and geology are implemented, whilst also allowing the coast to remain naturally dynamic.

Under Section 28G of the Countryside and Rights of Way Act 2000, Natural England is provided with the responsibility and power to safeguard England's finest and most vulnerable wildlife and geological features.

Similarly, Section 85 of the Countryside and Rights of Way Act 2000 charges relevant authorities with conserving and enhancing areas of outstanding natural beauty.

Accommodating the objectives of environmental bodies, such as Natural England, and future shoreline change requires flexibility in the assessment of nature conservation issues, possibly looking beyond the designation boundaries to consider wider scale or longer term benefits.

Where possible, opportunities for enhancing biodiversity have been identified within the report and have been taken into consideration in the selection of the preferred policies to enable operating authorities to make progress with implementing the UK BAP and local BAPs. There are several areas along the SMP frontage where biodiversity opportunities can be taken, e.g. allowing more natural coastal processes to take place along large stretches of low-lying areas either by No Active Intervention or through Managed Realignment (e.g. increases in intertidal habitat at The Maer etc), and the protection of important terrestrial/freshwater habitats through holding the line. Such approaches need to be balanced against the socio-economic objectives for the area and engineering feasibility to deliver long term sustainable management.

Human (socio-economic) environment

The human environment covers such aspects as land use (both current and future), infrastructure, material assets, cultural heritage, population and health and the man-made landscape.

(i) Land-use, infrastructure and material assets

Historically, development of the coast took place in an unconstrained manner, often undertaken by individual land owners. Planning Policy Guidance 20 (PPG20) identifies that approximately 30% of the coastline of England and Wales is developed; however, much of this development took place before the introduction of the Town and Country Planning Act, 1947. Growth of built development, both commercial and residential, within the coastal zone over the centuries has increasingly required engineering works to defend properties against the risk of erosion and flooding. However, continued construction of hard-engineered coastal and flood defences to protect development may not be economically sustainable in the long term (see Section 3.2.2). Local Development Frameworks now identify the need for 'sustainable development' and although the exact definition of this is uncertain, it recognises that opportunities for development on the coast are limited due to the risk of flooding, erosion, land instability and conservation policies (as discussed above). Planning Policy Statement 25 Supplement: Development and Coastal Change, that has now largely superseded PPG20, requires Coastal Change Management Areas to be defined to guide acceptable types of development based on the level of risk posed by coastal change, such that long-term sustainable development is directed to areas of very low risk.

In a similar way, Planning Policy Statement 25 (PPS25) on Development and Flood Risk seeks to direct development towards areas of low flood risk rather than areas of higher flood risk (which would in turn require more defence in the future).

There is a number of commercial and industrial interests along the coast including ports and harbours, areas of stone and mineral extraction and dredging activities. These tend to be concentrated in the larger towns and cities such as Plymouth, Brixham, Newton Abbot, Exeter and Portland. The continuation of these industries is essential to sustain the economy of the region as a whole.

In addition, there are military establishments, such as the military assets and firing ranges at Lulworth Camp, and known landfill sites within the study area, which may be particularly vulnerable to flooding and/or erosion and are likely to require further consideration to ensure that policy scenarios are implemented in a sustainable manner (e.g. to avoid release of contaminants into soils, groundwater or surface water).

The potential risk of changes in coastal management posed to infrastructure (e.g. roads, railways, sanitation) in some parts of the study area is also an important consideration. Where affected and still required, this infrastructure will need to be replaced.

(ii) Population and health

A number of large urban settlements are present along the coastline of the study area and those settlements with populations over 50,000 people comprise Weymouth, Exeter, Torquay, Paignton and Plymouth.

Sustainable coastal erosion and flood risk management of these settlements is one of the main objectives of the SMP, in order to meet social and economic needs, and to avoid adverse impacts upon human health (e.g. the physical, psychological and socio-economic impacts of flooding).

A coastal location can be fundamental to some types of tourism/recreation and although the popularity of many British seaside resorts has declined in recent years, seaside tourism often still represents a substantial part of the local economy. The South Devon and Dorset coast is an important destination for visitors from the UK, Europe and the rest of the world, aided by the Jurassic Coast World Heritage Site designation (bestowed upon much of this coast by UNESCO in 2001) and the English Riviera Geopark. Many of the towns along this coast are important centres for tourism, providing accommodation, facilities and services to the many visitors to the area each year. As well as the natural beauty of the area, the large number of accessible, award winning bathing beaches (e.g. Blue Flag status), marinas and sailing clubs is also a prime draw for visitors, especially in the summer months. Thus, the impacts of policy on the tourism industry need to be carefully considered.

As the coastal strip represents an important recreational and amenity resource, many activities rely on the presence of a beach or access to the sea. Although assets landward of current defences and access routes may be protected through maintaining existing defences, it must be recognised that continuing such defence practices would, in the longer term, result in a significant alteration in the nature of the coast, with large concrete seawall structures, narrow beaches and limited access.

(iii) Historic Environment (Cultural Heritage)

Heritage features are valuable for a number of reasons (English Heritage, 2006):

- they are evidence of past human activity;
- they provide a sense of place (or roots) and community identity;
- they contribute to the landscape aesthetics and quality; and
- they may represent an economic asset due to their tourism interest.

Within the study area, there is a combination of designated (e.g. Cornwall and West Devon Mining World Heritage Site, 184 Scheduled Monuments, numerous Listed Buildings, over 26 Registered Parks and Gardens and built Conservation Areas) and significant non-scheduled or unknown archaeological assets. These are described more fully in **Appendix D** 'SEA Environmental Baseline Report (Theme Review)'. These assets are unique and, if destroyed, they can not be recreated; therefore they are vulnerable to any coastal erosion and/or flooding. Conversely, the very process of coastal erosion is uncovering sites of historical interest. Government advice in PPG15 and PPG16 promotes the preservation of important heritage sites, wherever practicable. The Government's policy on archaeological remains set out in PPG16 states that "*Archaeological remains should be seen as a finite and non-renewable resource, in many cases highly fragile and vulnerable to damage and destruction. Appropriate management is therefore essential to ensure they survive in 'good condition'*".

However, due to the dynamic nature of our coastlines, this is not always possible, or sustainable. Therefore, each site must be considered as an individual site and balanced against other objectives at that location.

4 The Preferred Plan

4.1 Plan for Balanced Sustainability

The SMP is built upon the aim of achieving balanced sustainability, i.e. it considers people, nature, historic and economic realities.

