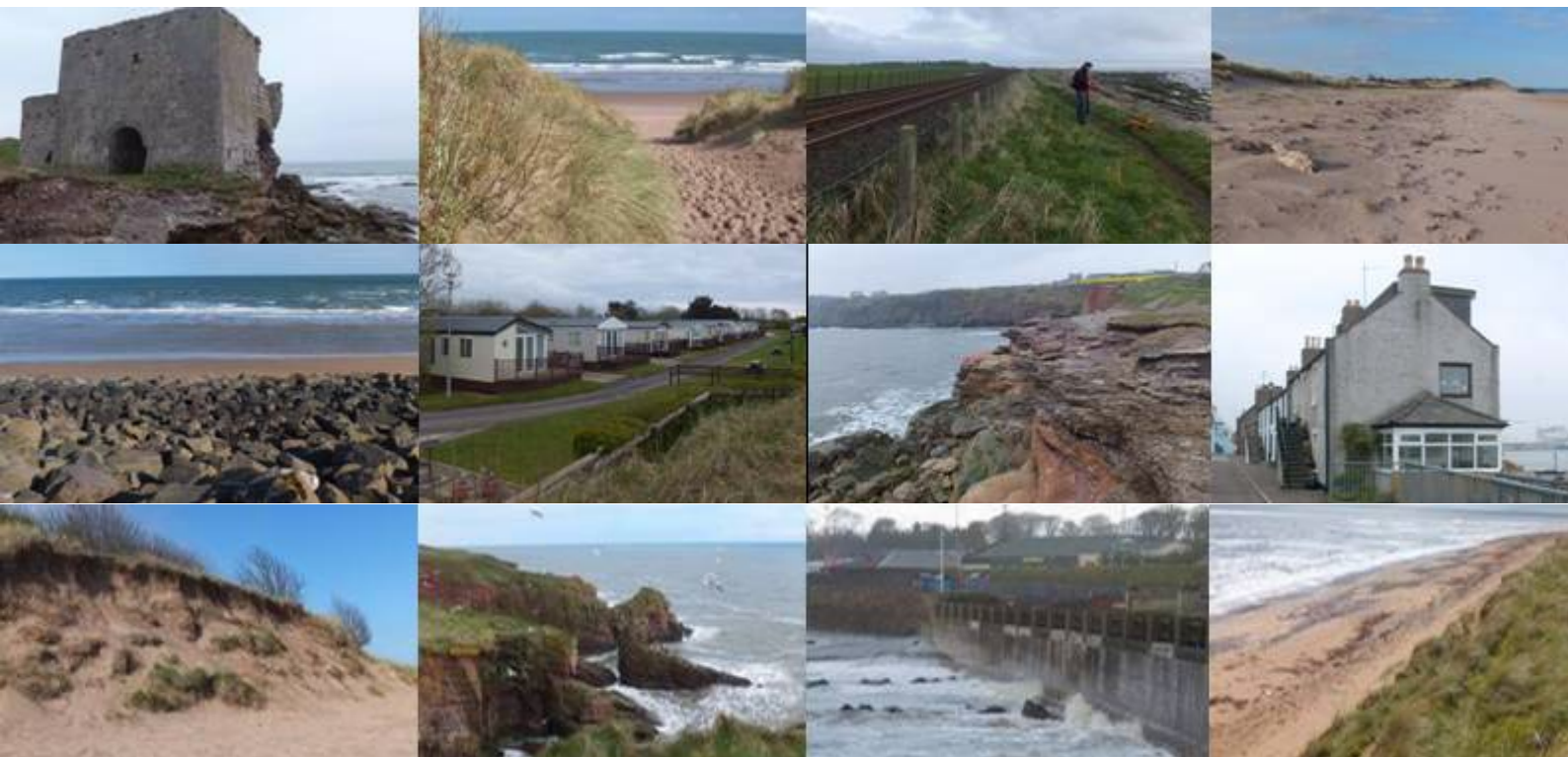


**Angus Council**

**Angus Shoreline Management Plan SMP2**

Main SMP2 Document



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## ANNEX 1 GLOSSARY

### APPENDICES:

- A – SMP2 DEVELOPMENT
- B – STAKEHOLDER ENGAGEMENT
- C – BASELINE PROCESS UNDERSTANDING
- D – SEA ENVIRONMENTAL REPORT
- E – ISSUES AND OBJECTIVES EVALUATION
- F – INITIAL POLICY APPRAISAL AND SCENARIO DEVELOPMENT
- G – POLICY SCENARIO TESTING
- H – ECONOMIC APPRAISAL AND SENSITIVITY TESTING
- I – HABITATS REGULATIONS ASSESSMENT
- J – WATER FRAMEWORK DIRECTIVE ASSESSMENT
- K - METADATA AND BIBLIOGRAPHIC DATABASES

# I Introduction

## I.1 Angus Shoreline Management Plan 2

### What is this document?

A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with erosion and flooding at the coast. It also presents policies to help manage these risks to people and to the developed, historic and natural environment in a sustainable manner. SMPs form an important part of the Department for Environment, Food and Rural Affairs (Defra) strategy for managing risks due to flooding and coastal erosion (Defra, 2006<sup>1</sup>).

The first generation SMP (SMP1) for the Angus coastline, produced by Angus Council, in partnership with HR Wallingford, was completed in 2004<sup>2</sup> and recommended strategic '50 year' policies. A SMP is, however, a working document and requires updating over time to ensure:

- any new information and improved understanding of coastal processes is incorporated into shoreline management decisions;
- any change in coastal use or local-level issues is taken into account;
- the policies adhere to new environmental legislation, such as Strategic Environmental Assessment, Habitat Regulation Appraisal and Water Framework Directive Assessment;
- the policies take due account of any change in governance or funding.

The Angus SMP has been reviewed by Halcrow Group Ltd to produce a revised plan (SMP2) that it takes account of the latest available information and our current understanding of flood and coastal erosion risks.

### What area does the SMP2 cover?

This document is the second generation Shoreline Management Plan (SMP2) for the shoreline which extends between Milton Ness in the north and Broughty Castle, Broughty Ferry in the south. This includes part of the Aberdeenshire Council coast from Milton Ness to the River North Esk, the Angus Council coast from the River North Esk to the Dighty Water and part of the Dundee City Council coast from the Dighty Water to Broughty Castle (Figure 1).

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<sup>1</sup> Defra (2006). Shoreline Management Plan Guidance. March 2006.

<sup>2</sup> Angus Council (2004) Angus Shoreline Management Plan. Angus Council, Forfar.

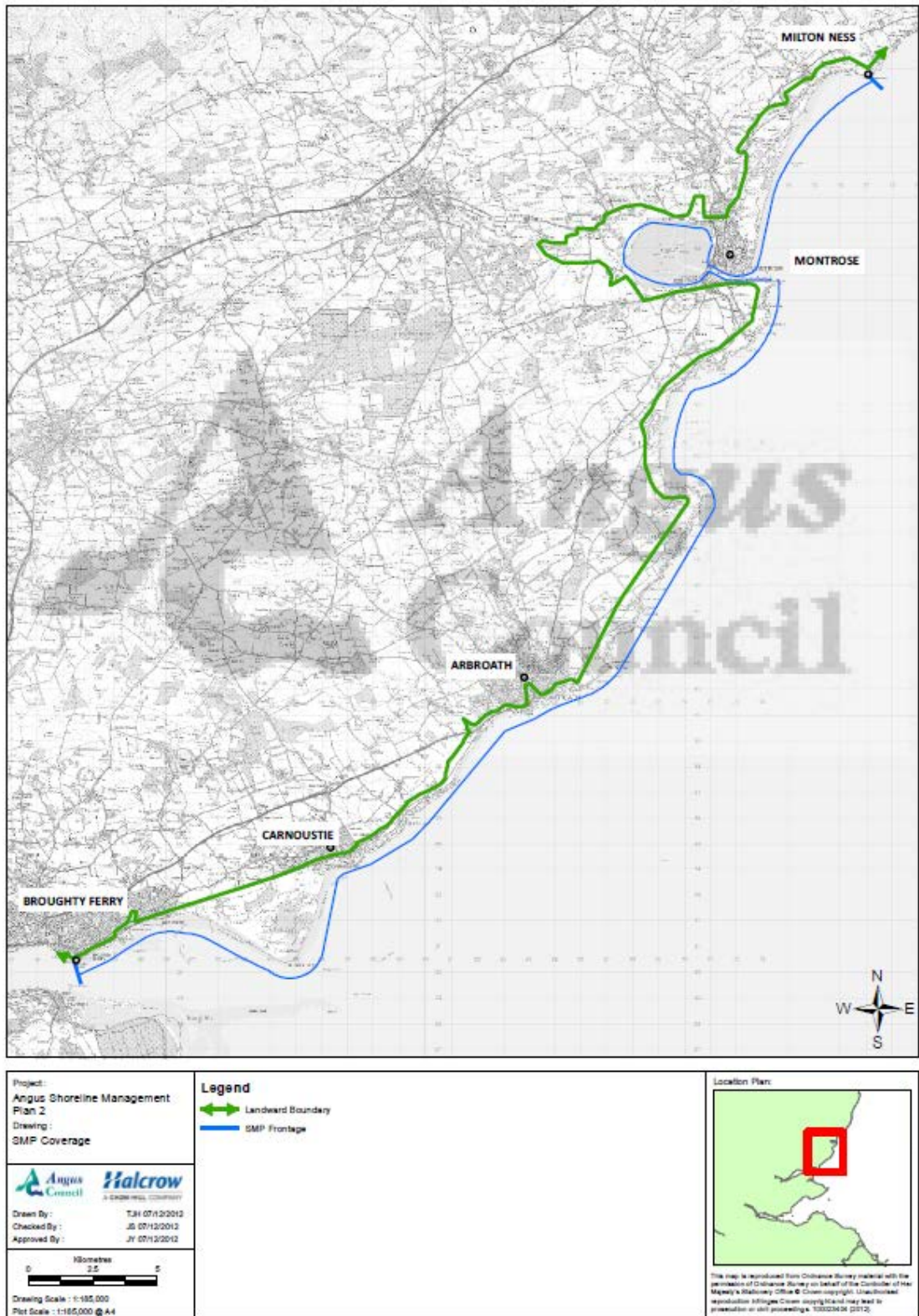


Figure 1 Angus SMP2 plan area.

## 1.2 The Role of the Angus Shoreline Management Plan 2

### What is a Shoreline Management Plan?

This SMP is a non-statutory, high level 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 planning.

The legislative framework for coastal defence, flood risk management and coastal planning in Scotland is built around the:

- the Flood Risk Management (Scotland) Act 2009 establishes a framework within which sustainable flood risk management of coastal flooding will operate; placing Local Authorities, SEPA, Scottish Water, and Scottish Ministers under a new duty to act with a view to reduce overall flood risk and a duty to act with a view to achieving the objectives set out in flood risk management plans;
- the Coast Protection Act 1949, which empowers 'Coast Protection' Authorities to carry out coast protection work inside and outside their area as necessary, subject to the approval of the Scottish Executive. The powers given to Coast Protection Authorities under the Act are permissive, i.e. they are not obliged to protect eroding coastlines;
- Scottish Planning Policy 2014, a statement of the Scottish Government's policy on nationally important land use planning matters, including coastal planning;
- National Marine Plan 2015, introduces a framework for maritime spatial planning (including land-sea interactions) and aims to promote the sustainable development of marine areas and the sustainable use of marine resources.

In Scotland there is no single agency with responsibility for coastal protection and flood defence, no dedicated budget for flood defence, and many coastal defences are privately owned. This has led to a piecemeal approach to shoreline management in the past. A number of Scottish local authorities including Angus Council have therefore developed Shoreline Management Plans to guide the management of their coasts.

### What will the SMP2 do?

The UK Government guidance for developing SMP2s (Defra, 2006<sup>1</sup>) requires them to:

- identify sustainable and deliverable policies for managing coastal risks while working with natural processes wherever possible;
- promote management policies for the coastline over the next 100 years, to achieve long-term objectives that are technically sustainable, environmentally acceptable and economically viable; and,
- be realistic and consider known legislation and constraints, both human and natural, and not promise what cannot be delivered.

Further reviews of the SMP2 will be carried out in future years, when deemed necessary. Future reviews may include changes to policies, particularly in light of continuous improvement in understanding and knowledge of the coastline.

### What are the objectives that Defra say the SMP2 should address?

The SMP2:

- sets out the risks from flooding and erosion to people and the developed, historic and natural environment within the SMP area;

- identifies opportunities to maintain and improve the environment by managing the risks from floods and coastal erosion;
- identifies the preferred policies for managing risks from floods and erosion over the next century;
- identifies the consequences of putting the preferred policies into practice;
- sets out procedures for monitoring how effective these policies are;
- informs others so that future land use, planning and development of the shoreline takes account of the risks and the preferred policies;
- discourages inappropriate development in areas where the flood and erosion risks are high;
- meets international and national nature conservation legislation and aim to achieve the biodiversity objectives; and,
- highlights areas where there are gaps in knowledge about the coast and produce an action plan to address these gaps.

