North West and North Wales Coastal Group

North West England and North Wales SMP2

Appendix I – Strategic Environmental Assessment (SEA) Report

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Approved by
1	0	Consultation Draft	1 October 2009	A Parsons
2	1	Consultation and QRG comments addressed	9 September 2010	A Parsons
3	2	Minor amendments for further QRG comments	12 November 2010	A Parsons
4	0	Final	18 February 2011	A Parsons

Halcrow Group Limited

Burderop Park, Swindon, Wiltshire SN4 0QD

Tel +44 (0)1793 812479 Fax +44 (0)1793 812089

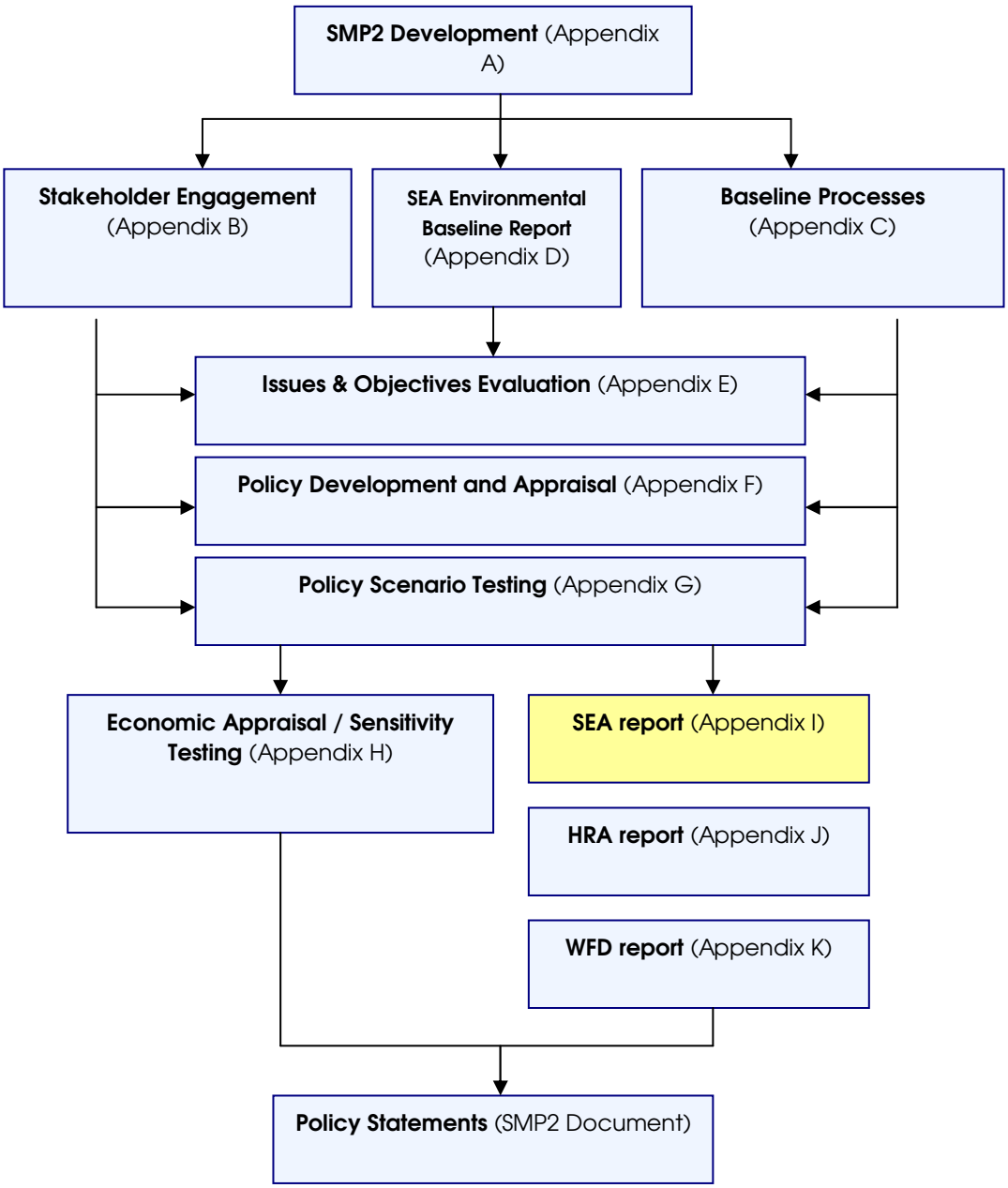
www.halcrow.com

The Supporting Appendices

This appendix and the accompanying documents provide all of the information required to support the Shoreline Management Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable. The appendices are:

A: SMP2 Development	This reports the history of development of the SMP2, describing more fully the plan and policy decision-making process.
B: Stakeholder Engagement	All communications from the stakeholder process are provided here, together with information arising from the consultation process.
C: Baseline Process Understanding	Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments.
D: SEA Environmental Baseline Report (Theme Review)	This report identifies and evaluates the environmental features (human, natural, historical and landscape).
E: Issues & Objectives Evaluation	Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance.
F: Policy Development and Appraisal	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
G: Policy Scenario Testing	Presents the policy assessment and appraisal of objective achievement towards definition of the Preferred Plan (as presented in the Shoreline Management Plan document).
H: Economic Appraisal and Sensitivity Testing	Presents the economic analysis undertaken in support of the Preferred Plan.
I: Strategic Environmental Assessment (SEA) Report	Presents the various items undertaken in developing the Plan that specifically relate to the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive), such that all of this information is readily accessible in one document.
J: Habitat Regulations Assessment	Presents an assessment of the effect the plan will have on European sites.
K: Water Framework Directive Assessment	Presents the Water Framework Directive assessment of the potential hydromorphological changes and consequent ecological impact of the preferred SMP2 policies.
L: Metadatabase and Bibliographic database	All supporting information used to develop the SMP2 is referenced for future examination and retrieval.

Within each appendix cross-referencing highlights the documents where related appraisals are presented. The broad relationships between the appendices are as below.



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Non-technical Summary

NOTE: This Non-technical Summary (NTS) includes updates following public consultation and the Environment Agency SMP2 Quality Review Group's responses to the draft Environmental Report and NTS.

Introduction

The North West and North Wales Coastal Group, led by Blackpool Council is developing a long-term plan to set out the future management of the coastline between Great Orme's Head (North Wales) and the Scottish Border (North West England) - the North West England and North Wales Shoreline Management Plan 2 (SMP2). This plan identifies shoreline management policies over a 100 year timescale to manage tidal flooding and coastal erosion risks in the plan area (Figure 1.1).

Figure 1.1 *North West England and North Wales SMP2 area*

The plan includes a Strategic Environmental Assessment (SEA) to ensure that the recommendations of the final plan are environmentally appropriate and potential opportunities for enhancement are identified. SEA is the appraisal of the potential environmental consequences of high level decision-making, to help protect the environment and to help ensure environmental considerations are integrated into the preparation and adoption of plans and programmes.

This document is a non-technical summary of the SEA process for the North West England and North Wales SMP2. This summary describes the background and purpose of both the SEA and the SMP2, and sets out the recommended strategic management options for the open coastline. The SEA Report describes the environmental characteristics of the plan area and identifies a set of proposed environmental objectives for the study based on the identified key environmental issues.

Baseline Environment

An SEA Environmental Baseline Report (Theme Report) (**Appendix D**) was prepared, which summarises the existing environment within the study area and identifies key issues, including: -

- *Flora and Fauna* – the importance of the plan area for wildlife is reflected in the designation of international, national and local nature conservation sites. The study area supports a variety of habitats including limestone pavements, cliffs, saltmarsh, mudflats, estuaries, sand dunes, grazing marsh, vegetated shingle, meadow, woodland, heathland, fen, saline lagoons and grassland. Opportunities exist to create wetland habitat in low-lying parts of the study area.
- *Earth Heritage, Soils and Geology* – there are numerous geological sites of national and local importance within the study area. Potential areas of contamination and known landfills are also present.
- *Air and Climate* – the long term effects of rising sea levels expected due to climate change could have significant implications for future flood risks to the natural, historic and built environment across large areas of low-lying land in the study area.
- *Water* – There are numerous coastal, freshwater and groundwater bodies in the SMP2 area that have the potential to be affected by SMP2 policies.
- *Landscape Character and Visual Amenity* – Some areas of the SMP2 lie within nationally important landscapes including the Lake District National Park, Areas of Outstanding Natural Beauty and Heritage Coasts.
- *Historic Environment* – the study area contains a complex array of historic buildings (many of which are scheduled or listed), historic settlements and landscapes including Registered Parks and Gardens, and known archaeological sites that are a fundamental component of the regional identity. The study area also includes two World Heritage Sites (WHS); Hadrian's Wall and Liverpool Maritime Mercantile City.
- *Land Use, Infrastructure and Material Assets* – much of the land along the coastal frontage comprises a combination of good/moderate quality agricultural land, urban areas (see population below), MoD land, ports and harbours and major industrial sites. Infrastructure within the SMP2 area varies from rural roads to major transport linkages (e.g. airports, railway lines, motorways and A-roads). The SMP2 area is also

important for energy production comprising offshore and onshore wind farms and gas, hydro and nuclear power stations.

- *Population and human health* – safety, security and social/physical well-being for occupants of properties within areas at coastal flood or erosion risk; population and properties are concentrated within the cities of Chester, Liverpool, Preston, Lancaster and Carlisle and other towns and villages. Recreation and tourism in the study area is centred on coastal holiday resorts (e.g. towns with promenades, pleasure piers and tourist attractions), cycle routes and coastal footpaths, bathing beaches and formal recreational pursuit venues such as golf courses.

SEA Objectives

SEA objectives were identified for the SMP2 to appraise the policy options during the assessment process (**Appendix E**). The following objectives were developed following identification of the key environmental features (or assets) and an understanding of the strategic environmental issues along the coastline.

Flora, Fauna and Biodiversity

- To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain / achieve favourable condition of their interest features (habitats and species);
- To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition;
- To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites; and
- To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats.

Earth Heritage, Soils and Geology

- To support natural processes and maintain geological exposures throughout nationally designated geological sites; and
- To maintain and enhance features as a natural flood defence.

Water

- To manage and minimise risk of pollution from contaminated sources.

Landscape Character and Visual Amenity

- To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives.

Historic Environment

- To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.

Land Use, Infrastructure and Material Assets

- To minimise the impact of policies on marine operations and activities;
- To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services; and
- To minimise coastal flood and erosion risk to agricultural land and horticultural activities.

Population and human health

- To minimise coastal flood and erosion risk to people and residential property;
- To minimise coastal flood and erosion risk to key community, recreational and amenity facilities;
- To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities; and
- To minimise coastal flood and erosion risk to MoD ranges.

Alternative SMP2 Policy Options

Four generic coastal management options were considered as part of the SMP2 and these are listed in the table below. The shoreline management policies considered are those defined by Defra (2006).

SMP2 Policy	Description
Hold the line	Maintain or improve the level of protection provided by defences.
Advance the line	Build new defences seaward of the existing defence line.
Managed realignment	Allowing retreat of the shoreline, with management to control or limit movement
No active intervention	A decision not to invest in providing or maintaining defences.

A 'with present management' policy was also assessed during the development of the SMP2. This policy assumes that the present management practices will be continued indefinitely, regardless of economic or technical constraints.

An environmental assessment of the alternative SMP2 policy options on SEA receptors was carried out (see **Appendix G of the SMP2**). Based on this assessment and a comparison of how well the SEA objectives have been achieved for the various policy scenarios, the environmentally preferred policy scenarios were identified.

Consultation

An awareness raising leaflet was produced and widely distributed at the start of the studies to encourage participation and help gather data and help identify interested parties. Following the preparation of the environmental baseline review it was discussed at a series of stakeholder workshops and made available on the project website. The baseline reports were updated following consultation and have been used throughout the SMP2 development. A five month public consultation on the draft SMP2, including the SEA was carried out between October and February 2009. Full details of the consultation process including consultation materials, representations made and comments on how they have been taken into account are being documented in **Appendix B** to the main SMP2. Responses received from consultees during the development of the SMP2 and SEA covered a wide range of issues. Specific comments made in relation to the draft SMP2 and SEA related to climate change, mechanisms to feed back high level policy into the SMP2 Action Plan, the need for pro-active management of the World Heritage Site, need for productive agriculture, opportunities for habitat creation and use of habitats as natural defences, links between this plan and other plans and the importance of continued consultation.

Environmental Impacts of the SMP2

The predicted potentially significant impacts associated with the preferred policy options are presented in **Annex 1 of this appendix** (**Appendix I 'SEA'**), and are summarised below.

Flora and Fauna: The SMP2 seeks to support natural processes and maintain wildlife (including the condition of designated sites) along the coastline. The SMP2 recommends the preferred policies of no active intervention or managed realignment where it would be possible to enhance and/or create new areas of wetland habitat within or adjacent to designated conservation sites, which would have beneficial impacts.

However, in some locations, holding the line is essential to protect cities or towns. In some of these locations, coastal habitats such as sand dunes, saltmarsh, mudflats and/or sandbanks may be adversely affected or lost in the long term due to expected future sea level rise as they may become squeezed against fixed defences or cliffs. Where impacts on international conservation sites are possible, further assessment (a Habitats Regulations Assessment) has been undertaken. This assessment demonstrates that there is potential for uncertain and potentially adverse impacts on seven international conservation sites in the long-term epoch as a result of coastal squeeze losses of intertidal habitat. The affected sites are as follows: -

- Dee Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site;
- Mersey Narrows and North Wirral Foreshore potential SPA;
- Mersey Estuary SPA and Ramsar site;
- Morecambe Bay SPA, SAC and Ramsar site;
- Duddon Estuary SPA and Ramsar site;
- Upper Solway Flats and Marshes SPA and Ramsar site; and
- Solway Firth SAC.

It is not proposed to hold the line in any previously undefended areas. In other areas, where defences will continue to be maintained, some designated freshwater or terrestrial habitats may benefit from holding the line and be protected from coastal flooding.

There are often conflicts between allowing the coastline to evolve naturally (benefiting marine or intertidal habitats) and maintaining designated terrestrial/freshwater sites on the land. In such areas, any SMP2 policy will result in some loss of habitat. Careful management of the shoreline will therefore be necessary to sustain the designated habitats in place wherever possible, while managing and adapting to changes due the impact of future sea level rise.

Earth Heritage, Soils and Geology: The SMP2 seeks to support natural processes and maintain the visibility of and accessibility to geological features wherever possible. There are however, some areas where continued protection of urban settlements is required and in some of these areas the SMP2 policies may damage geology or earth heritage features. In general, the SMP2 is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.

Along many areas of the frontage, beach management is proposed to maintain natural features, particularly in the short-term. However, where HTL is proposed to protect significant urban communities, increasing sea levels may result in the narrowing of natural defence features in future.

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

Water: In most areas along the coast, the SMP2 protects the majority of potentially polluting features such as landfill sites from flooding or erosion. However, there are some areas where changes to flooding or erosion risks at landfill sites may be experienced and in these areas, potential or known contamination sources should be investigated further at a more detailed stage to confirm the approach to policy delivery and manage pollution risks to water resources. It is envisaged that the SMP2 policies could be implemented in a manner that avoids pollution of surface water. However, there is the potential for saline intrusion to affect groundwater in three areas (due to the preferred SMP2 policies of either managed realignment or no active intervention in some or all epochs). Again, in these areas further investigation of the approach to policy delivery and monitoring will be recommended at a more detailed stage.

Landscape Character and Visual Amenity: The preferred SMP2 policies seek to achieve a free functioning natural coastline wherever possible, thus creating a more natural coastal and estuarine 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.

Generally, the SMP2 policies therefore conserve nationally designated landscapes and avoid conflicts with AONB Management Plan or National Park objectives, though localised changes in landscape (e.g. landscape changes resulting from the potential loss of coastal features) will need to be considered further at a more detailed level when approaches to delivering policy are determined.

Historic Environment: The majority of the heritage sites will be retained and protected through the preferred SMP2 policies. However, in areas where there are benefits in reverting to natural processes either by no active intervention or through managed realignment, there may be an increase in tidal flooding or erosion risk with associated negative impacts on isolated historic assets (e.g. Scheduled Monuments, a Registered Park and Garden, parts of Hadrian's Wall WHS and non-scheduled archaeological features of medium and high importance). Important historic assets that may be affected lie within the Dee Estuary and Leven Estuary; at Piel Island, Saltom Pit, Maryport and Hadrians Wall between Cardurnock and the Scottish Border.

Land Use, Infrastructure and Material Assets: For much of the coastline, the SMP2 policies will not affect critical infrastructure or crucial services. However, it will become increasingly difficult to minimise the risk to infrastructure and material assets in some areas in the long-term as sea level rise causes holding the line to become less acceptable due to economics, technical sustainability and environmental acceptability. In these areas, affected infrastructure may include some local roads and sewage works etc, particularly in areas that are realigned or that experience overtopping of defences during storm surges. Consequently, it may be necessary to re-route some of the critical infrastructure in the longer term.

The SMP2 policies will help reduce the coastal flood and erosion risks to large areas of agricultural land, with the long term policies protecting around 25,000ha of currently at risk land from erosion/flooding. However, where no active intervention or managed realignment is proposed, the loss of some agricultural land will be inevitable.

The proposed SMP2 policies are generally beneficial to industrial and commercial premises and/or activities, by protecting areas of significant development from flooding or erosion. However, some isolated industrial or commercial facilities may be affected, as policies leading to a more 'natural' and sustainable shoreline in the long-term are implemented.

The preferred SMP2 may result in the flooding or erosion of small areas of Ministry of Defence (MoD) ranges in the short to long-term as these generally lie within undeveloped stretches of coastline. In the longer term, Eskmeal Ranges may experience an increase in tidal flooding if the dunes breach under a no active intervention policy but as there is no change to the existing management regime, there will not be an increase in the number of MoD sites at risk.

Population and human health: For much of the coastline, the preferred SMP2 will maintain existing defences where economically viable in the long-term, thus having a beneficial impact on people, their health and property by protecting areas of significant urban development and developed parts of the coastline from flooding or erosion. The proposed

SMP2 policies provide for long term protection to over 107,000 residential properties that would be at long term risk of loss. However, there are some areas where isolated properties and areas of community, recreational and amenity facilities exist and may be lost to flooding or erosion through allowing the coastline to retreat naturally.

Under the proposed SMP2 long-term policies, the key centres of tourism and recreation will continue to be protected. However, this will be at the expense of natural beaches along many of these frontages, which are unlikely to be retained as the frontages and promenades become more prominent, exposed and less accessible.

What happens now?

There are a number of steps required to ensure that the recommendations of the SMP2 are taken forward in the short term, both in land use planning and coastal defence management. Necessary actions to facilitate the implementation of the longer-term policies also need to be initiated as appropriate.

In the most part, the policy recommendations in the SMP2 will be implemented through the development of approaches to deliver the policy in coastal flood risk management strategies, which cover smaller but strategically linked sections of the coast. Subsequently, implementation of coastal flood and erosion risk management schemes will deliver works on the ground. The process of implementation will be underpinned by monitoring of the shoreline to identify ongoing behaviour (to confirm assumptions made during the development and appraisal of policy options), together with targeted study and investigation where there are specific uncertainties. Monitoring of environmental receptors such as designated habitats, areas of potential contamination etc will inform environmental assessment at the strategy and scheme level.

1 Introduction and Background

NOTE: This Environmental Report includes updates following public consultation and the Quality Review Group's responses to the draft Environmental Report and Non-technical Summary.

The North West England and North Wales Shoreline Management Plan (SMP2)

A Shoreline Management Plan (SMP2) provides a large-scale assessment of the risks associated with coastal evolution and presents a policy framework to address these risks in a sustainable manner with respect to people and to the developed, historic and natural environment. An SMP2 is a non-statutory, policy document for coastal flood and erosion risk management planning. It takes account of other existing planning initiatives and legislative requirements and is intended to inform wider strategic planning. It does not set policy for anything other than coastal flood and erosion risk management.

The first generation SMPs were completed for the entire coastline of England and Wales approximately ten years ago. Since that time, many lessons have been learned. Reviews funded by Defra (2001, 2003) have examined the strengths and weaknesses of various Plans. Three 'pilot' SMP2s (Sheringham to Lowestoft, South Foreland to Beachy Head and Beachy Head to Selsey Bill) were undertaken and lessons learnt from these were fed into revised SMP2 guidance (Defra, 2006).

The first generation of SMPs are now under review to ensure that they are updated to take account of the latest knowledge and information and to take account of greater understanding of the risks we face in the future. The second generation of SMPs (SMP2s) identify sustainable and deliverable solutions to manage these risks while working with natural processes wherever possible.

Figure 1.1 shows the area covered by the North West England and North Wales SMP2, extending from Great Orme's Head in North Wales to the Scottish Border.

This frontage has been divided into five sub-cells, which revise the original Cell 11 SMP adopted between 1998 and 1999:

- Sub-Cell 11a: Great Orme's Head to Formby Point Shoreline Management Plan (Shoreline Management Partnership, 1999a);
- Sub-Cell 11b: Formby Point to River Wyre Shoreline Management Plan (Shoreline Management Partnership, 1999b);
- Sub-Cell 11c: River Wyre to Walney Island Shoreline Management Plan (Shoreline Management Partnership, 1999c);
- Sub-Cell 11d: Walney Island to St Bee's Head Shoreline Management Plan (Bullen Consultants Ltd, 1998b); and,
- Sub-Cell 11e: St Bee's Head to the Scottish Border Shoreline Management Plan (Bullen Consultants Ltd, 1998b).

The SMP2 frontage also includes a number of large estuaries within revised sub-cell boundaries:

- Sub-cell 11a: Great Orme's Head to Southport Pier (including the Clwyd, Dee and Mersey Estuaries);
- Sub-cell 11b: Southport Pier to Rossall Point (including the Douglas and Ribble Estuaries);
- Sub-cell 11c: Rossall Point to Haverigg (including the Wyre, Lune, Kent, Leven and Duddon Estuaries);
- Sub-cell 11d: Haverigg to St Bee's Head (including the Ravenglsss Estuary Complex); and,
- Sub-cell 11e: St Bee's Head to the Scottish Border (including Moricambe Bay and the Eden Estuary).

The objectives of the SMP2 are as follows:

- to define, in general terms, the risks to people and the developed, historic and natural environment of coastal evolution within the SMP2 area over the next century;
- to identify the preferred policies for managing those risks;
- to identify the consequences of implementing the preferred policies;
- to inform planners, developers and others of the risks of coastal evolution and of the preferred policies when considering future development of the shoreline, land use changes and wider strategic planning;
- to comply with international and national nature conservation legislation and biodiversity obligations;
- to set out procedures for monitoring the effectiveness of the SMP2 policies; and
- to highlight areas where knowledge gaps exist.

Full details of the procedure followed in development of the SMP2 are set out in **Appendix A** of the main SMP2.

Figure 1.1 Overview map of the Cell 11 North West England and North Wales Shoreline Management Plan 2 shoreline.

1.1 Purpose of 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 purpose of SEA is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes, with a view to promoting sustainable development.

The approach for this SMP2 was to ensure that the environmental assessment process is fully integral to the SMP2 development, as recommended in the Defra SMP2 Guidance (2006)[1]. Environmental assessment was therefore carried out in conjunction with and as part of the SMP2 stages, described in the guidance. In developing the North West England and North Wales SMP2, the environment has been considered alongside social, technical and economic issues. This appendix documents the SEA process undertaken for the North West England & North Wales SMP2. It demonstrates how the SEA process has been carried out during the development of the North West England & North Wales SMP2 and outlines how the SEA Directive's requirements have been met through signposting the relevant places within the main SMP2 document.

The main body of the SMP2 report provides a more detailed introduction to the SMP2, including the contents, aims and objectives of the plan.

The approach for this SMP2 has been to make the SEA process integral to the SMP2 process.

1.2 SEA Directive, Regulations and Guidance

A set of guidelines/procedures for SEA has been produced to ensure that duties are discharged under the European Community Directive on 'the assessment of the effects of certain plans and programmes on the environment' (2001/42/EC), which introduced statutory SEA into the UK from the 21 July 2004.

The directive was implemented by secondary legislation for England and Wales. The relevant English regulation is 'The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 1633)'. In addition, the SEA has been carried out with cognisance of, and in the spirit of, the following legislation and guidance:

- National Environmental Impact Assessment and Strategic Environmental Assessment Policy, Procedures and Guidance (Environment Agency, 2004 Environment Agency management system controlled documentation);
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 2: Strategic Planning and Appraisal (Defra 2001);
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 5: Environmental Appraisal (MAFF 2000);
- ODPM (2003) The Strategic Environmental Assessment Directive: Guidance for Planning Authorities. Practical guidance on applying European Directive 2001/42/EC

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

'on the assessment of the effects of certain plans and programmes on the environment' to land use and spatial plans in England and Wales;

- Conservation (Natural Habitats &c.) Regulations 1994 (as amended) and the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007; and
- Marine and Coastal Access Act 2009.

There is no legal requirement to undertake SEA for Shoreline Management Plans (SMP) because they are not required by legislation, regulation or administrative provision. However, SMPs do set a framework for future planning decisions, and have the potential to result in significant environmental effects. As a result, Defra guidance (Defra, September 2004[2]), best practice guidelines and internal policy have identified a need to undertake a SEA.

1.3 Structure of this Appendix

This appendix documents the SEA process we have undertaken throughout our SMP2 planning process and covers:

- Section 1 – Introduction and Background: describes the purpose of SEA, the SEA Directive, Regulations and Guidance and sets out the structure of this appendix.
- Section 2 – Appraisal Process/Methodology: sets out the SEA process used during the development of the SMP2, the SEA Directive, Regulations and Guidance and objectives. This section also provides an SEA Signposting table to show how the requirements of the SEA Directive have been fulfilled during the preparation of the SMP2.
- Section 3 – Strategic and Policy Context: explains the context of the SEA in the wider planning system and signposts relevant appendices that describes relevant plans and policies.
- Section 4 – Environmental Baseline: signposts the 'Environmental Baseline Report' **Appendix D** of the SMP2 and explains the link between the themes and the SEA receptors.
- Section 5 – Establishing SEA Environmental Objectives: provides a list of the SEA objectives that were used to appraise preferred SMP2 policy options (**Appendix E**).
- Section 6 – Stakeholder and Public Engagement: describes communications on the SEA /SMP2 and signposts **Appendix B** of the SMP2 'Stakeholder Engagement'.
- Section 7 - Options Appraisal: describes the generic SMP2 policy options and their links to policy scenarios that were developed for the SMP2. This section signposts **Appendix F** 'Policy Development and Appraisal', which presents the environmental assessment of the alternative policy scenarios.
- Section 8 – The Environmental Effects of the Plan: describes the environmental assessment of the preferred plan including consideration of the Habitats Regulations Assessment, Water Framework Directive Assessment, cumulative environmental

[2] Defra (2004) Strategic Environmental Assessment Guidance.

impacts and monitoring. This section signposts **Annex 1 of this document**, which presents the environmental assessment of the preferred policies.

It should be noted that some of the information contained within the main SMP2 documents is duplicated within this appendix for clarity and greater understanding of the SEA process.

2 SEA Approach/Methodology

2.1 The SEA Process

A detailed list of SEA stages and tasks, and their purpose, is shown in Table 2.1, which is adapted from "A Practical Guide to the Strategic Environmental Assessment Directive" [3].

Table 2.1 SEA Stages and Tasks

SEA stages and tasks	Purpose
Setting the context and objectives, establishing the baseline and deciding on the scope	
Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives.
Collecting baseline information	To provide an evidence base for environmental problems, prediction of baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme.
Developing and refining alternatives and assessing effects	
Testing the plan or programme objectives against the SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
Developing strategic alternatives	To develop and refine strategic alternatives
Predicting the effects of the plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and alternatives.
Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme.
Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
Proposing measures to monitor the environmental effects of plan or	To detail the means by which the environmental performance of the plan or programme can be

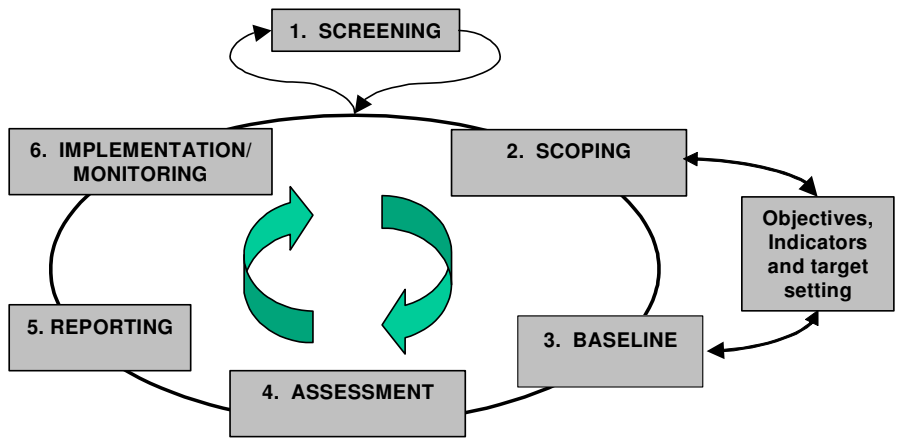
[3] Office of the Deputy Prime Minister (2005)

http://www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguidesea.pdf

SEA stages and tasks	Purpose
programme implementation	assessed.
Preparing the Environmental Report	
Preparing the Environmental Report	To present the predicted environmental effects of the plan or programme, including alternatives. In a form suitable for public consultation and use by decision-makers.
Consulting on the draft plan or programme and the Environmental Report	
Consulting the public and Consultation Bodies on the draft plan or programme and the Environmental Report	To give the public and the Consultation Bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme. To gather more information through the opinions and concerns of the public.
Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account.
Making decisions and providing information	To provide information on how the Environmental Report and consultees' opinions were taken into account in deciding the final form of the plan or programme to be adopted.
Monitoring the significant effects of implementing the plan or programme on the environment	
Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects.
Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

A summary of this process is shown in Figure 2.1, which has been applied to the development and assessment of the North West England and North Wales SMP2.

Figure 2.1 Summary of the SEA Process



2.1.1 Screening and Scoping

Screening determines whether there is a need for SEA for the Plan or Programme being initiated. In this case there is no formal need for SEA under the 'SEA Regulations', but best practice guidelines, and those of Defra, support the preparation of a voluntary SEA for Shoreline Management Plans.

No formal Scoping Report was prepared during the development of the SMP2, however, the scoping process (i.e. identification of the environmental receptors likely to be impacted by SMP2 policies) was undertaken during the production of the SEA Environmental Baseline report (Thematic Review) and was fully integrated into the SMP2 development – see **Appendix D 'SEA Environmental Baseline (Theme Review)'** of the SMP2.

Table 2.3 summarises the features we scoped into the development of the plan. Not all of these features are equally relevant everywhere in our plan area.

Consultation was carried out at the scoping stage with key stakeholders (see **Appendix B 'Stakeholder Engagement')** including statutory consultees to obtain relevant baseline environmental information and to understand key concerns and issues. The stakeholders were consulted on both the SEA Environmental Baseline Report (**Appendix D**) and Issues and Objectives Tables (**Appendix E**) together. The responses received during this consultation phase fed into the prioritisation and importance of SEA receptors in the option appraisal process. Table 2.2 summarises the features we scoped into the development of the plan. Not all of these features are equally relevant everywhere in our plan area.

Table 2.2 Scope of the SEA in relation to the SMP2

SEA Environmental Receptor	Scope and Justification		Relevance to SMP2
	Scoped In	**Scoped Out**	
Biodiversity, Flora and Fauna	Sites designated as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites and Marine Protected Areas (MPAs). A Habitats Regulations Assessment for the Natura 2000 sites has been prepared in conjunction with the development of SMP2 policy options.	International conservation sites that will not be affected by tidal flooding or coastal erosion.	Within the SMP2 area, there are 10 SPAs, 9 Ramsar sites, 19 SACs and 8 MPAs. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions.
	Sites designated as Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).	National conservation sites that will not be affected by tidal flooding or coastal erosion.	Within the SMP2 area, there are 116 SSSIs and 12 NNRS. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions.
	Local Nature Reserves (LNRs), RSPB Reserves Biodiversity Action Plan (BAP) Habitats	Local conservation sites that will not be affected by tidal flooding or coastal erosion. Sites of Importance for Nature Conservation (SINCs), County Wildlife Sites (CWS), non-statutory nature reserves, Regionally Important Geological Sites (RIGS) and Geological Conservation Review (GCR) sites were scoped out due to either their non-statutory nature, low-level status or because they already lie within wider nationally or internationally designated areas (e.g. SSSIs). BAP species have been scoped out	Within the SMP2 area, there are 39 LNRs and 40 non-statutory nature reserves. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions. There are 36 UK and local BAP habitats (priority and broad habitats) and numerous priority BAP species. Future flood risk management policies may present opportunities for biodiversity gain at these non-designated sites and these have been explored during the development of the SMP2.

SEA Environmental Receptor	Scope and Justification		Relevance to SMP2
	Scoped In	**Scoped Out**	
		as the locations of all BAP species within the SMP2 are unknown – this would be difficult to assess without extensive field survey, which would be more appropriate at scheme level.	
Earth Heritage, Soils and Geology	Sites designated as SSSIs (geological)	See local geologically designated sites (RIGS/GCRs) above	Within the SMP2 area, there 31 geological SSSIs (14 GCRs and 47 RIGS). All have potential to be affected by changes in flooding or erosion, particularly in a negative way by coastal defence interventions.
	Beaches and dune systems as natural features providing a flood defence function	N/A	Both of these features have potential to be affected by coastal erosion and flooding within the SMP2 area.
Air and Climate	Defra's recommended allowances for sea level rise have been used to provide erosion lines and flooding scenarios for the SMP2.	As air quality and noise levels will not influence or be affected by the recommendations of this SMP2, these receptors have been scoped out. Climate change is considered through the use of sea level rise allowances.	Climate change (notably sea level rise) is likely to place increasing pressure on flood defences in the SMP2 area.
Water	Sites included are designated bathing waters, historic and active landfill sites (EA source), major industry and hazardous waste sites, anecdotal evidence of disused mines and potentially contaminated land, known bathing water sites, surface and ground water. Groundwater Source Protection Zones.	N/A	There is the possibility that contaminants can be spread over a wide area if they are transported by tidal flooding.

SEA Environmental Receptor	Scope and Justification		Relevance to SMP2
	Scoped In	**Scoped Out**	
	Commercial fishing grounds and shellfisheries (e.g. Shellfish Harvesting Area)	N/A	Numerous Shellfish Harvesting Areas lies off the coast or within estuaries potentially affected by SMP2 policy options.
Landscape Character and Visual Amenity	Changes in landscape character and views within the National Park, sites designated as World Heritage Sites, Areas of Outstanding Natural Beauty (AONB) and Heritage Coasts	Locally important landscapes designated by the local authorities. Landscape Character Areas as they cannot be meaningfully assessed and the assessment of any change resulting from SMP2 policies would be too subjective.	Within the SMP2 area, there are 2 World Heritage Sites (WHS) designated for their landscape value (and heritage value – see below), 1 National Park, 3 AONBs and 2 Heritage Coasts. All have potential to be affected by changes in flooding or erosion, particularly in a negative way by coastal defence interventions.
Historic Environment (Cultural Heritage)	Sites designated as World Heritage Sites (historic), Scheduled Monuments, Registered Parks and Gardens, Listed Buildings, built Conservation Areas and non-designated archaeology of national importance. Archaeological Features identified on the North West Rapid Coastal Zone Assessment (NWRCZA 2009), considered of medium and high importance.	Non-designated archaeology considered of low importance, as the number of sites would be too high to meaningfully assess. No Registered Battlefields or marine wreck sites are present within the SMP2 area.	Within the SMP2 area, there are 2 World Heritage Site (historic), 176 Scheduled Monuments, 30 Registered Parks and Gardens, 4117 listed buildings and 70 built Conservation Areas. All have potential to be affected (positively or negatively) by changes in flooding or erosion.
Material Assets	Ports and harbours, boatyards, moorings, yacht and sailing clubs. Lifeboats, Ferry routes and waterways Coastguard, lifeboat and lifeguard. Access to the sea and navigation	N/A	There are 25 sites of port and harbour activity within the SMP2 area
	Motorways, A -, B - and minor roads (where linkage is a key issue), railway lines and stations, airfields and aerodromes, international airports		A range of critical infrastructure and services are present within the SMP2 and could potentially be affected by changes in flooding or erosion.
	Pumping stations, sewage works, quarries, existing power generating facilities (e.g. windfarms), sub-stations. Access for emergency services	N/A	A range of services are present within the SMP2 and could potentially be affected by changes in flooding or erosion.