The short term (first epoch-up to 20 years) policies for the South Devon and Dorset SMP coastline provide a high degree of compliance with objectives to protect existing communities against flooding and erosion. The preferred long term policies promote greater sustainability for parts of the shoreline and focus on sustaining and possibly enhancing the natural character of this coast. Long term policies that continue to defend the shoreline in the present-day manner would further change the nature of the coast, with a prominence of large concrete seawall structures and fewer beaches. However there is social-economic justification to maintain many of these defences, with some opportunities to optimise management techniques that will sustain those coastal assets important to the community in the longer term.

The overall rationale and long term vision behind the proposed policies for each policy scenario area is explained in the following sections of text. Details of the specific preferred policies for individual locations that seek to deliver the long term vision are provided by the individual Policy Statements in **Section 5**.

4.1.1 Sustainable Management

One of the main objectives in developing a Shoreline Management Plan is the definition of sustainable long term management policies for the coast. In Defra's Procedural Guidance for the Production of Shoreline Management Plans (Defra, 2006) this is defined as "those which take account of the relationships with other defences, developments and processes, and which avoid, as far as possible, committing future generations to inflexible and expensive options for defence". Given sea level rise predictions this would generally best be achieved through the creation of a naturally functioning coast, allowing it to move landwards or seawards at rates dictated by the natural processes of waves and tides. Along this SMP frontage there are large areas of natural undefended coastline and the most sustainable approach in those areas is to not intervene.

However, on the South Devon and Dorset coast, there are many areas that have a long history of coastal defence intervention to reduce the risk of flooding and erosion. This means that the shoreline is today, in places, in an 'unnatural' position and of a form which would not necessarily revert to 'naturally functioning' if simply allowed to develop unmanaged. The consequences of not defending these areas, given the extent of development along parts of the coast, would be an increase in flooding and erosion with thousands of homes and businesses affected within the areas of potential risk.

As such, it is the social and economic sustainability of the SMP area which has driven policy selection for most of the developed areas of this frontage, although policies leading to a more 'natural' shoreline in the long term have been identified where feasible.

4.1.2 Durlston Head to White Nothe

This area is characterised by rocky cliffed shorelines which are designated for their outstanding landscape and geological value. Much of this coast is currently undefended and erosion risks are generally low due to the resistant nature of these cliffs. The preferred policy is therefore to continue to allow natural development along this coast.

There are local exceptions where defences already exist to protect visitor access points and facilities, such as at Kimmeridge Bay and Lulworth Cove. Defence of these areas could be maintained without adversely affecting adjacent stretches of shoreline as sediment interlinkages here are weak. This would, however, be dependent

upon the availability of alternative funding as these will not satisfy national criteria for attracting centrally funded flood and coastal defence budget.

With this plan there is risk of damage or loss through erosion of historical features as well as agricultural land and some terrestrial habitats of international conservation.

4.1.3 White Nothe to Redcliff Point

This is a mainly cliffed section of coast dominated by clay-rich cliffs, which experience episodic landslide events that can cause tens of metres of retreat as a result of a single event. In places there is a risk of relict landslide complexes becoming reactivated, which makes management of this coastline more difficult.

The coast is mainly undefended except for one short stretch of defence at Ringstead. The continuation of the natural erosion process is integral to the World Heritage and SSSI status of the cliffs. Therefore, the long term plan is to allow this coastline to remain in its natural state, ceasing to intervene where this presently occurs.

With this plan there is potential loss of cliff top properties and holiday developments if a landslide event happens in this area. With this impact on cliff top assets a transition period is needed to enable measures to be put in place to manage this change in management. Some historical features could also be damaged or lost to erosion in addition to the loss agricultural land.

4.1.4 Redcliff Point to Portland Bill

This is one of the more heavily developed stretches of coastline within the SMP area, incorporating the key service and tourism centre of Weymouth and the Isle of Portland. There are also a number of nature designations for both geological and biological interests.

A key driver of policy in this area is the continued protection of commercial and social assets which will require the continued defence of the shoreline for much of this area. However, this will result in coastal squeeze of intertidal habitats and potential for accelerated cliff erosion in adjacent policy units. The plan therefore is to continue to protect built assets but seek more sustainable means of achieving this. That includes some local realignment and possible beach enhancement. The latter approach could also result in the beach in this area becoming more valuable as a tourism resource for the wider region. Where realignment does take place, measures will need to be in place to manage this transition in policy. There is also a need to start to plan for how transport links can be provided in the future, especially the long term future of how the road link to Portland is provided.

Along the north-western shore of Portland Harbour it is unlikely to be appropriate to intervene along the entire stretch of coast, at least in the short to medium term. With some risks to property and critical infrastructure along parts of this shoreline, this policy would require measures to be put in place to manage the relocation of people and property in the longer-term.

The Isle of Portland and Portland Harbour breakwaters are key controls on future evolution as they provide shelter and influence the movement of sediment. This whole stretch of coast is therefore heavily dependent on any changes to Portland Harbour breakwaters. The preferred plan includes the assumption that the breakwaters will remain and be maintained. However, even if this assumption were not to hold true in the future, sensitivity tests suggest that it would not alter the preferred management approach, only the nature and timing of how it is implemented.

4.1.5 Portland Bill to Thorncombe Beacon

This stretch of coast is dominated by Chesil Beach, which as well as being internationally important for its habitats, geomorphology and landscape characteristics, also provides an important defence role. The shingle

barrier is undergoing a natural change as it rolls landwards in response to sea level rise and experiences natural reduction in sediment inputs from further west. Whilst this natural process is integral to the designated status of Chesil Beach, where it fronts the tidal lagoon of The Fleet there are environmental implications as The Fleet is gradually being naturally 'squeezed'. This may result in changes to the interest features of the area. As this process occurs, there will also be a significant flood risk to the road and other assets that run behind the beach towards Portland at the eastern end of this section.

Other conflicts arise where there are small settlements, as this coast is also important for tourism which relies on access to the beach and the provision of facilities. As the ridge naturally rolls landward, sustaining defences along these stretches will become more difficult.

A key driver of policy is to maintain the natural status of Chesil Beach and take measures to ensure its future sustainability. Therefore for most of this stretch no intervention is planned.

In the very long term this could have implications for how transport links to Portland are provided and consideration of how this link can be provided in the future is required. Elsewhere this plan would have some implications for several cliff top properties and beach front facilities which would need to be relocated.

At Freshwater Beach, the plan is adapted to allow some minimal intervention to manage the realignment of the coast in line with the retreat of adjacent undefended cliffs. This approach, supported by construction of a secondary defence further inland, will reduce local flood risk to properties at Burton Bradstock without compromising natural functioning of the beach. Continued defence of West Bay will also require a secondary defence behind East Beach to enable sustainable long term management of flood risk to be achieved as whilst also allowing more natural functioning of the beach.