### 1.3 Shoreline Management Plan 2 Policies

The SMP2 must remain flexible to adapt to changes in legislation, politics and social attitudes. SMP2 therefore considers objectives, policy setting and management requirements for three main timescales; the present day or short-term (0 to 20 years), the medium-term (20 to 50 years) and the long-term (50 to 100 years). The SMP2 shows how we aim to achieve a long term sustainable vision when considering decisions about coastal defence now. Setting policies over three timescales allows us to meet the objectives and put in place policies that provide opportunities for change in the future. Action Plans have also been developed to help put the policies into practice (see **Section 4** and the accompanying Policy Statements, **Section 5**).

#### What are the policies that are used in SMP2s?

The policies for managing the shoreline used in this SMP2 are defined in the Defra guidance as shown in **Table 1**.

**Table 1: Descriptions of the four shoreline management policies used in SMP2**

Policy Option	Description
<b>Hold the line</b>	By maintaining or changing the current standard of protection of the existing line of defence. This policy also includes those situations where work is carried out in front of the existing defences (such as beach recharge, rebuilding the toe of a structure, building offshore breakwaters and so on) to improve or maintain the standard of protection provided by the existing defence line. Furthermore it includes work behind existing defences (such as building secondary flood defences) where this work would form an essential part of maintaining the current coastal defence system.
<b>Advance the line</b>	By building new defences on the seaward side of the original defences to create new areas protected from flooding or erosion. Use of this policy is limited to those policy units where significant land reclamation is considered.
<b>Managed realignment</b>	By allowing the shoreline position to move landwards (or seawards), with management to control or limit the extent of movement (such as reducing erosion or building new defences on the landward side of the original defences).
<b>No active intervention</b>	Where there is no investment in coastal defences or operations.

All four of the policies need to be supported by monitoring and must (when put into practice) take account of health and safety legislation. An explanation giving more detail of what the policies mean is given below.

**What does hold the line (HTL) mean?**

This policy option means that the shoreline will essentially be kept in the same place.

Where hold the line has been proposed, the intent is to manage the risk from coastal flooding or erosion to important assets and interests by maintaining current defences or by constructing new defences in the future.

It does not necessarily mean that the current defences will be maintained in the same form in the future as the way the risk is managed may change over time. In some locations additional structures may be required such as erosion protection seaward of the existing defences or new flood walls built further in land to help reduce flood risk. Beach management will be an important element of this policy in a number of locations where the beach and / or sand dunes form part of the defence line and where the beach is an important recreation asset.

In locations where a hold the line policy has been identified this does not guarantee that funding will be available from public sources. In some areas defences are fully or partly privately owned and maintained, or may require alternative private funding in the future.

**What does advance the line (ATL) mean?**

This policy option primarily means that more land will be created by constructing new coastal defences into the sea.

Alternatively, this policy may also mean the construction of new or extended harbour walls or breakwaters out into the sea. This policy has not been recommended in the current SMP2.

**What does managed realignment (MR) mean?**

This policy option allows the shoreline position to move landwards (or seawards) in a controlled way to manage the risk from coastal flooding or erosion to assets and interests. Managed realignment provides the opportunity to create a more natural coastline by allowing sediment movement which helps maintain beaches or provides space for natural landward roll-back of saltmarsh, beaches or dunes in response to ongoing coastal change and sea level rise.

Managed realignment has been recommended in this SMP2 for three different situations:

- Where there are dune systems that are presently defended along the coast, either creating an unnatural alignment or where defences are failing. The intent of managed realignment in these circumstances is typically to allow the dune system to accrete and erode naturally (moving seawards and landwards) with limited intervention to manage risks and adapt to the changing coast. This policy will allow the dunes to be managed as a natural coastal defence and allow adaptation to assets in the erosion risk zone (such as relocating paths, car parks and roads).
- Adaptive measures and dune management are already being implemented at East Haven by the local community (East Haven Together) to maintain and enhance the East Haven dunes as a natural form of defence and for their environmental importance. These methods have allowed the dunes to evolve in a more controlled way while maintaining their integrity as a defence line. The intent of managed realignment here is to recognise this ongoing work and to allow the local community to continue to reduce risk to their village through adaptation and dune management into the future.
- Within Montrose Basin, saltmarshes and mud flats provide a degree of natural flood defence as well as providing important natural habitat for wildlife. The SMP2 recognises that there are opportunities to move



defences landward, or to remove defences so the shoreline realigns back to higher ground or a new secondary defence. This will create more space for saltmarshes to be maintained and/or develop and hence improve the natural defence and provide environmental benefits. Managed realignment may also allow the creation of habitats for wildlife to balance potential long term losses of habitat elsewhere.

In locations where managed realignment is proposed, this SMP2 does not generally define or predict the new shoreline or defence position. Theoretically, the shoreline could be moved inland up to where the area at risk of coastal flooding ends. However, in reality defences are often not moved back that far, due to the presence of built or natural assets or infrastructure. Therefore, the SMP2 recommends in the Action Plans for the specific areas that more detailed studies and consultation is carried out before any realignment is implemented. These further studies would need to consider potential local and regional impacts of realignment along with the risks and opportunities.

#### **What does no active intervention (NAI) mean?**

This policy option lets nature take its course on the shoreline. It allows the coast or estuary frontage to develop naturally without any management.

This policy applies to areas of natural shoreline in this SMP2 area where there is no need for intervention to manage risks. It also applies in areas where it is important to allow sediment to erode from cliffs / dunes to feed beaches or to allow beaches, dunes or saltmarsh to adjust or roll-back naturally as sea levels rise.

## **I.4 Shoreline Management Plan 2 Report Structure**

This SMP2 document represents numerous studies and assessments performed over a period of time. To cater for a wide audience, the SMP2 is presented in two parts:

- **Main SMP2 Document** (this document); and,
- **Supporting Appendices** (a series of more detailed supporting documents, which are referred to from this Main SMP2 Document).

### **Main SMP2 Document**

#### **What is included in the Main SMP2 Document?**

The Main SMP2 Document sets out the policies for managing the risks of coastal erosion and tidal flooding over the next 100 years along the Angus SMP2 coast. It is intended for a general audience and is the main way that we will let people know what the SMP2 policies are. Whilst the justification for decisions is presented, it does not provide all of the information behind the recommendations; this is contained in the **Supporting Appendices**.

The **Main SMP2 Document** is presented in five parts:

- **Section 1 – Introduction** (this part) gives details on the principles, structure and background to the SMP2. This includes information on the content of the supporting documents, provides an overview to the SMP2 development process and how it has been applied to the Angus SMP shoreline.
- **Section 2 – Overview of Shoreline Management Plan** presents an overview of the preferred plan for shoreline management, including a summary of the policy options in each policy area, the potential implications of such options, and the reasons for their selection. This is presented in association with some background information regarding the behaviour and character of each section of the coast.
- **Section 3 – Environmental Assessment** presents a summary of the environmental assessments undertaken to confirm that the SMP2 policies comply with the requirements of European and National Directives and

Regulations. This includes an outline of the process and an overview of the key outcomes of the environmental assessments undertaken, including the Strategic Environmental Assessment (SEA), the Habitats Regulations Assessment (HRA) and the Water Framework Directive Assessment (WFDA).

- **Section 4 – Action Plan** provides an introduction to the Action Plan. The Action Plan identifies the steps which need to be taken to implement the SMP2 policies, as well as setting out more detailed studies and plans that would lead to a better understanding of the coastline or more effective management. Actions for the whole SMP area are included in the tables in **Section 4**, while more specific lists of detailed local actions are included in the policy statements in **Section 5**.
- **Section 5 – Policy Statements** presents a series of statements that provide the SMP2 policies for each individual section of the shoreline (known as Management Units), including some details on 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. This Section also includes mapping that illustrates the preferred policies for each of the three epochs along the entirety of the SMP coastline and provides a detailed Action Plan for each policy area, setting out the actions to be completed, lead partners with responsibility for each action and relative importance.

Although it is expected that many readers will focus upon the local details in **Section 5**, it is important to recognise that the SMP2 is produced for the Angus SMP coastline as a whole, considering issues that extend beyond specific locations. Therefore, the policy statements must be read in the context of the wider-scale issues and policy implications, as reported in **Sections 2 and 3** and the **Appendices** to the SMP2.

## Supporting Appendices

### What information is included in the supporting appendices?

The supporting appendices provide all of the background information to the SMP2. 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.

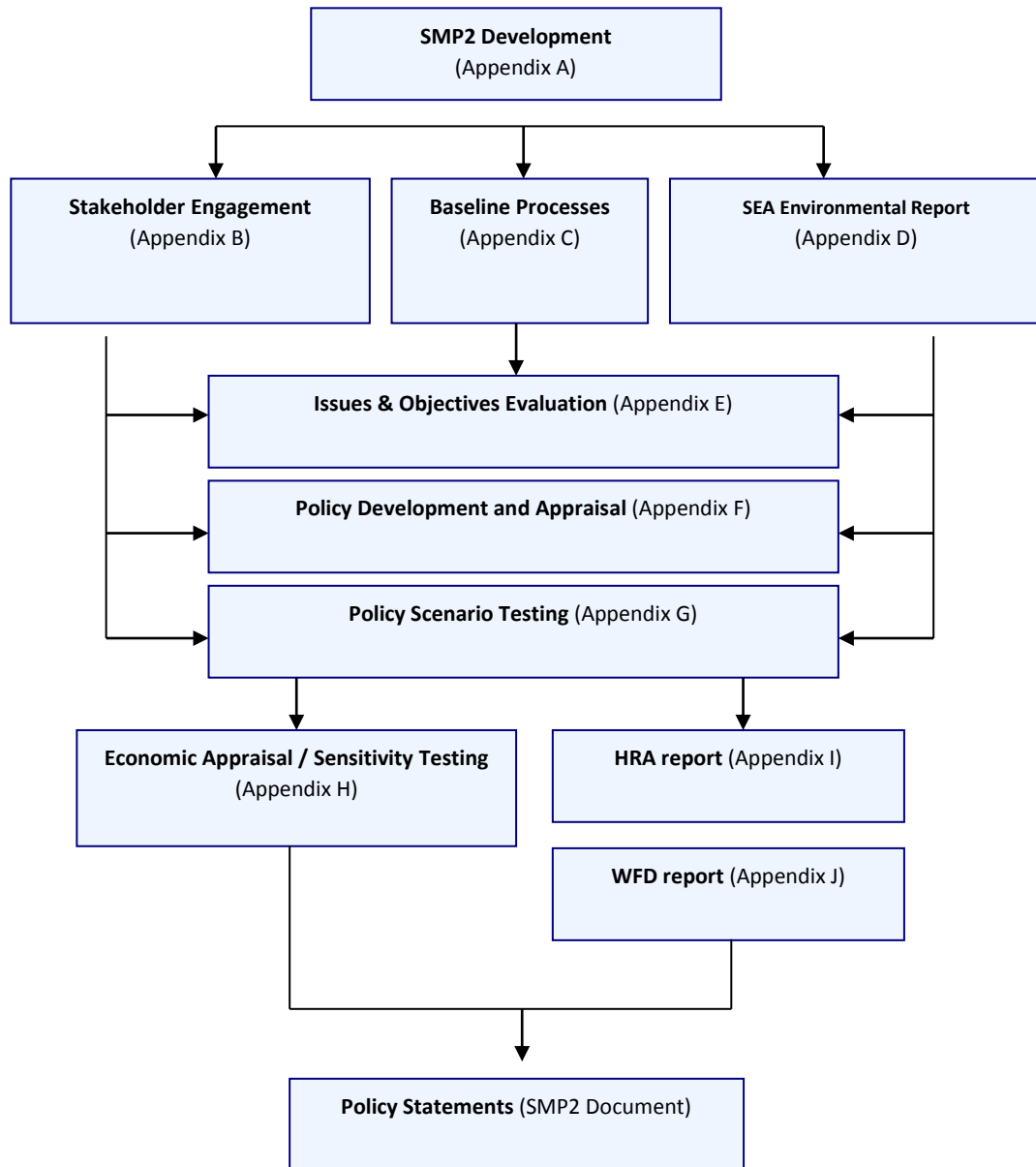
This information is largely of a technical nature and is provided in twelve parts:

- **Appendix A: SMP2 Development** reports the history of development of the SMP2, describing in more detail the SMP2 stages and policy decision-making process and outlines the chronology of the SMP2 development. It is intended to be a ‘route map’ for use when reading the rest of the SMP2 document and supporting appendices.
- **Appendix B: Stakeholder Engagement** documents the important role stakeholders have had in shaping the plan. This appendix outlines the Client Steering Group (CSG), their role in SMP2 development and details of outputs from their involvement. This appendix provides all communications from the stakeholder process including initial letters introducing the SMP2, CSG meeting minutes and any feedback relating to stakeholder comments. A consultation report is also included which details responses received during the public consultation process, the project team’s comments on the responses and how they have been taken into account.
- **Appendix C: Baseline Process Understanding** provides information on current understanding of shoreline processes and coastline behaviour, as well as estimating how the coastline may behave in the future under two different ‘baseline’ scenarios. This includes a number of coastal process statements which detail current and historical shoreline behaviour; assessments of the existing coastal defences (their location, type and residual life) and the two baseline scenarios for no active intervention (NAI) and with present policies (WPP)

which consider future shoreline change for the whole SMP area assuming no further investment in defences and assuming current management practices continue respectively over the next 100 years.

