

Medway Estuary and Swale Shoreline Management Plan SMP

Appendix K – Strategic Environmental Assessment

Contents Amendment Record

This report has been issued and amended as follows:

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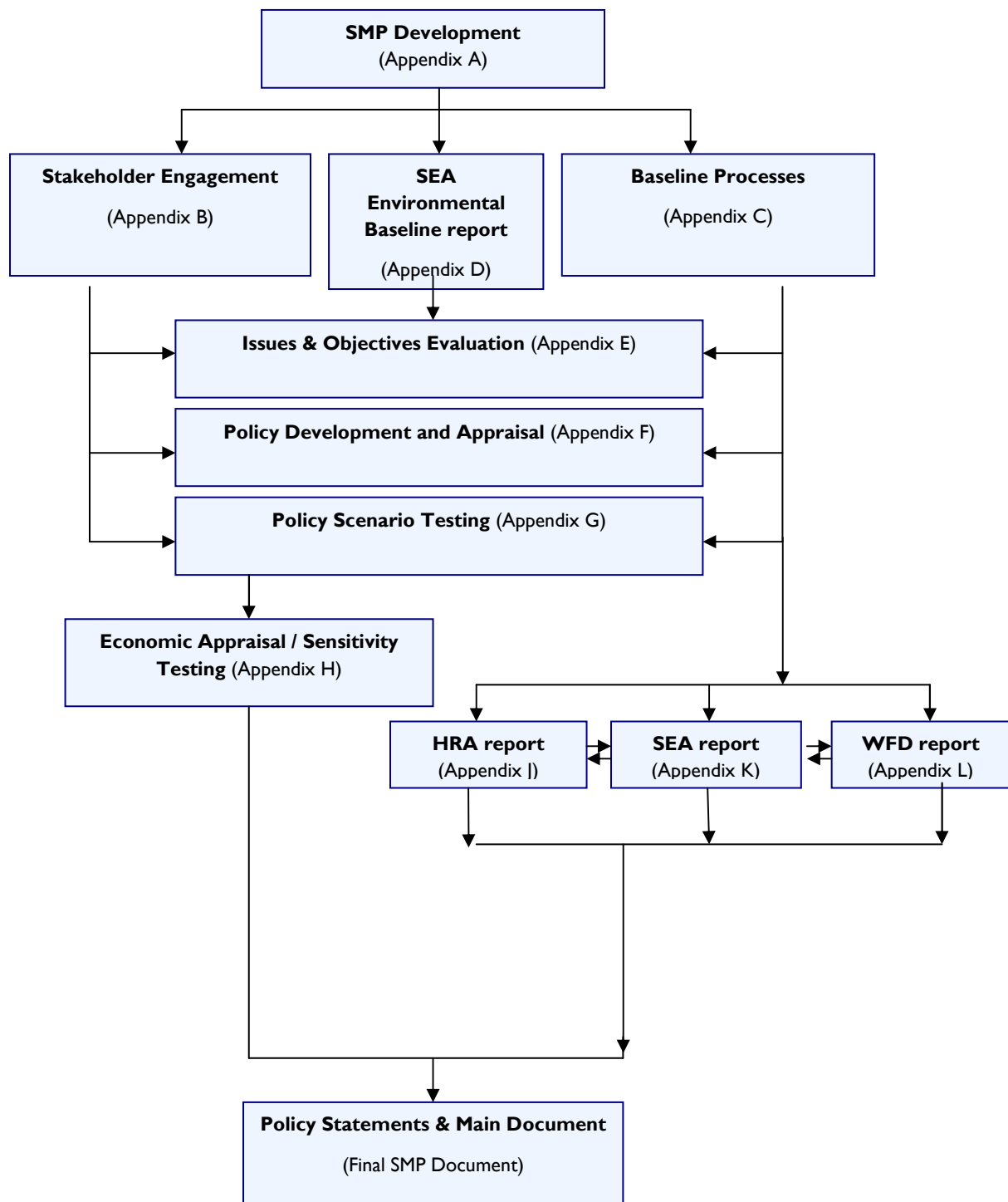
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The Supporting Appendices

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: SMP Development	This reports the history of development of the SMP, 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 (natural environment, landscape character, historic environment, land use, infrastructure and material assets, and population and human health).
E: Issues & Objective Evaluation	Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance.
F: Initial Policy Appraisal & Scenario Development	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing.
G: 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: Metadatabase and Bibliographic database	All supporting information used to develop the SMP is referenced for future examination and retrieval.
J: Habitats Regulations Assessment	Presents an assessment of the effect the plan will have on European sites.
K: Strategic Environmental Assessment	Presents the Strategic Environmental Assessment of the Plan.
L: Water Framework Compliance	Presents a retrospective Water Framework Directive Assessment.

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



Non-technical Summary

Introduction

The Environment Agency is developing a long-term plan to set out the future management of the coastline along the Medway Estuary and the Swale Estuary - the Medway Estuary and Swale Shoreline Management Plan (SMP). This plan identifies preferred management policies over a 100 year timescale to manage tidal flooding and coastal erosion risks in the plan area (Figures 1.1 and 1.2).

The SMP covers the Medway Estuary from its mouth between the Isle of Grain and Sheerness in the north to its tidal limit at Allington Lock in the south; and the Swale Estuary between the western mouth at Queenborough and the eastern mouth between Shell Ness and Faversham Creek, extending to the tidal limits of Milton, Conyer, Oare and Faversham Creeks.

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 provide a high level of protection of 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 Medway Estuary and Swale SMP. This summary describes the background and purpose of both the SEA and the SMP, and sets out the recommended strategic management options for the estuary coastlines. 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 was prepared in 2006¹ which summarises the existing environment within the study area and identifies key issues, including: -

- *Flora, Fauna and Biodiversity* – 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 saltmarsh, intertidal mudflats, estuaries, grazing marsh, saline lagoons and ditches. Opportunities exist to create wetland habitat in low-lying parts of the study area.
- *Earth Heritage, Soils and Geology* – there is one geological site of national importance within the study area, potential areas of contamination and known landfills within the study area.
- *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, transitional (areas of water near river mouths, which are partially saltwater but influenced by freshwater) and groundwater bodies in the SMP area that have the potential to be affected by SMP policies.