At the far eastern end (Chiswell) the long term plan is to continue to maintain existing defences. This is not expected to have detrimental impact on the Chesil Beach system as a whole, although locally rollback will be inhibited. However, this management is required to maintain protection to assets along this shoreline so that the risk of flooding continues to be reduced.

4.1.6 Thorncombe Beacon to Beer Head

This section of coast is characterised by dramatic, geologically important cliffs which are subject to large-scale complex landsliding. These events are difficult to predict with any certainty, making management of this shoreline difficult. Sediment interlinkages along this frontage are relatively weak due to the interruptions caused by headlands.

The nature of the erosion of these cliffs is integral to their designations and landscape value, however the area is also important for tourism, with resorts at Seatown, Charmouth, Lyme Regis, Seaton and Beer heavily dependent upon this. A key driver of policy is therefore to allow the continuation of natural coastline evolution whilst managing the risk of erosion and flooding to the key settlements.

The defence of Seatown will become increasingly difficult and expensive in the long term. Therefore the long term vision is for a more naturally functioning coast. This would, however, result in the potential loss of some assets. Therefore measures will need to be put into place to manage this transition from existing practice. In the long term the shoreline should reach a more sustainable position, such that a beach will be retained.

At Charmouth and the eastern side of Lyme Regis, there is a need to address the increasing risk further recession of the landslide complexes causing outflanking or even loss of the presently defended areas. Therefore the risk in these areas may be managed in the short to medium term through either maintenance of existing defences or, in the case of Lyme Regis, construction of the Lyme Regis Environmental Improvements Phase IV scheme. However, the long term defence of these areas will be determined by the extent and

location of future cliff recession and so it may be necessary to consider measures to enable assets to be relocated away from the areas at risk. This would be based on continual monitoring.

To the west of Seaton, continued maintenance of defences will reduce cliff recession rates but will not halt it entirely. So there would remain the risk for the loss of some cliff top assets over time.

At Beer, defences will reduce flood risk and retain beach material, as well as ensuring access to the shoreline continues to be provided for the benefit of the area's economy.

Throughout this whole area the majority of properties and other assets will be retained with this plan. However, some changes will occur and potential for losses will exist. There is therefore a need for measures to be put into place to manage the relocation of people, property and infrastructure in the longer term.

This area also includes the Axe Estuary. The long term plan here is to provide habitat creation through strategic realignment, although consideration as to what happens to the route of the tramway would need to be made when implementing this policy.

4.1.7 Beer Head to Otterton Ledge

This is a predominately undeveloped stretch of cliffed coastline, with one key settlement at Sidmouth. The cliffs are internationally important and their natural evolution is integral to their designated status. There is limited sediment interaction, due to the development of a series of headland-bays. A key driver of policy is therefore to conserve the natural status of this shoreline, through minimising intervention, whilst recognising the importance of Sidmouth, and other small coastal developments, to the social and economic structure of the area.

Accelerated cliff recession along the eastern part of Sidmouth is, in part, a result of the defences fronting the rest of Sidmouth further west. Erosion here will eventually lead to exposure of the defences on the River Sid and so increase the risk of flooding to the town. Beach management is therefore advocated to slow the rate of retreat and ensure that the risk to the fluvial defences in the River Sid is minimised. This would protect cliff top properties to the immediate east of the River Sid for a period of time, but these assets could ultimately need to be relocated away from the area of risk at some point if it becomes uneconomic to continue with this. Future decisions about this would be based upon continual monitoring of the beach and cliffs.

4.1.8 Otterton Ledge to Straight Point

This is a short stretch of shoreline lying between the headlands of Straight Point and Otterton Ledge and an important sediment feed from west to east exists which maintains the integrity of the spit at the mouth of the Otter Estuary. Although a naturally functioning coastal system is therefore a driver along this stretch, there is also a requirement for continued protection of Budleigh Salterton, a locally important tourist and service centre. The long term plan is therefore to defend the town but allow erosion of adjacent frontages to minimise impacts elsewhere.

To the west of Budleigh Salterton, this plan may cause loss of some cliff top assets in the medium to long term, but will continue to provide sediment to the beaches fronting the rest of Budleigh Salterton towards the mouth of the Otter Estuary. Managed Realignment within the Otter Estuary itself offers habitat creation potential and may also be beneficial for reducing flood risk in other parts of the estuary.

4.1.9 Straight Point to Holcombe

This is a long stretch of coastline that encompasses the Exe Estuary, the large urban and commercial centre of Exmouth and the resort of Dawlish. Key drivers of policy here are the conservation of currently undefended areas, which have outstanding landscape and geological value, whilst ensuring the continued protection of

important social and commercial assets. A key area of consideration is the protection of rail infrastructure. Future rise in sea level will also result in coastal squeeze in front of the defences and will result both in increased pressure on these defences and the loss of inter-tidal habitat.

There are areas of opportunity, for example through Managed Realignment at The Maer, Lower Clyst and Powderham, which offer habitat creation potential. Any schemes would, however, need to determine how these can be implemented without adversely affecting the flood risk to people, property and infrastructure.

The long term management of the Dawlish Warren spit is uncertain and requires much more detailed examination to determine a technically appropriate, economically sustainable and environmentally acceptable way of managing this area to continue to provide its flood protection function whilst also meeting the requirements of environmental legislation.

Within the Exe Estuary there is a requirement to retain many of the existing defences due to the presence of the railway. This could result in loss of inter-tidal habitat in some parts of the estuary as sea levels rise, which may be compensated for by the areas of proposed Managed Realignment, but would maintain protection to important social, commercial and infrastructure assets.

4.1.10 Holcombe to Hope's Nose

This is a largely undeveloped, hard cliffed section of coastline, with the main areas of development located at Teignmouth and Shaldon either side of the Teign Estuary mouth, and Newton Abbot at the head of the estuary. Long term recession of the coast will be limited in the most part by the geological resistance of the cliffs. Beaches will narrow along much of this shoreline where it is backed by hard defences.

As well as the geological and environmental importance of this shoreline, a key policy driver here is maintaining the mainline railway. The plan here is to continue to hold the existing line of defences to ensure this link remains. This will also serve to protect a range of tourist related assets.

Within the upper Teign Estuary, an area of Managed Realignment towards the head of the estuary could help reduce flood risk within other parts of the estuary whilst also providing habitat creation opportunities.

Along the undefended coast, the plan is to maintain this current natural status. Whilst this has the potential for some loss of local features and agricultural land, this will deliver some of the environmental objectives in this area.