- **Appendix D: Strategic Environmental Assessment (SEA) Environmental Report** draws together the work undertaken in developing the Plan that specifically relate to the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive). This appendix provides a systematic appraisal of potential environmental consequences of the proposed policies, including economic, technical and social factors. The SEA baseline (“Theme Review”) annex to this appendix identifies and evaluates the environmental features of the coastline (in terms of the human, natural, historical and landscape environment) in terms of their significance to the SMP2 process. Information from this baseline review is considered in the development of future policy options. The SEA baseline provides an understanding of these key features, their significance to the area both locally and nationally, and how they interact with coastal processes.
- **Appendix E: Issues & Objective Evaluation** provides information on the issues and objectives identified as part of the Plan development and which need to be addressed by future shoreline management. Features and issues identified during completion of the SEA Environmental Baseline Report (Annex 2 to **Appendix D**) and during the initial consultation with the CSG are assessed in terms of generic objectives which are defined for the whole SMP area. The objectives provide a framework for the development and appraisal of shoreline management policies.
- **Appendix F: Initial Policy Appraisal and Scenario Development** explains the development of a range of alternative policy options for particular sections of coast into ‘policy scenarios’ in order to help assess interactions between parts of the coast. The assessment of shoreline evolution and changes in coastal risks (**Appendix C**) has formed a key part in determining the combinations of policies to make up the ‘scenarios’ for testing.
- **Appendix G: Policy Scenario Testing** provides appraisals of how the coast would evolve under the alternative policy combinations identified in **Appendix F**, and the implications of this for important features along the shoreline. Through undertaking these appraisals, a ‘preferred’ scenario has been identified for each coastal area that best achieves the defined shoreline management objectives (**Appendix E**) and is most sustainable, i.e. technically feasible, environmentally acceptable and socio-economically viable.
- **Appendix H: Economic Appraisal and Sensitivity Testing** provides a high-level assessment of the economic robustness of each preferred policy and an assessment of sensitivities and uncertainties relating to these policies. This includes a cost-benefit analysis of each policy, an assessment of potential damages and assessment of uncertainties.
- **Appendix I: Habitats Regulations Assessment (HRA)** presents the assessment of the effects of the policies on European sites as required by the Habitats Regulations (Conservation (Natural Habitats &c.) Regulations 1994). It presents an assessment of whether the preferred policies would have an effect on the integrity of Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Ramsar sites. The scale and implication of potential impacts is established and a decision is presented on whether these impacts are acceptable or not.
- **Appendix J: Water Framework Directive Assessment (WFDA)** presents an assessment of the effects of the policies on the water bodies as described in the River Basin Management Plans established under the Water Framework Directive and as required by the Water Environment and Water Services (Scotland) Act, 2003.
- **Appendix K: Meta-database and Bibliographic database** includes a database of supporting information used to develop the SMP2, referenced for future examination and retrieval. This includes references to other literature, and type and source of datasets used in creation of SMP2 maps.

The structure of the SMP2 documents, and how they relate to each other, is summarised in the following flow chart.



## I.5 The Plan Development Process

### How has the SMP2 been developed?

Development of the Angus SMP2 has taken account of:

- the first round Shoreline Management Plan (Angus Council, 2004<sup>2</sup>);
- latest studies since the first generation SMP, including various reports on climate change and national / regional mapping (e.g. SEPA Flood Map);
- issues identified by recent coastal defence planning;
- changes in legislation (e.g. the EU Habitats and Birds Directives, Water Framework Directive);
- changes in national Scottish flood and erosion risk planning requirements; and
- the results of any coastal monitoring activities.

Throughout the SMP2 process it has also been important to work closely with other studies and projects to make sure that these plans are co-ordinated and coherent. A range of plans are being, or have been developed which link with the SMP2 and include:

- The River Basin Management Plan for the Scotland River Basin District 2009–2015 (Scottish Government, 2009<sup>3</sup>);
- Dundee Coastal Study (Dundee City Council, 2011<sup>4</sup>);
- Montrose Beach Environmental Development Plan (Milne and Dong, 2010<sup>5</sup>; 2011<sup>6</sup>); and
- National Coastal Change Assessment ([www.dynamiccoast.com](http://www.dynamiccoast.com)).

### How has the work been managed?

Development and delivery of this SMP2 has been led by Angus Council, with support, guidance and review provided by the Client Steering Group (CSG) who has been involved throughout the life cycle of the SMP2. The CSG includes representatives from Angus, Dundee City and Aberdeenshire Councils as well as Strategic Environmental Assessment (SEA) statutory consultees including the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH) and Historic Environment Scotland, as well as key stakeholders along the frontage, including the Ministry of Defence (MoD) and Scottish Water. Angus Council will also oversee implementation of the SMP2 following its completion.

The SMP2 development has been greatly assisted by inputs from the CSG, whose views have been sought at key decision-making points. A number of CSG meetings have been held throughout plan development to identify and understand the issues, review the objectives, set direction for appropriate policy development, and review and comment upon the proposed SMP2 policies for consultation.

### What did the work involve?

The main activities involved in producing the SMP2 are described in **Appendix A**. The work has followed the guidance from Defra<sup>1</sup>.

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<sup>3</sup> Scottish Government (2009) The River Basin Management Plan for the Scotland River Basin District 2009-2015

<sup>4</sup> Dundee City Council (2011) Dundee Coastal Study

<sup>5</sup> Milne, F.D. and Dong, P. (2010) The Morphodynamics of Montrose Bay and Implications for Coastal Management. Montrose Beach Environmental Development Plan Phase 1 Report. Angus Council, Forfar.

<sup>6</sup> Milne, F.D. and Dong, P. (2011) Management of Erosion at Montrose. Montrose Beach Environmental Development Plan Phase 1 Report. Angus Council, Forfar.

The key steps included:

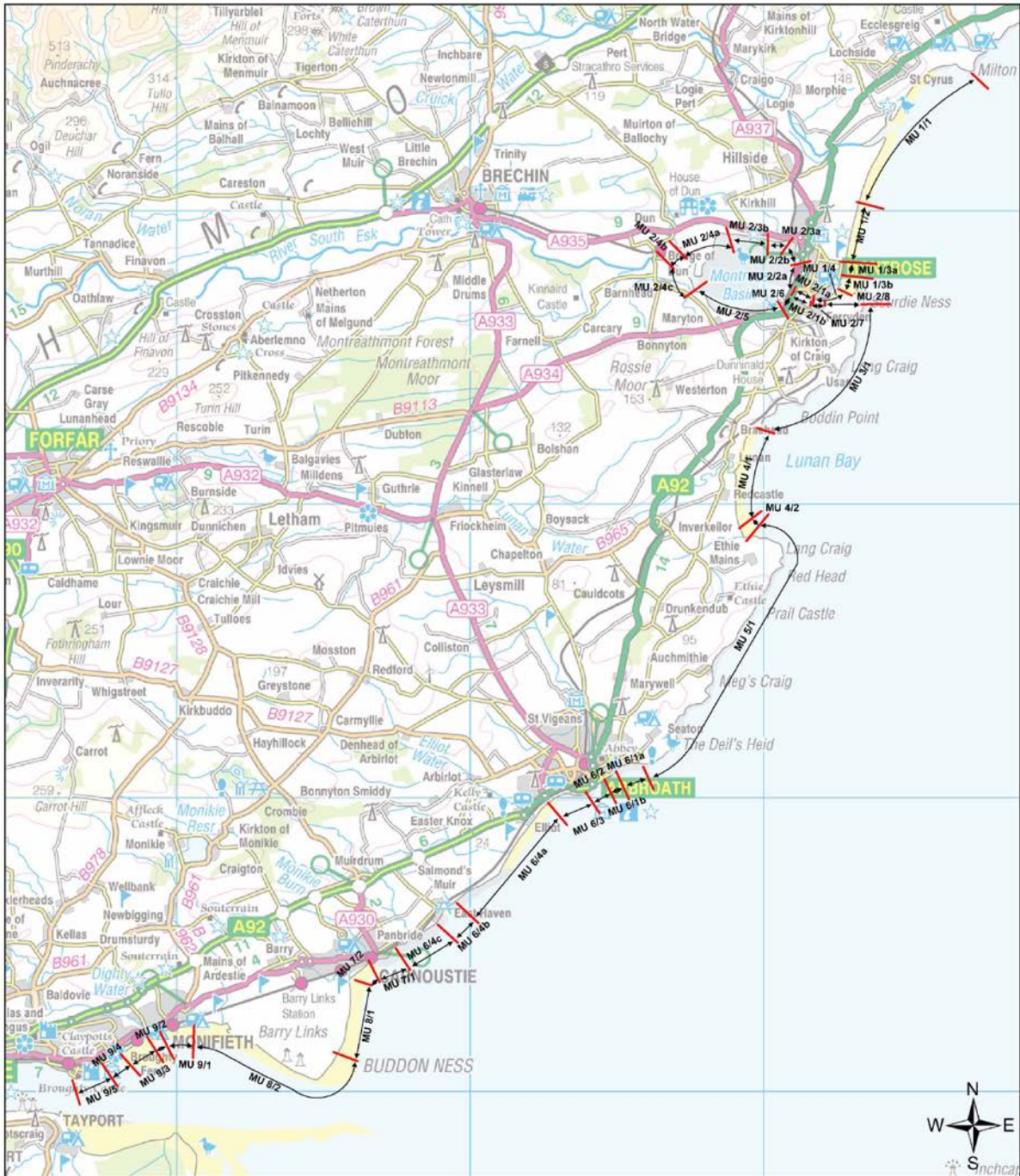
- reviews reporting on themes of human, historic and natural environmental to identify features near the shoreline and issues relating them to shoreline management;
- developing and analysing issues and objectives for shoreline management to address for various locations along the shore;
- analysing coastal and estuarine processes and coastal change to let us know the impacts of not defending and/or continuing to defend and manage the coastline as it currently is;
- agreeing key objectives and primary policy drivers with stakeholders, to help determine scenarios of possible policy options;
- developing scenarios of policy options based on the key objectives and primary policy drivers for sections of the shoreline;
- examining coastal change in response to policy scenarios and assessing the implications for people and the historic and natural environment;
- determining the preferred plan and policies through review with the Client Steering Group before compiling the SMP2 draft document;
- consultation on the proposed plan and policies (April 2016 to June 2016);
- review of consultation comments and issues raised and publication of consultation report (Appendix B);
- update the SMP2 policies and documents and finalise the SMP2;
- complete the Habitats Regulations Assessment for the final SMP2 policies; and
- Local Authority formal adoption of the SMP2, dissemination and sign off.

Following adoption of the SMP2 by the Local Authorities, the final SMP2 will be implemented by Angus Council. It will be the responsibility of Angus Council to ensure that the Action Plan is progressed by the appropriate partners and where there are problems with delivery to seek to resolve issues through collaborative working.

## 2 Overview of the Shoreline Management Plan

### 2.1 Summary of the Preferred Plan

The preferred plan for each SMP2 management units is explained in the following sections of text. Details of the preferred policies for individual locations are provided by the individual Management Unit Policy Statements in **Section 5**. Figure 2 provides a location map of the nine management units.



Project :  
Angus Shoreline Management  
Plan 2  
Drawing :  
SMP2 Management Unit  
Boundaries




Drawn By : MPC 04/02/2016  
 Checked By : LW 04/02/2016  
 Approved By : SB 04/02/2016

Kilometres  
  
 Drawing Scale : 1:125,000  
 Plot Scale : 1:125,000 @ A3

**Legend**

— Management Units (MU)

Location Plan:



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Figure 2: Location of SMP2 Management Units



## Management Unit I - Montrose



This section of coast extends from the cliffs at Milton Ness in the north to the mouth of the River South Esk in the south. An undefended natural beach and dune system, dissected by the River North Esk, extends between Milton Ness and the Montrose Golf Links, here there are few assets at risk and the dunes to the north are nationally designated as a Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR). The north of Montrose town is located landward of the Montrose Golf Links. The Montrose Golf links coastal frontage is mainly undefended;

apart from the rock strong points which were constructed to provide short term protection to the tees at most risk of erosion. Dune erosion is particularly severe along this frontage and these rock strong points are now at the end of their design life and have become increasingly ineffective.

The frontage south of the golf course, including the Splash, South Links Holiday Park and GlaxoSmith Kline frontages, is entirely defended. The seawall and rock armour around the Splash (the Faulds) recreation area has formed a promontory where the frontage is currently 40-60m seaward of the natural shoreline position. Beach lowering in front of this defence is an increasing problem. South of Splash a continuous rock revetment protects the South Links Holiday Park and the GlaxoSmithKline industrial complex. The 1999 coastal defence scheme in front of the GlaxoSmithKline site has acted to encourage accretion in this location and defences here are now buried.



The long term plan for the frontage north of Montrose Golf Links is to allow natural processes to continue unhindered, where the naturally evolving dune and beach system will continue to provide the natural coastal defence, protecting inland areas from coastal water intrusion. A naturally eroding and accreting dynamic dune system helps absorb the impact of storms and acts as a resilient barrier to the destructive forces of wind and waves.