SEA Environmental Receptor	Scope and Justification		Relevance to SMP2
	Scoped In	**Scoped Out**	
Land Use	Grades 1 – 3A Farmland	Low grade agricultural land (grades 3A to urban) (note that this was not however scoped out of the economic assessment)	
Population and Human Health	Ministry of Defence sites (including UK disposal sites, Core Sites and Firing Ranges)	N/A	There are 8 MoD sites within the SMP2 area.
	The impact of tidal flooding and coastal erosion on isolated properties, housing in coastal villages, towns and cities and communities they live in.	Human health - disease, stress and trauma as a result of tidal flooding/coastal erosion as it cannot be assessed meaningfully at SMP2 level.	Flood/erosion risks to people, property, community and recreational facilities (and their access) and other local services.
	Sites included are: - - key vulnerable community facilities (e.g. surgeries, NHS hospitals, aged persons homes, schools, shops, churches, libraries, universities etc), key amenity facilities (e.g. public open space) - key recreational facilities (e.g. golf courses, bathing beaches, formal promenades, national cycle routes and regional/national Public Rights of Way, Castles and Forts) - access to community/amenity facilities and access along the coastline.	*N/A*	
	Shops, offices, businesses, factories, warehouses, areas identified for regeneration, nursery grounds, caravan parks, stone and mineral extraction sites (quarries), military establishments and others key areas of employment	N/A	

It can be seen from Table 2.2 that air quality and human health were scoped out of the assessment as SEA receptors because the SMP2 is a high level document regarding management of risk from tidal flooding and coastal erosion.

2.1.2 Establish SEA Objectives

A recognised way of developing sustainable coastal management policies is the identification of agreed broad or SMP2 wide SEA objectives for developing and appraising sustainable policy options at a later stage in the assessment process.

A list of SEA objectives for the SMP2 was developed through consultation with key organisations (**Appendix E**). The objectives are described in Section 5.

2.1.3 Baseline Data Collection

Baseline data was collected to provide a baseline against which the significant environmental effects of the plan could be measured and assessed. The baseline data identifies the key environmental issues and trends that characterise the area covered by the SMP2.

An integral part of the SMP2 development process has been the identification of strategically important environmental issues that need to be addressed by future shoreline management along a particular stretch of coastline, which are fundamental to policy appraisal. These features were identified through a review of aerial photography, Ordnance Survey maps and extensive consultation with key external organisations and internal staff.

All economic, environmental and social assets or features of 'strategic' importance were identified along the coastline together with any key issues and benefits that may be important, particularly to stakeholders, or that may influence policy decision-making during the SMP2 appraisal process (**Appendix D**). A qualitative description was provided of issues along the coastal frontage where there may be conflicting interests in terms of coastal management. Consideration was also given to other plans and projects that may be relevant to the coastline.

The features or assets at risk of tidal flooding or erosion were identified using indicative erosion and flood risk zones.

2.1.4 Assessment methodology

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

The methodology and appraisal used to identify and predict environmental effects on the SEA receptors and environmental features identified, arising from the SMP2 is outlined below:

Identification of Impacts: Following the principles of 'Making Space for Water' (which is a Defra strategy that applies to England only to improve flood and coastal erosion risk management both for now and in the future), the methodology initially appraised a policy of no active intervention throughout the coastline, by considering the impact on coastal behaviour and on the features and issues identified. The implications of no active intervention on the features and issues identified were analysed to determine the potential environmental effects on the SEA receptors e.g. landscape. The environmental impacts identified during the no active intervention assessment were then compared against the SEA

objectives to determine whether objectives have been met, focusing on how and why objectives were (or were not) met. The environmental impacts resulting from alternative policy scenarios and preferred policies were also considered in terms of whether they compromise the objectives of other plans e.g. landscape impacts affecting AONB Management Plans etc. Through consultation with key stakeholders and elected members, key policy drivers were identified. Alternative policy scenarios were appraised where there was a clear need to protect identified assets. Sensitivity tests were applied to consider how variations in policy scenarios may affect the achievement of objectives.

Significance of Impacts: Significance of impact refers to the product of impact magnitude and receptor sensitivity. Although a formal consideration of impact magnitude was not undertaken as part of the SEA process, the aim was to describe only significant, strategic level, environmental impacts. Non strategic impacts and issues not considered to be significant at SMP2 level were not considered in the SEA. Indication at SMP2 level of strategic level significant impact provides a guide for lower level assessment.

Mitigation Measures: These were identified for inclusion in the assessment process and included avoidance and measures to minimise adverse effects (see **Annex I of this Appendix**). In addition, opportunities for enhancing the environment were identified and recommendations for further work are described in **Annex 1 of this Appendix.**

Selection of the Preferred SMP2 Policy Scenarios: based on the appraisal of policy scenarios, the environmentally preferred policy scenarios were identified. An explanation and justification for the selection of non-environmentally optimal policy scenarios on the basis of technical or economic grounds was also provided (see **Appendix G**).

Cumulative impacts: the SEA Directive requires the analysis of cumulative effects of the strategic options on the environment (see Section 8 of this Appendix). Many environmental problems result from the accumulation of multiple small and often indirect effects. These problems may occur together at one point, or over a period of time to create significant cumulative effects; see further details in Section 8.3.

2.1.5 Consultation

Consultation has been undertaken with a wide range of statutory and non-statutory consultees and stakeholder groups throughout the development of the SEA and the SMP2 (**Appendix B**) and is discussed further in Section 6 'Stakeholder and Public Engagement'.

2.1.6 Reporting

The SEA has been integrated into the SMP2 and this report describes how the North West and North Wales SMP2 achieves the requirements of the 2004 SEA Regulations. The results of the SEA process are documented in this report, which sets out how alternative policy options were appraised against environmental objectives and identifies and evaluates likely environmental effects, both positive and negative, of preferred policy options. It sets out how adverse effects will be mitigated and describes recommended follow up actions.

2.1.7 Implementation and Monitoring

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

Section 8.4 discusses the proposed monitoring of the predicted environmental effects of the plan, which have been reflected and incorporated into the **SMP2 Action Plan**.

2.2 SEA COMPLIANCE

To meet the requirements of the SEA Directive, a SEA compliance table (Table 2.3) is provided below, which is sub-divided into sections detailing the key requirements of the SEA Regulations and where this information can be located (or is signposted to other SMP2 documents) within this SEA appendix.

Table 2.3 SEA compliance table

Environmental Report Requirements	Location of information within this SEA Appendix
(a) an outline of the: • contents; • main objectives of the plan or programme; and, • relationship with other relevant plans and programmes;	Table of Contents Section 1 - Introduction and Background (objectives of SMP2) Section 3 – Strategic and Planning Policy Context
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	Section 4 – Environmental Baseline Section 7.2 – Environmental Appraisal of Alternative SMP2 Policy Options
(c) the environmental characteristics of areas likely to be significantly affected;	Section 4 – Environmental Baseline
(d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC;	Section 4 – Environmental Baseline Section 8.4 – Difficulties and Uncertainties
(e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	Section 5 – Establishing SEA Environmental Objectives
(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;	Section 7.2 – Environmental appraisal of alternative SMP2 policy options Section 8 – Environmental effects of the preferred policy options Annex 1 – Environmental assessment of preferred policy scenarios

Environmental Report Requirements	Location of information within this SEA Appendix
(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	Section 8 – Environmental effects of the preferred policy options Annex 1 – Environmental assessment of preferred policy scenarios
(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Section 7.2 – Environmental appraisal of alternative SMP2 policy options Section 8.4 – Difficulties and Uncertainties
(i) a description of the measures envisaged concerning monitoring in accordance with Article 10;	Section 8.5 – Monitoring
(j) a non-technical summary of the information provided under the above headings.	Non-technical Summary

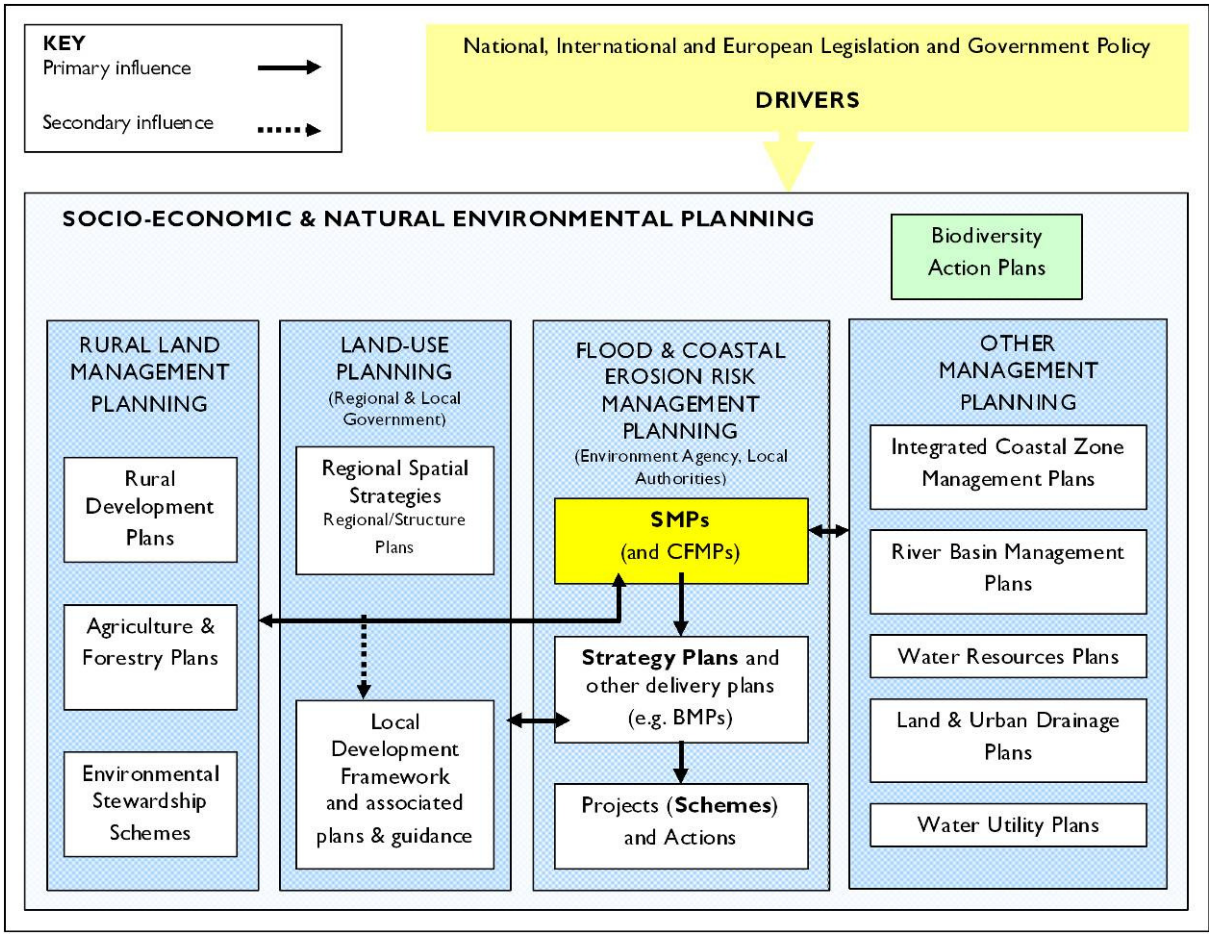
3 Strategic and Policy Context

Section 6.2.2 of **Appendix D 'SEA Environmental Baseline (Theme Review)** describes the land use planning characteristics of the SMP2 area.

Planning Technical Notes are provided in **Appendix D.** These detail the broad themes of local planning policy by local authority.

Figure 3.1 demonstrates how the SMP2 fits into the wider planning system.

Figure 3.1 SMP2 and the Planning System



4 Environmental Baseline

The current state of the environment is described in **Appendix D 'SEA Environmental Baseline (Theme Review)**. This appendix: -

- identifies the key environmental features or assets (natural environment, landscape character and visual amenity, historic environment and current and future land use) along the coastline;
- includes commentary on the characteristics, status, relevant designations and importance of the features and the 'benefits' they provide to the wider community;
- includes the environmental characteristics of areas likely to be significantly affected and any existing environmental problems, which are relevant to the SMP2 including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC and 92/43/EEC; and
- provides mapping of the boundaries of the key environmental features or assets identified along the coastline.

Table 4.1 shows the 'themes' covered in **Appendix D**, which cover more than one SEA receptor.

Table 4.1 Link between Themes and SEA Receptors

Thematic Review	**SEA Receptor** (as described in the Environmental Assessment of Plans and Programmes Regulations 2004 - SI 2004 1633)
Natural Environment	Biodiversity, Flora and Fauna
	Soil
	Water
	Air and Climatic Factors
Landscape Character and Visual Amenity	Landscape
Historic Environment	Cultural Heritage, including architectural and archaeological heritage
Current and Future Land Use	Population and human health
	Human Health
	Material Assets

Baseline data was collected to provide a baseline against which the significant environmental effects of the plan could be measured and assessed. The baseline data identifies the key environmental issues and trends that characterise the area covered by the SMP2. The environmental issues are summarised in Table 4.2.

The coastline covered by this plan has a rich diversity in its physical form, human usage and natural environment: including cliffs of both habitat and geological interest, low-lying plains fronted by dunes and beaches, towns and villages along the coastal fringe and areas of agricultural land. This combination of assets creates a coastline of great value, with a tourism economy of regional importance.

In addition to the review of the natural and human environment, the extent and nature of existing coastal defence structures and management practices are presented in Appendix C, along with an assessment of shoreline dynamics and interactions, which identifies the contemporary physical form of the coastline and the natural processes operating upon it.

Table 4.2 Environmental Features within the SMP2 Area

SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633	**Environmental Features**
Flora, Fauna and Biodiversity	The study area supports a variety of habitats including limestone pavements, cliffs, saltmarsh, mudflats, estuaries, sand dunes, grazing marsh, vegetated shingle, meadow, woodland, heathland, fen, saline lagoons and grassland. The quality of these natural habitats along the coastline is reflected in the designation of the following international nature conservation sites: - • 10 Special Protection Areas (SPA) and Ramsar sites • 19 Special Areas of Conservation (SAC) • 8 Marine Protection Areas (MPAs) The strategy area is also designated nationally (Sites of Special Scientific Interest and National Nature Reserves) and locally for its nature conservation value. Opportunities exist to create wetland habitat in low-lying parts of the study area.
Soils and Geology	The geological interest of the coastline includes stratigraphic features, which are reflected in a range of designated earth heritage sites of local, regional and international importance. Natural erosion and deposition processes are a key driver in maintaining the geological interest of the coastline, particularly Walney Island and Ainsdale. Elsewhere erosion in the SMP2 area exposes rock sequences in the cliff faces. Potential areas of landfills are also present.
Air and Climatic Factors	The long term effects of rising sea levels expected due to climate change could have significant implications for future flood risks to the natural, historic and built environment across large areas of low-lying land in the SMP2 area.
Water	Within the SMP2 area, there are 21 Transitional and Coastal Waterbodies, numerous river and lake waterbodies and 21Groundwater Bodies. These all have the potential to be affected by SMP2 policies through changes in salinity, inundation, presence of macrophytes, through change in longitudinal position and are considered further in the WFD Assessment in Appendix K.
Landscape	The most striking feature of the North West Coastline is the almost continuous chain of soft coast estuarine systems centred on Liverpool Bay, Morecambe Bay and the Solway Firth, with the only significant areas of cliff coastline lying on the Cumbrian Coast

SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633	Environmental Features
	around the St Bees Head Heritage Coast. Whilst having strong natural links, the coast has very different patterns of settlement, industry and economy, from the rural north of the region with its often isolated industrial coastal towns, to the densely populated and urbanised south of the region around the Mersey Belt. The coast of North Wales predominantly comprises stretches of beach punctuated with man-made defences where development abuts coastal frontage. Notable exceptions are Little Orme and Great Orme which rise abruptly out of the Irish Sea, forming lengths of steep and shear sea cliffs. A number of significant urban areas popular with tourists are located along this coastline, as can be evidenced by the numerous caravan sites. The high value of the landscape in the SMP2 area is recognised by the designation of the Lake District National Park, three Areas of Outstanding Natural Beauty and two Heritage Coasts.
Cultural Heritage, including architectural and archaeological heritage	The study area contains a complex array of historic buildings (many of which are scheduled or listed), historic settlements and landscapes including Registered Parks and Gardens, and known archaeological sites that are a fundamental component of the regional identity. The study area also includes two World Heritage Sites (WHS); Hadrian's Wall and Liverpool Maritime Mercantile City, which are designated for their heritage and landscape value.
Land Use, Infrastructure and Material Assets	Much of the land along the coastal frontage comprises a combination of good/moderate quality agricultural land, urban areas (see population below), MoD land, ports and harbours and major industrial sites. Infrastructure within the SMP2 area varies from rural roads to major transport linkages (e.g. airports, railway lines, motorways and A-roads). The SMP2 area is also important for energy production comprising offshore and onshore wind farms and gas, hydro and nuclear power stations.
Population and Human Health	Safety, security and social/physical well-being for occupants of properties within areas at coastal flood or erosion risk. Population and properties are concentrated within the cities of Chester, Liverpool, Preston, Lancaster and Carlisle and other towns and villages. Recreation and tourism in the study area is centred on coastal holiday resorts (e.g. towns with promenades, pleasure piers and tourist attractions), cycle routes and coastal footpaths, bathing beaches and formal recreational pursuit venues such as golf courses.

5 Establishing SEA Environmental Objectives

A list of SEA objectives, indicators and targets for the SMP2 (see Table 5.1) were developed following the identification of the key environmental features (or assets) and an understanding of the strategic environmental issues along the coastline.

The SEA Environmental Objectives, which differ to the four high-level SMP2 objectives that are defined in the SMP2 guidance (Defra 2006), have been linked as closely as possible to the SEA receptors described in the EU SEA Directive (2001/42/EC) and a differentiation made between those objectives that arise from legal obligations (shown in ***bold italics)*** and those that do not represent legal obligations. The definition and appraisal of these objectives has formed the focus of engagement with stakeholders during development of the SMP2 (as identified in Appendix B). The full list of issues and objectives defined for this SMP2 are presented in Appendix E.

Comprehensive issues and objectives tables were developed (**Appendix E**) based upon a review of the existing environment (**Appendix D 'SEA Environmental Baseline (Theme Review)'**), an understanding of the aspirations of stakeholders, and an understanding of the likely evolution of the shoreline under a hypothetical scenario of 'No Active Intervention' (**Appendices C**) (which identifies the likely physical evolution of the coast without any future defence management and hence the potential risks to shoreline features).

Key objectives of the SEA process are to ensure that the SMP2 is consistent with relevant strategic environmental objectives, environmental regulations, best practice and the objectives of other parties, and, to identify fundamental strategic environmental constraints and opportunities at the outset of the study. The SEA ensures that appropriate mitigation measures are identified where necessary. The SEA follows a similar approach to scheme-level environmental assessment, but differs in being a high level overview, setting broad objectives and identifies generic approaches. Consultation has been undertaken with the aim of agreeing the objectives with a wide-variety of stakeholders, and ensuring that the SMP2 is environmentally sustainable.

Table 5.1 also sets out a target against which the preferred policy options are measured, along with an inspirational target, which is more demanding and environmentally beneficial. In some areas, policy options that meet the higher inspirational targets have been favoured over other options.

Table 5.1 SEA Objectives

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target
Biodiversity, Flora and Fauna			
To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain / achieve favourable condition of their interest features (habitats and species)	Special Protection Areas (SPAs), Special Area of Conservation (SACs), Ramsar Sites and Marine Protected Areas	Reported conservation status of international conservation sites relating to flood risk management and erosion	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of international nature conservation sites as a result of SMP2 policies*
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	Site of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)	Reported conservation status of national conservation sites relating to flood risk management and erosion	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of national nature conservation sites as a result of SMP2 policies*
To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites (also covers Earth Heritage, Soils and Geology)	Local Nature Reserves (LNRs) RSPB reserves There is also a generic **statutory** duty (Natural Environment and Rural Communities Act 2006) to have regard for the conservation of biodiversity which applies to all public bodies and which extends beyond designated sites.	Reported conservation status of local conservation sites relating to flood risk management and erosion	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of local nature conservation sites as a result of SMP2 policies*
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats	National and local BAP habitats	BAP habitat present	No loss of extent of BAP habitat *Aspirational target: increase in extent of BAP habitat as a result of SMP2 policies*

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target
Earth Heritage, Soils and Geology			
To support natural processes and maintain geological exposures throughout nationally designated geological sites	Geological Sites of Special Scientific Interest (SSSIs)	Reported conservation status of geological SSSI relating to flood risk management and erosion	No deterioration in the conservation status of the designated site as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of nationally designated geological sites as a result of SMP2 policies*
To maintain and enhance features as a natural flood defence	Beaches Dune systems	Number of natural features currently providing a natural flood defence function	No loss of natural features currently providing a natural flood defence function *Aspirational target: enhancement of natural features as a result of SMP2 policies*
Water			
To manage and minimise risk of pollution from contaminated sources	Historic and active landfill sites (EA source), major industry and hazardous waste sites, anecdotal evidence of disused mines, potentially contaminated land, designated bathing water, surface and ground water (e.g. Groundwater Source Protection Zones)	Number of potentially polluting sites at risk from tidal flooding and/or coastal erosion	No increase in risk to potentially polluting sites at risk from tidal flooding and/or coastal erosion compared with `do nothing' policy *Aspirational target: reduction in risk to licensed sites as a result of SMP2 policies*
	Commercial fishing grounds and shell fisheries (e.g. Shellfish Harvesting Areas)		
Landscape Character and Visual Amenity			
To conserve and enhance nationally designated landscapes in relation to risks from coastal	Changes in landscape character and views within: -	Compliance with World Heritage Site,	No adverse impacts on landscape character within designated sites as a result of a change in

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target
flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	World Heritage Sites Areas of Outstanding Natural Beauty (AONB) National Parks Heritage Coasts	AONB and National Park objectives relevant to tidal flood risk/erosion management. Change in landscape character within designated areas.	flood risk/erosion management measures. *Aspirational target: improvement to landscape character within designated sites as a result of SMP2 policies*
Historic Environment (Cultural Heritage)			
To minimise coastal flood and erosion risk to scheduled and other internationally and nationally important cultural heritage assets, sites and their setting.	World Heritage Sites Scheduled Monuments (SM) (England and Wales) Registered Parks and Gardens Listed Buildings Conservation Areas Archaeological Features identified in the North West Rapid Coastal Zone Assessment (NWRCZA 2009), considered of medium and high importance.	Areas of architectural and archaeological importance at risk from tidal flooding and/or coastal erosion	No increase in tidal flood/erosion risk for archaeological features sensitive to flooding/erosion, compared with the 'do nothing' policy *Aspirational target: reduction in flood-risk for features sensitive to the impacts of tidal flooding and coastal erosion*
Material Assets			
To minimise the impact of policies on marine operations and activities	Ports and harbours, Boatyards Moorings, Yacht and Sailing Clubs Ferry routes and waterways Coastguard, lifeboat and lifeguard. Access to the sea and navigation	Number of marine operations and activities affected by tidal flooding and/or coastal erosion	No increase in number of marine operations and activities affected by tidal flooding and/or coastal erosion from the 'do nothing' policy *Aspirational target: reduction in tidal flood-risk to marine operations and activities as a result of SMP2 policies*
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	Motorways, A, B and minor roads (where linkage is a key issue)	Number of critical infrastructural assets	No increase in number of critical infrastructural assets at risk from tidal flooding and/or coastal

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target
	Railway lines and stations Airfields and aerodromes International airports Pumping stations, sewage works, wind turbines, quarries, existing power generating facilities (e.g. windfarms), sub-stations Access for emergency services	at risk from tidal flooding and/or coastal erosion	erosion from the `do nothing' policy *Aspirational target: number of critical infrastructural assets at risk from tidal flooding and/or coastal erosion reduced to zero*
Land Use			
To minimise coastal flood and erosion risk to agricultural land and horticultural activities	Grades 1 – 3A Farmland	Grades of agricultural land at risk from tidal flooding and/or coastal erosion	No risk of flooding/tidal erosion to Grades 1 – 3a agricultural land *Aspirational target: risk to agricultural land from tidal flooding and/or coastal erosion reduced to zero*
Population			
To minimise coastal flood and erosion risk to people and residential property	Isolated properties Housing in coastal villages, towns and cities Community	Number of residential properties at risk from tidal flooding and/or coastal erosion	No increase in number of residential properties at risk of tidal flooding or coastal erosion from the `do nothing' policy. *Aspirational target: number of residential properties at risk from tidal flooding and/or coastal erosion reduced to zero*
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	Key vulnerable community facilities (e.g. surgeries, hospitals, aged persons homes, schools, shops, churches, libraries, universities etc) Key amenity facilities (e.g. public open space etc) Key recreational facilities (e.g.	Number of high value community, amenity and recreational facilities at risk of tidal flooding and/or coastal erosion.	No increase in number of high value community, amenity and recreational facilities at risk of tidal flooding and/or coastal erosion from the `do nothing' policy. *Aspirational target: number of high value community, amenity and recreational facilities at risk from tidal flooding and/or coastal erosion*

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target
	golf courses, bathing beaches, formal promenades, national cycle routes, Country Parks, Public Rights of Way, Castles and Forts etc) Access to community/amenity facilities		*reduced to zero*
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	Shops, offices, businesses, factories, warehouses, areas identified for regeneration, caravan parks, airports, stone and mineral extraction sites, military establishments and others key areas of employment	Number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion	No increase in number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion from the `do nothing' policy *Aspirational target: number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion reduced to zero*
To minimise coastal flood and erosion risk to MoD ranges.	MoD sites (including UK disposal sites, Core sites and Firing Ranges)	Number of MoD sites at risk from tidal flooding and/or coastal erosion	No increase in number of MoD sites at risk from tidal flooding and/or coastal erosion compared to the `do nothing' policy *Aspirational target: reduction in number of MoD sites at risk from tidal flooding and/or coastal erosion*

6 Stakeholder and Public Engagement

6.1 Approach

Full details of all stages of stakeholder engagement undertaken during the development of the SMP2 are presented in **Appendix B 'Stakeholder Engagement'** together with the responses received.

Effective external stakeholder and public engagement has been central to the development of the SMP2 in order to arrive at a SMP2 that is acceptable to as many parties as possible and to engage those parties in the process. Consultation at key stages in the SEA process has enabled efficient data collection, identification of key issues, definition of SEA objectives, development of policy scenarios and the selection of the preferred SMP2.

The main purpose of communicating with stakeholders throughout the development of the SMP2 is to: -

- meet regulatory requirements for consultation under the EU SEA Directive; and
- contribute to the success of the SMP2 and improve decision-making along the shoreline by
    - raising awareness of management issues relating to tidal flooding and coastal erosion;
    - informing the development of the SMP2 by identifying, and where appropriate, addressing the concerns of external parties;
    - giving stakeholders an opportunity to comment on the environmental appraisal of options;
    - allowing representations made by stakeholders to be taken into account throughout the SEA process, particularly in the selection and assessment of policy options;
    - giving the public an opportunity to comment on the preferred policies; and
    - ensuring that the completed SMP2 influences coastal management decisions, plans and strategies (e.g. development planning).

Consultation has been undertaken throughout the SMP2 and SEA to ensure that the knowledge, experience and views of stakeholders and the general public are taken into account at all stages during its development.

The consultation process has been active from the inception stage and has continued throughout the development of the SMP2. The main activities have comprised: -

- Invitations to provide data and comments on key concerns;
- Information provided on the SMP2 website www.mycoastline.org and in press releases;
- Circulation of documents for comment;

- Stakeholder meetings and workshops; and
- Public meetings.

Responses received during the various consultation phases were used to inform policy selection (**Appendix B**).

6.2 Stakeholders

Statutory, non-statutory and local organisations and members of the general public have been involved in the development and future implementation of the SMP2 and associated SEA. The stakeholders were categorised into the following categories: -

- Client Steering Group (CSG) - The CSG comprises representatives from some of the local authorities, the Environment Agency, Natural England, the National Trust, the World Heritage Site management team, and Devon County Council, with a remit to agree the various stages of the SMP2 as it progresses. This group has met throughout the SMP2 development, agreeing to the outputs once they have been discussed with stakeholders.
- Stakeholder Forum (SF) - The SF includes representatives from interests including local authorities, nature conservation, industry and heritage and other people that have expressed an interest during the project. Due to the wide geographic area covered, stakeholder forums have been held at between four and six venues for each round of meetings. The stakeholder groups have met periodically throughout the SMP2 development process to input information and review outputs as the study progressed.
- Elected Members Forum (EMF) - EMF meetings have been held on three occasions at between four and six venues along the coast. Representatives from each of the local authorities and the Environment Agency were invited to the EMFs, with a remit to agree the various stages of the SMP2 as it progresses. Again, this group has met throughout the plan development, agreeing to the outputs once they have been discussed with the SF.

The views of all stakeholders are now sought through the present consultation process on the recommended policies.

6.3 External Communications

The communication programme is set out in **Appendix B 'Stakeholder Engagement'.** All feedback and comments received during the development of the SMP2 are recorded in meeting records and in the SMP2 Consultation Report (**Appendix B**) and those received to date have directly informed the production of this SEA appendix.

There have been a number of opportunities for stakeholder involvement during the SMP2 process. These included:

Stage 1 - Initial Consultation

- At the beginning of the SMP2 process, a website was created to keep the public informed of developments and to allow online feedback (www.mycoastline.org).

Visitors to the website were encouraged to complete an online questionnaire to provide their views on coastal issues and future coastal management.

- A leaflet was produced to make people aware of the SMP2 review. The leaflet contained information on the SMP2 process, an overview of the SMP2 area, generic coastal issues and contact / website details and was made available in both English and Welsh. Leaflets were publicly available in all council offices and in many public buildings.
- Letters and emails were also sent to targeted stakeholders, who had a stake in the coastline, to make them aware of the SMP2 review and in some cases to request specific information.

Stage 2 – Assessments to support policy development

- Two CSG, four Elected Member and four Stakeholder Forums (EMF 1, SF 1 – see **Appendix B**) were undertaken to introduce stakeholders to the SMP2 Review process, educate about coastal risks and to discuss issues and objectives. From these meetings comprehensive issues and objectives tables were drawn up for each sub-cell (**Appendix E**) that informed the scoping process.
- Tidal Dee User Group Meeting to discuss coastal processes and specific issues and objectives within the Dee estuary.

Stage 3 – Policy development

- Four CSG, four Elected Member and four Stakeholder Forums (EMF 2, SF 2 – see **Appendix B**) took place to allow stakeholders to assist in developing policy scenarios to assess, by identifying Key Policy Drivers and identify appropriate policies to test.
- Six joint Elected Member and Stakeholder Forums (EMF / SF 3 – see **Appendix B**) took place to discuss and agree the draft preferred policies put forward for the draft Consultation SMP2. Stakeholder comments were considered and used to finalise the draft preferred policies.
- RFDC Meeting to update members on SMP2 Progress and preferred policies.

Stage 4 – Public examination

- Public Consultation on the draft plan was carried out from October 2009 to February 2010.

Full details of all stages of stakeholder engagement undertaken during development of the SMP2 are presented in **Appendix B**.

6.4 Consultation Responses

A range of consultation responses have been received during the development of the SMP2 and SEA (**Appendix B**). A summary of those received during consultation on the draft SMP2 and SEA is provided below: -

- Queries regarding the evidence for climate change and associated coastal squeeze issues;

- Need for a clearer mechanism to feed back high level policy and guidance issues to Defra through an action in the SMP2 Action Plan;
- Need to proactively manage World Heritage Sites and other queries about the methodology of assessment for the historic environment;
- Reference to the Marine and Coastal Access Act required in the SMP2;
- Need to prevent flood damage to agricultural land and farm dwellings, and need for a sustainable productive agricultural industry;
- Concerns over food security;
- Flexibility required in the SMP2 to allow land managers to manage their land and business assets;
- Continued consultation is critical, particularly where realignment is recommended;
- Need to allow natural processes to function wherever possible and use natural habitats as natural defences;
- Opportunities for habitat creation should be sought;
- Need an adequate link between the SMP2 and the CFMP;
- Need to address beach maintenance.

7 Options Appraisal

7.1 Identification and Review of Alternative Policy Scenarios

Four generic options were considered as part of the policy plan and these are listed in Table 7.1. The shoreline management policies considered are those defined by Defra (2006).

Table 7.1 SMP2 Policy Options

SMP2 Policy	Description
Hold the line	Maintain or upgrade the level of protection provided by defences.
Advance the line	Build new defences seaward of the existing defence line.
Managed realignment	Allowing retreat of the shoreline, with management to control or limit movement
No active intervention	A decision not to invest in providing or maintaining defences.

A 'with present management' policy has also been assessed during the development of the SMP2 (**Appendix C**). This policy assumes that the present management practices will be continued indefinitely, regardless of economic or technical constraints.

In order to ensure that all potential impacts of a coastal management policy decision are considered, rather than looking at individual policy units (i.e. frontages for which a single SMP2 policy option applies), the SMP2 guidance (Defra 2006) suggests developing a policy scenario. For the North West England and North Wales SMP2, a 'string' of SMP2 policy options over a discrete stretch of coastline were defined.

Based on the background understanding of how the coast responds under the 'no active intervention' and 'with present management' policies (**Appendix C**) and therefore the potential risks posed to the environmental assets identified, an initial set of policy scenarios were developed using this 'string' of policy options (see **Appendix F**). The stretches of coastline for which policy scenarios were developed, were defined in terms of their geology, coastal processes and features present.

Up to a maximum of three initial policy scenarios were developed for appraisal. Therefore for each policy scenario to be appraised, draft policy units were identified, and for each policy unit one of the four SMP2 policy options was assigned to each of the three epochs 0-20 years (short-term), 20-50 years (medium-term) and 50-100 years (long-term).

Using feedback from consultees and an understanding of potential areas of conflict, a series of iterations were developed in an attempt to improve the initial policy scenarios.

Three 'policy scenarios' have been appraised against the environmental features (including SEA receptors) identified along the coastline, in order to assess the likely future evolution of the shoreline that would occur as a result of these scenarios (**Appendix G)**.

7.2 Environmental Appraisal of Alternative Policy Options

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, and has helped to identify the preferred environmental policy scenario for each coastal process unit.

The generic and potentially significant impacts associated with each alternative SMP2 option is shown in Table 7.2. The SEA receptor that is potentially affected by each impact is shown as underlined text after the impact.

Table 7.2 Potential generic implications of each SMP2 option

SMP2 option	Potentially significant positive impacts	Potential significant negative impacts
Hold the Line (HTL)	• Protection of communities (residential, industrial, agricultural and commercial assets) and infrastructure (Population and Human Health) • Protection of designated and non-designated habitat landward of existing defences (Flora, Fauna and Biodiversity) • Protection of freshwater resources (e.g. abstractions and boreholes) (Water) • Protection of material assets located behind defences (Material Assets) • Protection of recreational, cultural and historical assets landward of the defences and provision of opportunities to improve the condition of heritage features/sites (Population and Cultural Heritage) • Protection of potential sources of contamination (Geology, Soils and Water)	• Coastal squeeze (loss of intertidal habitat) (Flora, Fauna and Biodiversity) • Interruption of coastal processes (Earth Heritage, Soils and Geology) • Potential increase of flood and coastal erosion risk elsewhere along coastline, affecting population and land use. (Population and Human Health, and Land Use) • Encourages development in floodplain in hinterland of defences and HTL is not considered sustainable with rising sea levels(Land Use) • Change in landscape character and reduced visual amenity and views of sea if defences raised or new defences constructed (Landscape and Visual Amenity)
Advance the Line (ATL)	• Provision of additional space for communities (Population and Land Use) • Protection of communities and infrastructure from coastal flooding/erosion (Population and Human Health) • Protection of habitat landward of original defences (Flora, Fauna and Biodiversity) • Protection of freshwater	• Reduction in extent of intertidal habitat (Flora, Fauna and Biodiversity) • Change in function of the existing habitats (Flora, Fauna and Biodiversity) • Increased coastal squeeze (Flora, Fauna and Biodiversity) • Interruption of coastal processes (Earth Heritage, Soils and Geology)

SMP2 option	Potentially significant positive impacts	Potential significant negative impacts
	resources (e.g. abstractions an boreholes) (Water) • Protection of material assets located behind defences (Material Assets) • Protection of recreational,, cultural and historical assets landward of the defences (Population and Cultural Heritage) • Protection of potential sources of contamination (Geology, Soils and Water)	• Potential increase in rate of coastal erosion either side of the advanced line (Population and Human Health, and Land Use) • Uncertainty of effects • Reduced visual amenity and change in landscape (Landscape and Visual Amenity)
Managed Realignment (MR)	• Landward migration of coastal habitat under rising sea levels to realigned defence (Flora, Fauna and Biodiversity) • Creation of wetland habitat in line with UKBAP and local BAP targets (Flora, Fauna and Biodiversity) • Creation of habitat for juvenile fish and other aquatic organisms (benefits to environment and fishing communities) (Flora, Fauna and Biodiversity) • Reduction of flood/erosion risk to some areas (Population and Land Use) • Promotion of natural coastal processes and contribution towards a more natural management of the coast (Earth Heritage, Soils and Geology) • Creation of high tide bird roosts and feeding areas (Flora, Fauna and Biodiversity) • Maintenance of geological exposures and earth heritage features (Earth Heritage, Soils and Geology)	• Increased flooding/erosion of realigned area (Population and Land Use) • Change in condition or reduction of terrestrial/freshwater habitat landward of defences (Flora, Fauna and Biodiversity) • Impact upon aquifers and abstractions (Water) • Loss of some assets in hinterland of defences (e.g. residential, industrial, agricultural and commercial assets) (Population and Land Use) • Loss of recreational, heritage and cultural features (Population and Cultural Heritage) • Uncertainty of effects
No active intervention (NAI)	• Landward migration of coastal habitats under rising sea levels (Flora, Fauna and Biodiversity) • Promotion or continuation of natural coastal processes	• Uncontrolled flood/erosion risk (Population and Land Use) • Uncertainty of effects and time for adaptation • Increased risk of inundation to

SMP2 option	Potentially significant positive impacts	Potential significant negative impacts
	(Earth Heritage, Soils and Geology • Potential discovery of unknown archaeology (Cultural Heritage) • Maintenance of geological exposures and earth heritage features (Earth Heritage, Soils and Geology	landward habitats under rising sea levels (Flora, Fauna and Biodiversity) • Impact upon aquifers and abstractions (Water) • Loss of communities or community assets (Population) • Loss of and damage to heritage and cultural features (Cultural Heritage) • Risk of flooding/erosion of contaminated areas (Geology, Soils and Water) • Deteriorating defences become unsightly (Landscape and Visual Amenity) • Hazard to public access and loss of public rights of way. (Population)

These generic impacts together with specific impacts from the alternative policy options described in **Appendix G** informed the choice of the preferred option. For example, where designated intertidal habitats exist seaward of defences and the frontage is not considered to be accreting or may not continue accreting in the long-term, no active intervention or managed realignment were selected to enable landward migration of these habitats (except where it is not socially acceptable for reasons such as the presence of large urban areas).