¹ Halcrow (2006): *SEA Environmental Baseline Report (Theme Review)*

- *Landscape Character and Visual Amenity* – Some areas of the SMP lie within nationally and locally important landscapes including Areas of Outstanding Natural Beauty and Special Landscape Areas.
- *Historic Environment* – the study area contains a complex array of historic buildings (many of which are scheduled or listed), historic settlements, Conservation Areas, landscapes and unscheduled sites of importance.
- *Land Use, Infrastructure and Material Assets* – much of the land along the estuary frontages comprise a combination of good/moderate quality agricultural land, urban areas (see population below), ports and harbours, power stations and major industrial sites.
- *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 towns of Rochester, Chatham, Gillingham, Sittingbourne, Faversham and Sheerness and other smaller towns/villages. Recreation and tourism in the study area is largely centred on water-based recreation in the Medway and Swale Estuaries, including sailing, canoeing and angling. Birdwatching, wildfowling, walking and cycling are also popular pursuits. The area attracts visitors primarily to the estuaries' historic conservation areas (e.g. Rochester, Chatham Historic Dockyard and Queenborough) and to the landscape of the rural estuary environment (e.g. walkers, cyclists, photographers, birdwatchers).

SEA Objectives

SEA objectives were identified for the SMP to appraise the preferred policy options during the assessment process. 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

- Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works
- Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding and flood risk management works

Earth Heritage, Soils and Geology

- Promote biodiversity opportunities and prevent loss/ damage to designated geological site from erosion/ risk management works

Water

- Prevent loss/ damage to shell fishery from flooding or flood risk management works

Landscape Character and Visual Amenity

- Prevent degradation of landscape quality and visual amenity from flooding and flood risk management works. Ensure consideration of existing defences on landscape and heritage grounds. Seek opportunities to enhance features where appropriate

Historic Environment

- Prevent loss/ damage to Scheduled Monuments (SM) from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ damage to heritage from flooding and flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record. Seek opportunities to enhance features where appropriate

Land Use, Infrastructure and Material Assets

- Prevent loss/ damage/ disruption to infrastructure from flooding
- Prevent loss/ reduced potential of agricultural land from flooding
- Prevent loss/ damage/ disruption to industrial/commercial sites from flooding

Population and human health

- Prevent loss/ damage to residential properties from flooding or flood risk management works
- Prevent loss/ damage/ disruption to public open space from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ disruption to footpath from flooding and flood risk management works. Seek opportunities to enhance features where appropriate

Alternative SMP Policy Options

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

SMP 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 SMP. This policy assumes that the present management practices will be continued indefinitely, regardless of whether it is affordable or if there are technical constraints.

An environmental assessment of the alternative SMP policy options on SEA receptors was carried out (see **Annex 1 of this appendix**). 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.

Environmental Impacts of the SMP

The predicted potentially significant impacts associated with the preferred policy options are presented in **Annex 2 of this appendix (Appendix K 'SEA')**, and are summarised below.

Flora, Fauna and Biodiversity: The SMP seeks to support natural processes and maintain wildlife (including the condition of designated sites) along most areas of the coastline. The SMP has recommended preferred policies of no active intervention or managed realignment wherever possible to enhance and create 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 these locations, coastal habitats such as saltmarsh, intertidal mudflats and saline lagoons may be affected or lost due to sea level rise as they become squeezed against fixed defences or the cliffs. Where impacts on international conservation sites are possible, further assessment (a Habitats Regulations Assessment) has been undertaken. This assessment concluded that the preferred policies were likely to have a negative effect on the international conservation sites. Areas to create new intertidal habitat were therefore identified in partnership with Natural England to offset intertidal habitat losses.

In some areas, the inland migration of designated intertidal habitat may result in the loss of internationally designated freshwater or terrestrial habitat. The low lying areas along this frontage are notable for their freshwater habitats. The proposed long term realignments in locations around the Medway and Swale estuaries would displace some designated freshwater habitats. This will potentially require mitigation through the creation of equivalent habitat elsewhere.

There are conflicts between allowing the coastline to evolve naturally and maintaining designated terrestrial/freshwater sites and in such areas, any SMP policy will result in some loss of habitat. Careful management of the shoreline is therefore necessary to sustain the designated habitats already in place wherever possible, while managing the impact of sea level rise.

Earth Heritage, Soils and Geology: The proposed SMP seeks to support natural processes and maintain geological features wherever possible. There are however, some areas where continued protection of towns and villages is required and in these areas the preferred SMP may damage geological features. The SMP 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 geology including a site that is nationally designated for its geological interests.

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

Water: In most areas along the coast, the proposed SMP 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. Generally, it is envisaged that the SMP policies could be implemented in a manner that avoids pollution of surface water. However, there is the potential for a hold the line policy to present a risk of deterioration in ecological

status of the Medway Estuary and Swale in a few areas. 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: In general, the plan will maintain the landscape quality of the majority of frontages. However, the recommended long-term plan is to protect the current urban areas through proactive management of the existing defences, recognising that defences will be need to be upgraded in the long term. The plan does not recommend constructing new defences in currently undefended areas so most of the coastline and the character of the AONBs and Special Landscape Areas will remain as today.

Opportunities for forming a less managed shoreline in other areas have been taken to create a more natural estuary landscape, reducing the extent of man-made structures along the frontages.

Historic Environment: There are a wide range of heritage sites along the coast and many more of these will be protected through the SMP policies. Significant protected features include the following Scheduled Monuments (SMs); coastal artillery defences on the Isle of Grain, Upnor Castle, Temple Manor, Bishop's Palace at Halling, Aylesford Bridge, Chatham Dockyard, Oare Gunpowder Works, Castle Rough, Sayes Court, Queenborough Castle and Sheerness Defences. There are also many unscheduled sites of importance that are protected, along with areas of archaeological potential. Many listed buildings and Conservation Areas within the urban areas will also be protected under the recommended plan.