In line with the original Shoreline Management Plan (Angus Council, 2004), along the Montrose Golf Links frontage the plan is to manage erosion of the dunes through a managed realignment policy to maintain the integrity of the dunes as a natural defence while maintaining protection to the majority of the golf course into the long term. Assuming material is suitable and available, there is an opportunity for beneficial use of River South Esk dredgings as recharge material along the frontage to help maintain beach levels and manage dune erosion. Inevitably this policy will include the need for relocation of those assets / tees in the 100 year erosion zone further inland.

The medium term plan south of the golf course, along the Splash recreation area and the South Links Holiday Park frontages, is to continue to maintain existing defences to reduce flood and erosion risk into the medium term. Again, there is an opportunity for beneficial use of dredged material to maintain beach levels. Under rising sea levels, coastal squeeze may result in the further loss of beaches in front of the Splash and Holiday Park frontages and therefore, holding defences on their current alignment will become unsustainable in the

long term. In light of this, the long term plan here is therefore to remove defences once they reach the end of their design life and allow a more natural shoreline position to form, in line with the golf course dunes to the



Beach fronting GlaxoSmithKline

north. Opportunity exists to design a new scheme which will provide flood and erosion risk protection to Montrose while reinstating the dunes as the natural line of defence. Although provision will need to be made to relocate Trail Drive, as well as assets at Splash and along the seaward edge of the caravan park in the medium term, the reinstated managed eroding dune frontage will provide a release of sediment back into the system to feed, maintain and improve fronting beaches.

Assuming the industrial works remain, the long term plan along the GlaxoSmithKline frontage is to continue to provide flood and erosion protection to the site. However, as long as accretion continues along this frontage, minimal intervention is expected to be required.

### Policy Area 2 – Montrose Basin

Montrose Basin is an enclosed estuarine basin which almost empties at low water, exposing extensive mud flats which are internationally designated as a SPA and Ramsar site. The Basin acts as a sediment trap and current stability of its intertidal areas is expected to continue as sea levels rise. Montrose Basin also forms part of a Scottish Wildlife Trust Nature Reserve and Local Nature Reserve, important for the diverse habitats and species. The River South Esk drains through the basin and out to sea south of Montrose, adjacent to the village of Ferryden and the northern edge of the Scurdie Ness headland.

Defences provide flood and erosion protection to Montrose Port, residential and commercial assets, infrastructure (railway and road), landfill and low lying agricultural land in previously reclaimed areas at Montrose, Tayloan, Rossie Island and the western edge of the basin. The Basin is flanked by higher land to the north and south, much of which is currently undefended, however private defences preventing erosion exist along the Sleepyhillock Cemetery frontage.



Montrose Basin, Rossie Island

The long term plan is to continue to protect assets and infrastructure at flood or erosion risk at Montrose, Montrose Port, Rossie Island and Tayock, including allowing private maintenance of defences at Ferryden and Sleepyhillock Cemetery. Elsewhere, along the northern and southern flanks of the Basin, and along the undeveloped cliffs toward Scurdie Ness the plan is to maintain a naturally evolving system to preserve habitats and maintain designations. Designated freshwater habitat in the west of the basin will continue to be defended, however, in line with the original SMP, the long term plan for the Basin also provides opportunity for habitat creation in non-designated areas along the western bank under a managed realignment policy. The construction of new set back defences will manage flood risk to the wider area while providing accommodation space for longer term habitat creation. New habitat formed may offset losses of habitat as a result of coastal squeeze elsewhere in Montrose Basin.

### Policy Area 3 - Scurdie Ness to Rickle Craig



Boddin Lime Kilns

The Scurdie Ness to Rickle Craig coastline is dominated by an undefended rocky coast and fronting rock platform. Along the frontage erosion rates are low; however there is potential for occasional localised rock falls. The cliffs are geologically important for the exposures of volcanic lavas and are designated as a SSSI and GCR site.

There are minimal assets at risk along this undeveloped coastline, however, the East Coast Main Rail Line passes close to the edge of the cliffs near to Rickle Craig and therefore may be at risk in the future.

The listed Lime Kilns at Boddin Point are also being actively eroded.

In line with the first SMP, the long term plan along this undeveloped cliffed frontage is to continue to allow unhindered natural evolution of the coast. As minimal assets are at risk and coastal processes are key to the conservation of the designated sites, intervention is not recommended. Risk to the railway should be monitored and the sustainability of the railway in its present location should be reviewed by Network Rail.

### Policy Area 4 – Lunan Bay

Lunan Bay is a large sandy bay contained between high resistant cliffs to the north and south. An undeveloped dune and beach system dominates the bay, and is intersected by the Lunan Water outlet. Although the undefended dunes and beach are mostly stable in this enclosed bay, recreation and visitor activities have destabilised parts of the dunes in the north, where dune blowouts are evident.



Lunan Bay

The holiday home community of Corbie Knowe is located at the southern end of the bay. Here, *ad hoc* private defences have been constructed to protect the small number of assets. These defences are at present, in varying states of disrepair, and, having contributed to lowering of the beach in this location, will become increasingly unsustainable over time.



Corbie Knowe

The long term plan for Lunan Bay is to reinstate a completely naturally evolving system in the Bay as a whole, with the dunes providing the natural coastal defence. Once defences fail at Corbie Knowe they would not be replaced, to allow the system to revert back to a natural state. Private maintenance of existing defences until the end of their design life would be permitted to allow time to relocate assets away from the risk area, on the understanding that no new defences would be constructed following failure.

Measures to limit pressures on the dunes should be investigated and implemented to allow natural processes to continue alongside recreational activities within the dune system.

### Policy Area 5 - Lang Craig to Whiting Ness

The Lang Craig to Whiting Ness coastline is characterised by undefended natural cliffs and small shingle pocket beaches at Auchmithie, Castlesea and Carlinheugh Bays. Rugged resistant volcanic cliffs dominate the northern section between Ethie Haven and Red Head, which then give way to Old Red Sandstone cliffs fronted by a rock platform along the south of the frontage towards Whiting Ness. Along the frontage erosion rates are low, however there is potential for periodic localised rock falls. Sections of the cliffs are geologically important for their exposures and are designated as a SSSI and GCR sites. The southern cliffs at Seaton also form part of a Scottish Wildlife Trust Nature Reserve.



There are no built assets at erosion risk and the only human pressures along this coast relate to the small community at Ethie Haven, the abandoned harbour at Auchmithie which is in disrepair and the coastal path north of Arbroath which is at risk of erosion due to landslides caused by land drainage issues, not coastal processes.

In line with the first SMP, the long term plan along this undeveloped cliffed frontage is to continue to allow unhindered natural evolution of the coast. As no built assets are at risk and coastal processes are key to the conservation of the designated sites, intervention is not recommended.

### Policy Area 6 – Arbroath to West Haven



This section of coast extends from Arbroath in the north to West Haven in the south. The frontage can be split into two distinct areas. The coastal town of Arbroath, its harbour and recreation areas are located in the north of the frontage. Hard coastal defences extend along the entire Arbroath frontage, providing flood and erosion protection to assets and infrastructure at Arbroath, Arbroath Harbour, Seagate and to recreation assets at Victoria Park, Inchcape Park and Gayfield Park. Due to the reflective nature of the defences at Inchcape Park, beach lowering in front of this defence is an increasing problem.

The southern part of this section, extending from Arbroath to West Haven, is largely undeveloped and is characterised by a relatively stable, mostly undefended dune and beach system. A wide sand beach, backed by a cobble storm beach at the dune toe gives way to a fronting rock platform south of Corse Hill, broken only over a short section at East Haven. The dune systems at Elliot Links and in front of property at East Haven are nationally designated as SSSIs for important flora and fauna and habitats.

The East Coast Main Rail Line runs along the coast between Arbroath and West Haven, passing very close to the coastal edge at Hatton, just north of East Haven. Here a short stretch of defence has been constructed to

protect the railway line. The only other defence along the southern section is a short stretch of rock revetment at Dowrie, constructed to protect an area of contaminated land.

The village of East Haven is located towards the south of the frontage, within a small bay formed where there is a gap in the rock platform. A wide beach area has formed, backed by stable dunes. A number of properties, accessed by a road under the railway, are located directly landward of the dunes. Adaptive measures and dune management are already being implemented at East Haven by the local community to maintain and enhance the East Haven dunes as a natural form of defence and for their environmental importance



The long term plan for the Arbroath frontage is to continue to protect assets and infrastructure at flood or erosion risk, and allow private maintenance of defences at Seagate to continue. Between Arbroath and West Haven the long term plan is to allow natural evolution of the coast along the majority of the frontage, where the dunes form the natural coastal defence.



A localised hold the line policy is necessary between West Links and East Haven to allow the continued maintenance and improvement (if required) of defences at Hatton and Dowrie. Providing short lengths of protection to the railway and to contaminated land at these two locations is not expected to have a significant effect on coastal processes along the frontage. Risk to the railway should be monitored and the sustainability of the railway in its present location should be reviewed by Network Rail.

Natural evolution and unconstrained coastal processes are key to the conservation of the designated sites at West Links and East Haven. The long term plan for East Haven is to continue to allow the local community to undertake adaptive measures and dune management to maintain the integrity of the dunes as a defence line under a managed realignment policy. A small number of low lying residential properties in East Haven may be at increased flood risk as sea levels rise over time. Over time, property adaptation and resilience measures should be investigated / implemented to help residents address any future risk. In addition, flood warning and emergency procedures should be implemented for any properties at flood risk.

### Policy Area 7 – Carnoustie

The Carnoustie frontage extends from West Haven in the east to Barry Burn in the west and is characterised by two distinct areas. Between West Haven and Carnoustie Station the hinterland consists of a largely developed residential area, fronted by a low narrow dune ridge, narrow beach and fronting rock platform broken only over a short section at West Haven. The East Coast Main Rail Line runs along this section of coast, and a pumping station and buried wastewater main are also located close to the shore. The shoreline is



relatively stable along this section where the rock platform provides natural protection to the shoreline and consequently defences are now buried in some locations.



Barry Burn

Between Carnoustie Station and Barry Burn the hinterland is predominantly used for recreation. Carnoustie is an important tourism centre, famous for its golf course. Here defences provide flood protection to a recreation area, leisure centre, Carnoustie Golf Course and hotel. A wide sloping sand beach fronts the defences; however beach levels can vary, with no exposed beach at high tide along the majority of frontage.

The long term plan for Carnoustie is to continue to protect assets and infrastructure at flood or erosion risk. Where the coastline is stable and defences are currently buried, minimal intervention is expected to be required.

### Policy Area 8 – Buddon Ness

The Buddon Ness frontage extends from Barry Burn, Carnoustie in the east to Monifieth to the west. Buddon Ness represents an extensive, dynamic dune system, the majority of which is allowed to function and evolve naturally. Buddon Ness falls within the boundaries of MoD land and therefore there is very little development on the Ness, with the exception of Carnoustie Golf Course in the north east, two lighthouses and built assets associated with MoD activities. The majority of the Buddon Ness dune system is internationally designated as a SAC and nationally designated as a SSSI, while the intertidal areas are internationally designated as SPA and Ramsar. The eastern half of the Ness is also designated as a Geological Conservation Review (GCR) site.

A rock armour revetment, built in 1990, extends along the eastern side of the Ness at Barry Sands East to protect Carnoustie Golf Course and the MoD firing range located in this area. The intertidal beach is wide in this location; however, beach levels have fallen with no exposed beach at high tide. Construction of the defences has effectively restricted landward movement of the shoreline and natural sediment exchange between the dunes and beach.



Barry Sands East



Buddon Ness

In line with the first SMP, on the assumption that the MoD will continue to use Buddon Ness into the long term, the plan for Buddon Ness is to continue to protect MoD and golf course assets from flood and erosion risk at Barry Sands East, while allowing natural processes to continue unhindered along the southern and western frontages, where the naturally evolving dune and beach system will continue to provide the natural coastal defence. The continued loss of beach may result in the need to

maintain the current defences in the future. Should the MoD reduce their activities or leave the Barry Buddon site, opportunities to remove defences and restore the natural coastline and process should be investigated.

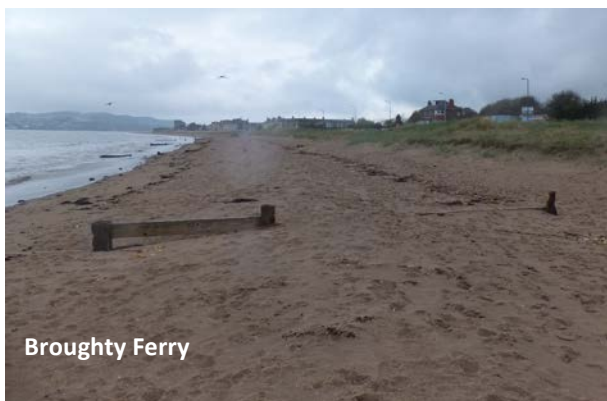
## Policy Area 9 – Monifieth to Broughty Ferry

This section of coast extends from Monifieth in the east, past Barnhill, to Broughty Ferry Castle in the west, and is intersected by the Dighty Burn at Milton Mill which marks the boundary between Angus Council and Dundee City Council. The Main East Coast Rail Line runs along the majority of the frontage, along with the buried wastewater main. Almost the entire frontage is defended and erosion and accretion has historically fluctuated along the frontage, where patterns of erosion and accretion



are linked to movement of the Tay channel and associated sand banks. Under present conditions, the frontage is accreting in the east and west, and eroding in between. The intertidal areas along the whole frontage are internationally designated as SPA, Ramsar and SAC sites and nationally designated as a SSSI.