4.1.11 Hope's Nose to Berry Head (Tor Bay)

This is a heavily populated and developed area of coastline which encompasses the Torbay district. Therefore the key driver is the continued protection of the important social and commercial assets, although this could adversely affect some of the designated geological features.

The embayed nature of this coastline means that the beaches tend to be self-contained, with limited sediment linkages between them, meaning that impacts tend to be confined locally. A key future issue is the technicality of maintaining sandy beaches along the key tourist resorts under a scenario of rising sea levels. The beaches in the northern part of Tor Bay would be subject to coastal squeeze. However, the sheltered nature of the bay lends itself to retaining a beach artificially in the future, which may be increasingly important for tourism and amenity as other beaches in the wider region are lost in the long term due to rising sea levels.

There are potential environmental opportunities at Goodrington Sands and Broadsands, where Managed Realignment along parts or all of these areas could allow a more naturally functioning beach to be retained.

4.1.12 Berry Head to Blackstone Point

This coastline is characterised by cliffs of outstanding landscape value and encompasses the Dart Estuary. Much of it is undeveloped with development centred at Dartmouth, Kingswear, Totnes and Brixham. Along much of this coastline the plan is to allow natural evolution of the shoreline, although in the long term natural narrowing of beaches may occur due to the combination of resistant cliffs and rising sea levels, which could impact on inter-tidal habitats. This policy will lead to loss of some properties in St Mary's Bay due to erosion.

Within the Dart Estuary, there is a need to continue to minimise flood and erosion risk to the various assets through maintaining existing defences. Elsewhere however, the plan would not include for the construction of new defences in currently undefended areas. In this way the large areas of natural estuary will be retained, and as such the impact on the long term estuary evolution is expected to be minimal.

4.1.13 Blackstone Point to Start Point

This frontage is characterised by a shingle barrier which over geological timescales has progressively become segmented by emerging headlands as it has migrated landwards in response to rising sea levels. There are a number of shingle beaches, the longest being Slapton Sands, which are important tourist attractions.

The landscape is one of vegetated sea cliffs, shingle ridges and freshwater lagoons and is of outstanding environmental, landscape and geological/geomorphological value. A key driver of policy is therefore conservation of these features, through allowing natural processes to occur and taking measures to ensure the sustainability of the shingle ridge as far as is feasible to do so.

Developments along this stretch are small in scale, but continued protection of these may become increasingly difficult and detrimental to the integrity of the shingle ridge as it continues to migrate landwards. The plan along this frontage is therefore to undertake localised interventions only as necessary to manage the natural realignment of Slapton Sands in both the short and the long term. The greatest implication for this area is the future loss of road access across Slapton Sands. Increasingly it will be unsustainable to maintain in its current form longer term. The policy of Managed Realignment and adaptation is based upon recommendations contained in the Slaptonline Coastal Zone Management report in 2006 (Scott Wilson, 2006; also see www.slaptonline.org). Plans have already been developed following that study to manage the adaptation of the road in the short to medium term and address the longer-term issue of future transport provision in the wider area.

As the shingle ridges at Slapton Sands and Beesands Beach roll-back landwards, it will become increasingly difficult to continue to provide sustainable defence to all parts of the villages of Beesands and Torcross, so some realignment in these areas will need to be considered in the long term.

4.1.14 Start Point to Bolt Head

With the exception of sizeable settlements at Kingsbridge and Salcombe this is a largely undeveloped length of coast with few defences. The coastline is characterised by cliffs of outstanding landscape and geological /geomorphological value, therefore a key driver of policy is for the continued natural evolution of the shoreline, with no intervention.

Within the Salcombe-Kingsbridge Estuary, the policy is to continue to defend areas currently protected against flooding, but not extend this to the construction of new defences in currently undefended areas. In this way the large areas of natural estuary will be retained. The impact on the long term estuary evolution is expected to be minimal, although within parts of the Kingsbridge Estuary there would be some loss of designated intertidal habitat due to coastal squeeze.

4.1.15 Bolt Head to Wembury Point

This is a long stretch of coastline that encompasses the Avon, Yealm and Erme Estuaries. Much of the coastline is relatively undeveloped with few coastal defences and is characterised by cliffs of outstanding landscape and geological /geomorphological value. Therefore along much of this coastline the policy is to not intervene. As a result there will be potential for damage to or loss of a number of cliff top assets.

At Inner and Outer Hope, the existing defence that provides protection to a cliff top road could be maintained if private funds are available, as to do so would have little impact on the rest of the coast. A more sustainable option could be realignment of the cliff top road as and when it becomes at risk of erosion. Similarly at Thurlestone and Challaborough, there are short lengths of defence, many of which are privately owned, that could be maintained without having adverse impacts elsewhere if privately funded, although to do so may increase narrowing and loss of beach locally.

Within the Avon Estuary, Managed Realignment in the upper reaches would provide habitat creation potential and flood storage of benefit to the wider estuary. A policy of Hold the Line at Newton Ferrers and Noss Mayo within the Yealm Estuary would allow continued protection to this developed area.

4.1.16 Wembury Point to Devil's Point

This stretch of coastline encompasses the large urban settlement of Plymouth, the protection of which is the key policy driver. A further requirement is the need to protect areas of active/former landfill and potentially contaminated land from increasing rates of erosion and flooding.

Elsewhere, the cliffs along the eastern side of Plymouth Sound are of outstanding landscape and geological/geomorphological value and no intervention in this area would ensure that these features are maintained in the future.

As a result of the preferred policies, there are potential losses of intertidal habitat, due to coastal squeeze to the west of Mount Batten Breakwater, but potential gains in intertidal habitat to the east of Mount Batten Breakwater. There is also the potential loss of some historic heritage features but protection of a significant number of recreational and tourist related assets and other historic features in Plymouth.

4.1.17 Tamar Estuary

The Tamar Estuary contains a number of developed areas as well as large areas of natural, undefended estuary. A mixture of policies to either continue to protect existing defended areas or to undertake Managed Realignment within the estuary seek to recognise this, as these can provide some significant social and economic benefits with minimal adverse impacts on the environment. Large areas of the Tamar Estuary are natural and undefended, and under this plan no new defences would be constructed in those areas.

In locations where there is potential for Managed Realignment, opportunities for the expansion of existing wetland areas can be explored through targeting environmental schemes such as stewardship. There are also opportunities for new areas of wetland habitat creation through the design of appropriate Managed Realignment schemes. Within these areas, the aim of Managed Realignment would be to both create habitat and reduce flood risk in other parts of the estuary.