8 The Environmental Effects of the Plan

8.1 The Preferred Plan

Based upon the output from the testing of policy scenarios (**Appendix G**), the preferred policies have been defined. The preferred policy scenario for the whole coastline differs along its length, so to accommodate this, 53 Policy areas and 188 individual Policy Units have been defined and Policy Statements developed that set out how the management of the coast is to be undertaken that accounts for the needs of each individual unit in the wider coastal context.

The Policy Statements in **Section 5 of the main SMP2 document** present the preferred policy scenario, identifying its justification and how it can be achieved over the 100 year period. They also present the detailed implications of the policies and identify any mitigation measures that would be required in order to implement the policy.

8.2 Environmental Assessment of Preferred Plan

An environmental assessment of the preferred policy scenarios for each cell is presented in **Annex I** of this appendix, along with mitigation measures where negative effects have been identified and potential environmental enhancement opportunities. Where mitigation has to been identified to avoid or minimise negative effects, these measures have been carried through into the **Action Plan** for the SMP2.

The key to identify significant impacts (prior to mitigation) that are potentially minor, moderate or major, negative or positive is provided in Annex 1. This key, together with professional judgement has been used to assign a strategic level of significance.

Table 8.1 provides an assessment of how the preferred plan has or has not achieved the identified SEA Environmental Objectives.

As many of the proposed SMP2 policies would be implemented within or adjacent to international conservation sites, a Habitats Regulations Assessment (**Appendix J 'Appropriate Assessment')** has been undertaken in accordance with the requirements of the EC Habitats Directive (92/43/EEC) and European Union Birds Directive (79/409/EEC) and their implementation in the UK under the Conservation of Habitats and Species Regulations 2010, under Regulation 48(1) ("Habitats Regulations"). Natural England and the Countryside Council for Wales (CCW) are currently being consulted on the conclusions of the draft Strategic Habitats Regulations Assessment (HRA). The HRA concludes an adverse effect on the following European sites: -

- Dee Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site;
- Mersey Narrows and North Wirral Foreshore potential SPA;
- Mersey Estuary SPA and Ramsar site;
- Morecambe Bay SPA, SAC and Ramsar site;
- Duddon Estuary SPA and Ramsar site;
- Upper Solway Flats and Marshes SPA and Ramsar site; and
- Solway Firth SAC.

A Water Framework Directive (WFD) assessment has been prepared by Halcrow and can be viewed in **Appendix K 'Water Framework Directive Assessment'** of the SMP2. This WFD-related assessment takes into consideration the potential effects of SMP2 policy options on the ecological quality elements of the coastal and transitional water bodies directly affected by the SMP2, and the associated river water bodies, which may also experience some indirect effect (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 WFD-related assessment 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). A further consideration of possible impacts on groundwater relates to their use for public (or other) water supply. Such considerations are primarily related to No Active Intervention and Managed Realignment policies, which will result in a geographical change in the shoreline in the vicinity of a groundwater Source Protection Zone (SPZ).

Appendix G evaluates how the 'environment', economic and social receptors, would be affected under the preferred policy scenario for each frontage, with consideration of environmental obligations.

Measures to monitor the environmental effects of implementing the Plan are provided in Section 8.4.

Table 8.1 Achievement of SEA Objectives

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target	Fulfilment of SEA Objectives by Preferred SMP2 Policies
Biodiversity, Flora and Fauna				
To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain / achieve favourable condition of their interest features (habitats and species)	Special Protection Areas (SPAs), Special Area of Conservation (SACs), Ramsar Sites and Marine Protected Areas	Reported conservation status of international conservation sites relating to flood risk management and erosion	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of international nature conservation sites as a result of SMP2 policies*	The SMP2 policies seek to support natural processes and maintain the integrity of designated international conservation sites along most areas of the coastline. No European sites will be affected by coastal squeeze as a result of a change to the 'with present management' regime (i.e. it is not proposed to hold the line in any previously undefended areas). However, in some locations, holding the line is essential to protect large urban areas such as Llandudno and Morecambe. In the locations where significant effects are likely, a Habitats Regulations Assessment (HRA) has been undertaken (see Appendix J). This concluded that there is potential for adverse impacts on seven European sites in the long-term as a result of intertidal habitat loss due to coastal squeeze if sea level rise outpaces ongoing accretion. As there are no alternative solutions for these areas and there are Imperative Reasons of Overriding Public Interest (IROPI), compensatory habitat will need to be identified and secured through the Environment Agency's Regional Habitat Creation Programme (RHCP). There are also other areas where there are conflicts between supporting the natural processes and maintaining designated terrestrial/freshwater sites. In such areas, this objective could not be fully achieved by any particular shoreline management response and a deterioration in one type of habitat is likely to be experienced. Consequently, this objective will partially be met by the preferred policies. The SMP2 policies have been developed so that they enable careful management of the shoreline to maintain the integrity of the designated habitats wherever possible and help to manage 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.
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	Site of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)	Reported conservation status of national conservation sites relating to flood risk management and erosion	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of national nature conservation sites as a result of SMP2 policies*	The objective to avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites is partially met by the SMP2 objectives, and in many areas the SSSIs and NNRs will be improved as a direct result of a change to the 'with present management' regime. For example, a change from HTL to NAI (e.g. for example, between Riverside Farm to Overton Cattle Grid, or between Potts Corner to Heysham Station) is likely to result in the extension of intertidal habitat (e.g. within or adjacent to Morecambe Bay SSSI). Along parts of the SMP2 frontage, some nationally designated interest features may be affected or reduced in size due to future sea level rise and associated coastal squeeze (e.g. habitat within Morecambe Bay SSSI where HTL at Heysham Power Station) against either fixed defences or the cliffs. In other areas, HTL will result in the protection of some designated grassland habitats. 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 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.
To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	Local Nature Reserves (LNRs) RSPB reserves There is also a generic **statutory** duty (Natural Environment and	Reported conservation status of local conservation sites relating to flood risk management	No deterioration in the conservation status of designated sites as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the*	The SEA objective to avoid adverse impacts on local nature conservation sites will be partially met by the preferred SMP2 policies. In some of the coastal areas, the preferred plan will result in losses of some designated habitat while in other areas, it will enhance the designated site and may result in

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target	Fulfilment of SEA Objectives by Preferred SMP2 Policies
(also covers Earth Heritage, Soils and Geology)	Rural Communities Act 2006) to have regard for the conservation of biodiversity which applies to all public bodies and which extends beyond designated sites.	and erosion	*conservation status of local nature conservation sites as a result of SMP2 policies*	habitat creation (e.g. intertidal habitat along the Ribble Estuary). Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing 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.
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats	National and local BAP habitats	BAP habitat present	No loss of extent of BAP habitat *Aspirational target: increase in extent of BAP habitat as a result of SMP2 policies*	The proposed SMP2 policies seek to support natural processes and maintain BAP habitats along most areas of the coastline. However, in some locations, holding the line is essential to protect large urban areas (e.g. Llandudno, Morecambe etc) and thus will result in losses of BAP habitat area (e.g. mudflats, sandflats and/or saltmarsh in the long term due to coastal squeeze from expected future mean sea level rise). There are also other areas where there are conflicts between supporting the natural processes and intertidal BAP habitats and maintaining terrestrial/freshwater BAP habitats. In such areas, this objective could not be fully achieved by any particular shoreline management response and a deterioration in one or more types of BAP habitat is likely to be experienced due to expected long term coastal changes. Consequently, this objective will partially be met by the preferred policies. The SMP2 policies have been developed so that they enable careful management of the shoreline to sustain the designated habitats already in place wherever possible and to manage 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.
Earth Heritage, Soils and Geology				
To support natural processes and maintain geological exposures throughout nationally designated geological sites	Geological Sites of Special Scientific Interest (SSSIs)	Reported conservation status of geological SSSI relating to flood risk management and erosion	No deterioration in the conservation status of the designated site as a result of changes in flood/erosion risk management measures *Aspirational target: improvement in the conservation status of nationally designated geological sites as a result of SMP2 policies*	The proposed SMP2 policies seek to support natural geomorphological processes and maintain the visibility of and accessibility to geological exposures wherever possible. There are however, some areas where continued protection of significant urban settlements or communities is required and in these areas the preferred SMP2 policies fail to meet this SEA objective. In general, the SMP2 is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.
To maintain and enhance features as a natural flood defence	Beaches Dune systems	Number of natural features currently providing a natural flood defence function	No loss of natural features currently providing a natural flood defence function *Aspirational target: enhancement of natural features as a result of SMP2 policies*	This objective is partially met by the SMP2. Along many areas of the frontage (e.g. at Point of Ayr, Cleveleys, Llandudno), beach management (e.g. sand or shingle recharge) is proposed to maintain natural features, particularly in the short-term. However, in some areas where HTL is proposed, (e.g. to protect significant urban communities), coastal squeeze may result in the narrowing of natural defence features, partly due to the expected future sea level rise.
Water				
To manage and minimise risk of pollution from contaminated sources	Historical and active landfill sites, major industry and hazardous waste sites, anecdotal evidence of disused mines, potentially contaminated land, designated bathing water, surface and ground water (e.g. Groundwater Source Protection Zones). Commercial fishing grounds and shell fisheries (e.g. Shellfish Harvesting Areas)	Number of potentially polluting sites at risk from tidal flooding and/or coastal erosion	No increase in risk to potentially polluting sites at risk from tidal flooding and/or coastal erosion compared with 'do nothing' policy *Aspirational target: reduction in risk to licensed sites as a result of SMP2 policies*	In most areas along the coast, the SMP2 protects the majority of potentially polluting features such as landfill sites from flooding or erosion. However, there are some areas where changes to flooding or erosion risks at landfill sites may be experienced and in these areas, potential or known contamination sources should be investigated further at a more detailed stage to confirm the approach to policy delivery and manage pollution risks to water resources. It is envisaged that the SMP2 policies could be implemented in a manner that avoids pollution of surface water. However, there is the potential for saline intrusion to affect groundwater in three areas (due to the preferred SMP2 policies of either managed realignment or no active intervention in some or all epochs). Again, in these areas further investigation of the approach to policy delivery and monitoring will be recommended at a more detailed stage.

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target	Fulfilment of SEA Objectives by Preferred SMP2 Policies
Landscape Character and Visual Amenity				
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	Changes in landscape character and views within: - World Heritage Sites (WHS) and their buffer zones Areas of Outstanding Natural Beauty (AONB) National Parks Heritage Coasts	Compliance with WHS, AONB and National Park objectives relevant to tidal flood risk/erosion management. Change in landscape character within designated areas.	No adverse impacts on landscape character within designated sites as a result of a change in flood risk/erosion management measures. *Aspirational target: improvement to landscape character within designated sites as a result of SMP2 policies*	The preferred SMP2 policies seek to achieve a free functioning natural coastline wherever possible, thus creating a more natural coastal and estuarine 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. Generally, the SMP2 policies therefore achieve the SEA objective to conserve and enhance nationally designated landscapes and avoid conflicts with AONB Management Plan or National Park objectives though localised changes (e.g. the potential loss of salt pans etc) will need to be considered further at strategy or scheme level.
Historic Environment				
To minimise coastal flood and erosion risk to scheduled and other internationally and, nationally important cultural heritage assets, sites and their setting. *(Cultural Heritage, including architectural and archaeological heritage)*	World Heritage Sites Scheduled Monuments (SM) (England and Wales) Registered Parks and Gardens Listed Buildings Conservation Areas Archaeological Features identified on the North West Rapid Coastal Zone Assessment (NWRCZA 2009), considered of medium and high importance.	Areas of architectural and archaeological importance at risk from tidal flooding and/or coastal erosion	No increase in tidal flood/erosion risk for archaeological features sensitive to flooding/erosion, compared with the `do nothing' policy *Aspirational target: reduction in coastal-risk for features sensitive to the impacts of tidal flooding and coastal erosion*	The majority of the scheduled heritage sites will be retained and protected through the preferred SMP2 policies. However, in areas where there are benefits in reverting to natural processes either by NAI or through managed realignment, there may be an increase in tidal flooding or erosion risk with associated adverse impacts on isolated historic assets (e.g. Scheduled Monuments, a Registered Park and Garden, areas of Hadrian's Wall WHS and some unscheduled archaeological sites considered of medium or high importance). Areas that may be affected include historic assets in the Dee Estuary, Leven Estuary, on Piel Island, at Saltom Pit, in Maryport and parts of Hadrians Wall WHS between Cardunock and the Scottish Border. Consequently, the SMP2 policies would only partially achieve the SEA objective to minimise coastal flood and erosion risk to scheduled monuments and other internationally, nationally and regionally important cultural heritage assets, sites and their settings.
Material Assets				
To minimise the impact of policies on marine operations and activities	Ports and harbours, Boatyards Moorings, Yacht and Sailing Clubs Ferry routes and waterways Coastguard, lifeboat and lifeguard. Access to the sea and navigation	Number of marine operations and activities affected by tidal flooding and/or coastal erosion	No increase in number of marine operations and activities affected by tidal flooding and/or coastal erosion from the `do nothing' policy *Aspirational target: reduction in tidal flood-risk to marine operations and activities as a result of SMP2 policies*	Throughout the majority of the SMP2 area, the objective to minimise the impact of the SMP2 policies on marine operations and activities can be achieved by appropriate approaches to the delivery of the SMP2 policies.
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	Motorways, A, B and minor roads (where linkage is a key issue) Railway lines and stations Airfields and aerodromes International airports Pumping stations, sewage works, wind turbines, landfills, quarries, existing power generating facilities (e.g. windfarms), sub-stations Access for emergency services	Number of critical infrastructural assets at risk from tidal flooding and/or coastal erosion	No increase in number of critical infrastructural assets at risk from tidal flooding and/or coastal erosion from the `do nothing' policy *Aspirational target: number of critical infrastructural assets at risk from tidal flooding and/or coastal erosion reduced to zero*	For much of the coastline, the preferred SMP2 policies will not affect critical infrastructure or crucial services over the lifetime of the SMP2. However, the objective to minimise the risk to critical road and rail linkages/services will become increasingly difficult to achieve in the long-term due to coastal change and expected long term sea level rise. Holding the line in some areas will become less acceptable due to economics, technical sustainability and environmental acceptability. In these areas, affected infrastructure may include some local roads and sewage works etc, particularly in areas that are realigned or that experience overtopping of defences during storm surges (e.g. at Dubmill Point). Consequently, it may be necessary to re-route some of the critical infrastructure in the longer term under this SMP2.

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target	Fulfilment of SEA Objectives by Preferred SMP2 Policies
Land Use				
To minimise coastal flood and erosion risk to agricultural land and horticultural activities	Grades 1 – 3A Farmland	Grades of agricultural land at risk from tidal flooding and/or coastal erosion	No increase in risk of flooding/tidal erosion to Grades 1 – 3a agricultural land *Aspirational target: risk to agricultural land from tidal flooding and/or coastal erosion reduced to zero*	The preferred SMP2 policies will partially fulfil the SEA objective to minimise risk to agricultural land and horticultural activities due to erosion/flooding. However, in some areas of NAI and MR, the loss of some agricultural land will be inevitable. Furthermore, while the SMP2 policies propose the alignment of the defences the standard of protection, which may vary in future due to coastal change and expected sea level rise are set at the more detailed appraisal level of strategies or schemes. Under NAI, approximately 37,000ha is considered to be at long term risk of loss. The proposed SMP2 Policies will provide long term risk reduction to around 25,000ha.
Population				
To minimise coastal flood and erosion risk to people and residential property	Isolated properties Housing in coastal villages, towns and cities Community	Number of residential properties at risk from tidal flooding and/or coastal erosion	No increase in number of residential properties at risk of tidal flooding or coastal erosion from the 'do nothing' policy. *Aspirational target: number of residential properties at risk from tidal flooding and/or coastal erosion reduced to zero*	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 and property by protecting areas of significant urban development and developed parts of the coastline from flooding or erosion. However, there are some less intensively developed areas where isolated properties and areas of community, recreational and amenity facilities exist and may be lost to flooding or erosion through allowing the coastline to retreat naturally. In these areas the SEA objectives relating to population and human health are unlikely to be met fully. Under NAI there are estimated to be around 107,900 residential properties at coastal risk across the whole of Cell 11. The proposed SMP2 policies will provide long term risk reduction to around 107,400 of these, so the objective is largely met.
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	Key vulnerable community facilities (e.g. surgeries, hospitals, aged persons homes, schools, shops, churches, libraries, universities etc) Key amenity facilities (e.g. public open space etc) Key recreational facilities (e.g. golf courses, bathing beaches, formal promenades, national cycle routes, Country Parks, Public Rights of Way, Castles and Forts etc) Access to community/amenity facilities	Number of high value community, amenity and recreational facilities at risk of tidal flooding and/or coastal erosion.	No increase in number of high value community, amenity and recreational facilities at risk of tidal flooding and/or coastal erosion from the 'do nothing' policy. *Aspirational target: number of high value community, amenity and recreational facilities at risk from tidal flooding and/or coastal erosion reduced to zero*	Under the preferred long-term policies, the key centres of tourism and recreation will continue to be protected. However, this will be at the expense of beaches along many of these frontages, which are unlikely to be naturally retained as the frontages and promenades become more prominent, and exposed to wave overtopping and flooding during surges. In many areas, beaches on HTL frontages will be subject to beach management, which depending on the detailed approach may sustain or partially sustain their amenity value. Consequently, the objective to avoid loss of key community, recreational and amenity facilities cannot be met fully.
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	Shops, offices, businesses, factories, warehouses, areas identified for regeneration, caravan parks, airports, stone and mineral extraction sites, military establishments and others key areas of employment	Number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion	No increase in number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion from the 'do nothing' policy *Aspirational target: number of industrial, commercial, economic and tourism assets at risk from tidal flooding and/or coastal erosion reduced to zero*	The SMP2 policies are generally likely to be beneficial to industrial, commercial and economic assets and/or activities, by protecting areas of significant development from flooding or erosion. However, the preferred SMP2 policy would only partially meet this objective as the SMP2 accepts that 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. Under NAI there could potentially be over 20,000 commercial properties at risk across the whole of Cell 11,as well as a significant number of regionally important industrial and power generation assets also at risk in flood and erosion risk areas The SMP2 policies will provide long term risk reduction to a large majority of these, around 100 properties may be at risk under the plan.

SEA Objective	Features covered by the objective (following scoping)	Indicator	Target	Fulfilment of SEA Objectives by Preferred SMP2 Policies
To minimise coastal flood and erosion risk to MoD ranges.	MoD sites (including UK disposal sites, Core sites and Firing Ranges)	Number of MoD sites at risk from tidal flooding and/or coastal erosion	No increase in number of MoD sites at risk from tidal flooding and/or coastal erosion compared to the 'do nothing' policy *Aspirational target: reduction in number of MoD sites at risk from tidal flooding and/or coastal erosion*	The MoD ranges lie generally within less developed stretches of coastline and therefore the SMP2 policies may result in the flooding or erosion of small areas of ranges in the short to long-term. Eskmeal Ranges may experience an increase in tidal flooding if the dunes breach under a NAI policy but as this risk already exists and there is no change to the existing management regime, this will not increase the number of sites at risk. The ranges will not be lost due to SMP2 policies and therefore the SEA objective is likely to be fulfilled by the preferred SMP2 policies.

8.3 Cumulative Environmental Impacts

SEA requires assessment of secondary, cumulative and synergistic effects. This section sets out the significant environmental effects of the plan as a whole, which have been considered in relation to each of the environmental objectives. It goes on to consider the environmental effects of potential interactions between the SMP2 and relevant plans and programmes within the study area. These findings are summarised in Table 8.2.

Table 8.2 Summary of Secondary, Cumulative and Synergistic Issues

SEA Environmental Objective	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP2 with relevant Plans and Programmes
To minimise coastal flood and erosion risk to people and residential property (*population*)	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 and property by protecting areas of significant urban development and developed parts of the coastline from flooding or erosion. Protection is predominantly focussed upon larger conurbations, where the highest level of benefit is achieved. However, some isolated properties, farm buildings, caravan sites, holiday centres and urban areas (e.g. Sunderland village) may be affected by flooding/erosion, as policies leading to a more 'natural' shoreline have been identified. For the preferred policies, the total loss of residential housing to coastal erosion and flooding through the whole SMP2 area in the first epoch, is approximately 40 residential and commercial properties, compared to potential erosion and flood losses of up to 50800 residential and commercial properties under the baseline scenario of no active intervention. By the second epoch, residential and commercial property losses as a result of coastal erosion and flooding under the preferred SMP2 could total 320, with cumulative losses of approximately 630 properties after 100 years. This compares to the no active intervention baseline, when cumulative house losses could be over 119,870 by the second epoch, and over 127,400 properties after 100 years. Along frontages where some properties will be lost due to coastal erosion or flooding in the short to long term, the preferred policy includes provision for management of the realignment of the shoreline at some of these locations. This could allow for relocation or mitigation measures to be implemented should there be the mechanisms to do so.	Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities. The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and Local development documents must ensure that the requirements of PPS25 are fully implemented.
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. *(population)*	Under the preferred long-term policies, the key centres of tourism and recreation (e.g. Llandudno, Colwyn Bay, Rhyl, Chester, Liverpool, Morecambe, Blackpool etc) will continue to be protected. However, this will be at the expense of beaches along many of these frontages, which are unlikely to be naturally retained as the frontages and promenades become more prominent, exposed and less accessible. Where it is possible to provide defence sustainably in the medium and long-term through beach re-charge, this will be of increasing value to tourism and recreation within the region as more beaches become lost as sea levels rise. In the medium and long term, narrowing and steepening of beaches is expected to occur from rising sea levels and coastal squeeze.	Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities. The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and Local development documents must ensure that the requirements of PPS25 are fully implemented.
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities. *(material assets and population)*	The proposed SMP2 policies will benefit most industrial, commercial and economic assets and/or activities, by protecting areas of significant development 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 have been identified where feasible.	Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities. The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and Local development documents must ensure that the requirements of PPS25 are fully implemented to ensure no future development in areas of coastal flooding or erosion.
To minimise the impact of policies on marine operations and activities *(material assets)*	The proposed SMP2 policies are unlikely to affect marine activities and in many areas will protect port and harbour facilities required for marine operations.	Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities. The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and Local development documents must ensure that the requirements of PPS25 are fully implemented.

SEA Environmental Objective	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP2 with relevant Plans and Programmes
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services. *(material assets)*	For much of the coastline the preferred policy is to maintain existing defences where economically viable. This will help to minimise loss of critical infrastructure 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 infrastructure will be required in the medium and longer term under this SMP2 and some critical services may be affected. While the preferred policy for many areas is to hold the line in the long term, there may be a detrimental impact on some infrastructure, where it will become increasingly technically difficult to retain coastal frontages.	The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and other 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 where the risks from coastal flooding or erosion can be managed appropriately.
To support natural processes and maintain geological exposures throughout nationally designated geological sites *(soils and geology)*	A significant threat to the internationally and nationally designated Earth heritage sites is the construction of artificial structures along the coast that would affect the natural processes of erosion or obscure the exposed geology. The proposed plan therefore seeks to balance the protection of these natural features with the maintenance and protection of property and material assets wherever possible. The preferred policies of no active intervention or managed realignment have been recommended in areas where there are limited human assets or along areas of undeveloped coastline to ensure the preservation of the geological interests. In general, the SMP2 is not recommending the construction of new defences to maintain economic assets in areas where none are currently present.	Local planning policies support the geologically related SEA objective of the SMP2.
To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain / achieve favourable condition of their interest features (habitats and species) *(biodiversity, flora and fauna)*	Along many parts of the SMP2 frontage, intertidal habitat is designated under international legislation for its conservation interests. The SMP2 recommends adopting a managed realignment or no active intervention policy along an increasing area of coastal/estuarine frontage to provide accommodation space for the natural roll-back or increase in extent of these internationally designated intertidal habitats. However, there will be some intertidal habitat losses due to coastal squeeze where holding the line is essential to protect significant urban settlements. In some areas, the inland migration of designated intertidal habitat may result in the loss of internationally designated freshwater or terrestrial habitat. Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing for the impact of sea level rise (e.g. through the provision of replacement/compensatory habitat sites). The conflicting objectives of a more dynamically functioning coastline coupled with conserving existing habitat 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.	HRAs of Catchment Flood Management Plans to assess cumulative effects on internationally designated conservation sites. Policies and actions in some CFMPs, the North West RSS (North West of England Plan Regional Spatial Strategy to 2021) (Published September 2008); and the Sub Regional Strategy for West Cheshire and North East Wales (Autumn 2006) have the potential to affect the designated conservation sites. However, these documents seek to ensure that there are no adverse effects. Coastal squeeze as a result of climate change and long term rising sea levels outpacing sediment accretion along some coastal frontages in areas of policy implementation will require the provision of compensatory intertidal habitat. The SMP2 proposes areas of MR and NAI, which can facilitate provision of appropriate compensatory areas.
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition *(biodiversity, flora and fauna)*	Along parts of the SMP2 frontage, some nationally designated interest features may be affected or lost due to sea level rise and there are potential cumulative effects of coastal squeeze against either fixed defences or the cliffs and in other areas, will result in the protection of some nationally designated terrestrial and/or freshwater habitats (e.g. grassland, freshwater grazing marsh etc.). However, in many areas a preferred 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.	HRAs of Catchment Flood Management Plans to assess cumulative effects on nationally designated conservation sites. National BAP targets are met through a variety of mechanisms, and during the implementation of the SMP2, we will work with the partners of the other plans to work towards achievement of these targets.
To avoid adverse impacts on, conserve and where practical enhance the	Along parts of the SMP2 frontage, habitats have been designated under local legislation 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. Careful management of the shoreline is necessary to sustain the designated habitats already in place, while managing for the impact of sea	HRAs of Catchment Flood Management Plans to assess cumulative effects on designated conservation sites.

SEA Environmental Objective	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP2 with relevant Plans and Programmes
designated interest of locally designated conservation sites *(biodiversity, flora and fauna)*	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.	
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats *(biodiversity, flora and fauna)*	Along parts of the SMP2 frontage, some BAP habitats (e.g. sand dunes, saltmarsh, mudflats, sandbanks etc) may be affected or lost due to sea level rise and coastal squeeze against either fixed defences or the cliffs and in other areas, will result in the protection of BAP habitats (e.g. grassland, freshwater grazing marsh etc). However, in an increasing number of areas a preferred policy of no active intervention or managed realignment will continue to enhance wetland BAP habitats and allow some of the terrestrial BAP habitats to adapt naturally to the effects of sea level rise. Careful management of the shoreline is necessary to sustain BAP 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 BAP habitat relies 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.	HRAs of Catchment Flood Management Plans to assess cumulative effects on BAP habitats.
To manage and minimise risk of pollution from contaminated sources *(water)*	In most areas along the coastal frontage, the preferred SMP2 policy provides protection from flooding or erosion to the majority of potentially polluting features such as landfill sites. However, there are a few areas where flooding or erosion of landfill sites may be experienced in the short, medium and long-term and will therefore require further consideration and study at strategy/project level if a policy of NAI or managed realignment is adopted.	Local Development Document 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. The North West Regional Spatial Strategy, the Wales Spatial Plan, Planning policy Wales, Sub Regional Strategy for NW Cheshire and NE Wales and Local development documents must ensure that the requirements of PPS25 are fully implemented.
To maintain and enhance features as a natural flood defence *(biodiversity and geology)*	Along many areas of the frontage beach management (e.g. sand or shingle recharge or recycling) is proposed to help maintain natural features. However, where HTL is proposed to protect significant urban communities, coastal squeeze may result in the narrowing of natural defence features.	
To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally **important cultural heritage assets, sites and their setting.** *(cultural Heritage, including architectural and archaeological heritage)*	There are a wide range of heritage sites along the coast and many more of these will be protected through the SMP2 policies than would survive under a no active intervention policy. Many features are retained and protected through the preferred policies. However, along some stretches of coastline, there may be possible damage to or loss of historic environmental features due to flooding and/or erosion including: • Several Scheduled Monuments; • Part of up to two Registered Parks and Gardens; • some Grade I and II Listed Buildings; and • parts of a World Heritage Site It should be noted that most of the Listed Buildings and Scheduled Monuments within the North West England and North Wales SMP2 area are located within the towns and cities along the coast, the majority of which would be protected, under the preferred policies. However, some historic assets are located in areas where changes in policy are proposed (due to either economics or where a return to natural processes is considered beneficial for European sites), and in these areas there is a risk of these being lost or damaged as a result of erosion or flooding, particularly in the medium to long term.	Local Development Document 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.
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and	The preferred policies in this SMP2 are intended to sustain the current dense urban areas through proactive management of the existing beaches and defences, whilst recognising that continuing to maintain/sustain linear and possibly shoreline control defences may be needed. In general the Plan is not to construct new defences in currently undefended areas so most of the coastline will remain as today. However, opportunities for forming a free functioning natural coastline in some areas have been taken, to create a more natural coastal landscape and reducing piecemeal man-made structures on the beach. This is likely to be more beneficial to the landscape character of the designated sites,	The SMP2 policies will be developed and implemented in accordance with the policies of the AONB and National Park Management Plans and policies of the Heritage Coast plan.

SEA Environmental Objective	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP2 with relevant Plans and Programmes
erosion and avoid conflict with AONB and National Park Management Plan Objectives *(landscape)*	particularly where sites are designated for their natural geological features and natural scenic beauty 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. In addition, a more naturally functioning coastline and ecosystem, a reduction in man-made structures and the encouragement of 'softer' engineering proposals for coastal defences are objectives of the AONB Management Plans. Similarly, the development of a more natural coastline may help to improve the aesthetic appearance of an area and improve views of the horizon, though visual amenity is subjective. However, where a no active intervention policy is recommended, there is also the potential for unsightly defences as they deteriorate in the long-term, the loss of features that contribute to the terrestrial landscape character of some designated sites (e.g. significant landscape features inland of defences such as salt pans) and these effects will require further consideration at strategy and/or scheme level.	
To minimise coastal flood and erosion risk to agricultural land and horticultural activities *(soil and population)*	Agriculture and grazing represents a share of the local economy and along the coast there are various grades of agricultural land. Along much of the coastline, these are in the less developed stretches between the towns and within the estuaries, where there is insufficient economic justification for maintaining or constructing defences, which would also be technically inappropriate. Under the preferred policies there could be loss or damage to approximately 12,000ha 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.
To minimise coastal flood and erosion risk to MoD ranges. *(population and material assets)*	The MoD ranges lie generally within undeveloped stretches of coastline and therefore the preferred SMP2 policies may result in the flooding or erosion of small areas of ranges in the short to long-term. Eskmeal Ranges may experience an increase in tidal flooding if the dunes breach under a NAI policy but as there is no change to the existing management regime, will not increase the number of sites at risk. Such minimal losses are unlikely to affect the operational nature of the MoD ranges.	The aspirations of the MoD for the ranges within the study area, is currently unknown.

8.4 Difficulties and Uncertainties

The main sources of uncertainty at this level of appraisal relate to: -

- It is assumed that the baseline information used in the SEA is complete, up to date, reliable and unbiased.
- Unknown archaeology – there is potential for buried archaeological features that have not been identified at this high level. Further archaeological desk study (and potential field evaluation) will be required at strategy or scheme level.
- Areas of potential contamination, ground stability, unrecorded landfills and buried ordnance are unknown at this stage. Further desk study and investigation will be required at strategy and scheme level.

Where data gaps or lack of understanding exist, then 'uncertainty' is introduced into the SEA and SMP2 implementation and into the prediction of environmental impacts/outcomes. Where this uncertainty is significant, the implications for the predictions have been identified as well as the data collection/analysis that might be needed to address it.

Where the preferred plan for any Policy Unit has specific monitoring or detailed study requirements, to help clarify uncertainties, such as future morphological evolution of the estuary and the extent of Managed Realignment and habitat creation, this is identified in the **Action Plan** in the **main SMP2 document**.

There is therefore some risk that closer inspection through the development of strategies and schemes may identify constraints that may change approaches to flood management at particular localities.

In addition, in carrying out the SEA, solutions that are environmentally justifiable have been selected based on existing data sources and baseline data. The assessment of cumulative impacts is therefore limited by changing environmental characteristics and future development.

8.5 Monitoring

The key principles of implementation and monitoring are to ensure that the mitigation measures implemented are effective, to ensure that recommendations or study requirements are addressed and to monitor all the significant environmental effects of the preferred plan identified during the assessment.

The SMP2 will be circulated to all stakeholders for consultation and comment. The plan may be modified in light of comments received from consultees before it is formally adopted. Once the plan is implemented, any potentially significant effects will be monitored and reported in accordance with the review cycle of the plan.

Where the preferred policies for any Policy Unit have specific monitoring/study requirements to clarify uncertainties, this is identified in the relevant policy scenario 'Action Plan' in the Policy Statements (**Main SMP2 document**).

The key environmental monitoring activities comprise: -

- Development of habitat management plans (e.g. dune management plans) and subsequent progress following implementation (e.g. dune restoration, intertidal habitat creation etc);
- Monitoring of BAP habitats, and designated habitats and species within international and nationally conservation designated sites over the lifetime of the SMP2;
- Need to carry out Habitat Regulations Assessments at Strategy and/or Scheme Level for some European sites; and
- Investigating and monitoring of landfill sites subject to increasing tidal flood and/or erosion risk.

Detailed monitoring could be undertaken within the existing North West and North Wales Coastal Monitoring Group Programmes or undertaken as part of coastal defence strategy studies. The latter will also define mitigation requirements.

At this level of plan, the mitigation and enhancement measures are integral to the policy appraisal. Where we have the potential to enhance the environment we have included this potential within the appraisal objectives. Mitigation measures at this level are generally included as part of the policy options, and involve avoidance of a detrimental impact through the selection of an alternative policy option. However, where avoidance of an adverse impact is not possible, the tables in **Annex 1** incorporate possible mitigation measures to ameliorate or minimise negative effects.

At a lower level in the planning hierarchy, when investigations are progressed to develop the details of how to implement flood risk and erosion management measures, an appropriate level of environmental assessment will be undertaken, and will identify more relevant mitigation measures to the impacts arising.

ANNEX 1: ENVIRONMENTAL ASSESSMENT OF PREFERRED POLICIES

SUB-CELL 11A

The tables below describe the environmental effects of the preferred SMP2 policy scenarios along with appropriate mitigation measures that could be implemented to ameliorate any adverse impacts. Mitigation measures identified in the tables below include those which are required to offset/avoid negative impacts, highlighted in ***italic and bold***, as well as a number of aspirational measures. The SMP2 is committed to deliver these measures through the Action Plan to meet SEA requirements and as such the ***highlighted*** mitigation measures have been included in each Policy Statement Action Plan.