Most of the land along the eastern Monifieth frontage has been reclaimed and is now almost entirely used for recreation, including two caravan parks, a recreation area and football playing field. Defences also provide protection to a historic landfill site along this frontage. The western Monifieth shoreline is characterised by a dune ridge backed by the railway line. In this location the rock platform is now exposed on the beach and timber breastwork has been constructed in an attempt to protect the backing dunes. At the mouth of the Dighty Water a rock revetment protects the railway and water main and there is very little beach in this location.



Broughty Ferry is a key tourist and commercial centre. Assets at Barnhill are located landward of the railway line, on high land; however a number of assets along the Broughty Ferry coastal frontage are at flood risk. A links area fronts the railway along this frontage, which increases in width and the sand beach becomes wider to the west, with a healthy sand beach and line of frontal dunes towards Broughty Ferry Castle. Defences along the esplanade at Barnhill provide protection to an area of contaminated land, and a new rock revetment has

been constructed at the Glass Pavilion to address erosion issues.

In line with the first SMP, the long term plan along the whole frontage is to continue to provide protection to the assets, infrastructure and recreation areas at Monifieth, Barnhill and Broughty Ferry. Where the coastline is stable and / or accreting, minimal intervention is expected to be required. In some locations, it may require replacement or reinforcement of existing defence structures.

## 2.2 Affordability, Climate Change Issues and Adaptation

This SMP2 aims to achieve sustainable flood and coastal risk management by achieving as many of the SEA objectives for people, nature, heritage and the economy as possible while working with natural processes wherever possible. In doing so it recognises that achievement of this goal will not be instantaneous and balancing the sometimes conflicting objectives needs to be the long term vision of the SMP2.

As indicated in **Section 1.5**, this SMP2 is based on the result of numerous studies and assessments.

The proposed short term (up to 20 years) policies for the Angus coastline provide a high degree of compliance with the SMP2 objectives to protect existing communities against flooding and erosion. The preferred medium and long-term (20 to 100 years) policies promote greater sustainability for parts of the shoreline where natural process and evolution provide a practical means of managing the shoreline.

### **Will the plan be affordable and who will pay?**

Present funding for flood prevention and coast protection in Scotland is included in the local government finance settlement for 2012 to 2015. It is for the authorities to allocate the total financial resources available to it on the basis of local needs and priorities having first fulfilled its statutory obligations and its Single Outcome Agreement with the Scottish Government. The financial settlement for 2012 to 2015 has not been increased in line with inflation and for a number of Scottish Local Authorities, the settlement has decreased. The spend power of councils will therefore be reduced and they will have difficult choices and decisions to make when allocating resources.

Coast protection capital works may, if approved, be eligible for grant aid from the Scottish Executive, ranging from 20-80% of eligible costs, depending upon the Authority concerned. Proposed schemes, other than maintenance or emergency operations, must be advertised and provide value for money as demonstrated by a rigorous cost benefit analysis.

The scale of coastal erosion and flood risks means that in future there may be insufficient funding to do all of the work that people would like. Public money is used as effectively as possible to reduce the risk to coastal communities, their property infrastructure and the natural environment. Decisions on where to defend are therefore based on risk assessments using a transparent, auditable and understandable process. Realistically, it is not possible to justify defending all locations to the same standard or in some cases at all.

In Scotland the legislation governing coastal defence gives permissive powers to Local Authorities. This allows them to undertake works, but does not give them a duty to do so. Local Authorities will only be able to commit to expenditure on defences to deliver the SMP2 policies if they can obtain funding to do so. In line with the permissive nature of the legislation there is no right to protection against coastal flooding or erosion or any right to compensation from the damage that it causes. Therefore, in the future, private land and property owners will need to consider how they will deal with changes to the shoreline that affects their property. On some SMP2 frontages there are lengths of coastal defences that are privately owned and maintained. Individuals and private organisations have rights or powers to maintain these defences and protect their own property, although under existing laws permission is needed before significant work other than routine maintenance can be carried out. Schemes proposed by landowners require the consent of the Local Authority and are not eligible for grant under the Coast Protection Act 1949. In other circumstances, co-funding of flood and coastal defence projects as well as other funding streams such as private contributions will need to be considered in the future. The SMP2 therefore recognises the need for alternative sources of funding as an essential part of delivering the plan.

### **How will climate change and rising sea levels effect the plan?**

As sea level rises, beach widths in front of defences will narrow and the defences themselves will become increasingly exposed and vulnerable. Sea level rise therefore not only means that higher and larger defences will be needed to provide the same standard of protection to assets along the shoreline, but that defences will need to be maintained more frequently or be improved to withstand more frequent attack. Even in locations where defences are improved the consequences of breaches or overtopping will increase in future.

Along parts of the Angus coastline, building larger defences to protect against rising sea levels will inevitably produce a change in the nature of the coast, with a prominence of larger defence structures and smaller



beaches. In some locations there is socio-economic justification to maintain existing defences in the short to medium term; however, when defences need rebuilding in the future opportunities to use alternative management techniques such as beach management to help maintain defences should be investigated. Additional adaptation and resilience measures will be required in some areas which will come under increasing flood or erosion risk as sea levels rise in the future (see below). In such locations it will be important to put steps in place to adapt and respond to coastal change and plan for the future sooner rather than later (see **Section 4**).

Due to the significant uncertainties associated with climate change and the magnitude of change, there is potential for SMP2 policies to need to be reviewed in the future. For example, significant sea level rise may mean that defences need to be raised substantially or the defences themselves may become technically difficult to sustain; such a situation may require long term change in land use and relocation of assets out of the risk area.

### **Adaptation and Resilience**

In the future, adaptation and resilience measures will also need to be considered and implemented as an integral part of a hold the line, managed realignment or no active intervention policy.

Adaptation measures, such as flood warning schemes allowing people to simply move themselves and valuable property out of the risk zone during floods, will become an integral part of flood risk management not only in flood risk areas where it is not affordable or sustainable to build new defences or maintain existing ones, but also where defences are maintained in the future. Emergency flood evacuation plans will need to be maintained and updated to reflect changing risks.

Resilience and resistance measures will also form a fundamental part of managing flood and coastal erosion risk. Adaptation such as raising floor levels or installing flood gates will need to be adopted by developers, businesses and people living in locations where it is not sustainable or viable to defend or in high risk areas. In some locations it may be possible or necessary for assets to be relocated to lower risk areas.

## 3 Environmental Assessment

### 3.1 Introduction to Strategic Environmental Assessment

An important part of the SMP2 process is to understand and assess how the plan will impact on the environment by considering both positive and negative effects of policies on and relationships between wildlife and habitats, people and their health, soil, water, air, climate, landscape and cultural heritage.

Under Directive 2001/42/EC of the European Parliament and European Council on the assessment of the effects of certain plans and programmes on the environment, a Strategic Environmental Assessment (SEA) is required for certain statutory plans. As SMP2s are not required by legislation, SEA is also not strictly required. However, SMP2s do set a framework for future coastal risk management and for planning decisions, and have the potential to result in significant environmental effects; consequently an SEA is expected. Therefore, in accordance with the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004, an SEA has been undertaken for the Angus SMP2.

This Section therefore presents a summary of the strategic process undertaken for the appraisal of the Angus SMP2 to confirm that the SMP2 policies comply with the requirements of European and National Directives and Regulations. This includes an outline of the process and an overview of the key outcomes of the environmental assessments undertaken, including the Strategic Environmental Assessment (SEA), the Habitats Regulations Assessment (HRA) and the Water Framework Directive Assessment (WFDA). The full assessments can be found in **Appendices D (SEA), I (HRA) and J (WFDA)**.

#### What is Strategic Environmental Assessment (SEA)?

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 SEA provides environmental protection by ensuring that the environment is considered when preparing and adopting plans and programmes, with a view to promoting sustainable policy.

The SEA process has been fully integrated into the work involved in the Angus SMP2 development, enabling the impacts on the wider environment to be taken into account. The advantage of this approach is that it enables focus on not only the physical environment, but also on other external factors, such as economic, technical and social factors.

**Appendix D** documents the SEA process undertaken for the SMP2 and demonstrates how, when developing this SMP2, the natural, built and historic environment has been considered alongside social, technical and economic issues in line with the SEA Directive's requirements.

A summary of the key outcomes of the SEA carried out for the Angus SMP2 is provided below.

### 3.2 Baseline Environment

#### What does the SEA say about the key environmental issues in the SMP2 area?

An SEA Environmental Baseline Report (Annex 2 to **Appendix D**) was prepared which summarises the existing environment within the SMP2 area and identifies key issues, including:

- **Population and human health** – Nearly two thirds of the Angus population live on or near the coast (Angus Council 2011<sup>7</sup>) with five main towns along the coastal corridor (Montrose, Arbroath, Carnoustie,

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<sup>7</sup> Angus Council (2011) **Angus State of the Environment Report**. Angus Council, Forfar.

Monifieth and Broughty Ferry), as well as several smaller settlements and historic fishing villages, all of which have strong links with the sea.

Flooding events/ coastal erosion can have adverse impacts upon human health and significant socio-economic consequences. Flooding affects people both physically (e.g. through loss of property, injuries and potentially loss of life) and psychologically (e.g. impacts on human health such as emotional distress can be caused by the event itself, as well as the fear of a flooding event). Socio-economic factors such as the financial burden (e.g. loss of property, the cost of repairs after a flood event, changes in insurance and loss of jobs where businesses are affected) created by flooding or erosion can continue to have an impact long after the event has occurred.

- **Flora and Fauna** – The SMP coast provides a wide diversity of species and habitat, including low-lying sandy beaches, sand dunes and links areas, intertidal mud/sand flats and rocky shorelines and cliffs. This diversity of habitats, species, landforms and rock exposures is reflected in the large number of designations for international, national and local nature conservation sites, of which over 60% of the Angus SMP coastline is included.
- **Earth Heritage, Soils and Geology** – The earth science interest of the coastline includes stratigraphic features, which are reflected in the numerous geological sites of national and local importance within the Angus SMP area, but there is also the potential for areas of made ground or contaminated land to be present.
- **Air and Climate** – There are no Air Quality Management Areas (AQMAs) within the SMP2 Area, indicating no areas where air quality is a concern. Climate change is predicted to lead to warmer summers, warmer, wetter winters with less snow and possibly to rising sea levels relative to the land.
- **Water** – Water quality within the SMP area is relatively good, with a number of designated bathing waters and no stretches of seriously polluted water.

Estuarine and coastal waters of poorer water quality within the SMP area are generally related to sewage and storm sewage discharges associated with the nearby towns. A number of wastewater treatment plants which discharge into the coastal waters, have been recently introduced in the SMP area. These help to address improvements in these discharges in order to meet SEPA's Environmental Quality Objectives and the requirements of the Urban Waste Water Treatment Directive. All sewage debris related to the down-grading of estuarine and coastal waters along the coast is now treated by wastewater plants with the exception of one or two small isolated coastal settlements.

- **Landscape Character and Visual Amenity** – The Angus SMP coastline, which stretches for 55km, is diverse and comprises several notable landscape features including wide sandy bays, estuaries and estuarine mudflats, sand dune systems and links and maritime cliffs and rocks. There are no national or local designations along the Angus SMP frontage.
- **Historic Environment** – The SMP coast has a particularly rich archaeological and historic legacy with a number of cultural heritage designations (Scheduled Monuments, Listed Buildings and Sites of Local Importance) located within the SMP area.
- **Land Use, Infrastructure and Material Assets** – Agriculture is one of the main industries within the area with a large proportion of coastal land used for farming.

Within the SMP2 area there is a port at Montrose and a working harbour at Arbroath. Other significant land use includes the GlaxoSmithKline industrial site at Montrose and the MoD military training area at

Buddon Ness. A significant proportion of the coast is also used for tourism, including Carnoustie and Montrose Golf Links as well as a number of recreation areas and caravan parks.

There are no motorways within the SMP area. Dual carriageway and A-roads are the major transport corridors connecting the study area to other parts of the country. Minor roads provide access to settlements and some other locations along the coastline, whereas other parts of the coast are accessible only on foot or by sea. The East Coast railway line generally runs parallel to the coast in the SMP area.

### 3.3 Strategic Environmental Assessment Objectives

#### What are the Strategic Environmental Assessment (SEA) objectives?

Strategic Environmental Assessment objectives were identified for the SMP2 to appraise the preferred policy options during the assessment process. The objectives were developed following identification of the key environmental features (or assets) and an understanding of the strategic environmental issues along the coastline. The SMP2 SEA objectives are to:

- minimise coastal flooding and erosion risk and its impact on people, coastal land use and future development plans;
- minimise coastal flood and erosion risk to critical infrastructure and maintain critical services;
- support natural coastal processes;
- maintain and enhance the integrity of internationally/European designated nature conservation sites and the favourable condition of their interest features;
- maintain and enhance nationally designated conservation sites and their interest features;
- avoid adverse impacts on, conserve and enhance the designated interest of local conservation sites;
- maintain and enhance features as a natural flood defence and identify new areas for coastal habitat creation as natural flood defences;
- support the achievement of good ecological and chemical status/potential under the EU WFD;
- enhance the aesthetic and landscape quality of the coastline;
- minimise coastal flood and erosion risk to scheduled and other nationally, regionally or locally important archaeological and cultural heritage assets, sites and their setting;
- minimise coastal flooding and erosion risk to key recreation and tourism assets and activities;
- enhance the tourism value of the coast and aim to incorporate and improve recreation, tourism and visitor management;
- minimise coastal flood and erosion risk to industry, commercial and economic activities and Ministry of Defence land;
- minimise the impact of policies on marine operations and activities;
- minimise the impact of policies on fishing activity; and
- minimise coastal flood and erosion risk to agricultural land.