4.1.18 Mount Edgcumbe to Rame Head

This coastline is mainly characterised by undefended, hard rock cliffs, which experience very slow retreat rates. Sediment interlinkages are weak. Impacts of defences therefore tend to be confined locally.

For most of the frontage the plan is to continue to allow natural retreat of the shoreline. Due to the low rate of retreat it is unlikely to result in significant losses of assets, although in some areas this may result in damage

to or loss of some historic features. There would be a beneficial impact on nature conservation through a potential increase in intertidal habitat adjacent to an internationally designated conservation site.

At Kingsand and Cawsand, the plan is to minimise the risk of flooding and erosion to the town assets through continued defence.

4.2 Predicted Implications of the Preferred Policies

In the longer term, there may come a time when it can no longer be justified, in economic, technical or environmental terms, to continue defending against coastal erosion and flooding. Although in places we may not have reached this stage, we need to begin planning for this situation. Accepting that it is not sustainable to continue to provide defences to the extent nationally that we have in the past century, the implications of this are presented below.

Direct comparison is made between the proposed policies and a No Active Intervention approach - this being the position if no money was spent on coastal defence. This comparison defines the benefits of the proposed policies.

4.2.1 Implications for Property and Land Use

For much of the South Devon and Dorset coastline the preferred policy is to maintain existing defences where economically viable in the long term. This is to minimise loss of property and assets along the developed parts of the coastline as far as possible. However, for some sections of the coast, a change in management policy has been identified for the longer term where a Hold the Line policy is no longer acceptable on the grounds of economics, technical sustainability or the environment. The SMP has identified areas where a more naturally functioning coastline would be to the benefit of the natural environment, however, there are potential losses of assets should this policy be implemented. The key areas of management change are Ringstead, Hive Beach (Burton Bradstock), East Beach (West Bay), Seatown, Charmouth, Branscombe, Torcross, and Beesands, where the long term technical sustainability and economic viability of a Hold the Line policy is questionable. These management policy changes are based on comprehensive consideration of multiple factors, including scientific fact and best technical knowledge. In situations where communities may be affected, it is critical to manage expectations and account for resistance to implementation of these policies.

For the preferred policies, the total loss of housing to coastal erosion through the whole SMP area up to year 2025, i.e. the end of the 1st epoch, is up to about 160 residential and commercial properties. This compares to the No Active Intervention baseline, when potential erosion losses of up to 580 residential and commercial properties could possibly occur.

By year 2055, residential and commercial property losses as a result of coastal erosion could total around 215, with cumulative losses of between 450 and 460 residential and commercial properties by the year 2105. This compares to the No Active Intervention baseline, when cumulative house losses could be up to 700 by 2055, and over 1,150 by 2105 if the protection measures were not afforded, i.e. the preferred policies deliver coastal erosion protection to about 700 'at risk' residential and commercial properties over the next 100 years. These figures relate to losses through coastal erosion only assuming worst case estimated erosion occurs along all parts of the coast. As parts of the SMP frontage are very low lying, overtopping, overflowing or breaching of defences, even where flood defences are maintained, could lead to wide spread flooding, with over 8,300 residential properties and over 3,200 businesses at risk from flood damage and associated increased risk to life.

Tourism and recreation is an important economic sector, with key centres located along the SMP frontage including those at Weymouth, West Bay, Charmouth, Lyme Regis, Seaton, Sidmouth, Budleigh Salterton,

Exmouth, Dawlish, Teignmouth and Torbay. Along these frontages there will be losses of a number of properties as a result of policies to undertake realignment or No Active Intervention along parts of these frontages, as well as some re-routing of major infrastructure will be required in the longer term under this Shoreline Management Plan. While the preferred policy for many of these areas is to Hold the Line in the long term, there may be a detrimental impact on tourism through loss of beaches at places such as West Bay (West Beach) and Exmouth, where it will become increasingly difficult technically to retain beaches as sea levels rise causing coastal squeeze pressures. Along frontages where some properties will be lost due to coastal erosion in the medium to long term, the preferred policy includes provision for management of the retreat at some of these locations. This could allow for relocation or mitigation measures to be implemented should there be the mechanisms to do so.

Agriculture and grazing also represents a share of the local economy and along the coast there are various grades of agricultural land. Along much of the South Devon and Dorset coast, these are in the undeveloped stretches between the towns and within the estuaries, where there is insufficient economic justification for maintaining or constructing defences, which would also be technically inappropriate. Under the preferred policies there could be loss or damage to approximately 2,800 hectares of agricultural land which will remain at risk of flooding, even where low-level defences are present, by year 2105.

4.2.2 Implications for Nature Conservation

The SMP seeks to support natural processes and maintain wildlife (including the condition of designated sites) along the coastline. The SMP recommends the preferred policies of No Active Intervention or Managed Realignment where it would be possible to enhance and/or create new areas of wetland habitat within or adjacent to designated conservation sites, which would have beneficial impacts.

However, in some locations, holding the line is essential to protect cities or towns. In some of these locations, coastal habitats such as vegetated cliffs, sand dunes, saltmarsh, mudflats and/or sandbanks may be adversely affected (e.g. at Portland Harbour) or lost in the long term due to expected future sea level rise as they may become squeezed against fixed defences or cliffs.

In other areas, where defences will continue to be maintained, some nationally or locally designated freshwater or terrestrial habitats may benefit from holding the line and be protected from coastal flooding.

As described in Section 2.7.4, the SMP has the potential to adversely affect the integrity of seven European sites; Exe Estuary SPA and Ramsar site, Plymouth Sound and Estuaries SAC, Tamar Estuaries Complex SPA, Dawlish Warren SAC in the short term, Chesil Beach and the Fleet SAC, and Sidmouth to West Bay SAC.

In most cases, potentially adverse effects may occur due to coastal squeeze of intertidal habitats and their associated qualifying species as a result of sea level rise against coastal defences. However, there is also uncertainty regarding the loss of vegetated cliff habitats due to holding the line.

Much of the SMP coast is characterised by a variety of cliff types, which are nationally and internationally important for their geology and geomorphology. This includes most of the stretch between Durlston Head and Exmouth which forms the UK's only natural UNESCO World Heritage Site, the 'Jurassic' coast. The most significant threat to the site is the creation of artificial structures along the coast that would affect the natural processes of erosion or obscure the exposed geology, and lead to a loss of fossils (World Heritage Site Management Plan 2009 - 2014: Draft for Consultation (March 31st March to June 9th 2009)). The proposed plan therefore seeks to balance the protection of these natural features with the maintenance and protection of property and material assets wherever possible. The preferred policies of No Active Intervention or Managed Realignment have been recommended in areas where there are limited human assets or along areas of undeveloped coastline to ensure the preservation of the geological interests and compatibility with the

Jurassic Coast WHS Management Plan objectives. In general, the SMP is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.