Notes on application:

Where there is a change in management practice from the 'with present management scenario' the preferred policy scenario is highlighted in blue and bold.

Methodology for Prediction of Significant Impacts

The following key is used to identify those impacts (prior to mitigation) that are of potential minor, moderate or major negative or positive significance, and those that are not significant or where the significance is unknown: -

Professional judgement has been used to assign a strategic level of significance using the table below.

Impact Significance	Description of Impact Significance
Major Positive	The option would significantly benefit internationally designated environmental features, fulfilling the SEA objective *and* maximising opportunities for environmental enhancement (e.g. habitat restoration or habitat creation etc). In addition, where properties are protected from flooding/erosion, a major positive impact on population and human health is assumed.
Moderate Positive	The option would significantly benefit nationally designated environmental features by resolving an existing environmental issue and/or fulfilling the SEA objective.
Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing locally important environmental issue and/or offering opportunity for some environmental enhancement
No Significant Impact	The option would not result in a significant impact on the environment.
Uncertain	There is insufficient detail available to assess how significantly the SEA objective would be affected by the option.
Minor Negative	The option would partially affect a SEA objective in a negative way
Moderate Negative	The option would significantly and negatively affect nationally designated environmental features and conflict with the SEA objective.
Major Negative **(Potential 'adverse effect' (relating to European sites only) – HR)**	The option would significantly and negatively affect internationally designated environmental features and conflict with the SEA objective. Where properties are lost due to flooding/erosion, a major negative impact on population and human health is assumed. To ensure that a link is made between the SEA and the Habitats Regulations Assessment, where a European site is present and an option significantly fails to meet an objective arising from obligations under the Habitats Regulations (i.e. cannot avoid adverse impacts on a European site), then a potential adverse effect is also stated in the assessment tables in brackets.
('No Adverse Effect' – HR)	To ensure that a link is made between the SEA and the Habitats Regulations Assessment, this impact relates to the international conservation sites only and uses the terminology used in the Habitats Regulations. This is stated in the assessment tables in brackets where an impact in terms of the Habitats Regulations will be significant but not adverse.

ANNEX I.I ENVIRONMENTAL ASSESSMENT OF PREFERRED POLICY OPTION: Sub-cell 11a

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 1: GREAT ORME TO LITTLE ORME												
1	**Great Ormes Head**	A	NAI	NAI	NAI	No adverse impact on the Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC. The intertidal area at Llandudno does not lie within this designated site boundary. **No Significant Impact** **('No Adverse Effect' – HR)** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. **No Significant Impact** **('No Adverse Effect' – HR)** Natural erosion and slumping processes will continue to	Shingle recharge and management will maintain the beach as a defence over the duration of the SMP2, particularly as the beach narrows and steepens due to coastal squeeze in the long-term. **Minor positive impact** Natural processes will continue to maintain the geological interest features of Great Orme`s Head/Pen y Gogarth SSSI and Criegiau Rhwledyn / Little Ormes Head SSSI in the short, medium and long-term. **Moderate positive impact**	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast from Pen-trwyn and Llandudno, as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas where NAI). **Uncertain**	The continuation of natural processes will maintain the natural geological formations, relative remoteness and natural wildness features that contribute to the landscape character of the Great Orme Heritage Coast over the duration of the SMP2. **Moderate positive impact**	Protection of known heritage features in flood risk zone in the short, medium and long-term. **Moderate positive impact**	Protection of infrastructure (e.g. A470) in Llandudno over the duration of the SMP2. **Moderate positive impact** Negligible loss of agricultural land on the Great Orme and the Little Orme due to low erosion rates over the duration of the SMP2. **No Significant Impact**	Protection of Llandudno through recharge and beach management, and cliff top properties by cliff stabilisation over the duration of the SMP2. **Major positive impact** Protection of tourist assets (including pier and promenade) and community/ recreational facilities (e.g. golf clubs) from flood and erosion risk over the duration of the SMP2. **Moderate positive impact** Potential risk to parts of the North Wales Path from localised landslides **Moderate negative impact** but protection of the footpath in Llandudno from flood risk over the duration of the SMP2 **Minor positive impact**
2	**Llandudno**	A	HTL	HTL	HTL							
3	**Little Ormes Head**	A	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						maintain the cliff habitat within Great Orme`s Head / Pen y Gogarth SAC & SSSI in the short, medium and long-term. **Moderate positive impact** The area of grassland habitat within Criegiau Rhwledyn / Little Ormes Head SSSI is likely to respond and adapt to natural erosion in the short, medium and long-term. **No Significant Impact**						
Mitigation Measures/Environmental Opportunities						HTL will not pose any threat to the offshore international conservation feature. However, the provision of a Strategy for this area, which would include this Policy Unit, and other adjacent and related Policy Units within this Sub cell, is recommended. This will enable beach management to sustain and improve beach widths as a natural defence line, as sea levels rise, and will allow for the long term development of proposals for HTL. ***A more site specific Appropriate Assessment will also be undertaken at strategy and/or scheme level.***	No mitigation required	No mitigation identified at this stage as there is uncertainty regarding the impact.	No mitigation required	No mitigation required	No mitigation required	Mitigation for the North Wales Path is likely to be required along sections, which become unsafe to use or where sections have been lost due to landslides and slumping. In these locations, mitigation could take the form of relocating small sections of the footpath further inland.

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
					Net non-designated intertidal losses will be replaced through the Regional Habitat Creation Programme (RHCP). ***Environmental monitoring of designated sites required to provide baseline data for future strategy and/or scheme level Habitat Regulations Assessments***						

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 2: LITTLE ORME TO THE CLYWD ESTUARY												
1	**Little Orme to Rhos-on-Sea (Penryhn Bay)**	A	HTL	HTL	HTL	Holding the line in the short to long term may interrupt the natural processes and continuation of a supply of shingle, which are important for the maintenance of the vegetated shingle (BAP habitat). **Minor negative impact** Any machinery working within the Traeth Pensarn SSSI has the potential to directly damage the shingle vegetation in the short, medium and long-term. **Moderate negative impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA.	Continued beach management is likely to result in continued accretion at either end of the frontage at Rhos-on-Sea and Kinmel Bay. In the centre of the section, around the eastern end of Colwyn Bay the foreshore levels will continue to decline and narrow due to coastal squeeze over the duration of the SMP2. **Uncertain**	**No Significant Impact** on water quality.	No designated landscapes within the policy area **No Significant Impact**	**No Significant Impact** on the historic environment.	Continued protection of infrastructure (e.g. A55, railway line and Pensarn sewage pumping station) along the frontage over the duration of the SMP2. **Moderate positive impact** Erosion of the foreshore in the short, medium and long-term may affect cable crossings from Rhyl Flats Wind Farm at Kinmel Bay where they reach the shore. **Minor negative impact** Protection of agricultural land in the short, medium and long-term. **Moderate positive impact**	Protection of assets (including residential properties, tourist facilities and recreational assets) at Penrhyn Bay, Colwyn Bay, Llandulas, Rhos on Sea, Abergele, Pensarn, Towyn and Kinmel Bay in the short, medium and long-term. **Major positive impact** Minimal risk to the North Wales Path and National Cycle Route 5, from overtopping during storm events. **No Significant Impact** to **Minor negative impact**
2	**Rhos-on-Sea to Llanddulas (Colwyn Bay)**	A	HTL	HTL	HTL							
3	**Llanddulas to Clywd Estuary**	A	HTL	HTL	HTL							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						No Significant Impact **('No Adverse Effect' – HR)**						
Mitigation Measures/Environmental Opportunities						***Further consideration will be given at strategy or scheme level to ensure the natural mobility of the vegetated shingle.*** As shingle vegetation is fragile, vehicle access should be carefully designed to avoid disturbance to areas of vegetated shingle. ***In conjunction with a strategic approach to beach management and beach recharge for the whole north Wales frontage from Little Orme through to the Dee estuary, the need to assess beach recharge requirements are necessary to maintain the condition of the Traeth Pensarn SSSI in the long term.*** Net non-designated intertidal losses should be replaced through the Regional Habitat Creation Programme (RHCP). The timing of works at scheme level should be designed to avoid the breeding season of the qualifying waterbirds.	No mitigation required	No mitigation required	No mitigation required	No mitigation required	Depending on the locations of cable crossings affected by erosion, mitigation may take the form of relocating the cable further inland.	Additional defences to retain sediment or beach recharge campaigns may help stabilise the beach, maintain the amenity value of the beach and reduce the risk of flooding to the Public Rights of Way during storm events. These will be considered further at strategy and/or scheme level.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 3: CLYWD ESTUARY												
1	**Hortons Nose to Foryd Railway Bridge**	A & B	HTL	HTL	HTL	Coastal steepening and sea level rise may lead to medium and long-term losses of non-designated intertidal habitat where holding the line in the medium and long-term. Also potential for some losses of intertidal habitat in response to larger flows associated with managed realignment in the upper estuary. **Moderate negative impact** Likely gain of intertidal habitat in areas of managed realignment. **Major positive impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is	**No Significant Impact** on earth heritage, soils and geology.	Continued protection of landfill site in the short-term **Minor positive impact** but potential erosion of the landfill site, dependant on realignment extent in the medium and long-term with potential for release of contaminants into the estuary **Moderate negative impact** The Clywd Estuary will remain constrained in form, by embankments and bridges, especially at the mouth and at the inland estuary boundary in the short-term. Natural meandering will continue to be restricted ***Minor negative impact***. Phased managed realignment will allow reactivation of meandering along the inner section in the medium and long-term. **Minor**	No designated landscapes within the policy area. **No Significant Impact**	Protection of conservation areas at Rhyl over the duration of the SMP2. **Moderate positive impact**	Continued protection of infrastructure (e.g. A548 and A525 roads as well as the railway line across the Clwyd Estuary) over the duration of the SMP2 and protection of the sewage works in the short-term. **Moderate positive impact** Loss of sewage works may occur in the medium/long-term, dependant on realignment extent. **Moderate negative impact** Protection of agricultural land in the short-term **Moderate positive impact** but potential loss of agricultural land, dependant on realignment extent in the medium and long-term **Moderate negative impact**	Continued protection of assets (e.g. residential and commercial properties and community facilities) in Abergele/Towyn/ Pensarn/Kinmel Bay. Rhyl and Prestatyn over the duration of the SMP2. **Major positive impact** Protection of coastal footpaths (e.g. North Wales Coast Path) in the short-term **Minor positive impact** but with changes in routing required in the medium and long-term, depending on where managed realignment is implemented (***impacts may be positive or negative)***
2	**Foryd Railway Bridge to Rhuddlan Road Bridge. Clywd Estuary West (left) bank**	B	HTL	**MR**	**MR**							
3	**Rhuddlan Road Bridge to Foryd Bridge. Clywd Estuary East (right) bank**	B	HTL	**MR**	**MR**							
4	**Forwyd Railway Bridge to Forwyd Road Bridge**	A & B	HTL	HTL	HTL							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						considered to be low and represents only a tiny proportion of the overall pSPA. **No Significant Impact** **('No Adverse Effect' – HR)**		**positive impact**				
Mitigation Measures/Environmental Opportunities						***Net non-designated intertidal losses should be replaced through the Regional Habitat Creation Programme (RHCP).*** The timing of works at scheme level should be designed to avoid the breeding season of the qualifying waterbirds.	No mitigation required.	Further consideration of areas of landfill would be required at project level if a policy of managed realignment is implemented in the medium and long-term. The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials would need to be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	No mitigation required.	No mitigation required.	No mitigation has been identified for losses of agricultural land. Further consideration of the sewage works and its potential relocation inland would be required at strategy or project level if a policy of managed realignment is implemented in the medium and long-term.	Affected parts of the North Wales Coast Path may need to be relocated inland and could be incorporated into the design of new set-back defences, with opportunities to improve views of the estuary for pedestrians and recreational users.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 4: CLWYD ESTUARY TO POINT OF AYR												
1	**Clwyd Estuary to Golf Links**	A & B	HTL	HTL	HTL	Potential loss of non-designated intertidal habitat due to coastal squeeze in the long-term at Rhyl, where holding the line. **Moderate negative impact** Potential increase in extent of intertidal habitats adjacent to the Dee Estuary/Aber Dyfrdwy SAC, SPA, Ramsar site and SSSI & Gronant Dunes & Talacre Warren SSSI in the short and medium-term. **Major positive impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. **No Significant Impact** **('No Adverse Effect' –**	Continued narrowing and steepening of beaches due to coastal squeeze will compromise its natural defence properties. **Minor negative impact**	Protection of Morfa tip site, along the open coast in the short, medium and long-term. **Minor positive impact**	No designated landscapes within the policy area **No Significant Impact**	Continued protection of Scheduled Monuments and Conservation areas at Rhyl and Prestatyn in the short, medium and long-term. **Moderate positive impact**	Continued protection of infrastructure (e.g. the A548, railway line and local roads along the seafront) in the short, medium and long-term. **Moderate positive impact** Protection of agricultural land from flooding (e.g. land south-west of Rhyl) over the duration of the SMP2. **Moderate positive impact**	Continued protection of assets at Rhyl and Prestatyn ofrom erosion and flooding over the duration of the SMP2. Construction of a secondary defence line where practicable and/or beach recharge will help reduce risks of overtopping during increasingly severe storm events. **Major positive impact** Tourist assets at the Point of Ayr may need to be relocated over time, or risk being lost, dependant on the success of dune management. The Point of Ayr itself, as a natural tourist attraction is likely to be enhanced by dune management. **Uncertain** Protection of Rhyl Golf Course) over duration of SMP2 **Minor positive impact,** however, increasing flood risk to Prestatyn Golf Club, (though risk may be reduced through
2	**Rhyl Golf Links**	A	HTL	HTL	HTL							
3	**Rhyl Golf Links to Barkby Beach (Prestatyn)**	A & B	HTL	HTL	HTL							
4	**Barkby Beach to Point of Ayr**	A	**MR**	**MR**	**MR**							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						HR) The Dee Estuary/Aber Dyfrdwy SAC, SPA, Ramsar site and SSSI does not fall within the HTL policy units though there is potential for changes at the site due to littoral drift. With strategic beach management and beach recharge, it is anticipated that there will be no adverse effects on the adjacent designated site. **No Significant Impact** **('No Adverse Effect' – HR)**						beach/dune management measures) **Minor negative impact** Protection of the North Wales Path and Offas Dyke Path via the coast in the short, medium and long-term. **Minor positive impact** Potential flood risk to National Cycle Route 5 along Barkby Beach in the short, medium and long-term. **Minor negative impact** Continued narrowing and steepening of beaches due to coastal squeeze will compromise their amenity value. **Minor negative impact**
Mitigation Measures/Environmental Opportunities						***A more site specific Appropriate Assessment will need to be undertaken at strategy and/or scheme level.*** Net non-designated intertidal losses should be replaced through the Regional Habitat Creation Programme (RHCP). The timing of works at	***Beach recharge and management along the frontage to help to combat beach losses and provide beach stability.***	No mitigation required	No mitigation required	No mitigation required	No mitigation required	Depending on the facilities that may be affected by flooding or erosion and the location of any managed realignment, mitigation may take the form of relocating some assets further inland (particularly part of the National Cycle Route).

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					scheme level should be designed to avoid the breeding season of the qualifying waterbirds.						

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POLICY AREA 5: DEE ESTUARY												
1	**Point of Ayr to Mostyn, south of Mostyn Dock**	A & B	HTL	HTL	HTL	Holding the line within the Dee Estuary SPA & Ramsar, SAC and SSSI is unlikely to adversely affect the designations (except at Hilbre Island) in the short and medium-term, as many areas are currently accreting. The continuation of natural processes in many areas is likely to be beneficial to the site and not interfere with the natural accretion. **No Significant Impact** **('No Adverse Effect' – HR)** In the long-term, there is potential for coastal squeeze of intertidal habitats within the Dee Estuary/Aber Dyfrdwy SAC, SPA, Ramsar site and SSSI if sea level rise outpaces ongoing accretion. **Major negative impact/ Uncertain** **(Potential for 'adverse effect' – HR)** Managed realignment is likely to be beneficial to the internationally designated sites. **Major positive impact** A combination of	The continuation of natural processes will be beneficial for the Dee Cliffs SSSI geological features over the duration of the SMP2. **Moderate positive impact** Holding the line in many areas has the potential to affect the geomorphological interests of the Afon Dyfrdwy/River Dee geological SSSI over the duration of the SMP2 **Moderate negative impact** Natural processes in some areas will benefit the fluvial geomorphological interests of this site, allowing continued visibility of the palaeochannels and allowing the river channel to continue meandering naturally over the duration of the SMP2 **Moderate positive impact.**	Protection of major industry, hazardous waste and the majority of landfill sites over the duration of the SMP2, thus no impacts on water quality. **Moderate positive impact** Potential erosion of landfill at Wirral Country Park in the short-term. Erosion/flooding of landfills within realigned areas in the medium and long-term, dependant on extents, therefore, potential contamination risk (**Moderate negative impact – some uncertainty)**. Potential for short, medium and long-term changes in condition of shellfisheries within the estuary, as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely	No designated landscapes within the policy area. **No Significant Impact**	Protection of SMs and Registered Park and Garden from flood risk and erosion in the short-term. **Moderate positive impact** Protection of chapel (MME5) considered of high importance and some submarine forests (of medium importance) on the NWRCZA (2009) from flood risk over lifetime of SMP2. **Moderate positive impact** Potential damage to a submarine forest (MME318) over lifetime of SMP2. **Moderate negative impact** Potential flood risk to St Andrews Medieval Hospital and Limekiln SM and Burton Marsh Registered Park and Gardens in the medium and long-term. **Moderate negative impact**	Protection of infrastructure (e.g. A55, North Wales Coast Line and Wirral Line) over the duration of the SMP2 (except in areas of realignment). **Moderate positive impact** Protection of Connah's Quay and Deeside gas power stations and associated infrastructure over the duration of the SMP2. **Moderate positive impact** Dependant on extent/location of realignment in the medium and long-term, there may be potential loss of local roads and disturbance to infrastructure (e.g. navigation within Port of Mostyn and Hawarden Airport). **Uncertain** Protection of marine services and operations at Mostyn and airports in the short-term **Moderate positive impact**	Protection of the towns of Flint, Mostyn, Shotton, Chester, Connah's Quay, West Kirkby (including the marine lake) over the duration of the SMP2. ***Major positive impact*** Protection of assets and tourist amenities on Hilbre Island over the duration of the SMP2. **Moderate positive impact** Flood risk to isolated properties at the foot of Thurstaston cliffs over the duration of the SMP2 and potential loss of isolated properties in areas of managed realignment **Major negative impact** Areas of saltmarsh fronting Neston and continued accretion provide natural protection to the town over the duration of the SMP2 **No Significant Impact** Continued siltation
2	**Mostyn to Flint Marsh**	B	HTL	**MR**	**MR**							
3	**Flint Marsh to Chester Weir to Sealand Rifle Range (Inner Dee Estuary, both banks)**	A & B	HTL	HTL/**MR**	HTL/**MR**							
4	**Sealand Rifle Range to Burton Point**	B	HTL	**MR**	**MR**							
5	**Burton Point to Thurstaston Cliffs**	A & B	NAI	NAI	NAI							
6	**Thurstaston Cliffs**	B	NAI	NAI	NAI							
7	**Thurstaston Slipway to Croft Drive, Caldy**	Variation on A & B	HTL	HTL	HTL							
8	**Croft Drive, Caldy to West Kirkby Marine Lake**	A	HTL	HTL	HTL							
9	**West Kirkby Marine Lake to Royal Liverpool Golf Club**	A & B	HTL	HTL	HTL							
10	**Royal Liverpool Golf Club to Hilbre Point**	B	NAI	NAI	NAI							
11	**Hilbre Island**	A	HTL	HTL	HTL							

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						holding the line and managed realignment between Flint Marsh and Sealand Rifle Range in not anticipated to affect the River Dee/Afon Dyfrdwy SSSI (biological) River Dee and Bala Lake SAC or the qualifying species of sea and river lampreys, water courses and Atlantic salmon **No Significant Impact** **(No 'adverse effect' - HR)** Natural roll back of the sand dune system within the Red Rocks SSSI over the duration of the SMP2 could lead to habitat gains (though there is some potential for losses due to realignment of spit) **Uncertain** The continuation of natural processes will be beneficial for the maritime cliff grassland within the Dee Cliffs SSSI and the inland area of marl pits and neutral lowland grassland at Thurstaston over the duration of the SMP2. **Moderate positive impact** Maintaining the existing defences is		increase in spawning areas where MR/NAI). **Uncertain**			Erosion of agricultural land along the English bank where no active intervention and in areas if realignment **Moderate negative impact**, protection of agricultural land in the inner estuary and Welsh bank **Moderate positive impact** over the duration of the SMP2.	will impact on navigation of leisure craft over the duration of the SMP2. **Minor negative impacts** Protection of Thurstaston caravan park over the duration of the SMP2. **Minor positive impacts** Foreshore saltmarsh accretion will continue to protect a variety of recreational assets (e.g. golf courses) in the short-term. **Minor positive impacts** Increased cliff erosion may potentially impact on Caldy Golf Course when defences fail in the medium and long-term. **Minor negative impacts** Potential for impacts on the Royal Liverpool and Heswall Golf Courses if accretion slows / reverts to an eroding foreshore in the medium and long-term. **Impacts uncertain at this stage**

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						likely to maintain the condition of the freshwater habitats and wet grassland within Inner Marsh Farm SSSI/ RSPB Reserve in the short-term. **Moderate positive impact** Increasing flood risk to freshwater marshes within the SSSI under managed realignment in the medium and long-term will change the habitat within the site. **Moderate negative impact** Holding the line in some areas over the duration of the SMP2 may restrict the natural roll-back of coastal sand dunes (BAP habitat) between Hillbre Point and the Royal Liverpool Golf Club. **Minor negative impacts** Natural retreat of maritime cliffs (BAP habitat) at Thurstaston over duration of the SMP2. **Minor positive impact** Managed realignment in some areas in the medium and long-term will provide accommodation space for roll back of						Increased erosion risk and potential loss of assets at Caldy Sailing Club in the long-term. **Minor negative impacts**

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						habitats /increase the extent of intertidal habitats (BAP habitats). **Moderate positive impact**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and, where required compensatory habitat sought through the RHCP for intertidal habitat losses within the Dee Estuary/Aber Dyfrdwy SAC, SPA, Ramsar site.*** ***Requirement to replace losses of SSSI freshwater habitat due to saline inundation and to replace losses of sand dunes that are subject to coastal squeeze. The replacement of freshwater habitat will be identified through the RHCP.*** Opportunities to improve the condition of Red Rocks SSSI could include carrying out weed clearance, scrub control and re-profiling ponds.	No mitigation required	***Further consideration of the landfill sites will be required at strategy or project level.*** The hazard that the landfill sites poses to people and the environment from leaching or the release of contaminated materials would need to be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary to avoid negative impacts.	No mitigation required	The likely impacts of the preferred SMP2 policy option on the SM and Registered Park and Garden will be investigated further at strategy or scheme level. Where avoidance of known features from flooding/erosion is not possible and where they cannot be preserved in situ, mitigation may take the form of excavation and recording.	Dependent on the availability of alternative inland routes, mitigation for the loss of local roads in realigned areas, may take the form of relocating roads inland. No mitigation has been identified for losses of agricultural land. Further consideration of the impacts to navigation within Mostyn Port should be carried out at the strategy and/or scheme level.	Depending on the facilities affected by flooding or erosion and the location of any managed realignment, mitigation may take the form of relocating the assets further inland. This should be investigated further at strategy and/or scheme level. There may be no provision for compensating or mitigating the loss of private properties. Consideration of dredging to remove siltation may be required to minimise impacts on navigation within the estuary following implementation of SMP2 policies.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 6: NORTH WIRRAL												
1	**Hilbre Point (Stanley Road) to Wallasea Embankment (Meols)**	A & B	HTL	HTL	HTL	The favourable condition of the littoral sediment within the Mersey Narrows and North Wirral Foreshore potential SPA & Ramsar and North Wirral Foreshore SSSI and the Dee Estuary / Aber Dyfrdwy SAC & SSSI currently remains unchanged and therefore continuing to hold the line is unlikely to affect the site in the short and medium-term as there is continued accretion of dunes and saltmarsh in front of the defences. If sea level rise outpaces ongoing accretion in the long-term, there is potential for natural roll-back of the dunes and coastal squeeze of intertidal habitat. **Major negative impact/Uncertain** **(Potential 'Adverse Effect' in long-term – HR)** However, at Leasowe, managed realignment would allow a return to a more natural dune development/roll-back with a set back defence **Major positive impact**. There is unlikely to be	Continued accretion of East Hoyle Bank beach and stabilisation of the beach to the east of Meols will maintain the defence value of the beach over the duration of the SMP2 **Moderate positive impact**	Potential for short, medium and long-term changes in condition of shellfish beds on East Hoyle Bank, as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas where MR at Leasowe). **Uncertain** Potential risk to landfill site depending on alignment of managed realignment, with potential for release of contaminants into the estuary. **Moderate negative impact**	No designated landscapes within the policy area **No Significant Impact**	**No Significant Impact** on historic environment.	Continued protection of infrastructure (e.g. M53) over the duration of the SMP2. **Moderate positive impact** Protection of Burbi Bank offshore wind farm and associated infrastructure (e.g. cable landfall at Gunsite at Leasowe Revetment) from flood risk in the short and medium-term **Moderate positive impact**. However, potential impact on cable landfall under a managed realignment policy, dependant on realignment extent **Moderate negative impact** Protection of agricultural land including Grade 2 land to the east of Hoylake, east Meols and to the east and west of Wallasey, over the duration of the SMP2. **Moderate positive**	Continued protection of residential and commercial properties at Hoylake, Leasowe, Wallasey/ New Brighton and Moreton over the duration of the SMP2. **Major positive impact** Continued protection of isolated properties and villages over the duration of the SMP2. **Major positive impact** Protection of golf clubs in the short and medium-term **Minor positive impacts** but potential loss of parts of Wallasey Golf Course and Leasowe Golf Course through managed realignment in the long-term **Minor negative impact** Protection of the North Wirral Coastal Park over the duration of the SMP2. **Moderate positive impact** Continued accretion of East
2	**Wallasey Embankment (Meols to Leasowe)**	A & B	HTL	HTL	HTL							
3	**Wallasey Embankment (Leasowe) to Harrison Groyne (New Brighton)**	B	HTL	HTL	**MR**							
4	**Harrison Groyne to Perch Rock (New Brighton)**	A & B	HTL	HTL	HTL							

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						any change in condition to the Meols Meadows SSSI over the duration of the SMP2 unless the existing hydrology is affected. **No Significant Impact** Potential loss of intertidal habitat (BAP habitat) in some areas and coastal sand dunes may be restricted from rolling back naturally over the duration of the SMP2 **Moderate negative impact** In the long-term, natural roll-back of dunes at Wallasey Golf Course under managed realignment would be beneficial **Moderate positive impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a					impact	Hoyle Bank beach and stabilisation of the beach to the east of Meols will maintain the amenity value of the beach over the duration of the SMP2 **Moderate positive impact** Managed realignment at Leasowe will allow accommodation space for the beach and dunes to roll landward with opportunities for increased amenity value. **Moderate positive impact**

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						tiny proportion of the overall pSPA. **No Significant Impact** **('No Adverse Effect' – HR)**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and, where required compensatory habitat sought through the RHCP for intertidal habitat losses within the Mersey Narrows and North Wirral Foreshore pSAC and Ramsar site, and the Dee Estuary SAC.*** The replacement of non-designated intertidal habitat losses due to coastal squeeze will be identified through the Regional Habitat Creation Programme (RHCP). ***Opportunities to be sought to improve the grazing regime within the Meols Meadows SSSI and for some scrub control.***	No mitigation required.	***Further consideration will be given to areas of landfill at project level if a policy of managed realignment is implemented in the long-term.*** The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials will need to be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	No mitigation required.	No mitigation required.	The cable landfall associated with the offshore wind-farm should be considered further at strategy or scheme level if a policy of managed realignment is implemented.	Depending on the facilities that may be affected by flooding and the location of any managed realignment, mitigation may take the form of relocating assets (e.g. golf courses) further inland.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 7: MERSEY ESTUARY												
1	**Perch Rock to Riverwood Road/Eastham Park (south/left bank)**	A & B	HTL	HTL	HTL	Continued expansion of intertidal habitat (particularly saltmarsh in Upper Mersey in medium-term) within the Mersey Estuary SPA, Ramsar and SSSI in many areas **Major positive impact** although over the duration of the SMP2, some areas of saltmarsh are likely to remain in a state of flux with some accretion and some erosion. **Uncertain** Holding the line in the long-term has the potential for coastal squeeze of intertidal habitat within the Mersey Estuary SPA, Ramsar and SSSI if sediment supply does not allow accretion to match sea level rise. **Major negative impact/Uncertain** **(Potential 'adverse effect' in long-term – HR)** Where there are cliffs adjacent to the airport, NAI will allow the natural erosion and movement of the designated cliffs **Major positive impact** Potential loss of some intertidal habitat in the	**No Significant Impact** on earth heritage, soils and geology.	Protection of major industry and hazardous waste over the duration of the SMP2. **Moderate positive impact** Potential for short, medium and long-term changes in condition of Shellfish Harvesting Area in the River Mersey Estuary, as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas where MR/NAI). **Uncertain** Potential for contamination issues due to landfill, under managed realignment in the upper Mersey Estuary. **Moderate negative impact**	No designated landscapes within the policy area. **No Significant Impact**	Protection of majority of SMs from flooding **Moderate positive impact** however, increasing flood risk to a SM with its potential loss in the long-term **Moderate negative impact** Protection of Liverpool – Maritime Mercantile City World Heritage Site from flood risk and erosion over the duration of the SMP2. **Moderate positive impact** Protection of shipyards (considered of medium importance in the NWRCZA (2009) and an airfield and docks of high importance. **Moderate positive impact**	Protection of Ellesmere Port, marine operations and activities, power stations and onshore wind farms protected over the duration of the SMP2. **Moderate positive impact** Protection of Defence Bills Agency site in Liverpool over the duration of the SMP2. **Moderate positive impact** Protection of infrastructure (e.g. M53, M56, M62, M6) over the duration of the SMP2. **Moderate positive impact** Increasing erosion of cliffs fronting Liverpool Airport but minimal risk to the periphery of the airport over the duration of the SMP2. **No Significant Impact** Managed realignment in the upper estuary could impact on the proposed new Mersey Crossing and visa versa,	Protection of Wallasey, Birkenhead, Bebington, Runcorn, Warrington, Widnes, Liverpool and Bootle over the duration of the SMP2. **Major positive impact** Continued protection of coastal villages and isolated properties along the banks of the River Mersey in the short-term **Major positive impact** but potential loss of isolated properties in the upper estuary where managed realignment, dependant on realignment extent in the medium and long-term **Major negative impact** Potential erosion of the Mersey Way between Pickerings Pasture and Garston Industrial Estate over the duration of the SMP2. **Moderate negative impact**
2	**Riverwood Road/Eastham Park to Eastham Ferry**	A & B	NAI	NAI	NAI							
3	**Eastham Ferry to Runcorn Bridge (south bank)**	A & B	HTL	HTL	HTL							
4	**Runcorn Bridge to Arpley landfill Site (Upper Mersey Estuary south bank)**	B	HTL	**MR**	**MR**							
5	**Arpley Landfill site (south bank) to SMP2 boundary to west of Sewage works (north bank))**	A & B	HTL	HTL	HTL							
6	**Sewage works to Terrace Road Widnes (Upper Mersey Estuary north bank)**	B	HTL	**MR**	**MR**							
7	**Terrace Road Widnes to Pickerings Pasture**	A & B	HTL	HTL	HTL							
8	**West Bank Dock Estate to Garston Industrial Estate**	A & B	NAI	NAI	NAI							
9	**Garston Industrial Estate to Seaforth**	A & B	HTL	HTL	HTL							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						long-term within the Mersey Narrows and North Wirral Foreshore pSPA & Ramsar site and Mersey Narrows SSSI due to coastal squeeze against fixed defences and with sea level rise over the duration of the SMP2. **Major negative impact** **(Potential 'adverse effect'** – HR) Potential loss of intertidal habitat within New Ferry SSSI due to coastal squeeze against fixed defences and with sea level rise over the duration of the SMP2. **Moderate negative impact**					dependant on realignment extents in the medium and long-term. **Uncertain** Minimal impact on agricultural land in the Upper estuary. Impacts will be dependant on realignment extent and potential for changed use of land e.g. saltmarsh grazing. **Uncertain**	
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will need to be quantified in detail and, where required compensatory habitat sought through the RHCP for intertidal habitat losses within the Mersey Estuary SPA, and Ramsar site, and the Mersey Narrows and North Wirral Foreshore pSPA and Ramsar site.*** ***Replacement habitat for non-designated intertidal habitat losses will be sought through the RHCP.***	No mitigation required	***Areas of landfill will be considered further at project level if a policy of MR is implemented in the medium/long-term.*** The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials would need to be explored. Where necessary, protection in situ or excavation	No mitigation required	The likely impacts of the preferred SMP2 policy option on SMs should be investigated further in more detailed estuary or scheme studies. Where avoidance of the features from flooding/erosion is not possible and where they cannot be preserved in situ, mitigation may take the form of excavation and recording.	No mitigation has been identified for losses of agricultural land.	Depending on the facilities that may be affected by flooding or erosion and the location of any managed realignment, mitigation may take the form of relocating the assets (e.g. Mersey Way) further inland. There may be no provision for compensating or mitigating the loss of private properties.

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
					Opportunity to ensure continued water management at Decoy Marsh within Mersey Estuary SPA, Ramsar and SSSI		and removal of material (which is potentially very expensive) may be necessary.				

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 8: SEAFORTH TO THE RIVER ALT												
1	**Seaforth to MEPAS pumping station**	A	HTL	HTL	HTL	Potential loss of intertidal habitat within the Ribble & Alt Estuaries SPA & Ramsar due to coastal squeeze in the long-term, if sea level rise outpaces ongoing accretion. **Major negative impact/Uncertain** **(Potential 'adverse effect' in long-term – HR)** Continued accretion of the dunes within the Sefton Coast SAC & SSSI (biological) in the short and medium-term. If sea level rise outpaces ongoing accretion in the long-term, there is potential for coastal squeeze of intertidal habitat. However, managed realignment in policy unit 9 that covers the majority of the site, allows for limited intervention to assist with the adaptation of the dunes to coastal change, thus offsetting any potentially negative impacts. **No significant impacts** **(No 'adverse effect') - HR** There is the potential	Continued accretion of the dunes within the Sefton Coast SAC & SSSI (biological) over the duration of the SMP2 (unless the dunes stop accreting). **Moderate positive impact**	Maintenance of the River Alt training walls will ensure no known impacts on the River Alt over the duration of the SMP2 **No Significant Impact** Potential release of contaminants associated with erosion of dunes north of the MEPAS pumping Station under a managed realignment policy. **Moderate negative impact**	No designated landscapes within the policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Protection of infrastructure from erosion over the duration of the SMP2 **Moderate positive impact** except the sewerage infrastructure present immediately behind the existing defence **Moderate negative impact** Protection of Altmouth pumping station over the duration of the SMP2. **Moderate positive impact**	Protection of Crosby and Hightown over the duration of the SMP2. **Major positive impact** Potential loss of part or all of West Lancashire Golf Course over the duration of the SMP2. **Minor negative impact**
2	**MEPAS pumping station to Hightown**	B	**MR**	**MR**	**MR**							
3	**Hightown to mouth of the River Alt (east bank)**	A & B	HTL	HTL	HTL							
4	**River Alt mouth (east and west banks) to the Alt pumping station**	A & B	HTL	HTL	HTL							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
						for the coastal squeeze of mudflats (BAP habitat) around Hightown **Minor negative impacts** but potential natural roll-back of the dunes in some areas and increase in extent of mudflats **Minor positive impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. **No significant impacts** **(No 'adverse effect') - HR**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Ribble&Alt***	No mitigation required.	***Potential contamination issues will be considered further at strategy or scheme level, if managed realignment is implemented.***	No mitigation required.	No mitigation required.	Further investigation should be undertaken at strategy or scheme level of the sewerage infrastructure behind the existing defences, in	Depending on the facilities that may be affected by flooding or erosion and the location of any managed realignment, mitigation may take the form of relocating the

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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					Estuaries SPA and Ramsar site. ***Opportunities should be sought for some scrub control at Hightown within the Sefton Coast SAC & SSSI (biological) at scheme level.***					particular the need to remove or re-route the infrastructure.	assets (e.g. part or all of the West Lancashire golf course) further inland.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	Population and Human Health
POLICY AREA 9: FORMBY DUNES												
1	**Mouth of the River Alt (west bank) to Weld Road, Southport (Formby dune system)**	B	MR	MR	MR	Likely increase in extent of intertidal habitats within the Ribble & Alt Estuaries SPA & Ramsar, which support associated bird interest features, over the duration of the SMP2. **Major positive impact** Managed realignment will allow the natural roll-back of the dune system within the Sefton Coast SAC & SSSI (biological) and the Ainsdale Sand Dunes NNR, and increase the extent of dune grassland. The fronting dune system at Formby is likely to continue to erode and is highly mobile but the sand would continue to move back and form new dunes. Natural processes are likely to be beneficial to this site and the redevelopment of the dune system over the duration of the SMP2. **Major positive impact**	Managed realignment is likely to be beneficial to the Sefton Coast SSSI (geological) and Ainsdale GCR Site, allowing natural roll-back of the dune system over the duration of the SMP2. **Moderate positive impact**	**No Significant Impact** on water quality. Managed realignment should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets.	No designated landscapes within the policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Dune management to encourage accretion will help provide natural protection to the Altcar Firing Range over the duration of the SMP2. **Moderate positive impact** Protection of infrastructure (e.g. the railway line, A565 and the coastal road between Ainsdale and Southport) over the duration of the SMP2. **Moderate positive impact**	Erosion at the end of Lifeboat Road and the car park at the end of Victoria Road in Formby will be managed in the short and medium-term **Minor positive impact** but potential damage to the car park in the long-term **Minor negative impact** Continued managed accretion and increased beach levels along the Southport frontage will provide natural protection over the duration of the SMP2 to the southern part of Southport at risk. **Moderate positive impact** Increasing risk of erosion/flooding to a minimal number of isolated properties along the frontage (e.g. at the end of Albert Road) over the duration of the SMP2. **Major negative impact** Managed flood and erosion risk to the tourist

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												amenities close to the shore along the Ainsdale frontage in the short and medium-term **Moderate positive impact** but increasing flood and erosion risk to the tourist assets in Ainsdale and the Sefton Coastal Footpath in the long-term **Minor negative impact**
Mitigation Measures/Environmental Opportunities						***Sand fencing on the dunes will be investigated at scheme level to encourage increased accretion from Aeolian transport.*** ***Opportunity to provide some grazing and scrub/weed control within the designated conservation sites should be investigated at scheme level.***	No mitigation required	No mitigation required	No mitigation required	No mitigation required	No mitigation required	Depending on the facilities that may be affected by flooding or erosion in the long-term, mitigation may take the form of relocating the assets (e.g. Victoria Road car park, tourist amenities in Ainsdale and parts of the Sefton Coastal Footpath around Formby Point) further inland. There may be no provision for compensating or mitigating the loss of private properties.