### 3.4 Consultation

#### How were the public consulted about the Strategic Environmental Assessment?

Effective stakeholder and public engagement is central to the development of the SMP2 (and SEA) in order to arrive at a SMP2 that is acceptable to as many parties as possible and to engage those parties in the process.

Development of this revision of the SMP2 has been led by a Client Steering Group (CSG). The group includes representatives from Angus, Aberdeenshire and Dundee City Councils as well as the Consultation Authorities for Strategic Environmental Assessment (SEA); Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and Historic Environment Scotland. The CSG were involved throughout the life cycle of the SMP2 development. As well as providing expert knowledge and information, they were involved in a series of workshops, which included discussing and approving the preferred policies presented in this consultation draft SMP2.

A 10 week public consultation took place between 19<sup>th</sup> April 2016 and 24<sup>th</sup> June 2016 on the draft SMP2, and SEA (consultation on the SEA was extended to 12 August 2016 at the request of SEPA). Full details of the consultation process including consultation materials, comments made and responses on how they have been taken into account are documented in Appendix B. The SEA Appendix I, which was developed in draft for the public consultation was revised to take into account comments received, particularly those from SEPA.

### 3.5 Identification and Review of Alternative Policy Scenarios

In addition to the four standard SMP2 policy options described in **Section 1.3**, cases of ‘with present policies’ (WPP) and ‘no active intervention’ (NAI) throughout the SMP area were also assessed during the development of the SMP2 (see **Appendix C**). The WPP case assumes that the present management practices will be continued indefinitely, regardless of economic or technical constraints and is useful for comparative work when undertaking the policy scenario development stage of the SMP2, while the NAI case is essentially a ‘walk away and do nothing’ scenario. The NAI and WPP scenarios were developed in line with Defra guidance (Defra, 2006<sup>1</sup>) and it is important to note that that these assessments were NOT intended to be realistic scenarios for managing the coast. They were developed as contrasting examples to form the basis of later policy appraisal and the WPP does not consider affordability or other constraints. The subsequent policy development has taken account of agreed objectives and social, environmental and economic assessments.

Based on the background understanding of how the coast responds in NAI and WPP situations, the potential risks posed to the environmental assets were identified, and an initial set of policy scenarios were developed using ‘strings’ of policy options (see **Appendix F**).

In order to ensure that the potential wider impacts of SMP2 policy decisions are considered, the SMP2 guidance suggests developing a ‘policy scenario’ rather than looking at separate policies within individual management units. This brings together individual policies that interact with those next to them (i.e. a group of policy management units). This approach has been followed for this SMP2, using a ‘string’ of SMP2 policy options over a discrete stretch of coastline (Policy Area). These Policy Areas were defined in terms of their geology, coastal processes and features present.

For each Policy Area, generally between one and three initial policy scenarios were developed for appraisal. In each Policy Area, draft management unit boundaries were identified, and for each management unit one of the four SMP2 policy options was assigned in each of the three time periods: short term (up to 20 years), medium term (20-50 years) and long term (50-100 years).

The resulting ‘policy scenarios’ for each Policy Area were appraised against the SMP2 issues and objectives agreed with the CSG, including the environmental features (i.e. SEA receptors) identified along the coastline

(see **Appendix G**). This involved an assessment of the likely future coastal change that would occur as a result of these scenarios. From this appraisal we were able to identify whether each objective had been met or not met. The method undertaken focused on how and why the objectives were (or were not) met, rather than simply attempting to add up the numbers of objectives achieved. Objectives were therefore not weighted or ranked; instead the policy scenarios were objectively appraised against technical, economic, environmental and social factors. By comparing achievement of objectives, provisional SMP2 Management Unit boundaries and policies were selected. These provisional SMP2 policies were then discussed and agreed with the CSG.

**Appendix G** identifies the environmental impacts of each of the alternative scenarios developed through an assessment of the SEA receptors set out in the SEA Directive. It has helped to identify the preferred SMP2 policy for each Management Unit.

### 3.6 Environmental Impacts of the SMP2

The environmental effects of the preferred SMP2 policies on the standard SEA receptors are described in detail in **Appendix D SEA Environmental Report** and summarised in the Policy Statements in **Section 5** of this document. An overview of the findings across the SMP2 is provided below.

**Population and human health:** The main positive effects arise from continued protection in the main population centres, particularly Montrose, Arbroath, Carnoustie, Monifieth and Broughty Ferry. There are a small number of isolated properties along the River North Esk near Kinnaber which would face increased flood risk. In this location an adaptation plan would be needed to help residents adjust. At Auchmithie and Ethie Haven there is a minor negative effect due to risk to the access roads.

**Flora and Fauna:** If the current sediment regime changes in Montrose Basin, under a scenario of rising sea levels and climate change, maintaining the defence line along the northern, eastern and western shores of Montrose Basin may result in the gradual loss of mudflats. However, with a continuation of current conditions coastal squeeze of intertidal habitats should not be an issue, or impact on qualifying species. Locations where there is a continuation of natural processes (Scurdie Ness to Rickle Craig, Lunan Bay, Lang Craig to Whiting Ness, East Haven), there will be a significant positive impact on flora and fauna. There will be a significant negative impact on flora and fauna between Monifieth and Broughty Ferry, due to the fact that continued maintenance of defences will constrain natural migration landward of the dune habitats and will result in coastal squeeze of the intertidal habitat due to rising sea levels. However, these are not considered to result in adverse effects on the designated nature conservation sites given there are no known impacts of the current HTL policy on the sites and the considerable fluctuation in erosion and accretion patterns over short durations currently experienced are not anticipated to change

**Earth Heritage, Soils and Geology:** The main positive effects identified are due to the continuation of natural coastal processes, particularly at Lunan Bay and Whiting Ness to Ethie Haven SSSI, while the main negative effect is due to holding the line at Barry Links East. All of these are continuations of the existing situation.

**Air and Climate:** No impacts on air and climate are anticipated as a result of the preferred SMP2 policies.

**Water:** The main effect on water quality is the beneficial effect from continued protection of historic landfill sites (in the Monifieth area and at Dowrie). There are also effects on the flows and sediment loads of rivers and the sea near the shore. These effects are generally considered beneficial in areas where natural processes are maintained or restored through NAI or MR policies and negative where HTL policies prevent natural erosion and, in some places, result in coastal squeeze. At Carnoustie continued defence maintenance would be required to maintain the water quality of the designated bathing beach.

**Landscape Character and Visual Amenity:** Landscape effects of the SMP2 policies are generally considered to be positive in the urban areas where existing features are to be protected. In the rural areas, effects are considered to be positive where natural processes are allowed to continue and negative where HTL will result in the narrowing of beaches and other intertidal areas.

**Historic Environment:** The main beneficial effects arise from continued protection of urban areas, benefitting historic features within them. Examples quoted are Montrose conservation area, Sleepyhillock Cemetery, St Ninians Well (Arbroath), Old Arbroath Harbour and Broughty Ferry Castle. Negative effects relate to heritage features which will be exposed to coastal erosion risk, particularly seven Scheduled Monuments along the coast between Ethie Haven and Whiting Ness but also the listed Boddin lime kilns south of Montrose and the Low Lighthouse at Buddon Ness and some world war 11 assets vulnerable to coastal erosion.

**Land Use, Infrastructure and Material Assets:** Most of the main infrastructure assets are subject to beneficial effects as they are in areas identified for continued protection, particularly the main urban areas. There are areas where agricultural land will be affected negatively, as NAI or MR policies will lead to either increased erosion or more frequent inundation with salt water. There are some isolated assets which will be negatively affected, such as the golf course at Montrose, holiday chalets at Corbie Knowe, clifftop paths in several locations and some minor access roads. In the case of the roads and paths, realignment may be needed, resulting in the loss of agricultural land. Several beaches are expected to experience negative effects due to coastal squeeze.

The railway line is located very close to the shoreline in a number of locations along the SMP frontage. The SMP2 allows for continued protection of the asset; however, the sustainability of the railway in its present location is questionable and should be reviewed by Network Rail.

### 3.7 Habitat Regulations Assessment

In some locations along the Angus SMP coastline, policies would be implemented within or next to international conservation sites (European sites). A Habitats Regulations Assessment (HRA), **Appendix I**, has therefore 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 (Natural Habitats &c.) Regulations 1994, under Regulation 48(1) ("Habitats Regulations"). The HRA has also followed Scottish Natural Heritage's (SNH) guidance on HRA of Plans (2005) and the updated Planning Circular 1/2009: Development Planning 1: The Habitats Regulations (Scottish Government).

#### **What are the overall findings of the Habitats Regulations Assessment?**

Full details of the approach used and the findings of the HRA assessment are provided in **Appendix I**. At the screening stage, the assessment considered seven sites. Three SACs were excluded from further assessment as no potential for significant impacts was identified; these were the Moray Firth, Isle of May and River South Esk SACs. Full assessment was carried out for Barry Links SAC, Montrose Basin SPA and Ramsar site, the Firth of Tay and Eden Estuary SAC, and the Firth of Tay and Eden Estuary SPA and Ramsar site (which is within the SAC). For all these sites, it has been concluded that with the implementation of appropriate mitigation (including monitoring), the plan will not have an Adverse Effect on the Integrity of any European sites.

### 3.8 Water Framework Directive Assessment

A Water Framework Directive Assessment (WFDA) has been prepared and can be viewed in **Appendix J** of the SMP2.

Ecological and water quality can be influenced by SMP2 policy, as changes in coastal management may result in different hydrological regimes and water body morphology (see **Glossary**) – including such factors such as

current velocities, sediment accretion/erosion, water quality (turbidity, salinity) and tidal inundation. This WFDA takes into consideration the potential effects of SMP2 policy options on the ecological and water quality elements of the coastal and transitional (estuary) water bodies directly affected by the SMP2. It also incorporates an assessment of adjacent river water bodies, which may also experience some indirect effects due to SMP2 policies (such as shifting in the upper tidal limit in rivers). The potential effects on ecological quality elements are associated with changes in hydrological regimes and water body morphology – including such factors as changes in current velocities, sediment accretion/erosion, water quality (turbidity, salinity) and tidal inundation.

The WFDA also considers whether the SMP2 policies may have adverse consequences for water bodies protected under other EU legislation, in particular Special Protection Areas and Special Areas of Conservation (related to the Birds Directive and Habitats Directive, respectively). Additionally, the potential for changes in groundwater bodies are considered insofar as such changes could affect dependent ecology (i.e. groundwater dependent ecosystems). Advance the Line (ATL) for example could have the potential to result in a deterioration in hydromorphological status due to the construction of new structures and associated loss of morphological capacity.

A further consideration of possible impacts on groundwater bodies relates to their use for public (or other) water supply. Such considerations are primarily related to 'no active intervention' and 'managed realignment' policies, which could result in a geographical change in the shoreline in the vicinity of a groundwater Source Protection Zone (SPZ).

#### **What is the overall finding of the WFD Assessment?**

Full details of the approach used and the findings of the WFD assessment are provided in **Appendix J**. In summary, the key conclusion of the WFDA is that all waterbodies, including groundwater, would be either improved or unaffected by the SMP2 and therefore all WFD environmental objectives are met.

### **3.9 Achievement of SEA Objectives by Preferred Plan Policies**

An overview of how the SMP2 objectives (see Section 3.3 and for more detail the SEA Environmental Report – **Appendix D**) have been achieved by the SMP2 policies as well as the predicted implications and benefits of the Preferred Plan is presented below. Detailed predicted implications of the preferred policies for each location are included in each individual Policy Statement (**Section 5**).

#### **3.9.1 To minimise coastal flooding and erosion risk and its impact on people, coastal land use and future development plans**

For much of the coastline, the preferred SMP2 policy is to maintain existing defences where economically viable in the long-term, thus having a beneficial impact on people, their health, residential property and community facilities by protecting areas of significant urban development and developed parts of the coastline from flooding or erosion. Protection is predominantly focussed upon larger conurbations (e.g. Montrose, Arbroath, Carnoustie, Monifieth, Broughty Ferry etc), where the highest level of benefit is achieved, although there are some smaller settlements e.g. Tayock village that will continue to be protected.

Some isolated properties and caravan sites including Kinnaber, Corbie Knowe and East Haven may be affected by flooding/erosion, as policies leading to a more 'natural' shoreline have been identified. In these locations adaptation and resilience measures would need to be considered and implemented as an integral part of the no active intervention policy.