There are often conflicts between allowing the coastline to evolve naturally (benefiting marine or intertidal habitats) and maintaining designated terrestrial/freshwater sites on the land. In such areas, any SMP policy will result in some loss of habitat. Careful management of the shoreline between Durlston Head and Rame Head will therefore be necessary to manage the designated habitats in place wherever possible, while managing and adapting to changes due to the impact of future sea level rise. Some habitat losses will occur due to sea level rise as the frontage reacts to increasing pressure, for example, as Chesil Beach rolls-back into The Fleet causing narrowing of the lagoon and loss of designated habitat. However, often this will not be a result of SMP policy but would occur due to natural change with or without the SMP.

4.2.3 Implications for Landscape

The preferred long term policies in this SMP are intended to sustain the current dense urban areas through proactive management of the existing beaches and defences, whilst recognising that new linear and possibly shoreline control defences may be needed in the longer term; although in general, the Plan is not to construct new defences in currently undefended areas so much of the coastline will remain as today. However, opportunities for forming a free functioning natural coastline in some areas have been taken, to create a more natural coastal landscape and reducing piecemeal man-made structures on the beach. This is more beneficial to the landscape than a policy of defending the whole coastline, which would involve construction of new, more substantial defences, which in some places would also be unlikely to be technically sustainable or economically viable. A policy of No Active Intervention would help to conserve and enhance the quality of the landscape and seascape of the AONBs, Heritage Coasts and UNESCO Dorset and East Devon 'Jurassic Coast' World Heritage Site. However, it is recognised that loss of some coastal properties, to which the AONB designation refers, may affect the quality of the landscape should they be of special character. In addition, where a No Active Intervention policy is recommended, there is the potential for unsightly defences as they deteriorate in the long term. Measures may be needed to remove such structures, particularly as they also pose a health and safety risk.

A Hold the Line policy involving pro-active management of the existing beaches and defences is still required in some areas to protect dense urban areas and this can result in changes to landscape character and negative effects on views for people living, working or visiting the area.

Generally, the SMP policies work with the objectives of management plans for the nationally designated landscapes, though localised changes in landscape (e.g. landscape changes resulting from the potential loss of coastal features) will need to be considered further at a more detailed level when approaches to delivering policy are determined.

4.2.4 Implications for the Historic Environment

There are a wide range of heritage sites along the coast and many more of these will be protected through the preferred policies than would survive a No Active Intervention policy. However, along some stretches of coastline, there may be possible damage to or loss of historic environmental features in the medium or longer term due to flooding and/or erosion including:

- Scheduled Monuments including Sandsfoot Castle in Weymouth;
- Small areas of Registered Parks and Gardens e.g. Encombe, Lulworth Castle, Rousdon, Connaught, Overbecks, Langdon Court, Flete, Mount Edgcombe;
- Grades I and II Listed Buildings;
- Potentially nationally important non-designated archaeological assets; and

- Other archaeological features that would require consideration at the scheme level including regionally and locally non-designated archaeological assets and HER features, historic landscapes and palaeo-environmental deposits.

The loss of such assets may affect their value as potentially important amenity and recreational assets.

Where there may be possible damage or loss to the historic environment mitigation measures are proposed. In the case of non-designated site mitigation measure should be considered a scheme or project level as appropriate.

4.2.5 Implications for Amenity and Recreational use

The coast is an important area for tourist and recreation use, with key interests concentrated along the coastal strip in many of the settlements in this area. Under the preferred long term policies, the key centres of tourism and recreation such as at Weymouth, West Bay, Lyme Regis, Sidmouth, Exmouth, Dawlish, Teignmouth and Torbay will continue to be protected to maintain assets currently protected by the existing defences. However, this will be at the expense of beaches along many of these frontages, which are unlikely to be retained as the frontages become more prominent and therefore more exposed. The promenades along these sections will also become more exposed and less accessible. Where it is possible to provide defence sustainably in the long term through beach renourishment, this will be of increasing value to tourism and recreation within the region as more and more beaches become lost as sea levels rise.

Although in the long term there are losses of beach expected from rising sea levels and coastal squeeze, there will also be potential access issues, with existing accesses to the beach often being lost or becoming redundant. There is potential, and in some places a necessity due to safety issues, for these to be re-established if funding is available.

Many of the historic and archaeological assets within the SMP area (see Section 4.2.4) provide important amenity attractions.

4.3 Managing the Change

The consequences of the long term management policies and the inevitability of having to change past policies cannot be overstated. By continuing to defend the coastline by following the same approach that has been taken in the past, is unsustainable in the very long term for particular frontages and it is unrealistic to present proposed policies that indicate continued defence of an area where this is unlikely to be sustainable or economically justifiable.

To achieve this change will, however, require consideration of the consequences at various levels of planning and government. There will be matters that need to be debated at a national level, as the issues that have been identified by this Shoreline Management Plan will exist several times over around the UK. It is not possible to achieve complete sustainability from all perspectives and quite probably national policies will need to be developed to help resolve the dichotomies.

4.3.1 Recommendations

It is expected that implementing this Shoreline Management Plan may require changes at local planning, regional and national government levels. At a time when regions are being charged with increasing the national housing stock, there may need to be compensatory provisions made to offset the losses that will result from this Plan and others. These provisions may, for example, include making other land available for building.

Regional planning needs to consider the messages being delivered by this Plan, and ensure that future

proposals for regional development and investment are made accordingly. Such planning needs to be looking beyond the current 20 year horizon.

Local planning should consider the risks identified in this Shoreline Management Plan and avoid approving development in areas at risk of flooding and erosion. Local planning also needs to consider that relocation of displaced people and property may require land to be made available within the same settlements to maintain the same level of community and may need to become increasingly flexible to enable this. Locations for new developments may need to be identified.

In the short term the need to **ensure that conservation interests within designated sites or in the wider environment are appropriately addressed by coastal management should be done in a way that engages the public and involves local communities in finding long term solutions to issues.** To help deliver this objective English Nature (now Natural England) has published a Maritime Strategy entitled ‘Our coasts and seas: making space for people, industry and wildlife’, available from the Natural England website.

To accommodate coastal change and associated potential loss of property and assets, whether due to coastal erosion or flooding, local operating authorities will need to develop action plans. These will need to address the removal of buildings and other cliff-top facilities well in advance of their loss to erosion. The plans for relocation of people also need to be established and clear for all affected.