SUB-CELL 11B

The tables below describe the environmental effects of the preferred SMP2 policy scenarios along with appropriate mitigation measures that could be implemented to ameliorate any adverse impacts. Mitigation measures identified in the tables below include those which are required to offset/avoid negative impacts, highlighted in ***italic and bold***, as well as a number of aspirational measures. The SMP2 is committed to deliver these measures through the Action Plan to meet SEA requirements and as such the ***highlighted*** mitigation measures have been included in each Policy Statement Action Plan.

Notes on application:

Where there is a change in management practice from the 'with present management scenario' the preferred policy scenario is highlighted in blue and bold.

Methodology for Prediction of Significant Impacts

The following key is used to identify those impacts (prior to mitigation) that are of potential minor, moderate or major negative or positive significance, and those that are not significant or where the significance is unknown: -

Impact Significance	Description of Impact Significance
Major Positive	The option would significantly benefit internationally designated environmental features, fulfilling the SEA objective *and* maximising opportunities for environmental enhancement (e.g. habitat restoration or habitat creation etc). In addition, where properties are protected from flooding/erosion, a major positive impact on population and human health is assumed.
Moderate Positive	The option would significantly benefit nationally designated environmental features by resolving an existing environmental issue and/or fulfilling the SEA objective.
Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing locally important environmental issue and/or offering opportunity for some environmental enhancement
No Significant Impact	The option would not result in a significant impact on the environment.
Uncertain	There is insufficient detail available to assess how significantly the SEA objective would be affected by the option.
Minor Negative	The option would partially affect a SEA objective in a negative way
Moderate Negative	The option would significantly and negatively affect nationally designated environmental features and conflict with the SEA objective.
Major Negative **(Potential 'adverse effect' (relating to European sites only) – HR)**	The option would significantly and negatively affect internationally designated environmental features and conflict with the SEA objective. Where properties are lost due to flooding/erosion, a major negative impact on population and human health is assumed. To ensure that a link is made between the SEA and the Habitats Regulations Assessment, where a European site is present and an option significantly fails to meet an objective arising from obligations under the Habitats Regulations (i.e. cannot avoid adverse impacts on a European site), then a potential adverse effect is also stated in the assessment tables in brackets.
('No Adverse Effect' – HR)	To ensure that a link is made between the SEA and the Habitats Regulations Assessment, this impact relates to the international conservation sites only and uses the terminology used in the Habitats Regulations. This is stated in the assessment tables in brackets where an impact in terms of the Habitats Regulations will be significant but not adverse.

Professional judgement has been used to assign a strategic level of significance using the above table.

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POLICY AREA 1: RIBBLE ESTUARY												
1	**Weld Road to Fairways (Southport)**	A & B	HTL	HTL	HTL	Holding the line will continue to maintain the lowland neutral grassland (e.g. on the left bank of the estuary mouth), which is currently in unfavourable condition but recovering within and outside of the Ribble & Alt Estuaries SPA & Ramsar and Ribble Estuary SSSI over the duration of the SMP2. **Major positive impact** Ongoing accretion is anticipated to counter sea level rise and avoid adverse effects on the Ribble & Alt Estuaries SPA & Ramsar and Ribble Estuary SSSI/NNR where holding the line. Phased managed realignment will be beneficial to this site. **No Significant Impact** **(No 'adverse effect' –** HR) Potential creation of new intertidal habitats (BAP habitats) in managed realignment areas adjacent to	Holding the line may affect the geological interest features of the Lytham Coastal Changes SSSI (geological), however, the site is currently in favourable condition and therefore, there is no known evidence at present that continued maintenance of the defences will pose a problem over the duration of the SMP2. **Uncertain**	Any works should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Protection of landfill sites in the short and medium-term. **Moderate positive impact** In the long-term, there may be potential release of contaminants into the Ribble Estuary where managed realignment is proposed between: - Freckleton Marsh (W end of sewage works) and Naze Point - Old Railway Embankment, Much Hoole Marsh House and Hutton Marsh - Hesketh Outmarsh East and White Bridge, Rufford **Moderate negative impact**	No designated landscapes within the policy area. **No Significant Impact**	Protection of heritage features, known archaeological sites and conservation areas from flooding and erosion over the duration of the SMP2. **No Significant Impact**	Protection of three marinas and activities in Preston Dock from flooding over the duration of the SMP2. **Moderate positive impact** Protection of infrastructure (e.g. A565 between Preston and Southport) in the short and medium-term **Moderate positive impact** Potential loss of local access roads in the long-term in areas of where managed realignment; dependent on extent **Moderate negative impact** Minimal or no risk of erosion to Warton aerodrome over the duration of the SMP2. **No Significant Impact** Protection of Crossens pumping station from flooding in the short and medium-term **Moderate positive**	Protection of residential and commercial properties and recreational assets in Preston, Lytham St Anne's and Southport over the duration of the SMP2. **Major positive impact** Protection of isolated villages and properties in the short and medium-term **Major positive impact** but potential loss of isolated properties in the long-term in areas of managed realignment **Major negative impact** Protection of tourist assets including coastal paths (e.g. the Ribble Way) and golf courses in the short-term **Moderate positive impact** but potential loss of sections of the Ribble Way under managed realignment in the medium and long-term (***may be negative or positive impact)***.
2	**Fairways to Crossen Pumping Station**	A & B	HTL	HTL	HTL							
3	**Crossen Pumping Station to Hesketh Out Marsh West (Hundred End Gutter)**	B	HTL	HTL	**MR**							
4	**Hesketh Out Marsh West**	B	HTL	HTL	**MR**							
5	**Hesketh Out Marsh East**	B	**MR**	HTL	HTL							
6	**Hesketh Out Marsh East to White Bridge, Rufford (River Douglas Left Bank)**	B	HTL	HTL	**MR**							
7	**White Bridge, Rufford to Old Railway Embankment, Much Hoole Marsh House (River Douglas right bank)**	B	HTL	HTL	**MR**							
8	**Old Railway Embankment, Much Hoole Marsh House to Hutton Marsh (Pilots Cottage)**	B	HTL	HTL	**MR**							
9	**Hutton Marsh**	B	**MR**	HTL	**MR**							
10	**Hutton Marsh to Penwortham Golf Course**	B	HTL	**MR**	HTL							
11	**Penwortham Golf Course to Penwortham Bridge**	A & B	HTL	HTL	HTL							
12	**Penwortham Bridge to Freckleton Marsh (west end of**	A & B	HTL	HTL	HTL							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
	Sewage works)					designated conservation sites. **Major positive impact** Potential loss of grassland habitat and reversion to former saltmarsh that was once present at this site under managed realignment, dependant on extent **Minor negative impact** Holding the line is likely to be favourable to the coastal grazing marshes and maintain the freshwater wetland habitats that are present at Marshside RSPB Reserve. **Minor positive impact** No known change in the status and condition of Hesketh Out Marsh RSPB Reserve over the duration of the SMP2. **No Significant Impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or					**impact** In the long-term, managed realignment in the section between Crossens Pumping Station and Hesketh Out Marsh West may have implications on drainage systems and affect flood risk management of Crossens Marshes **Moderate negative impact** Potential loss of agricultural land (including Grade 1) in some areas under managed realignment over the duration of the SMP2, dependant on realignment extents **Moderate negative impact** but protection of agricultural land elsewhere **Moderate positive impact** Protection of quarries and sewage works over the duration of the SMP2. **Moderate positive impact**	
13	**Freckleton Marsh (west end of Sewage works) to Naze Point**	B	HTL	HTL	**MR**							
14	**Naze Point to Warton Bank**	A & B	NAI	NAI	NAI							
15	**Warton Bank to Lytham Dock**	A & B	HTL	HTL	HTL							
16	**Lytham Dock to Land Registry**	A & B	HTL	HTL	HTL							
17	**Lytham Land Registry to Fairhaven Lake**	A & B	HTL	HTL	HTL							
18	**Fairhaven Lake**	A & B	HTL	HTL	HTL							
19	**Fairhaven Lake to Miniature Golf Course**	A & B	HTL	HTL	HTL							
20	**Miniature Golf Course to St Anne's Pier**	A & B	HTL	HTL	HTL							
21	**St Anne's Pier to St Annes' northern boundary**	A & B	HTL	HTL	HTL							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. **No Significant Impact** **('No Adverse Effect' – HR)**						
Mitigation Measures/Environmental Opportunities						***Estuary wide habitat losses and creation potential will be investigated to feed into the RHCP and subsequently if necessary replacement intertidal habitat will be secured through the RHCP, to offset potential habitat losses in the long-term.***	No mitigation required	***The current state of the landfill sites will be investigated at strategy or project level to minimise any potentially negative effects.*** The hazard that the landfill sites poses to people and the environment from leaching or the release of contaminated materials may need to be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	No mitigation required	No mitigation required	Depending on the availability of alterative routes inland, mitigation may take the form of relocating roads further inland. This will be dependent on the extent and location of the managed realignments. No mitigation has been identified for losses of agricultural land. Further investigation of the pumping station and drainage at Crossens Marshes should be carried out at strategy or	Dependent on the precise alignment of managed realignments, mitigation may take the form of relocating assets further inland (e.g. the Cumbrian Coastal Footpath). There is potential for the path to be relocated as part of the new set-back defences and opportunities to provide improved views of the Ribble Estuary for pedestrians and recreational users. There may be no provision for compensating or mitigating the loss of private properties. Local

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										scheme level.	defences however, may be allowed to protect individual properties where appropriate and subject to gaining the necessary consents.

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 2: ST ANNES TO ROSSALL POINT												
1	**St Annes (northern boundary) to Squires Gate**	B	**MR**	**HTL**	**HTL**	In the short term, managed realignment is likely to be beneficial to the Ribble & Alt Estuaries SPA & Ramsar Ribble Estuary SSSI **Major positive impact**, however holding the line in the medium and long-term might prevent the natural roll back of the dunes **Major negative impact** Holding the line in this policy area has the potential to disrupt littoral drift in the adjacent Morecambe Bay SPA, Ramsar & SAC with associated impacts on Annex 1 and migratory birds. However, the policies in this unit allow for strategic beach management and beach recharge to ensure adverse effects are avoided. **No significant impact** **(No 'adverse effect' – HR)** Managed realignment is likely to be beneficial to the Lytham St Annes Dunes SSSI **Moderate positive impact** however, holding the	Managed realignment in the short-term will allow natural processes, thus maintaining the geological and geomorphological interest features of the Lytham St Annes GCR and RIGS **Moderate positive impact.** In the medium and long-term, holding the line is likely to restrict the natural geomorphological evolution of these sites **Minor negative impact** Continued and increasing beach lowering and narrowing, exacerbated by sea level rise, over the duration of the SMP2 (though towards Rossall Point, pro-active management of the beach to encourage dune development may help limit beach losses) resulting in the reduced effectiveness of the dunes as a flood defence. **Moderate negative impact** See Biodiversity, Flora and Fauna	Any works should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Potential for short, medium and long-term changes in condition of the Shellfish Harvesting Area located off the coast of Salters Bank as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries MR could increase extent of spawning areas). **Uncertain**	No designated landscapes within this scenario area. **No Significant Impact**	**No Significant Impact** on designated archaeological features. Loss of sea defences, which are considered of medium archaeological importance in the NWRCZA (2009). **Moderate negative impact**	Overall protection of the integrity of infrastructure from erosion and tidal flooding over the duration of the SMP2 **Moderate positive impact** Some risk of periodic flooding to A584, coastal roads (e.g. at Cleveleys), the coastal tramway along the promenade at Blackpool through overtopping during surges and storms **Moderate negative impact** Overall protection of Grades 2 and 3 agricultural land over the lifetime of the SMP2 (except between St Annes and Squires Gate). **Moderate positive impact**	Continued protection of Blackpool, Cleveleys and Fleetwood from tidal flooding over duration of SMP2. **Major positive impact** Increasing risk of overtopping/ breach of defences over duration of SMP2 during surges and storms, with associated effects on extensive areas of development in the coastal floodplain (e.g. area to the south of Blackpool Tower). **Major negative impact** Lowering and narrowing of amenity beaches over duration of SMP2. **Moderate negative impact** Protection of six promenades and piers from erosion in the short, medium and long-term. **Moderate positive impact** Protection of golf courses **Minor positive impacts** however increasing residual risk of
2	**Squires Gate to Blackpool Tower**	A & B	HTL	HTL	HTL							
3	**Blackpool Tower to Anchorsholme Park**	A & B	HTL	HTL	HTL							
4	**Anchorsholme Park**	A	HTL	HTL	HTL							
5	**Anchorsholme Park to Jubilee Gardens**	A & B	HTL	HTL	HTL							
6	**Jubilee Gardens to Five Bar Gate**	A & B	HTL	HTL	HTL							
7	**Five Bar Gate to Rossall Hospital (Rossall School)**	A	HTL	HTL	HTL							
8	**Rossall Hospital to Chatsworth Avenue**	A & B	HTL	HTL	HTL							
9	**Chatsworth Avenue to Rossall Point**	A & B	HTL	HTL	HTL							

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						line in the medium and long-term might prevent the natural roll back of the dunes and/or encourage further stockpiling of sand adjacent to the sand yard **Moderate negative impact** Managed realignment will continue to maintain the interest features (e.g. intertidal habitats) of the Ribble Estuary NNR, which support migratory birds) **Moderate positive impact**, however in the medium and long-term, there is potential loss of intertidal habitat as sea levels rise and are squeezed against hard defences **Moderate negative impact**. Dune management in the short-term (e.g. by controlling public access and implementing measures to encourage dune accretion) between St Annes and Squires Gate should encourage the development of dune vegetation **Moderate positive impact**. In the medium/long-term term, the construction of hard defences and reduced sediment	Receptor for impacts on dunes within St Annes Dune System SSSI.					periodic flooding at Fleetwood Golf Course from overtopping during storm events over duration of SMP2 **Minor negative impact**

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						supply will erode the dune system, a BAP habitat **Moderate negative impact** Potential for displacement of qualifying waterbirds within Liverpool Bay pSPA offshore as a result of coastal squeeze losses of intertidal habitat or sandbanks. The landward boundary of the designated site follows the low water line. However, based on the extent of supporting sandbank habitat for waterbirds, their exposure to a small loss of habitat is considered to be low and represents only a tiny proportion of the overall pSPA. **No significant impact** **(No 'adverse effect' – HR)**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Ribble and Alt Estuaries SPA and Ramsar site.*** ***The replacement of non-designated intertidal habitat***	***Investigate beach management options including the use of beach recharge to help combat issues associated with sediment starvation of beaches and lowering of beaches, and maintain the beach as an amenity resource and flood defence.***	No mitigation identified at this stage.	No mitigation required	No mitigation required	Depending on the availability of alterative routes inland, mitigation may take the form of temporary diversion of vehicular access from coastal roads during storm surges. No mitigation has been identified for losses of	Depending on the facilities that may be affected by flood surges, mitigation may take the form of relocating assets further inland. Beach recharge could be considered to help combat loss of beach sediment, and maintain the beach as an

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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					losses due to coastal squeeze will be identified through the RHCP. ***At strategy and/or scheme level, potential to investigate the opportunity to remove creeping willow and seabuck from the dunes and to control the sand stockpiling within Lytham St Annes SSSI and the Ribble & Alt Estuaries SPA & Ramsar Ribble Estuary SSSI***					agricultural land between St Annes and Squire's Gate.	amenity resource.

SUB-CELL 11C

The tables below describe the environmental effects of the preferred SMP2 policy scenarios along with appropriate mitigation measures that could be implemented to ameliorate any adverse impacts. Mitigation measures identified in the tables below include those which are required to offset/avoid negative impacts, highlighted in ***italic and bold***, as well as a number of aspirational measures. The SMP2 is committed to deliver these measures through the Action Plan to meet SEA requirements and as such the ***highlighted*** mitigation measures have been included in each Policy Statement Action Plan.

Notes on application:

Where there is a change in management practice from the 'with present management scenario' the preferred policy scenario is highlighted in blue and bold.

Methodology for Prediction of Significant Impacts

The following key is used to identify those impacts (prior to mitigation) that are of potential minor, moderate or major negative or positive significance, and those that are not significant or where the significance is unknown: -

Impact Significance	Description of Impact Significance
Major Positive	The option would significantly benefit internationally designated environmental features, fulfilling the SEA objective *and* maximising opportunities for environmental enhancement (e.g. habitat restoration or habitat creation etc). In addition, where properties are protected from flooding/erosion, a major positive impact on population and human health is assumed.
Moderate Positive	The option would significantly benefit nationally designated environmental features by resolving an existing environmental issue and/or fulfilling the SEA objective.
Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing locally important environmental issue and/or offering opportunity for some environmental enhancement
No Significant Impact	The option would not result in a significant impact on the environment.
Uncertain	There is insufficient detail available to assess how significantly the SEA objective would be affected by the option.
Minor Negative	The option would partially affect a SEA objective in a negative way
Moderate Negative	The option would significantly and negatively affect nationally designated environmental features and conflict with the SEA objective.
Major Negative **(Potential 'adverse effect' (relating to European sites only) – HR)**	The option would significantly and negatively affect internationally designated environmental features and conflict with the SEA objective. Where properties are lost due to flooding/erosion, a major negative impact on population and human health is assumed. To ensure that a link is made between the SEA and the Habitats Regulations Assessment, where a European site is present and an option significantly fails to meet an objective arising from obligations under the Habitats Regulations (i.e. cannot avoid adverse impacts on a European site), then a potential adverse effect is also stated in the assessment tables in brackets.
('No Adverse Effect' – HR)	To ensure that a link is made between the SEA and the Habitats Regulations Assessment, this impact relates to the international conservation sites only and uses the terminology used in the Habitats Regulations. This is stated in the assessment tables in brackets where an impact in terms of the Habitats Regulations will be significant but not adverse.

Professional judgement has been used to assign a strategic level of significance using the above table.

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POLICY AREA 1: FLEETWOOD AND THE WYRE ESTUARY												
1	**Rossall Point to Marine Lake (east)**	A	HTL	HTL	HTL	Gains of intertidal habitat in the short-term under on-going accretion. **Moderate Positive impact** Holding the line within Morecambe Bay SPA, Ramsar & SAC is not anticipated to affect intertidal habitat or associated impacts on Annex 1 birds and migratory species in the long-term, as the ongoing sediment accretion is expected to continue over the duration of the SMP2. **No significant impact** **(No 'adverse effect' – HR)** Increasing loss of intertidal habitat in the Wyre Estuary SSSI as the intertidal habitats become squeezed against hard defences. **Moderate negative impact**	Continued stabilisation of beach levels, embryonic dune growth and beach conditions in the short-term. However, potential change from a stable beach condition to erosion in the medium and long-term, due to increased exposure resulting from sea level rise, reduced feed of sediment from beaches to the south, reduced influence of Rossall Scar and beach lowering. However, generally the influence of the North Wharf Bank is predicted to result in this frontage not being as affected by climate change as the rest of the Fylde Peninsula. **Uncertain**	Any works should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Continued maintenance of the existing defences is unlikely to result in any changes to the existing shellfisheries along the coast of Fleetwood over the duration of the SMP2. **No Significant Impact**	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Continued protection of Fleetwood's infrastructure (e.g. A587 and A585 coastal roads) and docks as beach levels remain stable and/or standards of protection are maintained. **Moderate positive impact** Some risk or periodic flooding to coastal roads along the Fleetwood frontage, as sea levels rise and there is a residual risk of flooding by surges that could overwhelm or breach the defences or overtopping. **Moderate negative impact**	Continued protection of Fleetwood and associated tourist and recreation assets from tidal flooding over duration of SMP2. **Major positive impact** Increasing risk of overtopping/ breach of defences over duration of SMP2 during surges and storms, with associated effects on Fleetwood frontage. **Major negative impact** The high beach levels will be maintained for amenity use in the short-term and tourism will remain unaffected **Moderate positive impact** though in the medium and long-term, beach lowering and erosion may occur as sea levels rise and beach sediment is reduced. **Uncertain** Protection of Fleetwood Golf Course **Minor positive impacts**
2	**Marine Lake to Fleetwood Pier**	A & B	HTL	HTL	HTL							
3	**Fleetwood Pier to Fleetwood Ferry**	A & B	HTL	HTL	HTL							

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												however increasing residual risk of periodic flooding at Fleetwood Golf Course from overtopping during storm events over duration of SMP2 **Minor negative impact**
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be identified through the RHCP.***	No mitigation identified at this stage.	No mitigation required	No mitigation required	No mitigation required	Depending on the availability of alterative routes inland, mitigation may take the form of temporary diversion of vehicular access from coastal roads during storm surges.	Depending on the facilities that may be affected by flood surges, mitigation may take the form of relocating assets further inland. Beach recharge should be considered to help combat loss of beach sediment, and maintain the beach as an amenity resource.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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4	**Fleetwood to Stanah**	A, B & C	HTL	HTL	HTL	Gains of intertidal habitat in the short-term in the estuary under on-going accretion. **Moderate Positive impact** Holding the line within Morecambe Bay SPA, Ramsar & SAC in some areas may result in the loss of intertidal habitat due to coastal squeeze with associated impacts on Annex 1 birds and migratory species in the long-term, if in the long term ongoing sediment accretion does not balance sea level rise. **Major negative impact** **(Potential 'adverse effect' – HR)** Allowing a reversion to natural processes between Stannah and Windy Harbour Holiday Centre in the medium and long-term would allow the natural migration of intertidal habitats inland adjacent to the Morecambe Bay SPA, Ramsar & SAC. **Major positive impact** Holding the line at Knott End has the	**No Significant Impact** on earth heritage, soils and geology.	Protection of landfill sites and waste water treatment works over the duration of the SMP2. **Moderate positive impact** Potential for short, medium and long-term changes in condition of shellfish beds located off the mouth of the Wyre Estuary as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas in the medium and long-term where MR). **Uncertain** No active intervention has potential to result in saline intrusion into a groundwater body adjacent to PU Knott End Golf Course, with associated failure of WFD objective 4, "no changes that will cause failure to meet good groundwater status or result in a	No designated landscapes within the policy area. **No Significant Impact**	**No Significant Impact** on known designated archaeological features.	Protection of infrastructure (e.g. A585 road into Fleetwood, port facilities, etc) in the short-term **Moderate positive impact** Increased incidence of flooding of local access lanes as existing defences deteriorate in the medium and long-term. **Moderate negative impact** Protection of Victrex Technology Centre and other developments at the Hill House Site over the duration of the SMP2. **Moderate positive impact** Losses and gains of agricultural land within policy area. **Moderate positive and negative impacts**	Protection of Fleetwood and Thornton over the duration of the SMP2. **Major positive impact** Protection of coastal villages and isolated coastal properties in the short-term. **Major positive impact** Increased flood and erosion risk to some isolated properties in the medium and long-term **Major negative impact** Increased erosion of Knott End Golf Course and Wyre Country Park over the duration of the SMP2 **Minor negative impact** Potential loss of Wyre Way in some sections where no active intervention in the medium and long-term. **Moderate negative impact**
5	**Stanah to Cartford Bridge (south bank) and Cartford Bridge to Shard Bridge (north bank)**	C	HTL	**MR**	**MR**							
6	**Shard Road (A588) to Golf Course**	A, B & C	HTL	HTL	HTL							
7	**Knott End Golf course**	C	NAI	NAI	NAI							
8	**Golf course to Knott End on Sea**	A, B & C	HTL	HTL	HTL							

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						potential to result in the coastal squeeze of intertidal habitats within Lune Estuary SSSI over the duration of the SMP2 and prevent the natural saltmarsh accretion that is currently occurring. **Moderate negative impact** Holding the line in the short-term has the potential to result in the coastal squeeze of intertidal habitat, against the fixed defences within Wyre Estuary SSSI **Moderate negative impact** However, in the medium and long-term, no active intervention will allow the natural extension and zonation of the intertidal habitats to be maintained in their current favourable condition **Moderate positive impact** Loss of intertidal habitats (BAP habitat) against the fixed defences in the short-term **Minor negative impact** but likely increase in extent of intertidal habitat in the medium and long-term **Minor positive**		deterioration of groundwater status". **Major negative impact**				

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						impact						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within Morecambe Bay SPA, Ramsar site & SAC.*** ***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be identified through the RHCP.***	No mitigation required	***The effects of potential saline intrusion on the groundwater body should be investigated during North West River Basin Management Plan review and will require further consideration at strategy or scheme level.***	No mitigation required	No mitigation required	Depending on the availability of alterative access routes inland, mitigation may take the form of raising local access roads or relocating roads further inland. No mitigation has been identified for losses of agricultural land.	There may be no provision for compensating or mitigating the loss of private properties or golf courses. There is the potential to relocate parts of the Wyre Way at risk of erosion inland.

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POLICY AREA 2: KNOTT END TO GLASSON DOCK												
1	**Knott End on Sea**	A & B	HTL	HTL	HTL	Gains of intertidal habitat in the short-term under on-going accretion. **Moderate Positive impact** If ongoing accretion does not balance sea level rise, holding the line is likely to result in the loss of intertidal habitat in the long-term within the Morecambe Bay SPA, Ramsar & SAC due to coastal squeeze, with the associated impacts on Annex I and migratory bird species. **Major negative impact** **(Potential 'adverse effect' – HR)** Managed realignment in some areas in the medium and long-term would allow the natural migration of intertidal habitats inland adjacent to the Morecambe Bay SPA, Ramsar & SAC. **Major positive impact** Continued losses of intertidal habitats due to coastal squeeze within the Lune Estuary SSSI in the short-term and	**No Significant Impact** on earth heritage, soils or geology.	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast from Plover Scar to Fluke Hall, and then continuing off-shore from Fluke Hall to Knott End as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas in the medium and long-term where MR). **Uncertain** Managed realignment in this policy area has potential to result in saline intrusion into a groundwater body with associated failure of WFD objective 4, "no changes that will cause failure to meet good groundwater status or result in a	No designated landscapes within this policy area. **No Significant Impact**	Continued erosion risk to Cockersand Premonstratensian Abbey Scheduled Monument (SM) over the duration of the SMP2 **Moderate negative impact** however the creation of marsh around the abbey may improve the setting of this SM in the medium and long-term.	Protection to Cockerham Quarry, a clay and shale extraction quarry over the lifetime of the SMP2. **Moderate Positive impact** Continued protection of agricultural land in the short-term and continuing into the medium and long-term in some areas **Moderate Positive impact** Between Fluke Hall and Glasson Dock, the loss of agricultural land through managed realignment in the medium and long-term will be controlled. **Uncertain**	Continued protection of commercial, economic and residential properties, tourist assets (e.g. Lancashire Coastal Way) and large areas of agricultural land in the short-term. **Major positive impact** Potential loss of isolated farms, isolated coastal holiday/caravan parks (e.g. at Bank End) and parts of the Lancashire Coastal Way through managed realignment in the medium and long-term **Major negative impact** Access to Pilling Sands Beach (Preesall) will be maintained in the short and medium-term **Minor positive impact** however narrowing and steepening of beach in the long-term, reducing its overall amenity value **Minor negative impact**
2	**Knott End to Fluke Hall**	A & B	HTL	HTL	HTL							
3	**Fluke Hall to Cocker Bridge**	B	HTL	**HTL or MR**	HTL							
4	**Cocker Bridge to Glasson Dock**	B	HTL	**HTL or MR**	**HTL or MR**							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						restriction of natural saltmarsh accretion (e.g. at Cockerham Marsh) that is currently occurring. **Moderate negative impact** Managed realignment in some areas in the medium and long-term is likely to maintain condition of SSSI and allow the natural extension of the existing intertidal habitats **Moderate positive impact** Accretion in front of the defences, holding the line between Knott End and Fluke Hall is unlikely to result in the loss of intertidal habitats **No Significant Impact** Protection of neutral grassland at Cockerham Marsh SSSI and the existing colony of natterjack toads from flooding in the short-term. As the salinity of the site reduces, the population of toads is likely to increase **Moderate positive impact** however in the medium and long-term, an increase in length of coastline subject to managed realignment may affect the current population of natterjack toads		deterioration of groundwater status". **Major negative impact**				

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						through increased salinity **Moderate negative impact** Protection of freshwater grazing marsh (BAP habitat) in short term **Minor positive impact** but some loss in the medium and long-term **Minor negative impact**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Morecambe Bay SPA, Ramsar site & SAC.*** ***The replacement of intertidal and freshwater/terrestrial habitat losses outside of European sites due to coastal squeeze will be identified through the RHCP.*** ***At Cockerham Marsh SSSI, potential to investigate the opportunity to control juncus on the site, either through cutting or cattle grazing as part of any flood management strategy or scheme.***	No mitigation required	***The effects of potential saline intrusion on the groundwater body should be investigated during North West River Basin Management Plan review and will require further consideration at strategy or scheme level.***	No mitigation required	The likely impacts of the preferred SMP2 policy option on the SM will be investigated further at strategy and/or scheme level. Where avoidance of known features from flooding/erosion is not possible and where they cannot be preserved in situ, mitigation may take the form of excavation and recording.	No mitigation has been identified for losses of agricultural land.	Depending on the facilities that may be affected by flooding, mitigation may take the form of relocating assets (e.g. tourist facilities such as the Lancashire Coastal Way, car parks, coast path and view points) further inland. There may be no provision for compensating or mitigating the loss of isolated properties (e.g. farms etc).