For the preferred policy scenarios, the total loss of housing to coastal flooding/erosion through the whole SMP area up to year 2025, is up to about 90 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 occur. By year 2055, residential and commercial property losses as a result of coastal erosion could total between 140 and 150, with cumulative losses of between 410 and 430 houses 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, i.e. the preferred policies deliver coastal erosion protection to over 700 'at risk' residential and commercial properties over the next 100 years. These figures relate to losses through coastal erosion only. As parts of the SMP frontage are very low lying, overtopping, overflowing/breaching of defences, even where flood defences are maintained, could lead to flooding of over 8,300 residential properties and over 3,200 businesses at risk from flood damage.

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.

The forthcoming Local Development Plans (LDPs) must ensure that the requirements of SPP 1 are fully implemented to ensure no future development in areas of coastal flooding or erosion. It is important that future LDPs do not promote development in areas subject to coastal flooding or erosion where no intervention or protection measures are proposed, and as such, the SMP is a material consideration in preparing LDPs and assessing development proposals. Guidance on the approach to coastal development under different policies is included in Section 4.2.

### 3.9.2 To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services

For much of the coastline the preferred policy is to maintain existing defences where economically viable. This will help to avoid the loss of critical infrastructure (e.g. East Coast Railway line, Montrose town/port infrastructure, Arbroath Harbour, treatment works and pumping station and major roads such as the A92) 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 where a hold the line policy is no longer acceptable on the grounds of economics, technical sustainability or the environment. Some re-routing of minor access roads may be required in the longer term under this SMP, where it will become increasingly technically difficult to retain coastal frontages.

Local Development Plans will influence the nature and location of new infrastructure. The SMP2 should help to influence and ensure that new infrastructure is located appropriately and not subject to coastal flooding or erosion.

### 3.9.3 To support natural coastal processes

The proposed plan seeks to balance the protection of natural features by protecting and enhancing (where possible) natural processes, with the maintenance and protection of property and material assets wherever possible. 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 support natural coastal processes and enable to natural evolution of geological sites (e.g. Scurdie Ness Geological Conservation Review site). In general, the SMP2 is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.

Local Authority Flood Management Plans have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.

### 3.9.4 To maintain and enhance the integrity of internationally/European designated nature conservation sites and the favourable condition of their interest features

Along parts of the SMP frontage, the Barry Links SAC, Montrose Basin SPA and Ramsar site, and the Firth of Tay and Eden Estuary SAC, SPA and Ramsar site support a range of internationally designated habitats including heathland, dunes, estuary, mudflats and sandbanks and associated breeding/overwintering bird species and common seal (Firth of Tay SAC only). A HRA screening exercise was undertaken which concluded that there would be no significant effects on the qualifying interest features of any of the European sites.

Where some minor habitat loss has been identified over the lifetime of the SMP2, it was concluded that this is a result of natural change due to sea level rise and in locations where a NAI policy has been selected as part of the overall SMP.

Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing for the impact of sea level rise. The conflicting objectives of a more dynamically functioning coastline coupled with conserving existing habitat will rely on the adoption of the appropriate management policy. By making step changes based on analysis of monitoring data, changes to management policy can be made slowly, with limited impact on the habitat.

Local Authority Flood Management Plans have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.

Where compensatory habitat (both intertidal and freshwater/terrestrial) is required this will be done in line with SNH guidance and in consultation with SNH officers.

### 3.9.5 To maintain and enhance nationally designated conservation sites and their interest features

Along parts of the SMP frontage, some nationally designated interest features may be affected or lost due to sea level rise and coastal squeeze (e.g. intertidal habitats at Montrose Basin SSSI with impact on wintering waders). However, in many areas a preferred long-term policy of no active intervention or managed realignment will continue to enhance intertidal habitat features.

Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing for the impact of sea level rise. The conflicting objectives of a more dynamically functioning coastline coupled with conserving existing habitat will rely on the adoption of the appropriate management policy. By making step changes based on analysis of monitoring data, changes to management policy can be made slowly, with limited impact on the habitat.

Local Authority Flood Management Plans have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.

National BAP targets will be met through a variety of mechanisms, and during the implementation of the SMP2, we will work with the partners of the other plans to ensure that these targets are met.

### 3.9.6 To avoid adverse impacts on, conserve and enhance the designated interest of local conservation sites

Along parts of the SMP frontage, habitats have been designated under local policies for their conservation interests. In some of these areas, the preferred plan will result in the loss of some designated habitat while in other areas, it may result in habitat creation (e.g. at Montrose Basin LNR).

Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing for the impact of sea level rise. The conflicting objectives of a more dynamically functioning

coastline coupled with conserving existing habitat will rely on the adoption of the appropriate management policy. By making step changes based on analysis of monitoring data, changes to management policy can be made slowly, with limited impact on the habitat.

Local Authority Flood Management Plans have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.

### 3.9.7 To maintain and enhance features as a natural flood defence and identify new areas for coastal habitat creation as natural flood defences

Generally, natural flood defences such as sand dunes, a spit and intertidal rock platforms will be able to evolve naturally and will continue to act as natural flood defences along the coastline, although some dune management will be required in some areas. However, where defences continue to be maintained, such as at Arbroath, there will be some beach narrowing over time, there will be some reduction in the function of the beaches as natural defences.

Local Authority Flood Management Plans have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.

### 3.9.8 To support the achievement of good ecological and chemical status/potential under the EU WFD

Where the SMP2 policy is NAI on an undefended reach of coastline, natural processes will continue and the biological quality elements are considered to be at no risk of deterioration as a result of the proposed policy. Nor will the policy prevent the water body from achieving good status in the future. Proposals for MR on a currently defended shoreline (i.e. Montrose Basin) are considered to be beneficial for biological quality elements, as this will restore a more natural shoreline position and processes. Where a HTL policy is for short sections of coast, isolated from coastal or estuarine processes or would result in loss of only small extents of fronting habitats and associated biological quality elements, losses would remain localised and would not significantly affect the water body, thus not impinging significantly on current or future status. The one exception is at Barry Sands East, where under a HTL policy, coastal squeeze of the intertidal beach habitat is anticipated, but at the same time the defence will prevent erosion of the dune habitats that lie shorewards. Only a very small percentage of the water body's shoreline will be affected by this policy, and the consequences for overall status are considered minor. In all other areas along the coastal frontage, the preferred SMP2 policy provides continued protection from flooding or erosion to any potentially polluting features such as industrial assets and landfills.

Local Development Plan policies provide protection for the water environment. Implementation of the SMP2 will try to ensure full adherence to these policies (wherever possible) through coastal management activities.

Tay Plan Strategic Development Plan and Local development documents must ensure that the requirements of SPP1<sup>8</sup> are fully implemented to ensure no pollution to coastal/estuarine waters.

### 3.9.9 To enhance the aesthetic and landscape quality of the coastline

The preferred long-term policies in this SMP2 are intended to sustain the 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

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<sup>8</sup> Scottish Planning Policy SPP 1: The Planning System

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. Where a no active intervention policy is recommended, i.e. at Montrose Basin (west) and Corbie Knowe, there is the potential for unsightly defences as they deteriorate in the long-term.

The SMP policies have been developed and implemented in accordance with the landscape and open space policies of the Local Development Plans. Landscape character or the visual amenity of the seascape may change over the life time of the plan. Therefore future local landscape designations should be taken into account when assessing the impacts of the SMP2 policies during future revisions / updates of the SMP.

### 3.9.10 To minimise coastal flood and erosion risk to scheduled and other nationally, regionally or locally important archaeological and cultural heritage assets, sites and their setting

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 under a no active intervention policy. These include Conservation Areas (e.g. Montrose Town, Arbroath and Broughty Ferry), heritage features in Montrose, listed buildings in Arbroath, Arbroath Old Harbour and Broughty Castle).

However, along some stretches of coastline, there may be possible damage to or loss of historic environmental features in the longer term due to flooding and/or erosion, as a result of natural change and/or where changes in management policy are proposed, including Scheduled Monuments e.g. seven monuments between Lang Craig and Whiting Ness, listed buildings e.g. Boddin Point Lime Kilns and Buddon Ness Low Lighthouse.

Local Development Plan policies provide protection for the historic environment. Implementation of the SMP2 will try to ensure full adherence to these policies (wherever possible) through coastal management activities.

### 3.9.11 To minimise coastal flooding and erosion risk to key recreation and tourism assets and activities

Under the preferred long-term policies, the key centres of tourism and recreation (e.g. Arbroath, Montrose, Carnoustie etc) will continue to be protected. However, at some locations (e.g. Montrose), this will be at the expense of beaches along many of these frontages, which will continue to narrow.

The Tay Plan Strategic Development Plan and Local Development Plans must ensure that the requirements of SPP 1 are fully implemented to ensure no future development in areas of coastal flooding or erosion.

### 3.9.12 To enhance the tourism value of the coast and aim to incorporate and improve recreation, tourism and visitor management

Under the preferred long-term policies, the key centres of tourism and recreation (e.g. Arbroath, Montrose, Carnoustie etc) will continue to be protected. However, at some locations (e.g. Montrose), this will be at the expense of beaches along many of these frontages, which will continue to narrow.

Beach re-nourishment may be implemented in the long-term, to maintain the amenity value of beaches and to retain tourism and recreation within the region, while more sustainable methods to improve recreation and tourism should be sought.

Tay Plan Strategic Development Plan and Local Development Plans must ensure that the requirements of SPP 1 are fully implemented to ensure no future development in areas of coastal flooding or erosion.

### 3.9.13 To minimise coastal flood and erosion risk to industry, commercial and economic activities and Ministry of Defence land

Generally, the proposed SMP2 policies are likely to be beneficial to industrial, commercial and economic assets and/or activities, as areas of significant development will continue to be protected from flooding or erosion. Protection is predominantly focussed upon larger conurbations and towns, where the highest level of benefit is achieved. However, some isolated industrial or commercial facilities may be affected by flooding or erosion, as policies leading to a more 'natural' shoreline in the long-term have been identified.

There will be continued evolution of the dune system with fluctuating erosion and accretion along Buddon Ness, although key MoD assets including MoD Barry Buddon Training Camp will continue to be protected. The MoD ranges and exclusion zone will continue to be protected; if there is a major land use change, then opportunities for a more natural coastline through managed realignment could be explored in the future.

The Tay Plan Strategic Development Plan and Local Development Plans must ensure that the requirements of SPP 1 are fully implemented to ensure no future development in areas of coastal flooding or erosion.

### 3.9.14 To minimise the impact of policies on marine operations and activities

The proposed SMP2 policies will protect existing marine operations including Montrose Port, Arbroath Harbour and small harbours between Scurdie Ness and Rickle Craig.

The Tay Plan Strategic Development Plan and Local Development Plans must ensure that the requirements of SPP 1 are fully implemented to ensure no future development in areas of coastal flooding or erosion.

### 3.9.15 To minimise the impact of policies on fishing activity

The preferred policy scenarios are unlikely to have any strategic impacts on commercial or recreational fishing, or fishing activity unless there are significant changes in water quality during implementation at project level.

The SMP2 will continue to provide protection to some commercial fishing assets including Arbroath fishing harbour.

### 3.9.16 To minimise coastal flood and erosion risk to agricultural land

Agriculture and grazing represents a share of the local economy and along the coast, the predominant grades of agricultural land are Grade 2 and 3. Along much of the coastline, these are in the undeveloped stretches between the towns, where there is insufficient economic justification for maintaining or constructing defences, which would also be technically inappropriate. Under the preferred policies, there will therefore be increased flood and erosion risk to rough grazing land at Charleton and Kinnaber, in areas of realignment, and between Lang Craig and Whiting Ness.

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.

Local Development Plans influence changes in Grades 1 to 3a agricultural land; the majority of agricultural land that would be affected in the study area would be Grade 3 – 5 agricultural land.

## 4 Action Plan

### 4.1 Approach

The purpose of the SMP2 Action Plan is to identify the steps that need to be taken in order to put the SMP2 policies into practice. This primarily includes taking steps to ensure that the SMP2 policies are taken forward in the short term but also to provide a strategic basis for more detailed studies and plans for managing and/or improving coastal management.

It is also vitally important that information provided by the SMP2 on the future coastal risks and their management is disseminated to Local and Regional Planning Authorities so that people involved with the development of and implementation of land use plans can make informed decisions.

The Action Plan provides a list of actions that should be undertaken by Angus Council in the period up to the next SMP review, which will ultimately lead to better-informed decision-making relating to coastal management policy. This is nominally a five to ten year period; however, the SMP provides for reassessment of this timescale should an earlier review be considered necessary.

The actions are split into those that are applicable to the whole SMP area (Section 4.2) and those that apply to specific areas or locations (Policy Statements). These specific areas are based on the sections of coast for which it has been identified that there is a significant processes interaction for developing SMP2 policies, also referred to in the Plan as Policy Areas.

In the Policy Statement Action Plans a summary of the actions to be taken is provided. An 'action type' is assigned to each action:

- **Management Area /Unit Studies** – studies and investigations, including site investigations, modelling, coastal stability, coastal process studies
- **Potential Scheme** – capital works scheme
- **Monitoring** – data collection and analysis
- **Asset management** – maintenance of assets
- **Communication** – consultation actions required
- **Adaptation and resilience** – plans to consider development and implementation of adaptation activities
- **Emergency response / flood warning** - emergency response planning
- **Habitat creation** – studies and works relating to the creation and restoration of habitats

Other details include a description of the action, the relevant importance of the action, responsibility, and links with other actions.