However, policies which promote long term realignment will invariably impact upon the historic environment, and there may be possible damage to or loss of some historic environmental features (e.g. three Scheduled Monuments) due to flooding and/or erosion.

Land Use, Infrastructure and Material Assets: The proposed SMP policies will protect port, marina and harbour facilities in most areas. Major infrastructure in the SMP area, including major roads, railways and other transport links, the Ports of Chatham and Sheerness, and power stations at Kingsnorth and the Isle of Grain, will continue to be protected under the recommended policies. However, where there is a change in management policy and a return to natural processes, there is potential for some impacts on infrastructure such as loss of a small local road between Funton and Raspberry Hill, a dredging disposal site and impacts on current and future commercial traffic in the estuaries.

Some re-routing of infrastructure will be required in the medium and longer term under this SMP and some critical services may be affected.

Some areas of agricultural land (including high grade agricultural land) will be exposed to coastal flooding and erosion under Managed Realignment or No Active Intervention policies.

Population and human health: For much of the coastline, the preferred SMP policy is to maintain existing defences where it is affordable in the long-term, thus having a beneficial impact on people, their health and property by protecting towns and developed parts of the coastline from flooding or erosion.

For urban and industrial areas of the SMP shoreline the recommended plan is to maintain existing defences where it is affordable to do so, in the long term, to minimise risk to properties and assets. However, for some significant sections of the shoreline, a change in coastal management has been identified and policies of No Active Intervention or Managed Realignment need to be considered. The SMP has identified areas where a more naturally functioning coastline would benefit the natural environment.

For the proposed plan, the maximum number of built assets lost to erosion by year 2105 would potentially be 4 (3 heritage assets, 1 residential and 1 commercial building). This compares to the No Active Intervention baseline where, erosion losses throughout the SMP frontage could total 101 residential, 24 commercial properties and 3 heritage assets. Consequently the plan provides for protection from erosion to over 100 properties over the next 100 years.

A total of 18,560 properties could potentially be at risk from flooding under No Active Intervention policies. Under the recommended policies the great majority of these assets will be protected, although a Managed Realignment option at Shell Ness (in conjunction with a Managed Realignment policy along the adjacent open coast –Leysdown-on-Sea to Shell Ness) will result in increased flood and erosion risk to some properties.

The proposed SMP policies will continue to provide protection to amenities within towns such as Rochester, Chatham Historic Dockyard and Queenborough, and the rural estuary environment that attract visitors (e.g. walkers, cyclists, photographers, birdwatchers). However, in some areas, access routes to the shoreline and public rights of way may be affected where policies have been identified where feasible, that lead to a more natural shoreline.

What happens now?

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

Generally, the policy recommendations in the SMP will be implemented through the development of 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. Environmental Statements and Appropriate Assessments (if required) will be prepared at scheme level, and these will be subject to public consultation.

The plan, which will require on-going review, will be informed by further understanding of changes in the environment, policy/legislation changes and environmental assessment. The process of implementation will be underpinned by monitoring of the shoreline to identify ongoing behaviour, 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.

K1 Introduction and Background

K1.1 THE MEDWAY ESTUARY AND SWALE SHORELINE MANAGEMENT PLAN

Section 1 of the main body of the Medway Estuary and Swale Shoreline Management Plan (SMP) report provides a more detailed introduction to the SMP, including the contents, aims and objectives of the plan.

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

The objectives of the SMP are as follows:

- to define, in general terms, the risks to people and the developed, historic and natural environment of coastal evolution within the SMP area over the next century;
- to identify opportunities to maintain and improve the environment by managing risks from floods and coastal erosion;
- 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 SMP policies; and
- to highlight areas where knowledge gaps exist.

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 have examined the strengths and weaknesses of various Plans. Three 'pilot' SMPs (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 SMP guidance (Defra, 2006²).

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 identify sustainable and deliverable solutions to manage these risks while working with natural processes wherever possible.

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

Figures 1.1 and 1.2 show the area covered by the Medway Estuary and Swale SMP. The SMP covers the Medway Estuary from its mouth between the Isle of Grain and Sheerness in the north to its tidal limit at Allington Lock in the south; and the Swale Estuary between the western mouth at Queenborough and the eastern mouth between Shell Ness and Faversham Creek, extending to the tidal limits of Milton, Conyer, Oare and Faversham Creeks.