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 3: LUNE ESTUARY												
1	**Glasson Dock to Condor Green Farm**	A & B	HTL	HTL	HTL	Holding the line in some areas throughout the duration of the SMP2 is likely to result in the long-term loss (due to coastal squeeze) and gain (due to current accretion) of intertidal habitat within the Morecambe Bay SPA, Ramsar & SAC and the Lune Estuary SSSI. There is unlikely to be a net loss of intertidal habitat as accretion is anticipated to match sea level rise over the duration of the SMP2. **No Significant Impact** **(No 'adverse effect' – HR)** Managed realignment in some areas in the medium and/or long-term would allow the natural migration of intertidal habitats inland adjacent to the Morecambe Bay SPA, Ramsar & SAC. **Major positive impact** Loss of intertidal habitat in between Glasson Dock and Condor Farm due to coastal squeeze **Moderate negative impact** but an increase in extent of intertidal habitat in most areas in the	**No Significant Impact** on earth heritage, soils and geology.	Protection of landfill sites in the short-term **Moderate positive impact** but potential inundation of historic landfill site north of Sunderland village, dependant on managed realignment extent. Potential contamination issues associated with inundation of this site in the medium and long-term **Moderate negative impact** Potential for medium term changes in condition of shellfish beds located off Sunderland Point, as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes and scouring could affect shellfisheries though likely increase in spawning areas in the medium and long-term where MR).	No designated landscapes within the policy area. **No Significant Impact**	Protection of heritage features from flooding over the duration of the SMP2. **Moderate positive impact**	Protection of Glasson Dock and Marina over the duration of the SMP2. **Moderate positive impact** Generally, protection of infrastructure and agricultural land in the estuary over the duration of the SMP2. **Moderate positive impact** In areas of managed realignment (i.e. between Overton Cattle Grid and Sunderland Village), potential loss of the local road and of agricultural land; however, this would be dependant on realignment extent. **Moderate negative impact**	Protection of Lancaster over the duration of the SMP2 **Major positive impact** Increasing flood risk to properties in the flood zone along the Riverside Farm to Overton Cattle Grid frontage with potential loss of some properties over time. **Major negative impact** Negligible erosion risk to Lancaster golf course over the duration of the SMP2 as saltmarsh provides natural protection. **No Significant Impact**
2	**Conder Green Farm to Aldcliffe**	B	NAI	NAI	NAI							
3	**Aldcliffe to Freemans Wood (Aldcliffe Marsh)**	B	NAI	NAI	NAI							
4	**Freemans Wood to Skerton Weir (east bank) and Skerton Weir to Lythe Bridge (west bank)**	A & B	HTL	HTL	HTL							
5	**Lythe Bridge to Riverside Farm**	B	HTL	**MR**	**MR**							
6	**Riverside Farm to Overton cattle grid**	B	**NAI**	**NAI**	**NAI**							
7	**Overton Cattle Grid to Sunderland Village**	B	HTL	HTL	**MR**							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						short, medium and long-term **Moderate positive impact**		**Uncertain**				
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be identified through the RHCP.***	No mitigation required	***The current state of the historic landfill site north of Sunderland village should be investigated at strategy and project level to avoid any potentially negative effects.*** The hazard that the landfill sites pose to people and the environment from leaching or the release of contaminated materials should be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	No mitigation required	No mitigation required	No mitigation has been identified for losses of agricultural land. Depending on the availability of alterative routes inland, mitigation could include relocating the local road further inland or diverting it around the realigned area.	Depending on the facilities that may be affected by flooding, mitigation may take the form of relocating the assets further inland. There may be no provision for compensating or mitigating the loss of private properties.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 4: SUNDERLAND VILLAGE TO POTTS CORNER												
1	**Sunderland Village to Sunderland Brows Farm**	B	**NAI**	**NAI**	**NAI**	A continuation of natural processes (except between Secondary Embankment to Potts Corner) over the duration of the SMP2 is likely to be beneficial to the Morecambe Bay SPA, Ramsar, SAC & SSSI and the Lune Estuary SSSI by allowing the natural migration of intertidal habitats inland (unless constrained by fixed structures such as roads). **Major positive impact** Holding the line is unlikely to result in the loss of intertidal habitat within the Morecambe Bay SPA, Ramsar & SAC as ongoing accretion is anticipated to match sea level rise over the duration of the SMP2. **No Significant Impact** **(No 'adverse effect' –** HR) Increased flood risk to Heysham Moss SSSI in an adjacent policy area could result in a change in water levels that could affect the condition of the site over the lifetime of the SMP2.	**No Significant Impact** on earth heritage, soils or geology.	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast of Sunderland Point as a result of NAI and MR (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain**	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment	Increasing loss of agricultural land to flooding as some existing defences deteriorate over the lifetime of the SMP2. **Moderate negative impact** The access road to Sunderland village will become increasingly more inundated in the short-term and medium-term and access to Sunderland village would be cut off in the long-term. **Moderate negative impact**	Increasing flood and erosion risk to Sunderland village and isolated properties as existing defences deteriorate with likely loss of properties in the long-term. **Major negative impact** Holding the line provides protection to properties in the wider flood cell in Middleton and Overton. **Major positive impact**
2	**Sunderland Point**		**MR**	**MR**	**MR**							
3	**Sunderland Point to Secondary Embankment**		**NAI**	**NAI**	**NAI**							
4	**Secondary Embankment to Potts Corner**	New policy units	**HTL**	**HTL**	**HTL**							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						Moderate negative impact Potential loss of freshwater grazing marsh over the duration of the SMP2. **Moderate negative impact**						
Mitigation Measures/Environmental Opportunities						The replacement of intertidal and freshwater/terrestrial habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP. Further investigation of the potential impacts of NAI on Heysham Moss SSSI in an adjacent policy area will be investigated at strategy level.	No mitigation required.	No mitigation required.	No mitigation required.	No mitigation required.	No mitigation has been identified for losses of agricultural land. ***Undertake/update more detailed study for the access road to Sunderland Village. The study should include consultation and more detailed socio-economic evaluation of potential impacts and affordability of local or private defences and resilience or adaptation.***	There may be no provision for compensating or mitigating the loss of private properties. However, flood resilience measures to properties in the small settlement of Sunderland Point may be adopted and maintenance of private defences continued subject to gaining the necessary consents. ***Undertake/update more detailed study for Sunderland Village. The study should include consultation and more detailed socio-economic evaluation of potential impacts and affordability of local or private defences and resilience or adaptation.***

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 5: POTTS CORNER TO HEYSHAM DOCK												
1	**Potts Corner to Heysham Power Station**	A	**NAI**	**NAI**	**NAI**	Holding the line between Heysham Power Station and Heysham Dock is unlikely to result in the loss of intertidal habitat within the Morecambe Bay SPA, Ramsar & SAC as ongoing accretion is anticipated to match sea level rise over the duration of the SMP2. HTL in this unit will also be beneficial to adjacent intertidal areas to the north and south by stabilising the channel. **No Significant Impact (No 'adverse effect' – HR)** The continuation of natural processes between Potts Corner and Heysham Power Station is likely to be beneficial to Morecambe Bay SPA, Ramsar, SAC & SSSI by allowing continued accretion related to the stabilising effect of Heysham promontory and natural migration of intertidal habitats inland. **Major positive impact** The continuation of natural processes over the lifetime of the SMP2 with continued extension the existing intertidal habitats is	**No Significant Impact** on earth heritage, soils or geology.	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast of Sunderland Point as a result of NAI (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain**	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment	Short, medium and long-term protection of Heysham Power Stations, the Port of Heysham and associated Infrastructure **Moderate positive impact** Increasing localised erosion of agricultural land as the condition of existing defences deteriorates **Moderate negative impact**	Short, medium and long-term protection of Heysham **Major positive impact** Increasing erosion risk to the coastal fringes of a number of tourist caravan parks along the frontage over the lifetime of the SMP2. **Minor** to **Moderate negative impact**
2	**Heynsham Power Station and Heysham Dock**	A	HTL	HTL	HTL							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						likely to be beneficial to the Lune Estuary SSSI, which is currently in favourable condition. **Moderate positive impact** No active intervention between the power station and Potts Corner is likely to be beneficial to the intertidal habitats (with continued accretion) and to an area of maritime cliffs and slopes (BAP habitat) to the north of Potts Corner over the lifetime of the SMP2. **Moderate positive impact**						
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.***	No mitigation required	No mitigation required	No mitigation required	No mitigation required	No mitigation has been identified for losses of agricultural land.	Mitigation could take the form of relocating tourist caravan parks further inland

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POLICY AREA 6: HEYSHAM TO HEST BANK												
1	**South End of Half Moon Bay to Chapel Hill (Lower Heysham)**	A	NAI	NAI	NAI	Holding the line between Chapel Hill and Hest Bank over the duration of the SMP2 may result in the loss of intertidal habitat in the long-term within the Morecambe Bay SPA, Ramsar, SAC & SSSI due to coastal squeeze. **Major negative impact** (**Potential 'adverse effect'** – HR) The continuation of natural processes between South End and Chapel Hill over the duration of the SMP2 is likely to be beneficial to Morecambe Bay SPA, Ramsar, SAC & SSSI by allowing the natural migration of intertidal habitats inland. **Major positive impact** A continuation of holding the line in some areas in adjacent policy units is unlikely to affect drainage at Heysham Moss SSSI and no active intervention is not anticipated to increase flood risk posed to the site. **No Significant Impact** No active intervention	**No Significant Impact** on earth heritage, soils or geology.	Potential for short, medium and long-term changes in condition of shellfish beds located off along the length of the coast as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain** Increasing flood risk to the Sealink historic landfill site on Spine Road in Heysham over the lifetime of the SMP2 **Moderate negative impact**	No designated landscapes within this policy area. **No Significant Impact**	Increasing flood risk to St Patricks Early Christian Cemetery at Lower Heysham Scheduled Monument (SM) over the duration of the SMP2 **Moderate negative impact**	Protection of infrastructure, including the A589 and A5105 roads through Morecambe, and Morecambe Lifeboat Station over the duration of the SMP2. **Moderate positive impact** Protection of agricultural land over the duration of the SMP2. **Moderate positive impact** .	Minimal risk of cliff erosion affecting individual properties at lower Heysham and defences would protect the parish church and graveyard over the duration of the SMP2 **No Significant Impact *to* Moderate positive impact** Continued flood and erosion protection of Morecambe throughout the SMP2 **Major positive impact** The existing defence regime will maintain the beaches fronting Morecambe in the short term **Minor positive impact** though coastal squeeze against the defences as sea levels rise may narrow beaches, thus reducing the amenity value of the beaches in the medium and long-term **Minor negative impact** Lancashire Coastal
2	**Chapel Hill to Hest Bank (Morecambe)**	A	HTL	HTL	HTL							

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						between South End of Half Moon Bay and Chapel Hill is likely to be beneficial to the maritime cliffs and slopes, a BAP habitat (e.g. at Chapel Hill). **Minor positive impact** but holding the line to the north has the potential to restrict natural processes to the cliffs **Minor negative impact** over the lifetime of the SMP2						way will be maintained in current location over the duration of the SMP2. **Minor positive impact**
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Morecambe Bay SPA, Ramsar site & SAC.*** ***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.*** The maintenance of defences and beach/dune management should be carried out in a manner that minimises affecting the maritime cliffs and slopes.	No mitigation required.	***The current state of the historic landfill site will be investigated at strategy and project level to avoid any potentially negative effects.*** The hazard that the landfill sites pose to people and the environment from leaching or the release of contaminated materials will be explored._Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	No mitigation required.	The likely impacts of the preferred SMP2 policy option on the SM should be investigated further at strategy and/or scheme level. Where avoidance of known features from flooding/erosion is not possible and where they cannot be preserved in situ, mitigation may take the form of excavation and recording.	No mitigation required.	Beach recharge should be considered at strategy and/or scheme level_to help maintain beach levels and their associated amenity value.

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POLICY AREA 7: HEST BANK TO HEALD BROW												
1	**Hest Bank to Sewage Works**	B	HTL	**MR**	HTL	Localised losses of intertidal habitat within the short-term in Morecambe Bay SPA, Ramsar, SAC & SSSI due to channel movements, which are likely to be balanced by gains offshore and in later epochs where gains will occur. **No Significant Impact (No 'adverse effect'** – HR) Leighton Moss SPA is set back from the railway. As the risks to the railway will continue to be managed, no adverse effects are anticipated on this site. Any changes to the management regime would not be a result of the SMP2 **No Significant Impact (No 'adverse effect'** – HR) The continuation of natural processes by NAI or MR in the medium and long-term is likely to be beneficial to Morecambe Bay SPA, Ramsar, SAC & SSSI by allowing the natural migration of intertidal habitats inland.	**No Significant Impact** on earth heritage, soils or geology.	Increasing flood/erosion risk to a small area of Cotestones tip over the lifetime of the SMP2 with potential for release of contaminants into the sea. **Moderate negative impact** Protection of Pasture Lane landfill site from flood risk in the short-term **Moderate positive impact** but further consideration of Pasture Lane landfill site would be needed if managed realignment is carried out in the medium-term. Potential for short, medium and long-term changes in condition of shellfish beds located off Jenny Browns Point as a result of SMP2 policies (i.e. potential changes in sedimentation/	Limited change in landscape character of the Arnside & Silverdale AONB over the short and medium-term **No Significant Impact** In the long-term, changes in the geomorphology of the coastline may result in localised changes in landscape character of the designated site **Uncertain –** however it is considered that some benefits such as the retention of the special seascape quality of the AONB will be retained and there will be a move towards a bay that functions as a natural ecosystem (an objective of the AONB Management Plan)	**No Significant Impact** on the historic environment	Continued protection of infrastructure (e.g. Cumbrian Coastal Railway) in the short-term **Moderate positive impact**, however in the medium and long-term, short sections of local access roads may be affected (depending on inland extent of managed realignment) and the railway will be at increased risk at Leighton Moss **Moderate negative impact** Continued protection of agricultural land in areas of hold the line in the short-term **Moderate positive impact** however, in areas of no active intervention and managed realignment (in medium-term), some flooding and erosion of agricultural land may occur during storm surges **Moderate negative impact**	Continued protection of communities, camp sites and tourism assets in settlements such as Hest Bank, Carnforth and Bolton-le-Sands and other more isolated properties located along the banks of Morecambe Bay in the short term **Major positive impact** A small number of residential and farm buildings and 2 campsites may be affected by managed realignment depending on set-back extent, and other campsites may be at risk of erosion in the medium and long-term **Major negative impact** Increasing erosion and flood risk to some sections of the Lancashire Coastal Way over the duration of the SMP2. **Minor negative impact**
2	**Sewage Works to Red Bank Farm**	A & B	NAI	NAI	NAI							
3	**Red Bank Farm to Bolton-le-Sands Caravan Park**	B	HTL	**MR**	HTL							
4	**Bolton-le-Sands Caravan Park to River Keer**	A & B	**NAI**	**NAI**	**NAI**							
5	**River Keer to Heald Brow**	B	**NAI**	**NAI**	**NAI**							

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						Major positive impact Increasing flood-risk to neutral grassland in Crag Bank SSSI and fen/marshy areas from the Keer Estuary, which may contribute to the site's currently unfavourable condition over the duration of the SMP2. **Moderate negative impact** Potential increase in extent of intertidal habitat (BAP habitat) in areas of managed realignment and no active intervention over duration of SMP2. **Minor positive impact**		coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain**				
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat and neutral grassland losses outside of European sites due to coastal squeeze will be addressed through the RHCP.*** ***Investigate the opportunity to improve the grazing regime at Crag Marsh SSSI as part of the implementation of SMP2 policies at scheme level.***	No mitigation required	***Investigate the current state of Cotestones Tip and Pasture Lane landfill site at strategy level to avoid any potentially negative effects.*** The hazard that the landfill sites pose to people and the environment from leaching or the release of contaminated materials should be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very	No mitigation required, however, an assessment of the effects of NAI on the AONB should be explored at strategy and/or scheme level in conjunction with the AONB Partnership to identify areas and landscape features at risk and to agree adaptation measures.	No mitigation required	Depending on the availability of alternative routes inland, mitigation may take the form of either raising the local access roads or relocating roads and parts of the Cumbrian Railway line further inland. No mitigation has been identified for losses of agricultural land.	Mitigation could take the form of relocating the Lancashire Coastal Way and tourist facilities (e.g. campsites) further inland. There may be no provision for compensating or mitigating the loss of private properties

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							expensive) may be necessary.				

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POLICY AREA 8: HEALD BROW TO HUMPHREY HEAD												
1	**Heald Brow to Frith Wood**	A & B	NAI	NAI	NAI	As the marshes are accreting over George over Sands, holding the line between Ash Meadow and Humphrey Head is not anticipated to result in losses of intertidal habitat within Morecambe Bay SPA, Ramsar, SAC & SSSI in the short and medium term. In the long-term, it is anticipated that the plentiful sediment supply will remain with increasing potential for sand transport to the bay with sea level rise. **No Significant Impact (No 'adverse effect' – HR)** A continuation of natural processes between Heald Brow and Ash Meadow over the duration of the SMP2 is likely to be beneficial to the Morecambe Bay SPA, Ramsar, SAC & SSSI and allow expansion of the intertidal habitats. **Major positive impact** The condition of the Witherslack Mosses SAC is not anticipated to be affected by SMP2 policy	The continuation of natural processes will be beneficial to Humphrey Head SSSI and GCR by maintaining the geological exposures in the short, medium and long-term. **Moderate positive impact** Holding the line has the potential to affect the condition of this Meathop Woods & Quarry SSSI (geological), obscuring the face and restricting access for study in the short, medium and long-term **Moderate negative impact**	Potential for short, medium and long-term changes in condition of shellfish beds located off Jenny Browns Point as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain**	Limited change in landscape character of the Arnside & Silverdale AONB and the lake District National Park over the short and medium-term **No Significant Impact** In the long-term, changes in the geomorphology of the coastline may result in localised changes in landscape character **Uncertain**	Protection of Grange-over-Sands Conservation Area over the duration of the SMP2. **Minor positive impact**	Protection of most of the key coastal infrastructure (e.g. Cumbrian Coastal Railway) over the duration of the SMP2. **Moderate positive impact** The access route to New Barns will be inundated more frequently as sea levels rise, restricting access to Caravan Park in the short, medium and long-term. **Minor negative impact** Protection of agricultural land over duration of SMP2 in most areas **Moderate positive impact** with the exception of a small area of agricultural land that may be inundated at New barns during the short and medium term **Moderate negative impact**	Protection of people and property at Grange-over-Sands, and protection of tourist assets (except the access to New Barns Caravan Park) over the duration of the SMP2. **Major positive impact** Most of the coastal paths will generally be maintained in their current location (except at New Barns where diversions may be created at areas such as New Barns) **Minor positive impact**
2	**New Barns**	B	NAI	NAI	NAI							
3	**Grubbins Wood (New Barns to Ash Meadow)**	A & B	NAI	NAI	NAI							
4	**Ash Meadow to the Kent Viaduct (Arnside)**	A & B	HTL	HTL	HTL							
5	**Kent Viaduct to Holme Island**	A	HTL	HTL	HTL							
6	**Holme Island to Humphrey Head**	A & B	HTL	HTL	HTL							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						No Significant Impact Holding the line is unlikely to affect the condition of the Witherslack Mosses SAC as long as it does not affect the existing hydrological regime or acidity of the site. **No Significant Impact** A continuation of natural processes throughout the duration of the SMP2 is unlikely to affect the existing condition of the calcareous grassland at Jack Scout SSSI, which is currently in favourable condition. **No Significant Impact** The broad-leaved, mixed and yew woodland present within Humphrey Head SSSI will continued to be maintained as the coastline is resistant to erosion in this location. **No Significant Impact** Protection of the Meathop Woods & Quarry SSSI (biological) from flood risk over the duration of the SMP2. **Moderate positive impact** Continued accretion of intertidal habitat (BAP habitat) likely in						

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						the short and medium-term **Minor positive impact** although in the long-term, there is some uncertainty about changes in BAP habitat and potential loss of intertidal habitat (e.g. mudflats at Kirkhead End) **Uncertain**						
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.*** ***Undertake studies to consider potential habitat creation by Managed Realignment (e.g. behind Holme Island) to manage coastal squeeze in longer term.***	Any works to hold the line at Meathop Woods & Quarry SSSI (geological) should be undertaken in such a way as to avoid coverage of the rock face and in consultation with Natural England.	No mitigation required	No mitigation required	No mitigation required	Depending on the availability of suitable inland sites, mitigation may take the form of relocating the Caravan Park to avoid restrictions on usage of the park due to flooding of the associated access road. No mitigation has been identified for losses of agricultural land.	No mitigation required

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 9: KENT ESTUARY												
1	**Kent Viaduct to Duck Fell Road (Sandside)**	B	HTL	**MR**	**MR**	Holding the line is not anticipated to affect the intertidal habitat (BAP habitat) within the Morecambe Bay SPA, Ramsar, SAC & SSSI. It is anticipated that the plentiful sediment supply will remain with increasing potential for sand transport to the bay with sea level rise. **No Significant Impact (No 'adverse effect'** – HR) Managed realignment in some areas in the medium and long-term is likely to be beneficial to the Morecambe Bay SPA, Ramsar, SAC & SSSI and allow expansion of the intertidal habitats (BAP habitat) **Major positive impact**	**No Significant Impact** on earth heritage, soils and geology.	**No Significant Impact** on water quality. Managed realignment should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets.	Limited change in landscape character of the Arnside & Silverdale AONB and the lake District National Park in the short term **No Significant Impact** In the medium and long-term, changes in the geomorphology of the coastline may result in localised changes in landscape character **Uncertain** however it is considered that some benefits such as the retention of the special seascape quality of the AONB will be retained and there will be a move towards a bay that functions as a natural ecosystem (an objective of the AONB Management Plan)	**No Significant Impact** on the historic environment	Protection of coastal infrastructure in the short-term. **Moderate positive impact** In areas of managed realignment in the medium and long-term, potential loss of B5782, local tracks and access roads, dependant on realignment extent. **Moderate negative impact** Protection of A590 and railway over the duration of the SMP2. **Moderate positive impact** Protection of agricultural land in the short term **Moderate positive impact** but losses in realigned areas in the medium and long-term **Moderate negative impact**	Protection of people and property in coastal communities in the short-term and properties at Sandside in the medium and long-term. **Major positive impact** Potential loss of isolated properties under managed realignment, dependant on extent, in the medium and long-term. **Major negative impact** Protection of coastal paths (e.g. Cumbrian Coastal Way and Coastal Sustrans National Cycle Route) in the short-term **Minor positive impact** Where managed realignment, loss of paths **Minor negative impact**
2	**Sandside (Duck Fell Road to Hollins Well Road)**	A, B & C	HTL	HTL	HTL							
3	**Hollins Well Road north to Levens Bridge (east bank) & Levens Bridge to Kent Viaduct (west bank)**	B	HTL	**MR**	**MR**							
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will***	No mitigation required	No mitigation required	No mitigation required however, an assessment of the effects of	No mitigation required	Depending on the availability of suitable inland sites, mitigation may take the form	There may be no provision for compensating or mitigating the loss of private

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
					be addressed through the RHCP.			managed realignment on the AONB and National Park should be explored at strategy and/or scheme level in conjunction with the AONB Partnership and Natural England to identify areas and landscape features at risk and to agree adaptation measures.		of relocating the B5782 (or tidal exchange beneath the road), local tracks and access roads further inland. No mitigation has been identified for losses of agricultural land in managed realignment areas.	properties Coastal paths may need to be relocated. Opportunities should be sought at strategy and scheme level for tourism and formal recreational facilities (e.g. new nature reserves with visitor centres etc) in association with managed realignment.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 10: HUMPHREY HEAD TO CARK												
1	**Humphrey Head**	A & B	NAI	NAI	NAI	A continuation of natural processes is likely to be beneficial to the Morecambe Bay SPA, Ramsar, SAC & SSSI and result in an increase in extent of intertidal habitat over the duration of the SMP2. **Major positive impact** Holding the line in the short-term and/or medium-term is unlikely to affect the intertidal habitat within the Morecambe Bay SPA, Ramsar, SAC & SSSI. Any habitat losses are likely to be a result of localised channel movements and not a result of the SMP2. **No Significant Impact (No 'adverse effect'** – HR) As the coastline is resistant to erosion, the continuation of natural processes is unlikely to affect the condition of the calcareous grassland within the Humphrey Head SSSI present in the short, medium and long-term. **No Significant Impact** No active intervention is likely to be beneficial for the	The continuation of natural processes is likely to be beneficial to the Humphrey Head SSSI (geological) and GCR and allow the exposures to be maintained over the duration of the SMP2. **Moderate positive impact**	Potential for short, medium and long-term changes in condition of shellfish beds located off Humphrey Head as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas). **Uncertain**	No designated landscapes within this policy area. **No Significant Impact**	In the short-term, protection of the majority of the World War II Fighter Pens and Airfield Remains SM at Cark Airfield (excluding pillboxes seaward of defences). **Moderate positive impact** Potential flood risk to and potential damage of the World War II Fighter Pens and Airfield Remains SM at Cark Airfield in the medium and long-term depending on the line of realignment. **Moderate negative impact**	Protection of coastal infrastructure (e.g. local minor roads) in the short-term. **Moderate positive impact** Potential for loss of minor local roads, dependant on set-back position in the medium and long-term. **Moderate negative impact** Protection of agricultural land in the short-term. **Moderate positive impact** In the medium and long-term, low lying agricultural land may be lost under MR dependant on realignment extent. **Moderate negative impact**	Protection of people, property and tourist assets in coastal communities in the short-term and/or medium-term. **Major positive impact** Phased managed realignment may result in the loss of some properties and a holiday park dependant on set-back position in the medium and long-term. **Major negative impact** Protection of Cumbrian Coastal Way in the short term and/or medium term **Minor positive impact** but potential changes in route will be required in realigned areas in the medium and long-term - **may be minor positive or negative**
2	**Humphrey Head to Cowpren Point**	B	HTL	MR and HTL	MR							
3	**Cowpren Point to Cark**	A & B	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						maritime cliffs and slopes (BAP habitat) at Humphrey Head allowing natural retreat of the cliffs. **Minor positive impact** Potential increase in extent of mudflats on the western side of Humphrey Head and along Cartmel Sands and likely increase in extent of intertidal habitat over the duration of the SMP2. **Minor positive impact**						
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.***	No mitigation required	No mitigation required	No mitigation required	The likely impacts of the preferred SMP2 policy option on the SM should be investigated further at strategy or scheme level. As the SM cannot be preserved in situ, mitigation may take the form of excavation and recording.	Dependent on suitable alternative routes, mitigation may take the form of raising the local roads or relocating them inland. No mitigation has been identified for losses of agricultural land.	There may be no provision for compensating or mitigating the loss of private properties Planning/ development restrictions should be considered to help facilitate MR in the medium and long term. The Cumbrian Coastal Way may need to be relocated/ diverted around the new realigned site; this should be designed in such a manner as to improve views of the sea for pedestrians/ recreational users. **Medium Term:**

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
											Holiday park may need relocating as part of the MR due to being unsustainable in the current location.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 11: OUTER LEVEN ESTUARY												
1	**Cark to Leven Viaduct**	NAI	NAI	NAI	NAI	Natural processes are likely to allow saltmarsh within Morecambe Bay SPA, Ramsar, SAC & SSSI to continue to accrete though there may be small scale fluctuations in the accretion and erosion trends over the duration of the SMP2. **No Significant Impact** As long-term changes in the tidal prism may affect erosion and deposition trends, there is potential for these changes to result in some coastal squeeze of intertidal habitat within Morecambe Bay SPA, Ramsar, SAC & SSSI. As accretion is expected to match sea level rise and any habitat losses are a result of localised channel movements, this is not a result of SMP2 policy, the SMP2 will not have an adverse effect on the designated sites. **No Significant Impact (No 'adverse effect'** – HR) Managed realignment in some areas will enable the	Potential impacts on the geological exposures of Barker Scar SSSI, potentially obscuring the face and/or restricting erosion in the short-term. **Moderate negative impact** Managed realignment in the medium and long-term is likely to be beneficial to this site and allow continued exposure of Barker Scar SSSI. **Moderate positive impact**	Potential flood and erosion risk to two landfill sites over the duration of the SMP2, resulting in potential water and soil contamination issues. **Moderate negative impact** Erosion of the Glaxo frontage could pose contamination issues over the duration of the SMP2 **Moderate negative impact**	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Protection of industrial sites from flooding in the short-term **Moderate positive impact** but potential erosion of some industrial facilities in the medium and long-term (**Moderate negative impact** Protection of infrastructure in the short-term. **Moderate positive impact** As existing defences deteriorate, increasing erosion risk to embankment of the Cumbrian Coastal railway (with potential loss in long-term). Increasing flood risk to local roads (with many becoming unusable in long-term). Potential loss of local road at Sandhall, dependant on realignment extent. **Moderate negative impact**	Protection of people and property at Ulverston over the duration of the SMP2. **Major positive impact** Flood risk to isolated properties in the flood zone between Connishead Priory and Bardsea over the duration of the SMP2. **Major negative impact** Erosion of Bardsea Country Park over the duration of the SMP2. **Moderate negative impact** Increasing flood and erosion risk to the coastal path where NAI over the duration of the SMP2. **Minor negative impact**
2	**Leven Viaduct to Canal Foot cottages**	NAI	NAI	NAI	NAI							
3	**Canal Foot**	A & B	HTL	HTL	HTL							
4	**Glaxo Factory Site (south)**	A & B	NAI	NAI	NAI							
5	**Sandhall to Conishead Priory**	B	HTL	**MR**	**MR**							
6	**Conishead Priory to Bardsea**	A & B	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
						creation of new intertidal habitat (BAP habitat) adjacent to designated sites. **Major positive impact** Potential gain of intertidal habitat (saltmarsh and mudflats) in some areas e.g. around Cartmel Sands **Moderate positive impact** and potential loss of freshwater grazing marsh in other areas. **Moderate negative impact** Natural retreat of the maritime cliffs and slopes at Plumpton Bright is likely to be beneficial. **Minor positive impact**					Protection of agricultural land where HTL **Moderate positive impact.** Increasing risk of flood and erosion to agricultural land where NAI/MR (some losses). **Moderate negative impact**	
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites resulting from changes in the tidal prism will be addressed through the RHCP.*** Investigate opportunity to improve grazing regime in some areas within Morecambe Bay SPA, Ramsar, SAC & SSSI at strategy and/or scheme level	Any works to hold the line should be constructed in a manner sympathetic to the geological feature and minimising obscuring of the exposures.	***The current state of the two landfill sites and Glaxo will be investigated at strategy or project level to minimise any potentially negative effects.*** The hazard that the landfill sites pose to people and the environment from leaching or the release of contaminated materials should be explored. Where necessary,	No mitigation required	No mitigation required	Dependent on suitable alternative routes, mitigation may take the form of relocating local roads and part of the Cumbrian Railway inland. No mitigation has been identified for losses of agricultural land. ***Investigate viability of a regulated tidal exchange scheme underneath the railway between Cark and the Leven in***	There may be no provision for compensating or mitigating the loss of private properties Planning/ development restrictions should be considered to help facilitate MR in the medium and long term. The coastal footpath may need to be relocated/ diverted around the new realigned

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		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
							protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.			***conjunction with a wider scale assessment of long term coastal squeeze of the internationally designated sites in relation to the railway***	site; this should be designed in such a manner as to improve views of the estuary for pedestrians/ recreational users.

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 12: LEVEN ESTUARY												
1	**Leven Viaduct to Haverthwaite (left bank) and Haverthwaite to Greenodd (right bank)**	B	HTL	**MR**	NAI	Likely continued accretion of saltmarshes and mudflats within the Morecambe Bay SPA, Ramsar, SAC & SSSI in the short-term. **Major positive impact** Intertidal habitat gains due to managed realignment/NAI and a phased approach to a natural coast within the Morecambe Bay SPA, Ramsar, SAC & SSSI in the long-term. **Major positive impact** Sediment supply from outer Morecambe Bay may allow accretion to balance sea level rise. However increased channel volatility expected with potential wider impacts on intertidal habitats in outer Bay and therefore potential for adverse effects on the international conservation site in the long-term (though any impact will be limited due to proximity of high ground) **Major negative impact (Potential 'adverse effect' – HR)**	Obstructing the natural processes by holding the line is likely to affect the geological exposures of the Skelwith Hill SSSI and Barker Scar SSSI, reducing accessibility and potentially obscuring the face and/or restricting erosion. **Moderate negative impact** Continued erosion and natural processes (by MR/NAI) in the medium and long-term will maintain the geological exposures of the Skelwith Hill SSSI and Barker Scar SSSI in favourable condition and enable access to the exposures. **Moderate positive impact**	**No Significant Impact** on water quality. Managed realignment should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets.	Limited change in landscape character and wildlife value of Lake District National Park in the short-term though potential changes in hydrodynamics of estuary and habitats in the medium and long-term may result in more significant changes in the landscape. **Significant change – Uncertain** It is considered that a move towards a naturally functioning system and the protection and enhancement of 'wildness' with emphasis on sustainability are objectives of the National Park Management Plan, which managed realignment would help to meet.	Protection of Lowwood Gunpowder Works SM and Holker Park Registered Park and Garden (though potential for this park to experience flooding from other coastal sections) from flood-risk over the duration of the SMP2. **Moderate positive impact** Potential flood risk /erosion risk to Frith Hall under no active intervention. **Moderate negative impact**	Protection of coastal infrastructure (e.g. railway embankment and Leven Viaduct) and agricultural land in the short-term. **Moderate positive impact** Potential loss of minor access roads and agricultural land in the medium and long-term in areas of managed realignment. **Moderate negative impact**	Protection of Greenodd village over the duration of the SMP2. **Major positive impact** Protection of isolated properties in the short-term. **Major positive impact** Potential loss of isolated properties due to managed realignment, dependant on realignment extent in the medium and long-term. **Major negative impact** Potential loss of parts of the Cumbrian Coastal Way and Coastal Sustrans National Cycle Route in the medium and long-term. **Minor negative impact**
2	**Greenodd to Barrow End Rocks (A590)**	A & B	HTL	HTL	HTL							
3	**Barrow End Rocks (A590) to Leven Viaduct**	B	HTL	**MR**	NAI							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						Potential loss and gains of intertidal habitat (BAP habitat) and freshwater grazing marsh (BAP habitat) over the duration of the SMP2 **Minor negative and minor positive impacts**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Morecambe Bay SPA, Ramsar site & SAC.*** ***The replacement of intertidal and freshwater habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.***	Holding the line should be implemented in such a manner as to avoid where possible or minimise damage to or obscure the geological exposures. Appropriate construction methods that are sympathetic to the geological features should be investigated further at strategy and scheme level.	No mitigation required	Assess the impacts on the landscape character of the National Park at strategy and/or scheme level, when details of the realigned areas are known to identify areas and landscape features at risk and to agree adaptation measures.	The likely impacts of the SMP2 on Frith Hall should be investigated further at strategy or scheme level. Mitigation may take the form of excavation and recording.	Dependent on suitable alternative routes and the location/extent of managed realignment, mitigation may take the form of diverting, raising local access roads or relocating them inland. No mitigation has been identified for losses of agricultural land.	There may be no provision for compensating or mitigating the loss of private properties Planning/ development restrictions should be considered to help facilitate MR in the medium and long term. The feasibility of relocating/ diverting the Cumbrian Coastal Way and Coastal Sustrans National Cycle Route around the new realigned site should be investigated and designed in such a manner as to improve views of the sea for pedestrians/ recreational users.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 13: BARDSEA TO PIEL ISLAND												
1	**Bardsea to Newbiggin**	A & B	NAI	NAI	NAI	Holding the line in the short-term is unlikely to affect the existing stability of the Morecambe Bay SPA, Ramsar, SAC & SSSI and will allow continued accretion of saltmarshes and mudflats in the short-term. Potential for saltmarsh accretion to reduce in the medium-term and potential for loss of intertidal habitat due to coastal squeeze and uncertainty of sediment supply in the long-term. **Major negative impact (Potential 'adverse effect' – HR)** Unimpeded coastal processes (e.g. between Bardsea and Newbiggan) and continued saltmarsh accretion and erosion through a no active intervention policy is likely to be beneficial to this site. **Major positive impact** Increasing risk of erosion to a very small frontage of the Sea Wood SSSI over the duration of the SMP2. **No Significant Impact** to **Moderate negative impact**	A continuation of natural processes is likely to be beneficial to South Walney & Piel Channel Flats SSSI and maintain its geological features in favourable condition over the duration of the SMP2. **Moderate positive impact**	Managed realignment should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Potential for short, medium and long-term changes in condition of Shell Fisheries Harvesting Area located off the coast in the southern end of this policy area (off Roa and Piel Islands) as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas where MR/NAI). **Uncertain**	No designated landscapes within the policy area. **No Significant Impact**	Increasing flood risk to Piel Castle on Piel Island over duration of SMP2 with potential inundation in long-term. **Moderate negative impact** (though localised defences to protect the castle would be permitted subject to obtaining necessary consents) Increasing risk of erosion to Moat Hill, Motte and Bailey Castle Scheduled Monument (SM) at Moat Scar over the duration of the SMP2. **Moderate negative impact** Potential damage to a barrow (listed on the Cumbria CC HER) in the medium-term (depending on realignment) and port due to NAI over lifetime of SMP2, both of which are considered of medium	Flood risk to a section of the A5087 at Bardsea in the short-term as sea levels rise and loss of the A5087 in the medium and long-term due to managed realignment. **Moderate negative impact** Protection of the remaining infrastructure (e.g. coast road elsewhere) along the frontage. **Moderate positive impact** Protection of agricultural land to south of Newbiggin in the short-term. **Moderate positive impact** Increasing risk of erosion to agricultural land north of Newbiggan over the duration of the SMP2. **Moderate negative impact** Localised areas of low lying agricultural land would be lost where managed	Protection of properties at Rampside and on Roa Island over duration of SMP2. **Major positive impact** Increasing flood risk to properties on Piel Island with potential inundation of properties in the medium-term. **Major negative impact** Erosion risk to isolated properties between Bardsea and Newbiggin in the medium-term as sea levels rise and in areas of managed realignment in the medium-term. **Major negative impact** Protection of Cumbrian Coastal Way in some areas (e.g. south of Newbiggin) **Minor positive impact** but potential diversion of coastal path in areas of managed realignment. **Uncertain** - may be negative or positive
2	**Newbiggin to Rampside**	B	HTL	**MR**	HTL							
3	**Rampside**	A & B	NAI	HTL	HTL							
4	**Roa Island**	A & B	HTL	HTL	HTL							
5	**Piel Island**	B	**NAI**	**NAI**	**NAI**							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						A continuation of natural processes between Aldingham and Bardsea is likely to be beneficial to the maritime cliffs and slopes allowing natural retreat of the coastline over the duration of the SMP2. **Minor positive impact** Protection of freshwater grazing marsh (BAP habitat) from tidal flooding throughout coastal area in the short-term and at Rampside over the duration of the SMP2. **Minor positive impact** Potential loss of freshwater grazing marsh due to tidal flooding between Rampside and Newbiggin where managed realignment in the medium-term. **Minor negative impact**				importance during the NWRCZA (2009). **Minor** to **Moderate negative impact**	realignment is undertaken, when the defences fronting the A5087 breach. **Moderate negative impact**	dependent on location of new route and potential for improved pedestrian views Increased erosion risk to the footpath in some areas (e.g. between Bardsea and Newbiggin). **Minor negative impact** Increasing erosion risk to Bardsea Country Park over duration of the SMP2. **Moderate negative impact**
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Morecambe Bay SPA, Ramsar site & SAC.*** ***The replacement of***	No mitigation required	No mitigation required	No mitigation required	***The likely impacts of the SMP2 on Piel Castle and the Scheduled Monument to be investigated further at strategy or scheme level. Mitigation in agreement with English Heritage may take the***	Dependent on suitable alternative routes and the location/extent of managed realignment, mitigation may take the form of re-routing roads (e.g. the A5087) inland. No mitigation has been identified for	***Develop adaptation strategy to facilitate future local flood or erosion risk protection or resilience work to isolated properties including Leyhey Lane and Baycliff if justified.***