As well as short term activities, the SMP2 Action Plans need to ensure that activities to facilitate the implementation of the longer-term policies are initiated as appropriate. This includes actions to:

- facilitate implementation of the SMP2 policies through more detailed local studies and consultation on the best approaches to delivery;
- identify studies to improve understanding or reduce uncertainty where this is required to resolve policy and/or implementation;
- facilitate the development of a prioritised programme of possible schemes;
- deal with the consequences of the plan;

- promote use of the SMP2 recommendations in spatial planning of land use;
- establish a process for informing stakeholders of progress with SMP2 implementation;
- establish a framework to monitor and manage progress against the action plan and initiate future SMP2 review.

Within **Section 5**, Action Plans for individual Policy Areas have been included in each Policy Statement. These identify the steps to be taken in the period up to the next review of the plan.

In the most part, the policy recommendations in this Plan will be brought about through the implementation of coastal defence schemes or other coastal management actions. The process of implementation will be underpinned by monitoring of the shoreline to identify ongoing behaviour (to confirm assumptions made in policy development), together with targeted study and investigation where specific uncertainties need to be addressed to enable policy (short or longer term) implementation. It should be recognised that funding for these recommended studies and schemes is not guaranteed, in that direct funding may not be available due to the need for prioritisation of flood and coastal defence funding at a local level. Co-funding of flood and coastal defence projects as well as other funding streams such as private contributions will become increasingly important and therefore need to be considered at the earliest opportunity. There may be other potential sources to consider and, in addition, the Local Authority will need to continue to investigate other areas for collaborative working as well as keeping the prioritisation of actions under review to ensure the best value for money in terms of reducing risk.

Where the Action Plan tables refer to undertaking monitoring, this includes the proper storage and analysis of data to inform management practices. In many areas of the SMP, the environmental appraisal of options has recommended that monitoring to provide data to assess impacts, assist in the specification of any required mitigation and to feed into future SMP revisions is required.

## **4.2 Broad Scale SMP2 Actions**

### **Actions to help us adapt to coastal risks**

Regional planning needs to consider the messages being delivered by this SMP2, and ensure that future proposals for regional development and investment are made accordingly. Such planning needs to consider beyond the current 20 year horizon.

Local planning should consider the risks identified in this SMP2 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 set back from the coast 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.

The UK Climate Change Risk Assessment (CCRA), published on 25 January 2012, is the first assessment of current and predicted impacts of climate change for the UK under Section 56 of the Climate Change Act 2008. This assessment was produced by HR Wallingford on behalf of Defra and draws together evidence and analysis on the threats and opportunities presented by the changing climate. The CCRA consists of a number of reports, including 'a Climate Change Risk Assessment for Scotland'. Following publication of the CCRA, Section 53 of the Climate Change (Scotland) Act 2009 requires Scottish Ministers to develop a Scottish Adaptation Programme, now underway, which addresses the risks identified for Scotland in the CCRA. Further information is available on the Scottish Government website:

<http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/adaptation>

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. The Marine (Scotland) Act 2010 provides a framework which will help balance competing demands on Scotland's seas by introducing a duty to protect and enhance the marine environment. The Act aims to improve marine nature and historic conservation with new powers to protect and manage areas of importance for marine wildlife, habitats and historic monuments.

To accommodate shoreline retreat and loss of property and assets, whether due to coastal erosion or flooding, local operating authorities will need to develop adaptation plans. These will need to address the removal of buildings and other cliff-top facilities well in advance of their loss. The plans for relocation of people also need to be established and clear for all affected. However, 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, who will need to make provision for long-term change in coastal risks 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 the changing shoreline. The terms of the Acts under which the coastal defence 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 or to provide any compensation for losses.

However, the Shoreline Management Plan 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 SMP2 needs to be considered now, not in several decades time.

### **Spatial Planning Actions**

As discussed above, the risk management policies set out in the SMP2 cannot be implemented through engineering or coastal defence management alone. There is a need for spatial planning to adopt the policies and understand their consequences, such that risk areas are avoided by development, and future changes in policy are facilitated to allow a more sustainable approach to management of coastal risks and avoid increasing risks by allowing development in flood and erosion prone areas.

### **No Development Areas**

In areas where managed realignment and no active intervention are the agreed policy, future coastal development should be restricted in areas subject to erosion. Along these frontages a coastal setback 'buffer zone' area should be identified to exclude development in areas where there is a risk of erosion. An appropriate 'no development' set back area would extend back to the 100 year erosion risk predicted shoreline position (as shown on the Policy Statement Management Unit maps). In addition, development should be restricted in areas behind dune systems to allow for natural rollback of the dunes over time, to maintain the integrity and function of the dunes as a defence.

Under all policies, in flood risk areas, Scottish Planning Policy (SPP) requires that planning authorities must take the probability of flooding from all sources and the risks involved into account when preparing development plans. Strategic Flood Risk Assessments (SFRAs) are used to guide development decisions and meet the



requirements of the SPP. The SPP states that development plans should be developed to protect the coastal environment, indicate priority locations for enhancement and regeneration, identify areas at risk from coastal erosion and flooding, and promote public access to and along the coast wherever possible. Where relevant, development plans should also identify areas where managed realignment of the coast may be appropriate, setting out the potential benefits such as habitat creation and new recreation opportunities. Planning authorities should take the likely effect of proposed development on the marine environment into account when preparing development plans and making decisions on planning applications.

A number of spatial planning actions have been identified which aim to ensure that the SMP2 policies are appropriately reflected in the relevant development plans, such that long term coastal erosion and flooding risks are a material consideration in the planning process (Table 2).

**Table 2: Spatial Planning Actions**

Spatial Planning Actions	Responsibility
Inform and involve Local Authority Planning Officers of the final SMP2 recommendations and implications.	Local Authority Officers
Include the SMP2 as reference material for, or an annex to, the Local Development Plans.	
Promote the use of Strategic Flood Risk Assessment as part of the preparation of Development Plans.	
Ensure that SMP2 policies are integrated into development control activities to control development and flood risk.	
Define 'No Development Areas' in line with SMP2 recommendations.	
Advise the local Planning Authorities of the need to promote the development of planning policies to facilitate adaptation to coastal change and address potential housing and other future losses through implementation of 'realignment' and 'no active intervention' policies. This may involve relocation of property, essential services, infrastructure etc and should involve cross authority working with a range of partners and interested parties, including likely cross boundary issues.	

**Actions to Facilitate Medium / Long Term Policies**

In addition to the specific actions outlined in each Policy Statement in **Section 5**, there is also a need for some activities to be progressed; these require consideration at a broader scale, either across the whole of the SMP frontage or even beyond the SMP boundaries. It is important that the need for these broader scale studies is promoted by the relevant bodies.

These studies/initiatives and the actions are outlined in **Table 3**.

**Table 3: Further Actions to facilitate medium / long term policies**

Action	Responsibility
1) Formal adoption of the SMP2 by the Coast Protection Authorities, SEPA, SNH, and Historic Environment Scotland.	Angus Council
2) Develop adaptation plans for the relocation of communities and removal of assets when they become at risk from erosion.	Responsible Local Authority, cross Authority partners.
3) Develop medium to long-term plans for relocation of property, essential services, infrastructure, community services and facilities that will be lost to erosion, e.g. outfalls, highways, railway.	Cross-Authority partners, service and utility providers, highways authorities, Network Rail, other interested parties.
4) Develop and promote a communication strategy / awareness raising / education of the public with regards to potential future coastal issues, adaptation and SMP2 recommendations.	Local Authority in conjunction with SEPA
5) Develop a coastal monitoring strategy to include encompass all areas of the SMP	Responsible Local Authority
6) Undertake further investigation of any biodiversity or habitat creation opportunities to balance losses and gains of the features of designated sites.	SNH, SEPA
7) Use the National Coastal Change Assessment at each new SMP review to inform policy	Angus Council

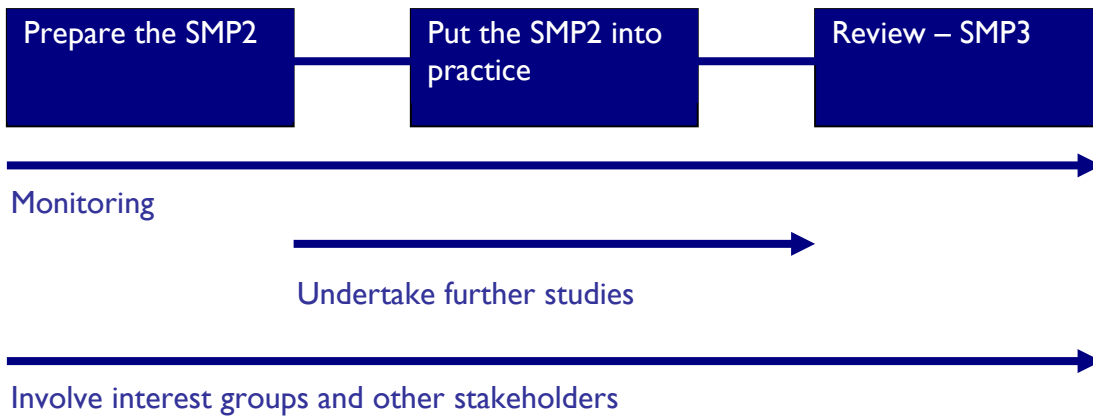
### 4.3 Managing the SMP2 until the next review

Through the implementation of actions outlined in each Policy Statement and in Section 4.2 it is likely that the technical understanding of this coastline, the basis of some SMP2 policies, and the wider shoreline management framework may change. As such, it is important that progress against these actions is monitored by Angus Council so that any developments which might affect policy, and hence works, are notified, and also so that the need for revision of the SMP can be monitored. Adjacent projects should be monitored for cross project changes.

The Action Plans should be considered as working documents which need to be regularly reviewed by Angus Council and updated as and when required. It will be the responsibility of Angus Council to promote and monitor progress and to ensure that the action plan is progressed by the appropriate Partners and where there are problems with delivery to seek to resolve issues through collaborative working.

It is not possible at this time to set a date for the next review of the SMP but it is likely to be within a five to ten year period. However, it is vital that changes in understanding (for example, results of the National Coastal Change Assessment) or the shoreline management framework are monitored to establish if there comes a point (within the next five to ten years) that the SMP2 policies become sufficiently out of date as to warrant a full review of the plan. This will be a judgment made by Angus Council, as it is not possible to prescribe exactly at what point this should be.

Regardless of other developments, it is considered that the review should be undertaken in ten years (if not before) in order to ensure the policies remain appropriate. The life-cycle of the SMP, from preparation to review, is shown in **Figure 3**.



**Figure 3: Life-cycle of the Shoreline Management Plan**

## 5 Policy Statements

### 5.1 Introduction

This section describes the contents of a series of Policy Statements that present the SMP2 policies for each area. The Policy Statements are included in Section 5.2.

#### How is the information set out in the Policy Statements?

Each Statement contains the following information:

1. **Location** each Policy Statement gives the location of the Policy Area covered by the statement, together with the Management Units covered by the statement. Management Units are identified by a number which is sequential along the shoreline from north to south. The Management Unit boundaries shown should not be taken as definitive, as the SMP2 is based upon high-level assessment and more detailed studies at implementation may justify the need to 'go across' boundaries shown by a small distance in order to appropriately deliver the intention of the Plan policies.
2. **Summary of the SMP2 preferred plan recommendations and justification** summarises the long term vision for the frontage but also notes any different short-term requirements and outlines the principal reasons for selecting the SMP2 policies.
3. **Summary of Preferred Policies** describes the SMP2 policies and potential approaches that could be used to put the policies into practice in the short, medium, and long-term. In this respect, "Short-term" is broadly representative of the next 20 years, "Medium-term" 20 to 50 years, and "Long-term" 50 to 100 plus years. These timescales should not be taken as definitive, however, but should instead be considered as phases in the management of a location.
4. **Predicted implications of the policies being adopted in this location** this table summarises the consequences at this location resulting from the preferred policies. These are categorised in accordance with requirements for the Strategic Environmental Assessment of the SMP2, which are: Property and Human Health", "Material Assets and Infrastructure", "Historic Environment", "Flora, Fauna and Biodiversity", "Geology and Soils", "Fisheries and Water", and "Landscape". The implications have been assessed for the short, medium and long terms.
5. **Action Plans** this table identifies the steps that need to be taken in order to put the SMP2 policies into practice for each individual Management Unit. These identify the steps to be taken in the period up to the next review of the plan and beyond.
6. **Maps** are included for each Management Unit, which include Management Unit boundaries and the preferred plan policies for each of these discrete areas for the short, medium and long terms. In addition, where no active intervention is the policy and coastal erosion is the main risk, the predicted shoreline position is included for each epoch as an estimated erosion distance from the shoreline position in 2012.

### 5.2 Policy Statements

The nine Policy Statements which follow cover the following areas:

- Management Unit 1: Montrose
- Management Unit 2: Montrose Basin
- Management Unit 3: Scurdie Ness to Rickle Craig
- Management Unit 4: Lunan Bay
- Management Unit 5: Lang Craig to Whiting Ness

- Management Unit 6: Arbroath to West Haven
- Management Unit 7: Carnoustie
- Management Unit 8: Buddon Ness
- Management Unit 9: Monifieth to Broughty Ferry