Mitigation measures do not fall solely upon national and local government and should not be read as such within this Plan. **Business and commercial enterprises will need to establish the measures that they need to take to address the changes that will take place in the future.** This includes providers of services and utilities, which will need to make provision for this long term change when upgrading or replacing existing facilities in the shorter term. They should also consider how they will relocate facilities that will become lost to erosion or flooding and the need to provide for relocated communities. Other parties needing to consider mitigation measures will be the local highways authorities and bodies responsible for local amenities (including churches, golf clubs, etc).

Private land and property owners will also need to consider how they will deal with these changes. The terms of the Acts under which the operating authorities work confer only “permissive powers” and, as such, there is currently no general obligation on the part of operating authorities or national government to assure protection against flooding or erosion. There is no reason at present to assume that this will change in the future or that individual losses would be recompensed from central funds.

The SMP provides a long lead time for the changes that will take place, which in general will not happen now, but will occur at some point in the future. To manage these changes effectively and appropriately, the approach put forward in this SMP needs to be considered now, not in several decades time. Refer to the Action Plan in **Section 6.**

5 Policy Statements

5.1 Introduction

This section presents the preferred policies and implications for individual sections of coast. These are to provide local detail to support the overall SMP presented in **Section 4**, and consider locally-specific issues and objectives which are presented in **Appendix E**. These statements must be read in conjunction with the wider objectives and in the context of the wider-scale issues and policy implications.

5.2 Content

Each Policy Statement contains the following:

- **Location reference** – This provides the general location covered by the statement, together with the policy unit or units covered by the statement. The policy units are identified by a number which is sequential along the shoreline from east to west (to accord with a new national notation).
- **Summary of the SMP recommendations and justification** – This summarises each location’s plan and explains the reasoning behind it. These statements focus upon the long term policy but also note any different short term requirements necessary to achieve the long term aim.
- **Preferred policies** – This describes the preferred policies and activities to be adopted in the short, medium, and long term. In this respect, “short term” is broadly representative of the next 20 years, “medium term” the next 20 to 50 years, and “long term” the next 50 to 100 years or more. These timescales should not be taken as definitive and should be considered as phases in the management of a location. Similarly, the policy unit boundaries shown should not be taken as definitive, as the SMP is based upon high-level assessment and more detailed studies may justify the need to ‘go across’ boundaries to appropriately deliver the plan’s policies.
- **Predicted implications of the preferred policies for this location** – This table summarises the consequences at this location only resulting from the preferred policies. These come under the categories of “property and population”, “land use, infrastructure and material assets”, “historic environment”, “landscape”, “earth heritage, soils and geology”, “water”, and “biodiversity, flora and fauna” and correspond with information being entered into the national database of SMPs. The implications have been assessed for the situation by years 2025, 2055 and 2105 to provide a nationally consistent picture, and consider the impact of the local policy and also policies along adjacent stretches of coast, as necessary.

Maps – The maps show the erosion that is expected to occur under the preferred policy option in each area. It should be noted that in some areas no erosion is predicted to occur and so the erosion lines shown sit on top of each other (and so only a single erosion line is visible). 2008 Environment Agency flood zone maps have been used. The reader should note that these are continually updated by the Environment Agency (refer to www.environment-agency.gov.uk) but do not include the effects of climate change or raised defences. The maps, where appropriate, show potential realigned defence positions to illustrate possible implications of policies. It should be noted that the realignment extent where managed realignment is proposed will be subject to further studies before any realignment scheme is undertaken (refer to Section 5.2.2). Not all data used in the SMP is shown on these policy unit maps. Additional data used can be viewed on the maps provided in Appendix D.

5.2.1 Policy units

Statements are provided for the following Policy Units:

Policy statement extent	Policy units covered	Page number
Durlston Head to White Nothe	5g01 to 5g08	49
White Nothe to Redcliff Point	5g09 to 5g11	62
Redcliff Point to Preston Beach (Rock Groyne)	5g12 to 5g15	69
Preston Beach (Rock Groyne) to Portland Harbour (North Breakwater) (includes Weymouth Harbour)	5g16 and 5g17	78
Bingleaves to Dowman Place	5g18 to 5g20	84
Small Mouth to King's Pier	5g21 and 5g22	92
King's Pier to Portland Bill	5g23	100
Portland Bill to West Weare	6a01	103
Chiswell and Chesil Beach (to Wyke Narrows)	6a02 and 6a03	107
Chesil Beach and The Fleet	6a04	114
Chesil Beach (Abbotsbury to East Cliff (West Bay))	6a05 to 6a10	119
West Bay	6a11 and 6a12	131
West Cliff (East) to Thorncombe Beacon	6a13	138
Thorncombe Beacon to Seatown (East)	6a14	142
Seatown	6a15	146
Seatown (West) to Charmouth (East)	6a16 and 6a17	152
Charmouth	6a18	157
Charmouth (West) to East Cliff (Lyme Regis)	6a19	162
Lyme Regis	6a20 to 6a22	166
Monmouth Beach to Haven Cliff (West)	6a23 and 6a24	174
Axe Estuary	6a25 to 6a28	179
Seaton to Seaton Hole	6a29 and 6a30	188
Seaton Hole to Beer Head	6a31 to 6a33	194
Beer Head to Salcombe Hill	6a34	202
Sidmouth	6a35 and 6a36	206
Chit Rocks to Otterton Ledge	6a37 and 6a38	213
Otter Estuary	6a39 and 6a40	218
Budleigh Salterton	6a41	223
Budleigh Salterton (West) to Straight Point	6a42	227
Straight Point to Orcombe Rocks	6a43	231
Orcombe Rocks to Exmouth Spit	6a44 to 6a47	234
Exe Estuary (East Bank – Exmouth to River Clyst)	6b01 to 6b07	243
Exe Estuary – Lower Clyst	6b08	254
Exe Estuary (East Bank – River Clyst to Topsham Sludge Beds)	6b09 to 6b11	259
Exe Estuary (West Bank)	6b12 to 6b18	265
Dawlish Warren	6b19 to 6b22	276
Langstone Rock to Holcombe	6b23 and 6b24	284
Holcombe to Teignmouth (The Point)	6b25 to 6b29	289
Teign Estuary	6b30 to 6b35	298
Shaldon (The Ness) to Petit Tor Point	6b36 to 6b40	309
Petit Tor Point to Walls Hill	6b41	317