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
					intertidal and freshwater habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.				***form of excavation and recording.***	losses of agricultural land.	Planning/ development restrictions should be considered to help facilitate MR in the medium and long term. Investigate the relocation/ diversion of the Cumbrian Coastal Way around the new realigned site and design in such a manner as to improve views of the sea for pedestrians/ recreational users.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 14: WALNEY ISLAND												
1	**South End Hawes to Biggar (east side)**	A & B	NAI	NAI	NAI	Potential increase in extent of intertidal mud and sandflats adjacent to Duddon Estuary SPA, Ramsar, SSSI due to increased flooding over the duration of the SMP2 **Major positive impact** Holding the line in some areas has the potential to result in the loss of intertidal habitat within Morecambe Bay SAC, SPA & Ramsar and Duddon Estuary SPA, Ramsar, SSSI in the long-term due to coastal squeeze in the long-term. **Major negative impact (Potential 'adverse effect' in the long-term – HR)** Unimpeded coastal/estuarine processes and an increase in saltmarsh through a no active intervention policy or managed realignment is likely to be beneficial to Morecambe Bay SAC, SPA & Ramsar. **Major positive impact** The continuation of natural processes is likely to be beneficial to the South Walney &	The continuation of natural processes is likely to be beneficial to the geological South Walney & Piel Channel Flats SSSI (geological) and Walney Island GCR, and Duddon Estuary (geological) SSSI and maintain these sites in their favourable condition. **Moderate positive impact** Holding the line in some areas (e.g. between Hare Hill and Hillock Whins) over the duration of the SMP2 has the potential to affect the condition of the South Walney & Piel Channel Flats SSSI (geological) and the Walney Island GCR. **Moderate negative impact**	Allowing controlled erosion of sections of the frontage whilst protecting areas such as the landfill sites will allow the beaches to be fed naturally with sediment from the local cliffs, whilst maintaining the bathing quality over the duration of the SMP2. **Moderate positive impact** Protection of landfill between Hare Hill and Hillock Whins from flood and erosion risk over the duration of SMP2, therefore no release of contaminants. **Moderate positive impact** Potential for short, medium and long-term changes in condition of Shell Fisheries Harvesting Area coast bordering the eastern edge of Walney Island as a result of SMP2 policies (i.e. potential	No designated landscapes within the policy area. **No Significant Impact**	Protection of conservation areas (e.g. at Vickerstown and North Walney) over the duration of the SMP2. **Minor positive impact** Potential damage or loss of an anti-aircraft battery and practice trenches, which are considered of medium importance during the NWRCZA (2009). **Minor negative impact**	Limited risk to Walney airport in the short term as sea level rise will not have a significant effect on erosion rates during this period although potential loss of emergency access road due to managed realignment at West Shore Park. **Moderate negative impact** Potential loss of agricultural land in areas of managed realignment in the short, medium and long-term. **Moderate negative impact**	Continued protection of the most at risk areas of Walney Island. **Major positive impact** Potential loss of properties due to erosion in areas of realignment (e.g. at West Shore Park) over the duration of the SMP2. **Major negative impact** Controlled erosion will help maintain beach levels and provide a more attractive natural coastline for tourism. **Minor positive impact** Increasing risk of flooding and erosion to the Cistercian Way between South End Bungalow and Biggar with losses of some sections of path in the medium and long-term. **Minor negative impact** Continued erosion of Furness Golf Course along the southern section
2	**Biggar to Lenny Hill (east side)**	A & B	HTL	HTL	HTL							
3	**South End Hawes to Hare Hill (open coast)**	A & B	NAI	NAI	NAI							
4	**Hare Hill to Hillock Whins**	A & B	HTL	HTL	HTL							
5	**Hillock Whins to Nanny point Scar**	B	NAI	**MR**	**MR**							
6	**Nanny Point Scar to Mill Scar**	A & B	NAI	NAI	NAI							
7	**Mill Scar to north of West Shore Park**	B	**MR**	**MR**	**MR**							
8	**North Walney - from north of West Shore Park to Lenny Hill (both coasts)**	A & B	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						Piel Channel Flats SSSI (biological) (although some scouring of vegetation may occur during storm events) **Moderate positive impact** Continued erosion and accretion of sand with likely continued growth of *Zostera* on mobile areas of sand. **Minor positive impact** Holding the line in some areas (e.g. between Hare Hill and Hillock Whins) over the duration of the SMP2 has the potential to affect the condition of the SSSI. **Moderate negative impact** The continuation of natural processes is likely to be beneficial to North Walney NNR over the duration of the SMP2. **Moderate positive impact** Natural roll-back of coastal sand dunes (BAP habitat) to the north and south of Walney Island over the duration of the SMP2. **Minor positive impact**		changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas where MR/NAI). **Uncertain**				although erosion rates are likely to be low. MR to the north may result in the loss of coastal sections of the course, dependant on location/extent. **Minor negative impact**
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and***	Holding the line should be implemented in such a manner as	No mitigation required	No mitigation required	***Investigate need for recording or other mitigation for historical***	No mitigation has been identified for losses of agricultural land.	***Investigate and implement short term limited intervention at***

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
					where required, compensatory habitat sought through the RHCP for intertidal habitat losses within the Morecambe Bay SPA, Ramsar site & SAC and Duddon Estuary SPA and Ramsar site. ***The replacement of habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.***	to avoid if possible or minimise damage to or obscure the geological exposures. Appropriate construction methods that are sympathetic to the geological features will be investigated further at strategy and scheme level.			***environment features (e.g. anti-aircraft battery) that may be at risk to inform strategy development, in consultation with English Heritage.***	The emergency access road may need to be re-routed around the realigned area to ensure the airfield can continue to operate safely.	***Earnse Point Groyne and West Shore Park to manage erosion risks whilst coastal adaptation and managed realignment is progressed to relocate properties out of the erosion risk zone in the medium term.*** Planning/ development restrictions should be considered to help facilitate MR. The Cistercian Way could be relocated/ diverted around new realigned areas and designed in such a manner as to improve views of the sea for pedestrians/ recreational users.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 15: WALNEY CHANNEL (MAINLAND)												
1	**Rampside to Westfield Point**	A	NAI	NAI	NAI	Holding the line between Westfield Point and Hindpool over the duration of the SMP2 will be beneficial to the brackish reservoir within the Morecambe Bay SAC, SPA & Ramsar and the Duddon Estuary SPA, Ramsar, SSSI. Accretion is expected to match sea level rise. Any habitat losses and gains due to navigation channel management will not be a result of the SMP2. **No Significant Impact** **(No 'adverse effect' – HR)** No active intervention between Rampside and Westfield Point, and Hindpool and Lowsy Point over the duration of the SMP2 is likely to be beneficial to the Duddon Estuary SPA, Ramsar, SSSI and Morecambe Bay SAC, SPA & Ramsar resulting in a potential increase in extent of intertidal mud and sandflats due to increased flooding. **Major positive impact** A continuation of natural processes	A continuation of natural processes between Rampside and Westfield Point over the duration of the SMP2 is likely to maintain the condition of the geological South Walney & Piel Channel Flats SSSI. **Moderate positive impact** Holding the line north of Westfield Point over the duration of the SMP2 has the potential to affect the condition of the geological South Walney & Piel Channel Flats SSSI. **Moderate negative impact**	Potential for short, medium and long-term changes in condition of Shell Fisheries Harvesting Area located off the coast, bordering the eastern edge of Walney Island as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas where MR/NAI). **Uncertain** No active intervention between Hindpool and Lowsy point has the potential to result in saline intrusion into a groundwater body with associated failure of WFD objective 4, "no changes that will cause failure to meet good groundwater status or result in a deterioration of	No designated landscapes within policy area. **No Significant Impact**	Protection of heritage features (e.g. conservation areas in Barrow-in-Furness and historic sites north of Westfield Point) over duration of SMP2. **Moderate positive impact** Potential damage/loss of an anti-aircraft battery, which is considered of medium importance during the NWRCZA (2009), over the lifetime of the SMP2. **Minor negative impact**	Protection of Buccleuch Dock, Roosecote Centrica Power Station, proposed landfill site at the gas terminal in Barrow in Furness and Rampside gas terminal from flooding and erosion over duration of SMP2. **Moderate positive impact** Protection of railway line, Barrow in Furness Rail Station and maintenance of harbour access over the duration of the SMP2. **Moderate positive impact** Increasing risk of erosion to agricultural land as sea levels rise, however losses are expected to be low. **Moderate negative impact**	Protection of Barrow-in-Furness over the duration of the SMP2. **Major positive impact** Potential erosion of the Cumbrian Coastal Way between Rampside and Westfield Point in the medium and long-term. **Minor negative impact** Protection of Cistercian Way over the duration of the SMP2. **Minor positive impact**
2	**Westfield Point to Hindpool (Barrow in Furness)**	A	HTL	HTL	HTL							
3	**Hindpool to Lowsy Point**	A	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						between Rampside and Westfield Point over the duration of the SMP2 is likely to be beneficial to the South Walney & Piel Channel Flats SSSI (although some scouring of vegetation may occur during storm events). **Moderate positive impact** Continued erosion and accretion of sand with likely continued growth of *Zostera* on mobile areas of sand. **Minor positive impact** Holding the line north of Westfield Point has the potential to affect the condition of the South Walney & Piel Channel Flats SSSI over the duration of the SMP2. **Moderate negative impact** A continuation of natural processes is likely to be beneficial to the maritime cliffs and slopes (BAP habitat) between Rampside and Westfield Point. **Minor positive impact** Potential loss of mudflats (BAP habitat) due to coastal squeeze between Westfield Point and		groundwater status". **Major negative impact**				

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						Hindpool over the duration of the SMP2. **Minor negative impact**						
Mitigation Measures/Environmental Opportunities						***The replacement of habitat losses outside of European sites due to coastal squeeze will be addressed through the RHCP.***	Holding the line should be implemented in such a manner as to avoid if possible or minimise damage to or obscure the geological exposures. Appropriate construction methods that are sympathetic to the geological features should be investigated at strategy and scheme level.	***The effects of potential saline intrusion on the groundwater body to be investigated during North West River Basin Management Plan review and may require further consideration at strategy or scheme level.***	No mitigation required	Investigate need for recording or other mitigation for historical environment features (e.g. anti-aircraft battery) that may be at risk to inform strategy development, in consultation with English Heritage.	No mitigation has been identified for losses of agricultural land.	The Cumbrian Coastal Way could be relocated further inland and should be designed in such a manner as to improve views of the sea for pedestrians/ recreational users.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 16: DUDDON ESTUARY												
1	**Lowsy Point to Askam Pier**	A & B	NAI	NAI	NAI	Holding the line in some areas is not anticipated to affect intertidal habitat within Morecambe Bay SAC, SPA & Ramsar and the Duddon Estuary SPA, Ramsar and SSSI (e.g. Millom Marshes) due to coastal squeeze as intertidal accretion is expected to match sea level rise and will have a beneficial effect at Askam Pier of stabilising channel movements. **No Significant Impact (No 'adverse effect' – HR)** Gains of intertidal habitat adjacent to the Duddon Estuary SPA, Ramsar, SSSI (e.g. between Greety Gate and Duddon Bridge) depending on areas of holding the line, no active intervention or managed realignment. **Major positive impact** Protection of a small area of Duddon Mosses SAC & SSSI on the estuary side of the railway line from flood risk over the duration of the SMP2.	**No Significant Impact** on earth heritage features within this policy area.	**No Significant Impact** on water quality.	Limited change in landscape character and wildlife value of Lake District National Park in the short and medium-term, however, potential changes in hydrodynamics of the estuary in the long-term may result in some changes in the landscape. **Uncertain** - a move towards a naturally functioning system and the protection and enhancement of 'wildness' with emphasis on sustainability are objectives of the National Park Management Plan, which managed realignment would help to meet.	**No Significant Impact** on the historic environment.	Protection of West Cumbrian railway line over the duration of the SMP2. **Moderate positive impact** Protection of agricultural land in areas of HTL **Moderate positive impact** but potential flood risk in areas of NAI and losses where MR in medium and long-term **Moderate negative impact**	Protection of Askam-in-Furness, Sand Side and Foxfield and no anticipated risk to Millom over the duration of the SMP2. **Major positive impact** Some isolated properties in the flood zone may be at risk of flooding where NAI over the duration of the SMP2. **Major negative impact** Potential loss of footpaths in areas of NAI and MR over the duration of the SMP2. **Minor negative impact**
2	**Askam-in-Furness (including Askam Pier)**	A & B	HTL	HTL	HTL							
3	**Askam to Dunnerholme**	A & B	**NAI**	**NAI**	**NAI**							
4	**Dunnerholme to Sand Side**	A	HTL	HTL	HTL							
5	**Kirkby-in-Furness**	A	HTL	HTL	HTL							
6	**Herdhouse Moss**	A & B	**NAI**	**NAI**	**NAI**							
7	**Galloper Pool to Viaduct**	A & B	HTL	HTL	HTL							
8	**Duddon Estuary (Both banks upstream of Viaduct and right bank south to Green Rd Station)**	A	HTL	**MR**	**MR**							
9	**Millom Marshes**	B	HTL	**MR**	**MR**							
10	**Red Hills (Industrial area)**	A & B	**NAI**	**NAI**	**NAI**							
11	**Hodbarrow Mains to Hodbarrow Point**	B	NAI	**MR**	**HTL**							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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						Major positive impact No active intervention and managed realignment in much of the policy area over the duration of the SMP2 is likely to be beneficial to Morecambe Bay SAC, SPA & Ramsar resulting in a potential increase in extent of intertidal mud and sandflats due to increased flooding. **Major positive impact** The continuation of natural processes is likely to be beneficial to the Sandscale Haws NNR over the duration of the SMP2, resulting in the creation of intertidal habitat. **Moderate positive impact** Some losses of freshwater grazing marsh (BAP habitat) may occur in areas of realignment/NAI in the medium-term. **Minor negative impact** Maritime cliffs and slopes (BAP) may be restricted from retreating naturally in some areas in the short-term **Minor negative impact** but in the medium and long-term, natural processes will be						

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						beneficial to the cliffs. Minor positive impact						
Mitigation Measures/Environmental Opportunities						***The replacement of habitat losses (e.g. freshwater grazing marsh) outside of European sites due to coastal squeeze will be addressed through the RHCP.*** ***Investigate opportunities to improve the hydrological regime (i.e. address freshwater losses), ditch management, improve water levels and scrub control within Duddon Mosses SAC & SSSI at scheme level.***	No mitigation required.	No mitigation required	Assess the impacts on the landscape character of the National Park at strategy and/or scheme level, when details of the realigned areas are known to identify areas and landscape features at risk and to agree adaptation measures.	No mitigation required	No mitigation has been identified for losses of agricultural land.	There may be no provision for compensating or mitigating the loss of private properties The Cumbrian Coastal Way could be relocated further inland and designed in such a manner as to improve views of the sea for pedestrians/ recreational users.

SUB-CELL 11D

The tables below describe the environmental effects of the preferred SMP2 policy scenarios along with appropriate mitigation measures that could be implemented to ameliorate any adverse impacts. Mitigation measures identified in the tables below include those which are required to offset/avoid negative impacts, highlighted in ***italic and bold***, as well as a number of aspirational measures. The SMP2 is committed to deliver these measures through the Action Plan to meet SEA requirements and as such the ***highlighted*** mitigation measures have been included in each Policy Statement Action Plan.

Notes on application:

Where there is a change in management practice from the 'with present management scenario' the preferred policy scenario is highlighted in blue and bold.

Methodology for Prediction of Significant Impacts

The following key is used to identify those impacts (prior to mitigation) that are of potential minor, moderate or major negative or positive significance, and those that are not significant or where the significance is unknown: -

Impact Significance	Description of Impact Significance
Major Positive	The option would significantly benefit internationally designated environmental features, fulfilling the SEA objective *and* maximising opportunities for environmental enhancement (e.g. habitat restoration or habitat creation etc). In addition, where properties are protected from flooding/erosion, a major positive impact on population and human health is assumed.
Moderate Positive	The option would significantly benefit nationally designated environmental features by resolving an existing environmental issue and/or fulfilling the SEA objective.
Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing locally important environmental issue and/or offering opportunity for some environmental enhancement
No Significant Impact	The option would not result in a significant impact on the environment.
Uncertain	There is insufficient detail available to assess how significantly the SEA objective would be affected by the option.
Minor Negative	The option would partially affect a SEA objective in a negative way
Moderate Negative	The option would significantly and negatively affect nationally designated environmental features and conflict with the SEA objective.
Major Negative **(Potential 'adverse effect' (relating to European sites only) – HR)**	The option would significantly and negatively affect internationally designated environmental features and conflict with the SEA objective. Where properties are lost due to flooding/erosion, a major negative impact on population and human health is assumed. To ensure that a link is made between the SEA and the Habitats Regulations Assessment, where a European site is present and an option significantly fails to meet an objective arising from obligations under the Habitats Regulations (i.e. cannot avoid adverse impacts on a European site), then a potential adverse effect is also stated in the assessment tables in brackets.
('No Adverse Effect' – HR)	To ensure that a link is made between the SEA and the Habitats Regulations Assessment, this impact relates to the international conservation sites only and uses the terminology used in the Habitats Regulations. This is stated in the assessment tables in brackets where an impact in terms of the Habitats Regulations will be significant but not adverse.

Professional judgement has been used to assign a strategic level of significance using the above table.

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 1: HODBARROW POINT TO SELKER												
1	**Hodbarrow Point to Haverigg**		HTL	**MR**	HTL	Holding the line at Haverigg and Silecroft (subject to private funding agreements) is not anticipated to affect the intertidal habitats within Duddon Estuary SPA, Ramsar site and SSSI and Morecambe Bay SPA, Ramsar site and SSSI as the area is expected to continue to accrete. **No Significant Impact (No 'adverse effect' – HR)** However, a policy of managed realignment at Hodbarrow Lagoon would result in the lagoon becoming tidal (as in past) with a likely change in habitats and species resulting from the increased salinity **Major negative impact/Uncertain** **(potential 'adverse effect' – HR)** The continuation of natural processes between Haverigg and Silecroft over the duration of the SMP2 is likely to be beneficial to Duddon Estuary SPA, Ramsar site and SSSI	The continuation of natural processes in the short, medium and long-term is likely to be beneficial to the earth heritage features at Annaside and Gutterbanks SSSI. Natural coastal erosion would continue and, where slumping does conceal the fluvial sand and gravel exposures, it is expected that natural erosion would re-expose these areas. **Moderate positive impact**	Holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. **No Significant Impact**	Minimal change in landscape character of Lake District National Park through increased flooding, erosion and continuation of natural processes. **No Significant Impact** Potential for deteriorating defences at the cliff toe at Hartrees Hill to become unsightly in the long-term. **Moderate negative impact**	**No Significant Impact** on the historic environment.	Protection of infrastructure in Haverigg in the short, medium and long-term. **Moderate positive impact** Potential erosion of a number of access routes to the shore between Silecroft and Selker. **Moderate negative impact** Loss of some areas of Grade 3 agricultural land due to flooding and erosion, in the short, medium and long-term. **Moderate negative impact**	Protection of properties and community assets in Haverigg from coastal flooding in the short, medium and long-term. **Major positive impact** Increasing erosion risk to properties in Silecroft at Hartrees Hill over the lifetime of the SMP2, if defences are not privately maintained. **Major negative impact** Majority of tourist assets protected **Minor positive impact** except a very limited area of the golf course at Southfield and the Cumbria Coastal Way at Haverigg **Minor negative impact**
2	**Haverigg**		**HTL**	**HTL**	**HTL**							
3	**Haverigg to Hartrees Hill**	A & B	NAI	NAI	NAI							
4	**Silecroft (Hartrees Hill)**		**HTL** (subject to private funding)	**HTL** (subject to private funding)	**HTL** (subject to private funding)							
5	**Hartrees Hill to Selker**	A & B	NAI	NAI	NAI							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						and Morecambe Bay SPA, Ramsar site and SSSI with wetter areas become more biologically diverse and the shingle and dunes will continue to be unrestricted and mobile. **Major positive impact** The condition and Hodbarrow lagoon at Hodbarrow Point RSPB Reserve would be maintained in its current condition in the short-term **Minor positive impact** Potential extension of areas of floodplain grazing marsh (e.g. at Hodbarrow Mains). **Minor positive impact** The continuation of natural processes and coastal flooding of neutral grassland at Annaside SSSI is likely to continue to maintain the site in favourable condition and may assist in increasing the extent of suitable habitat available to natterjack toads. **Moderate positive impact** Potential erosion of a						

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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						small area of heathland and neutral grassland at Shaw Meadow and Sea Pasture SSSI to the south of the village access road in the short, medium and long-term. **Moderate negative impact** Protection of the floodplain and coastal grazing marshes (BAP habitats) in the hinterland of Haverigg Bank and at Kirksanton from coastal flooding. **Minor positive impact** Continued erosion of maritime cliffs and slopes (BAP habitat). **Minor positive impact**						
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for freshwater habitat losses within the Morecambe Bay SPA, Ramsar site & SAC and Duddon Estuary SPA and Ramsar site.*** The replacement of	No required mitigation	No mitigation required	Investigate possibility of defence removal in areas to minimise visual impacts in National Park. Assess the impacts on the landscape character of the National Park at strategy and/or scheme level, to identify areas and landscape	No mitigation required	Depending on the availability of alterative routes inland, mitigation may take the form of raising local access roads or relocating roads further inland. No mitigation has been identified for losses of agricultural land.	Depending on the facilities that may be affected by erosion at Hartrees Hill, mitigation may take the form of relocating assets further inland. ***Consider risks to isolated properties, coastal paths and car park and beach access at Hartrees Hill and need for coastal adaptation to***

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
					habitat losses (e.g. healthland and neutral grassland) outside of European sites will be addressed through the RHCP. ***Investigate opportunity to provide some gorse management to improve the condition of the Duddon Estuary SPA/Ramsar/SSSI at Bullstone Bed at scheme level.***			features at risk of disturbance through HTL or NAI and to agree adaptation measures to sea level rise where applicable.			***relocate or move back or resilience measures to manage the risk of coastal change.*** There is the potential to relocate parts of the Cumbrian Coastal Footpath at risk of erosion inland.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 2: SELKER TO ESKMEALS DUNES												
1	**Selker to Stubb Place**		NAI	NAI	NAI	A continuation of natural coastal processes in the short, medium and long-term is likely to be beneficial for the Drigg Coast SAC and SSSI and the river estuaries are likely to remain in a very natural state. The extent of estuary habitats is unlikely to change (beyond natural channel movements) and will continue to support a range of biotopes. **Major positive impact** Continued flooding of floodplain and coastal grazing marsh (BAP habitat) at Williamsons Moss, likely natural roll back of the dune system at Eskmeals Ranges (with possible continued growth of the spit into the estuary in the short term but some uncertainty regarding changes to outer banks and channels and spits at estuary mouth in the medium and long-term) and a potential increase in extent of intertidal habitat (e.g. mudflats). **Minor positive impact**	**No Significant Impact** on earth heritage or geological features.	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast of Ravenglass as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas in the long-term). **Uncertain**	Minimal change in landscape character of Lake District National Park through increased flooding, erosion and continuation of natural processes. A move towards a naturally functioning system and the protection and enhancement of 'wildness' with emphasis on sustainability are objectives of the National Park Management Plan, which managed realignment and NAI would help to meet however some terrestrial features that contribute to the landscape character may be lost in the long-term including coastal access. **No Significant Impact**	**No Significant Impact** on the historic environment.	Increasing flood risk in the short, medium and long-term to road at Marshside, which continues along the coast past Eskmeals Range, by overtopping during storm events. **Moderate negative impact** Flooding of the West Cumbrian railway line to the east of Eskmeals Range in the short, medium and long-term. **Moderate negative impact** Loss of some areas of Grade 3 agricultural land due to MR in the short, medium and long-term. **Moderate negative impact**	Increasing flood-risk over the lifetime of the SMP2 to isolated residential properties including those at the Tarn, Marshside Cottages, properties at Eskmeals Range. These would be inundated fairly quickly during storm surges and on high tides. Potential loss and abandonment of some properties due to flooding in the medium and long-term. **Major negative impact** Increasing flood risk (but limited erosion) to Eskmeal Ranges and an area of MoD properties in the short, medium and long-term and potential risk to ranges if the dunes are breached during storms (though it is currently expected that the dunes will continue to accrete). **Uncertain – Moderate negative impact** Increasing flood risk
2	**Stubb Place and Eskmeals Dunes**		MR	MR	MR							

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
												to Cumbrian Coastal Way between Selker and Eskmeals Ranges. **Minor negative impact**
Mitigation Measures/Environmental Opportunities						No mitigation required	No mitigation required	No mitigation required	Assess the impacts on the landscape character of the National Park at strategy and/or scheme level, to identify areas and landscape features at risk and agree adaptation measures to sea level rise.	No mitigation required	Depending on the availability of alterative routes inland, mitigation may take the form of raising the road at Marshside or relocating local access roads/sections of the West Cumbrian railway line further inland. ***Highway Authority, MoD and CBC to consider timing and viability of realignment of road at Stubb Place to adapt to coastal change. Study to consider highway protection or realignment and sources of funding given the national strategic importance of site and value of employment to local community.***	Depending on the facilities that may be affected by flooding, mitigation may take the form of relocating assets further inland. ***Consult Eskmeals site operator over approaches to coastal adaptation in medium & long term to allow roll back of facilities in dunes*** There is the potential to relocate parts of the Cumbrian Coastal Footpath at risk of flooding inland.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 3: RAVENGLASS ESTUARY COMPLEX												
1	**Eskmeal dunes to Ravenglass including River Esk to Muncaster Bridge SMP2 boundary**	B	NAI	NAI	NAI	The marshes of Drigg Coast SAC/SSSI will continue to show good zonation through pioneer to terrestrial habitats (except at Ravenglass). The river estuaries are likely to remain in a natural state and the estuary habitats would continue to support a range of biotopes. Newbiggan marsh is likely to remain in good ecological condition. The marshes next to Muncaster Bridge are likely to continue to recover with gradual increasing dominance of saltmarsh in a heavily influenced freshwater area. **Major positive impact** Holding the line at Ravenglass over the duration of the SMP2 is not anticipated to adversely affect this site as accretion continues. If accretion does not continue to keep pace with sea level rise in the long-term, any losses of sand dunes at Drigg Coast SAC/SSSI and within Drigg Dunes and Gullery LNR due to coastal squeeze will be a small fraction of the overall site and will	**No Significant Impact** on earth heritage, soils or geology.	Potential for short, medium and long-term changes in condition of shellfish beds located off the coast of Ravenglass as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries though likely increase in spawning areas in the long-term where NAI continues). **Uncertain**	Minor change in landscape character of Lake District National Park through continued flooding, erosion and continuation of natural processes in some areas. It is considered that NAI helps to maintain a naturally functioning system and enhances 'wildness' with emphasis on sustainability; all of which are objectives of the National Park Management Plan. However, the potential upgrading of defences (at Ravenglass) may alter the landscape character and views within the National Park. **No Significant Impact** to **Moderate negative impact**	Increasing flood and erosion risk to a small part of the frontage of Muncaster Castle Registered Park and Garden (e.g. at Haggs Park) over the lifetime of the SMP2. **Moderate negative impact** Likely loss of an anti-aircraft battery, fort and church, which are considered of medium/high importance during the NWRCZA (2009). **Moderate negative impact** Continued and increasing risk of erosion to Ravenglass Roman Fort Scheduled Monument. **Moderate negative impact**	Protection of main railway line from flooding as long as it is in operation. **Moderate positive impact** Potential flooding of some areas of Grade 3 agricultural land in the short, medium and long-term. **Moderate negative impact** Local tidal roads and sections of the A595 will be at risk of increasing flooding on high tidal levels over the duration of the SMP2 and some roads may become disused in the long-term. **Moderate negative impact**	Protection of Ravenglass village and associated recreational facilities (e.g. cycle route) from flooding in short, medium and long-term. **Major positive impact** Increasing flood risk to isolated properties and properties at Newbiggin (as far inland as Eskmeals House), Hall Watherbaite, Saltcotes, Mite Houses and Hall Carleton over lifetime of SMP2 (some properties may be abandoned due to flooding and inaccessibility in the long-term). **Major negative impact** Increasing flood risk to the local narrow guage railway (Eskdale Heritage Railway) during storm surges and at high tide over the duration of the SMP2. **Minor negative impact** Potential flood risk
2	**Ravenglass**	A & B	HTL	HTL	HTL							
3	**Ravenglass to Drigg Point including River Mite to Muncaster Mill and River Irt to Drigg Holme**	Variation of NAI, A & B	NAI	NAI	NAI							

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
						be offset by gains resulting from MR and NAI. **No Significant Impact** **(No 'adverse effect'** – HR) No active intervention will be beneficial to Drigg Dunes and Gullery LNR (except at Ravenglass) allowing natural roll back of the dune system. **Minor positive impact** Continued flooding of areas of coastal grazing marsh and intertidal habitat (BAP habitats) and likely natural roll back of the dune system (with localised areas of accretion and erosion. **Minor positive impact**						to some sections of the Cumbria Coastal Way **Minor negative impact** and protection of the coastal path at Ravenglass **Minor positive impact**
Mitigation Measures/Environmental Opportunities						The replacement of habitat losses outside of European sites will be addressed through the RHCP.	No mitigation required	No mitigation required	Assess the impacts on the landscape character of the National Park at strategy and/or scheme level, to identify areas and landscape features that may be disturbed by defence raising and agree adaptation measures with the National Park to sea level rise in areas of NAI.	***Carry out a study to investigate the likely impacts of SMP2 policy on Ravenglass Fort Scheduled Monument and the other archaeological assets identified, to determine the need and appropriateness of providing protection from erosion and / or appropriate mitigation or adaptation such***	No mitigation has been identified for losses of agricultural land. Depending on the availability of alterative routes inland, mitigation may take the form of relocating the A595 further inland. ***Raise awareness to highway authority of need to consider flood alleviation measures such as***	Depending on the facilities that may be affected by flooding, mitigation may take the form of relocating the assets (e.g. sections of the Eskdale Heritage Railway line and Cumbrian Railway Line) further inland. There may be no provision for compensating or mitigating the loss of private properties.

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
								The maintenance and upgrading of defences at Ravenglass should be carried out in a manner sympathetic to the existing environment and landscape character.	***as recording***.	***road raising for the Main A595 at Muncaster bridge.***	

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 4: DRIGG POINT TO SEASCALE												
1	**Drigg Point to Seascale**	A	NAI	NAI	NAI	No active intervention will provide a continued sediment source and stability of the dune heathland and grassland within the Drigg Coast SAC and SSSI over the duration of the SMP2 (though some localised erosion of the dunes may occur during storm events). **Major positive impact** Continued flooding of floodplain and coastal grazing marsh at Maudsyke. **Minor positive impact**	**No Significant Impact** on earth heritage, soils and geology.	**No Significant Impact** on water quality.	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Increasing flood risk to a small area of land within the south-eastern section of Drigg low level waste repository site but no risk to the site. **No Significant Impact to Moderate negative impact** Potential flooding and erosion of Grade 3 agricultural land over the duration of the SMP2. **Moderate negative impact**	Limited flood-risk to isolated properties (e.g. around Seascale). **No Significant Impact to Major negative impact** Increasing erosion risk to the Coast to Coast and the Cumbrian Coastal Way over the duration of the SMP2. **Minor negative impact**
Mitigation Measures/Environmental Opportunities						No mitigation required.	No mitigation required.	No mitigation required.	No mitigation required.	No mitigation required.	***Continue to undertake detailed monitoring of dune system to inform future studies of coastal risk to Drigg Storage depot and take account of new climate change predictions.*** No mitigation has been identified for losses of agricultural land.	Depending on the facilities that may be affected by flooding or erosion, mitigation may take the form of relocating the assets further inland (e.g. sections of the Cumbria Coastal Way). There may be no provision for compensating or mitigating the loss of private properties. However, flood resilience measures could be adopted.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 5: SEASCALE TO ST BEES												
1	**Seascale**	A	HTL	HTL	HTL	Holding the line between Seamill and Pow Beck will restrict the natural evolution of the maritime cliffs and slopes (BAP habitat) in the medium and long-term. **Minor negative impact**	**No Significant Impact** on earth heritage, soils and geology.	**No Significant Impact** on water quality.	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment	Protection of Sellafield Nuclear Site and reprocessing plant from erosion. **Moderate positive impact** Protection of the railway station at Seascale and the West Cumbrian Railway line from flooding over the duration of the SMP2. **Moderate positive impact** Protection of roads (e.g. B5344 road at Seascale) from flooding and erosion in the short, medium and long-term. **Moderate positive impact**	Potential damage to isolated properties by the beach around Coulderton, Braystones and Netherton due to storm surges in the short-term with increasing flood/erosion risk and potential loss of some properties in the medium and long-term. **Major negative impact** Protection of properties in Seascale from erosion and flooding over the duration of the SMP2. **Major positive impact** Potential flood and erosion risk to the Coast to Coast path at certain tides and landward of the properties in the short-term with increasing risk and potential loss of the path in the medium and long-
2	**Seascale to Sellafield**	Tested through NAI	NAI	NAI	NAI							
3	**Sellafield**	A	HTL	HTL	HTL							
4	**Sellafield to Braystones**	A	NAI	NAI	NAI							
5	**Braystones, Nethertown and Coulderton**	A	**MR**	NAI	NAI							
6	**Coulderton to Seamill**	A	NAI	NAI	NAI							
7	**Seamill to Pow Beck**		**HTL**	**HTL**	**HTL**							

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
											term. **Minor negative impact**
Mitigation Measures/Environmental Opportunities					No mitigation identified	No mitigation required	No mitigation required	No mitigation required	No mitigation required	No mitigation required	Depending on the facilities that may be affected by flooding or erosion, mitigation may take the form of relocating the assets further inland (e.g. the Coast to Coast path). ***Develop with the residents association an adaptation strategy for properties on beach in Braystones, Nethertown and Coulderton area. Strategy to include short term measures to manage risks including beach management, emergency access and EA flood warnings and development of land use planning policy to facilitate relocation out of risk area in the medium term.***

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 6: ST BEES												
1	**Pow Beck to St Bees Promenade**	A & B	NAI	NAI	NAI	Continued erosion (and continuation of natural processes) of the maritime cliffs and slopes (BAP habitat) between Pow Beck and St Bees Promenade, in the short, medium and long-term. **Minor positive impact**	The continued exposure of features by allowing natural processes over the duration of the SMP2 will ensure that this part of the geological St Bees Head SSSI between Pow Beck and St Bees Promenade remains in favourable condition. **Moderate positive impact**	**No Significant Impact** on water quality.	No designated landscapes within this policy area. **No Significant Impact**	**No Significant Impact** on the historic environment.	Increasing flood risk to the West Cumbrian Railway Line from Pow Beck over the duration of the SMP2. **Moderate negative impact**	Protection of assets at St Bees beach frontage from erosion in the short and medium term **Minor positive impact** though potential for some assets to be at risk in the long-term **Minor negative impact** Continued erosion of the golf course at St Bees and the Coast to Coast footpath over the duration of the SMP2, with the potential loss of the footpath in the long-term. **Minor negative impact**
2	**St Bees Promenade**	A	HTL	HTL	**MR**							
Mitigation Measures/Environmental Opportunities						No mitigation required	No mitigation required.	No mitigation required.	No mitigation required.	No mitigation required.	Mitigation may take the form of relocating part of the Cumbrian Railway line inland.	Depending on the facilities that may be affected by erosion, mitigation may take the form of relocating the assets further inland (e.g. the Coast to Coast path). ***Conduct further studies into long term solutions to develop approach and justification to maintaining the beach and associated amenity in the future, in order to support***

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
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											plans for maintenance and inform the next review of the SMP2.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 7: ST BEES HEAD												
1	**St Bees Head**	A	NAI	NAI	NAI	Area of maritime cliff habitat at St Bees Head SSSI and RSPB Reserve will continue to be maintained in favourable condition by natural erosion and slumping processes over the duration of the SMP2. **Moderate positive impact**	Continued exposure of features by allowing natural processes, therefore ensuring that the geological St Bees Head SSSI and Fleswick to St Bees GCR remains in favourable condition over the duration of the SMP2. **Moderate positive impact**	**No Significant Impact** on water quality.	No change in landscape character of St Bees Head Heritage Coast over the duration of the SMP2, as natural processes continue. NAI will continue to allow the coastline to function naturally and retain its natural beauty (an objective of Heritage Coast Management Plans) **No Significant Impact**	**No Significant Impact** on the historic environment.	Potential loss of small area of agricultural land along frontage due to erosion. **Moderate negative impact**	Minimal change in the tourism value of the Heritage Coast and RSPB Reserve, as the natural features are maintained. **No Significant Impact** Increased erosion risk to Coast to Coast footpath in the medium and long-term. **Minor negative impact**
Mitigation Measures/Environmental Opportunities						No mitigation required	No mitigation required	No mitigation required	No mitigation required	No mitigation required	No mitigation required	Mitigation may take the form of relocating the Coast to Coast footpath further inland.

SUB-CELL 11E

The tables below describe the environmental effects of the preferred SMP2 policy scenarios along with appropriate mitigation measures that could be implemented to ameliorate any adverse impacts. Mitigation measures identified in the tables below include those which are required to offset/avoid negative impacts, highlighted in ***italic and bold***, as well as a number of aspirational measures. The SMP2 is committed to deliver these measures through the Action Plan to meet SEA requirements and as such the ***highlighted*** mitigation measures have been included in each Policy Statement Action Plan.

Notes on application:

Where there is a change in management practice from the 'with present management scenario' the preferred policy scenario is highlighted in blue and bold.