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

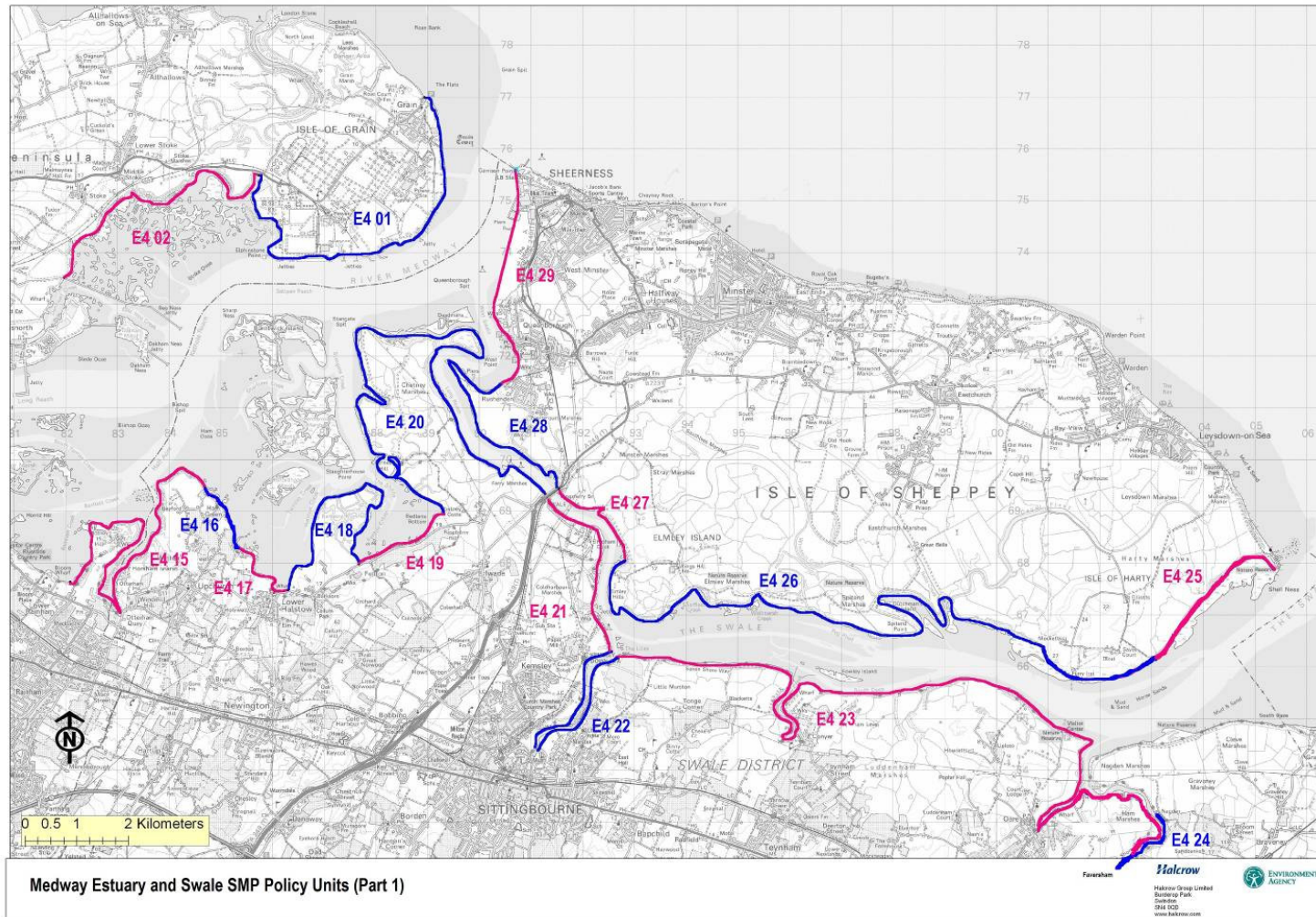


Figure 1.1: Medway Estuary and Swale SMP Policy Units (part 1).

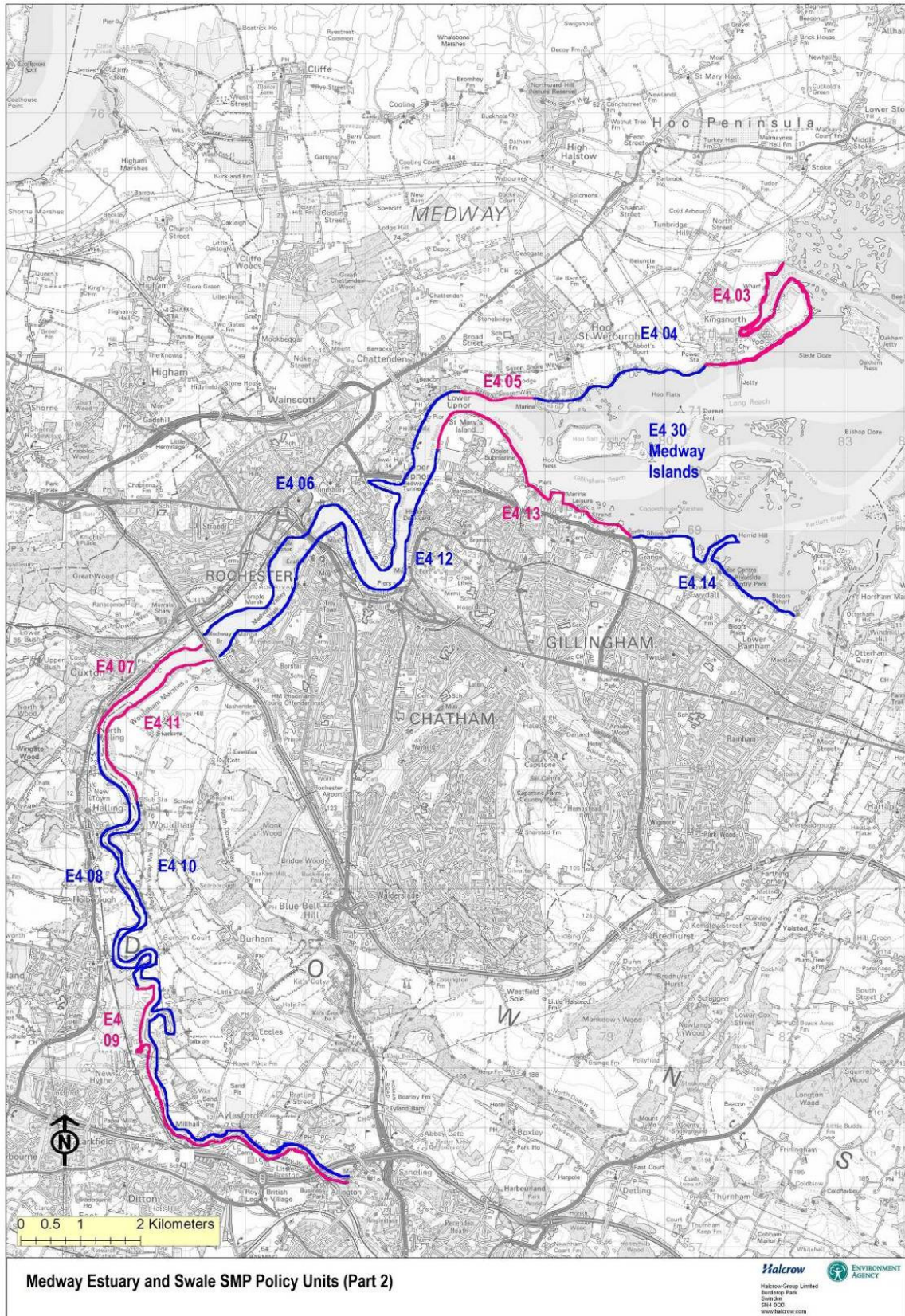


Figure 1.2: Medway Estuary and Swale SMP Policy Units (part 2).