Policy statement extent	Policy units covered	Page number
Walls Hill to Hope's Nose	6b42 to 6b44	322
Hope's Nose to Beacon Cove	6b45 to 6b47	328
Beacon Cove to Roundham Head	6b48 to 6b55	334
Roundham Head to Churston Cove (East)	6b56 to 6b59	345
Brixham	6b60 and 6b61	353
Berry Head to Kingswear (South)	6b62 and 6b63	359
Dart Estuary	6b64 to 6b70	364
Blackstone Point to Strete	6b71 to 6b74	375
Strete to Limpet Rocks	6b75 and 6b76	384
Limpet Rocks to Beesands	6b77 and 6b78	391
Beesands (South) to Start Point	6b79	397
Start Point to Limebury Point	6c01 and 6c02	401
Salcombe Harbour (Limebury Point to Kingsbridge Estuary – Scoble Point)	6c03	407
Kingsbridge Estuary	6c04 to 6c06	410
Salcombe (Snapes Point to Splat Cove Point)	6c07	416
Splat Cove Point to Bolt Head	6c08	419
Bolt Head to Avon Estuary (East)	6c09 to 6c12	422
Avon Estuary	6c13 to 6c15	431
Warren Point (Bigbury-on-Sea) to Challaborough (West)	6c16	438
Challaborough (West) to Erme Estuary (East)	6c17	442
Erme Estuary	6c18 to 6c20	445
Erme Estuary (West) to Yealm Estuary (East)	6c21	451
Yealm Estuary	6c22 to 6c25	454
Season Point to Wembury Point	6c26	462
Wembury Point to Mount Batten Breakwater	6c27	466
Mount Batten Breakwater to Devil's Point (including Plym Estuary)	6c28 to 6c30	470
Tamar Estuary (East Bank)	6c31	476
Upper Tamar Estuary	6c32 and 6c33	480
Tamar Estuary (West Bank)	6c34 to 6c40	486
Mount Edgcumbe to Rame Head	6c41 to 6c45	497

5.2.2 Additional information

Historic environment features

Where a proposed policy results in the loss of Historic Environment features (known and unknown) it will be important to consider surveys and investigations to record these important sites, and any features not yet identified.

Footpaths

Where a proposed policy results in the loss of footpaths, there is potential, subject to planning consents, for footpaths to be re-routed as the shoreline retreats and/or when defences are realigned. It is important to note, however, that the provision of defences to support a footpath is not sufficient justification alone for

providing the defence, as evidenced by the policy of the South-West Coast Path (www.southwestcoastpath.com).

Land use within defended areas or those affected by policies

Flood and erosion defences reduce the risk to the assets they protect but they do not remove the risk completely. To be suitably adaptable to future change and future risks, all new development in flood and erosion risk areas should be appropriately adaptable, resilient and resistant. Decisions on development land use within flood and erosion risk areas should fully consider the risk and be adaptable to change. This should follow national planning policy, particularly PPG20 and PPS25 which states development should first be directed to low risk areas. Appropriate emergency/contingency plans should also be put in place to manage any residual risks of sudden extreme flooding.

Where the SMP recommends managed realignment of existing defences, the effect on parties currently protected by defences will be part of the 'management' of that change.

Health and safety and removal of defences

All the policies presented will need to be supported by strategic monitoring and must, when implemented, take due account of existing health and safety legislation. Where a policy of No Active Intervention will result in present defences not being maintained, then consideration will need to be given to removing defences so that they do not present a risk to public safety as they deteriorate.

Erosion risk

Within the policy statements, 'total erosion' is stated for a given period and refers to total erosion from the present day and not the erosion during that period. For example, if the 20 to 50 year statement states that there is 10m erosion and the 50 to 100 year statements states there is 25m erosion, then this would mean that there was a potential for 15m recession between years 50 and 100, resulting a cumulative recession of 25m by year 100.

The erosion risk stated is the maximum extent of risk expected along the stretch of coastline discussed. However, it should be recognised that erosion is not linear due to local variations in geology and structure and exposure conditions, and varying rates of erosion will occur along any length of coastline.

Estuaries

The SMP2 has considered the estuaries along the coast up to the tidal limits which, in some cases, extend some way inland, whilst in others, are located at the coast (refer to **Appendix C, Annex C.1** for a full list of estuaries considered).

For many of the estuaries along this coastline, there have not been detailed studies undertaken and therefore limited information was available for this SMP. The recently completed Catchment Flood Management Plans (CFMPs) (Environment Agency, 2008) that cover the estuaries have therefore been used as the primary basis for setting policy in the SMP. It should, however, be noted that the policies set by CFMPs are not directly equivalent to SMP policies.

Economic viability

Although economic viability has been considered in putting together this plan, a proposed policy of hold the line or managed realignment does not guarantee funding for defence maintenance and/or capital works along these sections of the shoreline (see **Appendix H** for further detail on the economic appraisal for the preferred policy options presented).

Private defences

Along parts of this coast there are private defences that have been constructed by individual landowners. The policy statements indicate where we believe these existing private defences could, or should not, be maintained for technical and/or environmental reasons. However, it is acknowledged that at some point other individuals may wish to build new defences where presently there are none. In these situations, new defences might be permitted, but the landowner would need to demonstrate that these would have no adverse impacts on coastal processes and designated features, as part of the statutory planning process. It is not possible to prescribe specific policies for this situation as it is unknown as to if, when or where this situation may arise.

Managed Realignment policies

Managed realignment extents are not defined in the following SMP policy unit statements because further studies are needed to:

- identify the best alignment and extent of defences that best manages flood risk on technical, social, economic and environmental grounds;
- define the exact standard of protection of any realigned defences along these frontages;
- investigate implementation methods;
- assess hydrodynamic impacts of managed realignment;
- investigate future morphological evolution;
- assess potential impacts on Designated or Registered Historic Environment assets and their settings;
- assess the potential impact on internationally designated sites; and
- investigate any mitigation measures required for loss of any designated habitats.

Theoretically the maximum extent of any realignment is limited by the extent of the floodplain, but in reality there are a number of other constraints which restrict it further. Within the present SMP, example realignment extents have been identified after considering:

- the provision of a more sustainable estuary alignment;
- the avoidance of built assets, infrastructure and internationally designated habitats where practicable;
- more economic, shorter and sheltered defences, incorporating high land where possible;
- the creation of intertidal habitat; and
- the potential effects on estuary dynamics.

These are indicative extents and definition of the actual realignment extent will depend upon further studies.

There should be detailed consideration of future land use, development and infrastructure improvements in all areas of flood and erosion risk, particularly where the policy is to enable the shoreline, and the assets affected by it, to adapt in a sustainable, controlled and balanced way.