Methodology for Prediction of Significant Impacts

The following key is used to identify those impacts (prior to mitigation) that are of potential minor, moderate or major negative or positive significance, and those that are not significant or where the significance is unknown: -

Impact Significance	Description of Impact Significance
Major Positive	The option would significantly benefit internationally designated environmental features, fulfilling the SEA objective *and* maximising opportunities for environmental enhancement (e.g. habitat restoration or habitat creation etc). In addition, where properties are protected from flooding/erosion, a major positive impact on population and human health is assumed.
Moderate Positive	The option would significantly benefit nationally designated environmental features by resolving an existing environmental issue and/or fulfilling the SEA objective.
Minor Positive	The option would be partially beneficial to the SEA objective by contributing to resolving an existing locally important environmental issue and/or offering opportunity for some environmental enhancement
No Significant Impact	The option would not result in a significant impact on the environment.
Uncertain	There is insufficient detail available to assess how significantly the SEA objective would be affected by the option.
Minor Negative	The option would partially affect a SEA objective in a negative way
Moderate Negative	The option would significantly and negatively affect nationally designated environmental features and conflict with the SEA objective.
Major Negative **(Potential 'adverse effect' (relating to European sites only) – HR)**	The option would significantly and negatively affect internationally designated environmental features and conflict with the SEA objective. Where properties are lost due to flooding/erosion, a major negative impact on population and human health is assumed. To ensure that a link is made between the SEA and the Habitats Regulations Assessment, where a European site is present and an option significantly fails to meet an objective arising from obligations under the Habitats Regulations (i.e. cannot avoid adverse impacts on a European site), then a potential adverse effect is also stated in the assessment tables in brackets.
('No Adverse Effect' – HR)	To ensure that a link is made between the SEA and the Habitats Regulations Assessment, this impact relates to the international conservation sites only and uses the terminology used in the Habitats Regulations. This is stated in the assessment tables in brackets where an impact in terms of the Habitats Regulations will be significant but not adverse.

Professional judgement has been used to assign a strategic level of significance using the above table.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 1: ST BEES TO WHITEHAVEN												
1	**St Bees Head to Saltom Pit**	A	NAI	NAI	NAI	The continued slow rates of erosion and slumping (with no constraints on natural processes except at Saltom Pit) of the cliffs in the short, medium and long-term at St Bees Head Site of Special Scientific Interest (SSSI) will continue to maintain the cliff habitats (heather, bracken and gorse) and rock crevice vegetation. **Moderate positive impact** Continued erosion and natural evolution of the maritime cliffs and slopes (a BAP habitat) in long-term **Minor positive impact**	Continuation of natural processes is key to the integrity of the geological interest features of St Bees Head SSSI, therefore the preferred policies in this coastal section would continue to maintain the geological exposures of these features in the long-term **Moderate positive impact** The shingle and wave-cut platforms will be maintained by the long-term erosion of the cliffs **Minor positive impact** Any works in the short and medium-term at Saltom Pit are likely to restrict the natural evolution of the earth heritage features of the coastline **Minor negative impact** *(in short and medium-term)*	See 'material assets' receptor **No Significant Impact**	Potential for deteriorating structures at Saltom Pit within the Heritage Coast to become unsightly in the long-term however, as these lie at the base of the cliff, no views of the structures would be afforded (except from the sea). **No Significant Impact** The landscape character of St Bees Head Heritage Coast will be maintained through increased erosion and continuation of natural processes. A move towards a naturally functioning coastline will help to improve the natural beauty of this heritage coast (an objective of Heritage Coast Management Plans). **Moderate positive impact**	Damage/ potential partial loss of Barrowmouth Gypsum and Alabaster Mine at Saltom Bay Scheduled Monument (SM) due to erosion over lifetime of SMP2. **Moderate negative impact** Protection of Saltom Coal Pit SM through additional measures to stabilise the defences in the short and medium-term (i.e. until such a time as it is deemed technically difficult or not affordable to do so). **Moderate positive impact** *(in short and medium-term)* **Moderate negative impact** *in long-term*	Continued protection of Whitehaven harbour from flooding and erosion. **Moderate positive impact** Permanent loss of grade 3 agricultural land due to erosion **Moderate negative impact** Potential erosion of a small area of a historic landfill (Marchon Tip) at Saltom Bay in the medium and long-term; this site lies in a landslip area with potentially indirect impacts on water quality (and aesthetic appearance) **Moderate negative impact**	Continued protection of Whitehaven town from flooding and erosion. **Major positive impact** Permanent loss of some parts of the Cumbrian Coastal Way between Saltom Pit and Whitehaven due to erosion **Minor negative impact**
2	**Saltom Pit**	A	HTL	HTL	**NAI**							
3	**Saltom Pit to Whitehaven**	A	NAI	NAI	NAI							
4	**Whitehaven South Beach**	A	NAI	NAI	NAI							
Mitigation Measures/Environmental Opportunities						No mitigation required	Any works in the short and medium-term should be sensitively designed	No mitigation required	Assess the impacts on the landscape character of the	***Monitor coastal risks to the affected Scheduled***	No mitigation has been identified for losses of agricultural land.	Potential to relocate parts of the Cumbrian Coastal Footpath

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						to avoid obscuring the earth heritage features of the cliffs.		Heritage Coast at strategy and/or scheme level, to identify areas and landscape features that are at risk and agree adaptation measures with the Heritage Coast Warden and Natural England to sea level rise in areas of NAI.	***Monuments and plan for adaptation for long term coastal change, including investigations and recording.*** As the SMs cannot be preserved in situ, mitigation (e.g. recording) will need to be agreed with English Heritage.	***Investigate the current state of the historical landfill site at strategy and/or project level to minimise any potentially negative effects.*** The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials would need to be explored. Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	at risk of erosion inland.

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 2: WHITEHAVEN TO WORKINGTON												
1	**Whitehaven Harbour and North Beach**	A, B & C	HTL	HTL	HTL	Continued maintenance and upgrading of defences may limit partial influx of saline water to saline lagoon docks at Whitehaven (a priority habitat) with associated change in water quality and salinity of the lagoons and potential change in biodiversity interests. **Minor negative impact** Holding the line at Harrington may result in coastal squeeze of a small area of undesignated mudflat at Harrington. **Minor negative impact** Potential increase in intertidal habitat in some areas where no active intervention and management realignment would be implemented. **Minor positive impact** Holding the line in some areas will restrict natural process along the maritime cliffs and slopes BAP habitat. **Minor negative impact**	**No Significant Impact** on earth heritage or geological features.	See 'Material assets' receptor. Holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. **No Significant Impact**	No designated landscapes within this policy area. **No Significant Impact**	Protection of Old Quay and Old Quay lighthouse SMs at Whitehaven from tidal flooding. **Moderate positive impact** Potential damage to a dock and harbour installation (listed on an HER), which is considered of high importance during the NWRCZA (2009). **Moderate negative impact** HTL between Parton and Harrington manages flood risk to Parton Roman Fort Scheduled Monument (part of Hadrians Wall WHS) over the duration of SMP2. **Moderate positive impact**	The upgrading of railway defences will provide continued protection to the railway line from tidal flooding and erosion although protection of the railway will become more difficult over time. **Moderate positive impact** Protection of the Port of Workington from flooding. **Moderate positive impact** Protection of major roads from flooding. **Moderate positive impact** Protection of the majority of predominantly Grade 3 agricultural land except in small areas of managed realignment. **Moderate positive impact** Potential erosion of one authorised landfill site (Derwent Howe)	Protection of low-lying areas of Whitehaven town and Workington (including associated community/tourist facilities) from flooding, and areas to the north of Whitehaven Harbour from erosion and tidal flooding. **Major positive impact** Protection of commercial and residential properties, and community assets in coastal villages. **Major positive impact** In the medium and long-term, the coastal path between the Howe and Workington will be affected by erosion. **Minor negative impact**
2	**Whitehaven to Parton**	A & B	HTL	HTL	HTL							
3	**Parton**	A	HTL	HTL	HTL							
4	**Parton to Harrington Parks**	A & B	HTL	HTL	HTL							
5	**Harrington Parks to Harrington Harbour**	C	HTL	**NAI**	**NAI**							
6	**Harrington Harbour**	A, B & C	HTL	HTL	HTL							
7	**Harrington to Steel Works Site**	A & B	HTL	HTL	HTL							
8	**Steel Works Site**	A, B & C	HTL	HTL	HTL							
9	**Harrington Steel Works to The Howe**	A, B & C	NAI	NAI	NAI							
10	**The Howe to Workington Harbour**	B	**MR**	**MR**	**MR**							
11	**Workington Harbour**	A, B & C	HTL	HTL	HTL							

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											and one disused landfill site (Workington Slag Bank) at the Howe in the short, medium and long-term; with potentially indirect impacts on water quality (and aesthetic appearance) **Moderate negative impact** Protection of Chapel Bank Works landfill site on the seaward side of Isabella Road from erosion. **Moderate positive impact**	
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat (notably mudflat) due to coastal squeeze at Harrington and to the north of Harrington will be sought through the RHCP.***	No mitigation required	No mitigation required	No mitigation required	Monitor coastal risks to the dock and harbour installation and plan for adaptation for long term coastal change, including investigations and recording.	Investigate the current state of the landfill sites at project level to minimise any potentially negative effects. The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials would need to be explored. Where necessary, protection in situ or excavation and removal of material (which is	Potential to relocate parts of the Cumbrian Coastal Footpath at risk of erosion inland.

Policy Unit (Number and Description)	Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
										potentially very expensive) may be necessary. ***Investigate potential contaminated land between Harrington Parks and Harrington Harbour to confirm long term policy for next SMP2 review***	

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			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 3: WORKINGTON TO MARYPORT												
1	**Workington Harbour to Siddick**	C	HTL	**MR**	**MR**	Protection of grassland at Maryport Harbour SSSI from flooding and erosion in the short-term **Moderate positive impact** but potential loss of neutral grassland due to erosion at Maryport Harbour SSSI in the medium to long-term though the vegetation is currently undergoing natural succession **No Significant Impact *to* Moderate negative impact** Protection of freshwater/terrestrial habitats including fen, grassland and broad-leaved woodland at Siddick Pond SSSI. **Moderate positive impact** Potential coastal squeeze of areas of undesignated mudflat against existing defences in some areas e.g. at Maryport Harbour in the long-term. **Minor negative impact** Potential extension of mudflats at Workington in medium and long-term.	**No Significant Impact** on earth heritage or geological features.	Holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. **No Significant Impact**	No designated landscapes within this policy area. **No Significant Impact**	Short, medium and long-term protection of up to four Scheduled Monuments and Hadrian's Wall World Heritage Site (WHS) at Burrow Wells from flooding. **Moderate to major positive impact** Potential damage to a barrow (listed on the Cumbria CC HER), which is considered of medium importance during the NWRCZA (2009). **Minor negative impact**	Long-term protection of A596 and the mainline railway line at Flimby, Maryport and Risehow from flooding. Managed realignment at Siddick would continue to protect the railway line and coastal road. **Moderate positive impact** Protection of Siddick wind farms at Siddick from erosion and flooding in the short-term **Moderate positive impact** but potential loss or affected by flooding and erosion in the medium and long-term **Moderate negative impact** Potential loss of predominantly Grade 3 agricultural land due to erosion between Risehow and Maryport Marina. **Moderate negative impact** Long-term protection of historic landfill site	Long-term protection of residential, industrial and commercial premises including community facilities in Workington, Siddick and Flimby from flooding. **Major positive impact** Protection of residential and community facilities in Maryport from flooding in the short term **Major positive impact** but potential loss of isolated properties south of Maryport, through erosion in the medium and long-term **Major negative impact** Potential loss of parts of the Cumbrian Coastal Way to erosion between Risehow and Maryport Marina in the short, medium and long-term. **Minor negative impact** Likely long-term protection of cycle
2	**Siddick to Risehow**	A & C	HTL	HTL	HTL							
3	**Risehow to Maryport Marina**	A, B & C	**NAI**	**NAI**	**NAI**							
4	**Maryport Harbour/Marina**	A, B & C	HTL	HTL	HTL							

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						Minor positive impact					on the north side of Workington Harbour next to Siddick Pond (OS Field No 8444) from flooding. **Moderate positive impact**	route from flooding or erosion. **Minor positive impact**
Mitigation Measures/Environmental Opportunities						***The replacement of mudflat and neutral grassland will be sought through the RHCP.*** ***As Maryport Harbour SSSI is currently in unfavourable condition due to inappropriate scrub control, investigate the opportunity to manage the scrub as part of a hold the line policy option at scheme level.***	No mitigation required	No mitigation required	No mitigation required	Monitor coastal risk to a barrow and plan for adaptation for long term coastal change, including investigations and recording.	No mitigation has been identified for losses of agricultural land. Investigate relocation of Siddick windfarm further inland or the adoption of resilience measures in the medium and long-term.	Depending on the facilities that may be affected by flooding or erosion to the south of Maryport, mitigation may take the form of relocating the assets further inland. There may be no provision for compensating or mitigating the loss of private properties. May need to relocate parts of the Cumbrian Coastal Footpath at risk of erosion inland.

Policy Unit (Number and Description)		Scenario	Preferred Policy			Potential environmental impacts (refer to Appendix D for SEA Environmental Baseline – Theme Review)						
			Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	Biodiversity, Flora and Fauna	Earth Heritage, Soils and Geology	Water	Landscape Character and Visual Amenity	Historic Environment (Cultural Heritage)	Land Use, Infrastructure and Material Assets	**Population** (note: human health has been scoped out of further assessment)
POLICY AREA 4: MARYPORT TO DUBMILL POINT												
1	**Maryport Harbour to Roman Fort**	A	HTL	HTL	HTL	Holding the line at Seacroft Farm to Dubmill Point in the short-term may result in the loss of a small area of intertidal habitat within the Upper Solway Flats and Marshes SPA & Ramsar, SSSI and Solway Firth SAC due to coastal squeeze. However, no active intervention and managed realignment in the medium and long-term is considered beneficial to the Upper Solway Flats and Marshes SPA & Ramsar, SSSI (biological only in this area) and Solway Firth SAC, avoiding the deterioration of the qualifying habitats and associated species and offsetting the short-term losses **No Significant Impact (No 'adverse effect' – HR)** Beach management will allow roll-back of sand dunes between Maryport Golf Course and Allonby. **Minor positive impact** No active intervention at Dubmill Point is unlikely to affect the	Holding the line may restrict erosion and natural evolution of the maritime cliffs and slopes to the north of Maryport. **Minor negative impact**	Works to continue holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Potential for short, medium and long-term changes in condition of shellfish beds offshore as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries whereas no active intervention may provide additional spawning areas). **Uncertain**	Increased flooding and erosion is unlikely to affect the identity and character of the Solway Coast AONB (though it may result in the loss of salt pans, which are an important component of the landscape). **No Significant Impact *to* Moderate negative impact** A move towards a more naturally functioning ecosystem is an objective of the AONB and therefore NAI and managed realignment are likely to have a beneficial impact on the site. **Moderate positive impact**	Potential damage or change in setting of parts of Hadrian's Wall World Heritage Site (WHS) in the short, medium and long-term due to erosion and flooding. **Major negative impact** Potential loss of Medieval salt pans at Allonby from erosion though limited intervention in the short-term **Moderate negative impact** Potential loss of Dubmill Point Milefortlet Scheduled Monument in the long-term as a result of no active intervention. **Moderate negative impact**	Increased flooding of the main B5300 road (and Staith Bridge) at certain tides north and south of Allonby with potential loss of infrastructure in the long-term. **Moderate negative impact**	Long-term protection of Maryport town (including residential properties and community facilities within the town) and properties in Allonby from flooding and erosion. **Major positive impact** Potential flood-risk to some isolated properties (e.g. Staith House). **Major negative impact** Maryport Golf Course is at risk of flooding and erosion during high tides and storm events in the short, medium and long-term and the defences would fail relatively quickly. **Minor negative impact** Protection of large sections of the Cumbria Coastal Way **Minor positive impact** but some sections would be lost to
2	**Roman Fort to Bank End**	Variation A & B	HTL	**NAI**	**NAI**							
3	**Maryport Golf Course to Allonby**		**MR**	**MR**	**MR**							
4	**Allonby**	A	HTL	HTL	HTL							
5	**Allonby to Seacroft Farm**	A & B	**NAI**	**NAI**	**NAI**							
6	**Seacroft Farm to Dubmill Point**	B	HTL	**NAI**	**NAI**							

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						condition of Silloth Dunes & Mawbray Bank SSSI, which lies to the north of this policy area. **No Significant Impact**						flooding and erosion in the short, medium and long-term **Minor negative impact**
Mitigation Measures/Environmental Opportunities						The replacement of habitat losses outside of European sites will be addressed through the RHCP.	Any works to hold the line should be sensitively designed to avoid obscuring the earth heritage features of the cliffs.	No mitigation identified at this stage.	***Investigate the landscape value of the saltpans within the Solway Coast AONB in consultation with Natural England and English Heritage and inform on the need for mitigation or justification for local short term intervention and next revision of SMP2*** Assess the impacts on the landscape character of the AONB at strategy and/or scheme level, to identify areas and landscape features that may be at risk and agree adaptation measures with the AONB Partnership.	***The likely impacts of the SMP2 on the WHS will be investigated at strategy and/or scheme level.*** ***Investigate the landscape and heritage value of the saltpans within the Solway Coast AONB in consultation with Natural England and English Heritage and inform on the need for mitigation or justification for local short term intervention and in the next revision of the SMP2***	***Consider risks to coastal road and need for short term protection or adaptation.*** Depending on the availability of alternative routes inland, mitigation may take the form of either raising the main road or relocating it further inland.	Depending on the facilities that may be affected by flooding or erosion, mitigation may take the form of relocating the assets further inland (e.g. the Cumbria Coastal Way). ***Undertake study to investigate the impacts of erosion of Dubmill Point on Mawbray village.*** There may be no provision for compensating or mitigating the loss of private properties. However, flood resilience measures may be adopted.

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POLICY AREA 5: DUBMILL POINT TO SILLOTH												
1	**Dubmill Point to Siloth**	A & B	**MR**	**MR**	**MR**	As the Upper Solway Flats and Marshes SPA, Ramsar and SSSI (biological) are currently in favourable condition, managed realignment over the duration of the SMP2 is likely to be beneficial. **No significant impact *to* Major positive impact (No adverse effect – HR)** Managed realignment is likely to be beneficial to the Solway Firth SAC over the duration of the SMP2 allowing natural processes and the migration of intertidal habitats inland. **Major positive impact** Potential for some erosion of Silloth Dunes & Mawbray Bank SSSI in short, medium and long-term as sea levels rise, however, the small area of dune system within this policy area is currently in favourable condition and is significantly accreting, particularly on the northern side of Dubmill Point. Managed realignment is likely to	Continued stability of coastal sand dunes and natural roll-back in short to medium-term and continued accretion of dunes at Silloth **Minor positive impact** though potential for some dune erosion (and coastal squeeze of dunes against fixed structures) in the long-term **Minor negative impact**	Potential for short, medium and long-term changes in condition of shellfish beds offshore as a result of SMP2 policies (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries whereas managed realignment may provide additional spawning areas). **Uncertain**	Increased flooding and erosion is unlikely to affect the identity and landscape character of the Solway Coast Area of Outstanding Natural Beauty (AONB). However, a move towards a more naturally functioning ecosystem is an objective of the AONB and therefore managed realignment is likely to have a beneficial impact on the site. **No significant impact** to **Moderate positive impact** No change in landscape or visual setting of Hadrian's Wall WHS buffer zone. **No significant impact**	Ongoing erosion of undesignated Roman Cemetery at Beckfoot, which is not a result of a change in SMP2 policy. **No significant impact** See 'landscape' with regard to the Hadrians Wall Buffer Zone WHS.	Permanent loss of grade 3 agricultural land due to erosion and flooding **Moderate negative impact** Continued but increasing risk of flooding to B5300, which is currently regularly closed during storm high tides from overtopping. Potential loss of the road at Beckfoot in the long-term. **Moderate negative impact**	Increasing flood risk to Beckfoot Farm during high tides, and erosion risk to properties in Beckfoot village in the medium and long-term **Major negative impact** Continued accretion of the dunes will ensure that the integrity of the golf course is maintained in the short and medium term. Potential erosion of the dunes (if channel moves landward) in the long-term is likely to have minimal impacts on the golf course **No significant impact** As it is assumed that the dunes will continue to accrete, the integrity of the coastal paths are likely to remain in the short and medium-term **Minor positive impact** but potential erosion of some sections of the Cumbrian Coastal

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						be beneficial to this site, and the strandline through to mobile dunes will continue to be represented. **No significant impact**						Way if the channel moves landward in the longer term **Minor negative impact**
Mitigation Measures/Environmental Opportunities						No mitigation required	The replacement of dunes outside of European sites will be addressed through the RHCP.	No mitigation required	Existing deteriorating defences should be removed to retain the visual amenity value of the AONB. Assess the impacts on the landscape character of the AONB at strategy and/or scheme level, to identify areas and landscape features that may be at risk and agree adaptation measures with the AONB Partnership. Consider opportunities to improve landscape character presented in AONB Management Plan.	***Undertake a more detailed investigation of the likely impacts of coastal change on historic features of the WHS and Beckfoot Roman Cemetery***, and propose adaptation approaches such as local temporary protection from erosion and /or recording before loss of features at risk.	No mitigation has been identified for losses of agricultural land. ***Undertake a study to investigate and identify approaches for adaptation to coastal change for coastal road at Beckfoot and Castle's Corner***	Depending on the facilities that may be affected by flooding or erosion, mitigation may take the form of relocating the assets further inland. ***Investigate flood risks to individual properties at Beckfoot and case for future adaptation or resilience measures.*** There may be no provision for compensating or mitigating the loss of private properties.

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POLICY AREA 6: SILLOTH TO THE GRUNE												
1	**Silloth Harbour**	A & B	HTL	HTL	HTL	The continuation of natural processes is likely to be beneficial to the Upper Solway Flats and Marshes SPA, Ramsar and SSSI and Solway Firth SAC and result in the continued accretion of the shingle bank at the end of The Grune (though the fronting shore of the Grune is currently experiencing coastal squeeze of the dune vegetation **Major positive impact** Holding the line (and a breach in defences at the Grune associated with no active intervention) may result in the loss of intertidal habitat due to coastal squeeze within the Upper Solway Flats and Marshes SPA, Ramsar and SSSI and Solway Firth SAC in the medium and long-term. **Major negative impact (Potential 'adverse effect' – HR)**	The continued use of groynes between Silloth and Skinburness to hold the line in the short, medium and long-term will attempt to artificially fix the shoreline and prevent its natural migration. **Minor negative impact** A continuation of natural processes at the Grune will enable the long-term likely natural roll-back of coastal sand dunes at The Grune. **Minor positive impact**	No known impacts on water quality. Works to continue holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. A continuation of the existing coastal management policy is unlikely to affect the condition of shellfish beds located off the coast of Moricambe however changes in coastal processes (i.e. potential changes in sedimentation/ coastal processes could affect shellfisheries and no active intervention may provide additional spawning areas). **Uncertain**	Maintaining the defences is likely to retain the existing identity and landscape character of the Solway Coast AONB, however any upgrading of the existing seawall, groynes and potential construction of defences across the spit has the potential to change the landscape character and reduce views afforded of the sea. **No significant impact *to* Moderate negative impact** No change in landscape or visual setting of Hadrian's Wall WHS buffer zone in the short-term. However, raising or extending the defences has the potential to affect the setting. **No significant impact *to* Major negative impact**	Short, medium and long-term protection from flooding of the Skinburness Scheduled Monument (SM), part of the roman frontier defences along the Cumbrian coast, and earlier roman camp. **Moderate positive impact** See 'landscape' with regard to the Hadrians Wall Buffer Zone WHS.	Protection of Grade 3 agricultural land from flooding. **Moderate positive impact** Long-term protection of Silloth docks (Marshall Dock and New Dock) from flooding by maintenance of the harbour walls. **Moderate positive impact** Long-term protection of the B5302 link road from flooding and erosion **Moderate positive impact**	Protection of small settlements and coastal villages (e.g. Silloth and Skinburness) and isolated properties on the Cumbrian Coast properties from flooding and erosion. **Major positive impact** Increasing risk of erosion to an area of the Green in Silloth. **Minor negative impact** Potential breach of the Grune would make it inaccessible to tourists and result in the loss of coastal paths within the Grune. **Minor negative impact** Short, medium and long-term protection of the Cumbrian Coastal Way and Allerdale Ramble (except at The Grune) **Minor positive impact**
2	**Silloth to Skinburness**	A & B	HTL	HTL	HTL							
3	**The Grune**	A	NAI	NAI	NAI							

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		Short Term (to 2025)	Medium Term (to 2055)	Long Term (to 2105)	**Biodiversity, Flora and Fauna**	**Earth Heritage, Soils and Geology**	**Water**	**Landscape Character and Visual Amenity**	**Historic Environment (Cultural Heritage)**	**Land Use, Infrastructure and Material Assets**	**Population** (note: human health has been scoped out of further assessment)
Mitigation Measures/Environmental Opportunities					***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within Upper Solway Flats and Marshes SPA and Ramsar site, and the Solway Firth SAC.***	No mitigation identified. Some beach recharge may be necessary to retain the beaches as they become narrower and erode	No mitigation identified at this strategic level.	Investigate opportunities to improve landscape character in line with the AONB Management Plan. ***Assess the visual and landscape impacts of raising or extending defences at strategy or scheme level on the buffer zone of Hadrian's Wall WHS and the AONB, in consultation with Natural England and English Heritage***. The construction of any new defences should be designed and constructed in a manner sympathetic to the existing landscape character.	No mitigation required.	No mitigation required.	No mitigation identified.

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POLICY AREA 7: MORICAMBE BAY												
1	**Skinburness (East)**	A & B	HTL	HTL	HTL	Holding the line in some areas (e.g. Anthorn) over the duration of the SMP2 may result in coastal squeeze of the intertidal habitat within Upper Solway Flats and Marshes SPA, Ramsar, SSSI and the Solway Firth SAC against the fixed defences as a result of sea level rise in the long-term. **Major negative impact (Potential 'adverse effect' – HR)** However, managed realignment in many areas over the duration of the SMP2 would allow the migration inland of intertidal habitats within Upper Solway Flats and Marshes SPA, Ramsar, SSSI and the Solway Firth SAC. Overall, there is likely to be a net gain in intertidal habitat within the internationally designated site. **Major positive impact** Potential flood risk to neutral grassland at Gribbs Meadows SSSI during very high tides in the medium and long-term.	Managed realignment in many areas over the duration of the SMP2 would allow the continued scour of the creek systems and erosion of the geological interest features within Upper Solway Flats and Marshes SSSI/GCR. **Moderate positive impact** Holding the line in some areas (e.g. Anthorn and Skinburness) over the duration of the SMP2 may interrupt natural processes, damage the impressive creek system and obscure rock exposures within the Upper Solway Flats and Marshes SSSI/GCR. **Moderate negative impact**	Continued flooding of three historic landfill sites in the short, medium and long-term; with potentially indirect impacts on water quality (and aesthetic appearance) **Moderate negative impact** Works to continue holding the line should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Any changes in the existing sediment processes have the potential to affect the Shellfish Harvesting area. Managed realignment in some areas may be advantageous to shellfisheries by providing additional spawning areas;	Limited change in landscape character of Solway Coast AONB through increased flooding, erosion and continuation of natural processes in some areas. However, a move towards a more naturally functioning ecosystem is an objective of the AONB and therefore managed realignment is likely to have a beneficial impact on the site. **No significant impact** to **Moderate positive impact** No change in landscape or visual setting of Hadrian's Wall WHS buffer zone in the short-term. However, raising or extending the defences has the potential to affect the setting. **No significant impact** *to* **Major negative impact**	No known impacts on the historic environment. See 'landscape' with regard to the Hadrian's Wall Buffer Zone WHS.	Increasing flood risk (over lifetime of SMP2) to a number of local access roads between villages, some are currently inaccessible during high tidal levels. **Moderate negative impact**	Protection of the majority of residential properties and community assets. **Major positive impact** Potential flood risk in short, medium and long-term to some isolated properties at Salt Cotes, a large number of properties in and around Kirkbride and Whitrigg during very high tides. **Major negative impact** Increasing flood risk to sections of the Cumbria Coastal Way, particularly at high tide in the short, medium and long-term (and potential loss of parts of path in long-term). **Minor negative impact**
2	**Skinburness to Wath Farm**	B	HTL	**MR**	HTL							
3	**Wath Farm to Saltcoates including Waver to Brownrigg**		**MR**	**MR**	**MR**							
4	**Newton Marsh**		**MR**	**MR**	**MR**							
5	**Newton Marsh to Anthorn including Wampool to NTL**		**MR**	**MR**	**MR**							
6	**Anthorn**	A & B	HTL	HTL	HTL							
7	**Anthorn to Cardurnock**	A & B	**MR**	**MR**	**MR**							

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						Moderate negative impact Potential increase in extent of coastal floodplain grazing marsh in most areas **Minor positive impact** though some loss of grazing marsh due to coastal squeeze against hard defences (e.g. at Anthorn) **Minor negative impact**		however, a change in tidal prism, scouring and sedimentation also has the potential to affect fisheries. **Uncertain**				
Mitigation Measures/Environmental Opportunities						***Designated habitat losses and gains will be quantified at strategy level and where required, compensatory habitat sought through the RHCP for intertidal habitat losses within Upper Solway Flats and Marshes SPA and Ramsar site, and the Solway Firth SAC.*** ***A coastal process and strategy study is recommended for this policy area and 11e 6: Silloth to the Grune. This should consider: the linkages between the Grune and the long term evolution of the internationally designated sites in the Bay***	Any works to hold the line will require further investigation at strategy or scheme level to ensure that they avoid adverse impacts on the geological rock exposures.	***Investigate the current state of the landfill sites at project level to minimise any potentially negative effects. The hazard that the landfill site poses to people and the environment from leaching or the release of contaminated materials would need to be explored.*** Where necessary, protection in situ or excavation and removal of material (which is potentially very expensive) may be necessary.	**Assess the visual and landscape impacts of raising or extending defences at strategy or scheme level on the buffer zone of Hadrian's Wall WHS, in consultation with English Heritage.** Assess the impacts on the landscape character of the AONB at strategy and/or scheme level, to identify areas and landscape features that may be at risk and agree adaptation measures with the AONB Partnership. Consider opportunities to improve landscape character in line	No mitigation required.	Depending on the availability of alternative routes inland, mitigation may take the form of raising roads or relocating them inland.	Depending on the facilities that may be affected by flooding and the location of any managed realignment, mitigation may take the form of relocating the assets (e.g. the Cumbria Coastal Path) further inland. There may be no provision for compensating or mitigating the loss of private properties. However, there is the potential for private owners to build localised defences to protect isolated properties subject to gaining the necessary consents. Coastal adaptation may

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								with the AONB and Hadrian's Wall Management Plans.			be required to manage residual risks to isolated properties and assets Undertake studies to assess viability of local flood risk management to Kirkbride and Angerton.

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POLICY AREA 8: CARDURNOCK TO THE SCOTTISH BORDER												
1	**Cardurnock to Bowness-on-Solway**		**MR**	**MR**	**MR**	Managed realignment is likely to be beneficial to the River Eden SAC & River Eden & Tributaries SSSI and not constrain the natural geomorphology of the watercourses over the duration of the SMP2 **Major positive impact** There is potential for the tidal limit to migrate further inland due to sea level rise and affect terrestrial and freshwater habitats and associated species within the River Eden SAC. However, this will not be a result of SMP2 policy. Furthermore MR at this location allows measures to proactively adapt to future coastal changes in all 3 epochs so it allows for coastal risk management as necessary / appropriate. **No significant impact (No 'adverse effect' – HR)** Managed realignment in most areas over the	Continuation of natural processes is key to the integrity of the geological interest features of Upper Solway Flats and Marshes Geological SSSI and GCR, therefore the preferred policies in this coastal section would continue to maintain the creek systems and geological exposures of these features in the short, medium and long-term **Moderate positive impact** Holding the line at Rockliffe over the duration of the SMP2 may interrupt natural processes, damage the impressive creek system and obscure rock exposures within the Upper Solway Flats and Marshes SSSI/GCR. **Moderate negative impact**	**No significant impact** on water quality. Works associated with managed realignment should be implemented so as to not adversely impact on the water quality status of the coastal waters, and does not compromise the achievement of WFD water quality targets. Any changes in the existing sediment processes have the potential to affect the Shellfish Harvesting area. Managed realignment in some areas may be advantageous to shellfisheries by providing additional spawning areas; however, a change in tidal prism, scouring and sedimentation also has the potential to affect fisheries. **Uncertain**	Minor change in landscape character of Solway Coast AONB through increased flooding, erosion and continuation of natural processes in some areas. However, a move towards a more naturally functioning ecosystem is an objective of the AONB and therefore managed realignment is likely to have a beneficial impact on the site. **No significant impact** to **Moderate positive impact**	Potential damage to or loss of up to four Scheduled Monuments (SM) and part of Hadrians Wall World Heritage Site (WHS) from flooding at high tides. **Moderate negative impact** Potential damage to a castle (listed on the Cumbria CC HER), which is considered of medium/high importance during the NWRCZA (2009). **Moderate negative impact** Potential damage to a port, dock and harbour installation (listed on an HER), which is considered of medium/high importance during the NWRCZA (2009). **Moderate negative impact**	Increasing flood risk to local roads (including the main road to Drumburgh) during high tides with some sections periodically inaccessible in the short-term. In the medium and long-term, some roads will become inaccessible and become disused on most tides. **Moderate negative impact** Loss of Grade 3 (and lower) agricultural land due to managed realignment. **Moderate negative impact**	Increasing flood-risk to Rockliffe village and isolated properties located along the frontage in the short to long-term with increased risk of flooding to isolated properties located along the frontage in the vicinity of Bowness-on-Solway and Easton in the medium-term. **Major negative impact** Increasing flood risk to tourist assets including parts of the Cumbria Way coastal path, the Hadrian's Wall path and local access roads used by visitors to the area over the lifetime of the SMP2 with potential damage and loss of assets in the long-term. **Minor negative impact**
2	**Bowness-on-Solway**		**MR**	**MR**	**MR**							
3	**Bowness-on-Solway to Drumburgh**		**MR**	**MR**	**MR**							
4	**Drumburgh to Dykesfield**		**MR**	**MR**	**MR**							
5	**Dykesfield to NTL Kingsmoor (Eden)**		**MR**	**MR**	**MR**							
6	**NTL Kingsmoor (Eden) to Rockliffe**		**MR**	**MR**	**MR**							
7	**Rockliffe**	A & B	HTL	HTL	HTL							
8	**Rockliffe to Demesne Farm**		**MR**	**MR**	**MR**							
9	**Demesne Farm to Metal Bridge (Esk)**		**MR**	**MR**	**MR**							
10	**Metal Bridge (Esk) to River Sark**	B	**MR**	**MR**	HTL							

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						duration of the SMP2 would allow the natural migration inland of intertidal habitats within Upper Solway Flats and Marshes SPA, Ramsar & SSSI. **Major positive impact** Holding the line at Rockliffe is not anticipated to adversely affect the Upper Solway Flats and Marshes SPA, Ramsar & SSSI as the defences can be set back from the shoreline. **No significant impact (No 'adverse effect' – HR)** Managed realignment in most areas over the duration of the SMP2 would allow the natural migration inland of intertidal habitats within Solway Firth SAC. **Major positive impact** Increased flooding of Campfield Marsh RSPB Reserve in short, medium and long-term with potential extension of the intertidal habitats present. **Minor positive impact** Potential increase in extent of BAP habitats						

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						i.e. coastal floodplain grazing marsh and mudflats (e.g. those present between Bowness-on-Solway and Burghmarsh Point). Minor positive impact						
Mitigation Measures/Environmental Opportunities						***The replacement of intertidal habitat losses outside of European sites will be addressed through the RHCP.*** ***Undertake studies to investigate realigning defences to high ground between Demesne Farm to Metal Bridge, to facilitate habitat creation and more cost effective defence.***	Any works to hold the line at Rockliffe will require further investigation at strategy or scheme level to ensure that they avoid adverse impacts on the creek system and geological rock exposures of the SSSI.	No mitigation required.	Assess the impacts on the landscape character of the AONB at strategy and/or scheme level, to identify areas and landscape features that may be at risk and agree adaptation measures with the AONB Partnership. Investigate opportunities to improve landscape character in AONB through the actions in the AONB Management Plan.	***Undertake a more detailed investigation of the likely impacts of coastal change on historic environmental features (including the Scheduled Monument and HER features) and landscape setting of the World Heritage Site, in consultation with English Heritage and propose adaptation approaches such as local temporary protection from erosion and /or recording before loss of features at risk.***	No mitigation has been identified for losses of agricultural land. ***Investigate opportunities to re-route or divert the coastal roads to define approach and timing of implementation of policies.*** ***Seek opportunities to re-route or divert undefended coastal road for Rockcliffe to Demesne Farm***	Depending on the facilities that may be affected by flooding or erosion, mitigation may take the form of relocating the assets further inland. There may be no provision for compensating or mitigating the loss of private properties.