K1.2 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.

In developing the Medway Estuary and Swale Shoreline Management Plan (SMP), the environment has been considered alongside social, technical and economic issues. This appendix documents the SEA process undertaken for the Medway Estuary and Swale SMP. It demonstrates how the SEA process has been carried out during the development of the Medway Estuary and Swale SMP and outlines how the SEA Directive's requirements have been met, by providing summary information on each element of the SEA process and by signposting to the relevant sections of the main SMP document, as appropriate.

The approach for this SMP was to ensure that the environmental assessment process is fully integral to the SMP development, as recommended in the Defra SMP Guidance (2006)³. Environmental assessment was therefore carried out in conjunction with and as part of the SMP stages, described in the guidance. However, it should be noted that this SEA appendix has been prepared retrospectively and compliance with the SEA Directive was not fully considered as the SMP developed. In order to ensure transparency and show how the development of the SEA fulfils the SEA Regulations (see Section K2.3), this appendix (with signposting to relevant sections within the main SMP and associated appendices) has been produced to document the SEA process.

The requirement to undertake SEA of certain plans and programmes entered European Law in 2001 under Directive 2001/42/EC; transposed into UK law in 2004 by The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 1633)¹. This SEA has been carried out with cognisance of, and in the spirit of, the following legislation and guidance:

- National Environmental Impact Assessment and Strategic Environmental Assessment Policy, Procedures and Guidance (Environment Agency, 2004 Environment Agency management system controlled documentation).
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 2: Strategic Planning and Appraisal (Defra 2001).
- Flood and Coastal Defence Project Appraisal Guidance (PAG) 5: Environmental Appraisal (MAFF 2000).
- The Strategic Environmental Assessment Directive: Guidance for Planning Authorities. Practical guidance on applying European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' to land use and spatial plans in England ODPM (2003)
- Conservation (Natural Habitats &c.) Regulations 1994 (as amended) and the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007.
- A Practical Guide to the Strategic Environmental Assessment Directive (ODPM 2005)

³ Defra (2006): *Shoreline Management Plan Guidance Volumes 1 and 2*

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

K1.3 STRUCTURE OF THIS REPORT

This appendix documents the SEA process we have undertaken throughout our SMP 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 – SEA Approach/Methodology: sets out the SEA process used during the development of the SMP and provides an SEA signposting table to show how and where the requirements of the SEA Directive have been fulfilled, in the substantive SMP report.
- 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 SMP 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 appraised preferred SMP policy options.
- Section 6 – Stakeholder and Public Engagement: describes communications on the SEA /SMP and signposts **Appendix B** of the SMP ‘Stakeholder Engagement’.
- Section 7 - Options Appraisal: describes the generic SMP policy options and their links to policy scenarios that were developed for the SMP. 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 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 SMP documents is summarised within this appendix for clarity and greater understanding of the SEA process.

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

K2 SEA Approach/Methodology

K2.1 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” (Office of the Deputy Prime Minister 2005⁵).

Table 2.1 SEA Stages and Tasks

SEA stages and tasks	Purpose
<i>Setting the context and objectives, establishing the baseline and deciding on the scope</i>	
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.
<i>Developing and refining alternatives and assessing effects</i>	
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 programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.

⁵ (<http://www.communities.gov.uk/documents/planningandbuilding/pdf/practicalguidesea.pdf>)

SEA stages and tasks	Purpose
<i>Preparing the Environmental Report</i>	
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.
<i>Consulting on the draft plan or programme and the Environmental Report</i>	
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.
<i>Monitoring the significant effects of implementing the plan or programme on the environment</i>	
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 SEA process is shown in Figure 2.1 and the stages shown are summarised below.

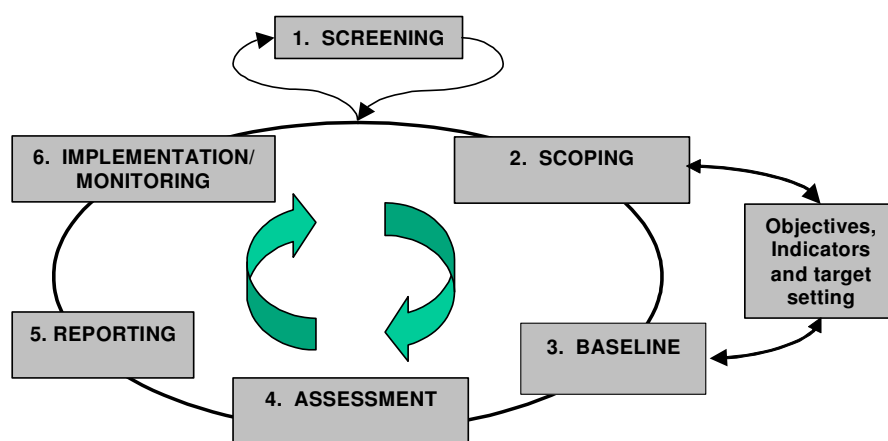


Figure 2.1 Summary of the SEA Process

K2.1.1 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 legal requirement to apply the ‘SEA Regulations’ to SMP, but best practice

guidelines, and those of Defra, support the preparation of a voluntary SEA for SMPs. They strongly encourage the adoption of SEA for SMPs to help set the framework for future planning and allow a strategic approach, as SMPs have significant environmental implications and require extensive consultation (www.defra.gov.uk).

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

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

K2.1.2 Establish SEA Objectives

A recognised way of considering the environmental effects of a plan and developing sustainable coastal management policies is the identification of agreed broad or SMP 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 SMP was developed through consultation with key organisations. The objectives are described in Section 5 of this document.

K2.1.3 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 SMP. An integral part of the SMP 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 site visits, data review 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 SMP appraisal process. 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.

Table 2.2 Scope of the SEA in relation to the SMP

SEA Environmental Receptor	Scope and Justification		Relevance to SMP
	Scoped In	Scoped Out	
Flora, Fauna and Biodiversity	Sites designated as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites An Appropriate Assessment for the Natura 2000 sites has been prepared in conjunction with the development of SMP policy options.	International conservation sites that will not be affected by tidal flooding or coastal erosion.	Within the SMP area, there are 3 SPAs, 3 Ramsar sites and 1 SAC. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions. For example, freshwater/terrestrial habitats have the potential to be negatively affected by no active intervention or managed realignment policies while intertidal habitats have the potential to be negatively affected by advance the line or hold the line policies.
	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 SMP area, there are 6 SSSIs and 2 NNRS. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions. For example, freshwater/terrestrial habitats have the potential to be negatively affected by no active intervention or managed realignment policies while intertidal habitats have the potential to be negatively affected by advance the line or hold the line policies.
	Local Nature Reserves (LNRs), Sites of Nature Conservation Interest (SNCI), RSPB Reserves and Wildlife Trust Reserves. Biodiversity Action Plan (BAP) Habitats	Local conservation sites that will not be affected by tidal flooding or coastal erosion. BAP species have been scoped out as the locations of all BAP species within the SMP are unknown – Instead they will be assessed during subsequent	Within the SMP area, there are 2 LNRs, 10 SNCIs and 7 other non-statutory nature reserves. All have potential to be affected (positively or negatively) by changes in flooding or erosion and by coastal defence interventions. For example, freshwater/terrestrial habitats have the potential to be negatively affected by no

SEA Environmental Receptor	Scope and Justification		Relevance to SMP
	Scoped In	Scoped Out	
		strategies or projects where a sufficient level of knowledge and detail of proposals are available.	<p>active intervention or managed realignment policies while intertidal habitats have the potential to be negatively affected by advance the line or hold the line policies.</p> <p>There are UK and local BAP habitats (priority and broad habitats) and numerous priority BAP species within the SMP area. Future flood risk management policies may present opportunities for biodiversity gain at non-designated sites and these have been explored during the development of the SMP.</p>
Soils and Geology	Sites designated as SSSIs (geological)	Local geologically designated sites (RIGS/GCRs) as these are considered more applicable to assessment at strategy or scheme level rather than at SMP level. Also, usually the RIGS/GCRs already fall within other designated areas such as SSSIs, which are scoped into this assessment.	Within the SMP area, there is one geological SSSI; this has the potential to be affected by changes in flooding or erosion, particularly in a negative way by advance the line or hold the line coastal management policies.
Air and Climate	Defra's recommended allowances for sea level rise have been used to provide erosion lines and flooding scenarios for the SMP.	<p>As air quality and noise levels will not influence or be affected by the recommendations of this SMP, these receptors have been scoped out.</p> <p>Climate change is considered through the use of sea level rise allowances.</p>	Climate change (notably sea level rise) is likely to place increasing pressure on flood defences in the SMP 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	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 SMP
	Scoped In	Scoped Out	
	Registered shellfisheries (e.g. Shellfish Harvesting Area)	N/A	Registered shellfisheries within the estuaries have the potential to be affected by SMP policy options.
Landscape Character and Visual Amenity	Changes in landscape character and views within Landscape Character Areas and within sites designated as Areas of Outstanding Natural Beauty (AONB) and Special Landscape Areas (SLAs)	N/A	Within the SMP area, there is 1 AONB, 4 National Landscape Character Areas, 2 SLAs, 4 County Landscape Character Areas and 8 Local Landscape Character Areas. All have potential to be affected by changes in flooding or erosion, particularly in a negative way by coastal defence interventions such as advance the line or hold the line policies.
Historic Environment (Cultural Heritage)	Sites designated as Scheduled Monuments, Listed Buildings, built Conservation Areas and non-statutory archaeology	No Registered Battlefields or marine wreck sites are present within the SMP area.	Within the SMP area, there are 85 Scheduled Monuments, 151 listed buildings, 1 Registered Park and Garden and 3 built Conservation Areas. All have potential to be affected (positively or negatively) by changes in flooding or erosion. No active intervention or managed realignment policies have the potential to result in the damage or loss of these assets.
Material Assets	Container ports and docks, Wharfs and marina operations	N/A	There are numerous ports and harbour activity within the SMP area
	Motorways, A -, B - and minor roads (where linkage is a key issue), railway lines and stations, bridges.	N/A	A range of critical infrastructure and services are present within the SMP and could potentially be affected by changes in flooding or erosion. Policies of no active intervention or managed realignment could result in the damage to or loss of some of these material

SEA Environmental Receptor	Scope and Justification		Relevance to SMP
	Scoped In	Scoped Out	
			assets.
	Sewage works, existing power generating facilities, electricity pylons, dredging activities.	N/A	A range of services are present within the SMP and could potentially be affected by changes in flooding or erosion. Policies of no active intervention or managed realignment could result in the damage to or loss of some of these material assets.
Land Use	Agriculture Industry	N/A	Agricultural land and industry can be affected by changes in flooding or erosion. Policies of no active intervention or managed realignment could result in the damage to or loss of some of these land uses.
Population and Human Health	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 SMP level.	Flood/erosion risks to people, property, community and recreational facilities and other local services, particularly from policies of no active intervention or managed realignment.
	Sites included are: - <ul style="list-style-type: none"> - 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. 	N/A	
	Shops, offices, businesses, factories, warehouses, areas identified for regeneration, nursery grounds, caravan parks,	N/A	

SEA Environmental Receptor	Scope and Justification		Relevance to SMP
	Scoped In	Scoped Out	
	stone and mineral extraction sites (quarries), military establishments and others key areas of employment		

K2.1.4 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 SMP 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 (see **Appendix C**). The implications of no active intervention on the features and issues identified were analysed to determine the potential environmental effects on the SEA receptors.

The environmental impacts identified during the no active intervention assessment were then compared against the SEA objectives to determine whether SEA objectives have been met, focusing on how and why objectives were (or were not) met (see **Annex 1 of this Appendix**). Through consultation with key stakeholders and elected members, key policy drivers were identified (see **Appendix F**). Alternative policy scenarios were appraised where there was a clear need to protect identified assets (see **Appendix G**).

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 SMP level were not considered in the SEA. Indication at SMP 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 2 of this Appendix**).

Selection of the Preferred SMP 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).

K2.1.5 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 SMP and is discussed further in Section 6 ‘Stakeholder and Public Engagement’ of this document and in **Appendix B**.

K2.1.6 Reporting

The SEA was integrated (in process terms) into the SMP and this report describes how the Medway Estuary and Swale SMP achieves the requirements of the 2004 SEA Regulations⁶. The results of the

⁶ HMSO (2004): *The Environmental Assessment of Plans and Programmes Regulations 2004 (No 1633)*

SEA process are documented in this report, which identifies, describes and evaluates the likely effects of the SMP as well as any reasonable alternatives. This report documents the SEA process undertaken with respect to the Medway Estuary and Swale SMP2. It 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.

K2.1.7 Implementation and Monitoring

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

Section K8.5 discusses the proposed monitoring of the predicted environmental effects of the plan, which have been reflected and incorporated into the **SMP Action Plan**.

K2.2 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 SMP 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: <ul style="list-style-type: none"> • contents; • main objectives of the plan or programme; and, • relationship with other relevant plans and programmes; 	Table of Contents Section K1 - Introduction and Background (objectives of SMP) Section K3 – 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 K4 – Environmental Baseline Annex 1 – Environmental Assessment of Alternative SMP Policy Options
(c) the environmental characteristics of areas likely to be significantly affected;	Section K4 – 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 K4 – Environmental Baseline

Environmental Report Requirements	Location of information within this SEA Appendix
(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 K5 – 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 K7.2 – Environmental appraisal of alternative SMP policy options Section K8 – Environmental effects of the preferred policy options
(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 K8 – Environmental effects of the preferred policy options Annex 2 – 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 K7.2 – Environmental appraisal of alternative SMP policy options Section K8.4 – Difficulties and Uncertainties
(i) a description of the measures envisaged concerning monitoring in accordance with Article 10;	Section K8.5 – Monitoring
(j) a non-technical summary of the information provided under the above headings.	Non-technical Summary

K3 Strategic and Planning Policy Context

The planning framework for the SEA and SMP is described in Annex D4 of **Appendix D ‘SEA Environmental Baseline (Theme Review)’**.

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

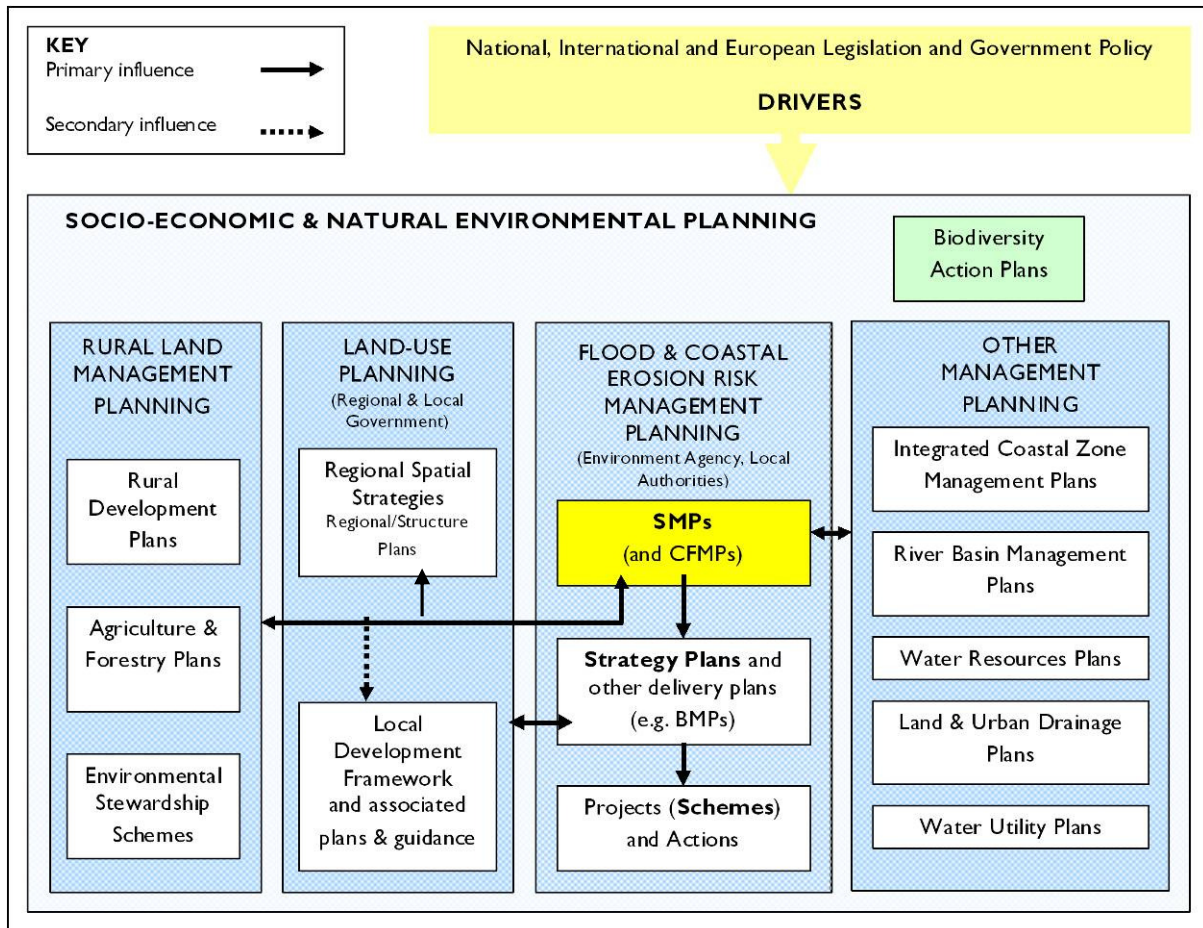


Figure 3.1 SMP and the Planning System

K4 Environmental Baseline

The current state of the environment is described in Section 2 of the main body of the Medway Estuary and Swale SMP and **Appendix D** 'SEA Environmental Baseline (2006), which: -

- 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 SMP 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.
- 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	Flora, Fauna and Biodiversity
	Soil
	Air and Climatic Factors
	Water
Landscape Character and Visual Amenity	Landscape
Historic Environment	Cultural Heritage, including architectural and archaeological heritage
Land Use, Infrastructure and Material Assets	Material Assets
Population and Human Beings	Population
	Human Health

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 SMP. The environmental issues are summarised in Table 4.2.

The shorelines of the Medway and Swale estuaries, covered by this plan, are diverse in their physical form, human usage and natural environment. This includes:

- The major industrial and commercial areas along the shoreline of the constrained channel in the outer Medway estuary;
- The wide middle Medway estuary with extensive saltmarsh islands and mudflats and extensive areas of reclaimed freshwater habitats behind defences;
- The large urban areas of the Medway Towns;
- The narrow meandering channel of the inner Medway estuary;
- The extensive floodplains bordering the Swale estuary; and,
- Many areas designated and protected for their heritage, landscape and environmental value.

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 the 'Defence Report' in **Appendix C**.

This is supplemented by the 'Assessment of Estuary Dynamics' baseline report, in **Appendix C**, which identifies the contemporary physical form of the estuaries and the processes operating upon them.

Table 4.2 Environmental Issues within the SMP Area

SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633	Environmental Issue
Flora, Fauna and Biodiversity	<p>The study area supports a variety of habitats including saltmarsh, intertidal mudflats, estuaries, grazing marsh, saline lagoons and ditches. The quality of these natural habitats within the Medway and Swale Estuaries is reflected in the designation of the following international nature conservation sites: -</p> <ul style="list-style-type: none"> • Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site • Medway Estuary and Marshes SPA and Ramsar site • The Swale SPA and Ramsar site • Peters Pit Special Area of Conservation (SAC). <p>The strategy area is also designated nationally (Sites of Special Scientific Interest (SSSI) and National Nature Reserves) and locally for its nature conservation value.</p> <p>Opportunities exist to create wetland habitat in low-lying parts of the study area.</p>
Soil	Tower Hill to Cockham Wood Geological SSSI, which comprises a Tertiary age stratigraphic sequence lies within the study area, together with potential areas of contamination and known landfill sites.
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 study area.

SEA Receptor described in the Environmental Assessment of Plans and Programmes Regulations SI 2004 1633	Environmental Issue
Water	There are numerous coastal, freshwater, transitional and groundwater bodies in the SMP area that have the potential to be affected by SMP policies.
Landscape	Some areas of the SMP lie within nationally and locally important landscapes including the North Kent Downs Area of Outstanding Natural Beauty (AONB), Special Landscape Areas (SLA) and Areas of Local Landscape Interest (ALLI).
Cultural Heritage, including architectural and archaeological heritage	The SMP area contains a complex array of statutory historic buildings (e.g. Scheduled Monuments, Listed Buildings), non-statutory buildings and find spots, historic settlements, maritime archaeology, Conservation Areas, historic landscapes and unscheduled sites of importance.
Material Assets	Much of the land along the estuary frontages comprise a combination of good/moderate quality agricultural land, urban areas (see population below), ports and harbours, power stations and major industrial sites.
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 towns of Rochester, Chatham, Gillingham, Sittingbourne, Faversham and Sheerness and other smaller towns/villages. Recreation and tourism in the study area is largely centred on water-based recreation in the Medway and Swale Estuaries, including sailing, canoeing and angling. Birdwatching, wildfowling, walking and cycling are also popular pursuits. The area attracts visitors primarily to the estuaries' historic conservation areas (e.g. Rochester, Chatham Historic Dockyard and Queenborough) and to the landscape of the rural estuary environment (e.g. walkers, cyclists, photographers, birdwatchers).

K5 Establishing SEA Environmental Objectives

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

The SEA Environmental Objectives, which differ to the four high-level SMP objectives that are defined in the SMP guidance (Defra 2006⁷) and described in Section K1, are based on the SEA receptors described in the EU SEA Directive (2001/42/EC), as follows:

Flora and Fauna

- Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works
- Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding and flood risk management works

Earth Heritage, Soils and Geology

- Promote biodiversity opportunities and prevent loss/ damage to designated geological site from erosion/ risk management works

Water

- Prevent loss/ damage to shell fishery from flooding or flood risk management works

Landscape Character and Visual Amenity

- Prevent degradation of landscape quality and visual amenity from flooding and flood risk management works. Ensure consideration of existing defences on landscape and heritage grounds. Seek opportunities to enhance features where appropriate

Historic Environment

- Prevent loss/ damage to Scheduled Monuments (SM) from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ damage to heritage from flooding and flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record. Seek opportunities to enhance features where appropriate

Land Use, Infrastructure and Material Assets

- Prevent loss/ damage/ disruption to infrastructure from flooding
- Prevent loss/ reduced potential of agricultural land from flooding
- Prevent loss/ damage/ disruption to industrial/commercial sites from flooding

Population and human health

⁷ Defra (2006): *Shoreline Management Plan Guidance Volumes 1 and 2*

- Prevent loss/ damage to residential properties from flooding or flood risk management works
- Prevent loss/ damage/ disruption to public open space from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works. Seek opportunities to enhance features where appropriate
- Prevent loss/ disruption to footpath from flooding and flood risk management works. Seek opportunities to enhance features where appropriate

These objectives were developed in line with environmental regulations, best practice and the objectives of other parties. Consultation has been undertaken with the aim of agreeing the objectives with a wide-variety of stakeholders (see **Appendix B**).

Comprehensive issues and objectives tables are provided in **Appendix E 'Issues and Objectives Evaluation'**. These tables were developed based upon a review of the existing environment, 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' (which identifies the likely physical evolution of the coast without any future defence management and hence the potential risks to shoreline features). The objectives were refined through consultation with the Client Steering Group, stakeholders and elected members (see **Appendix B**).

K6 Consultation

K6.1 APPROACH

Full details of all stages of stakeholder engagement undertaken during development of the draft Plan are presented in **Appendix B ‘Stakeholder Engagement’** together with the responses received. This includes the copies of briefing materials and records of stakeholder inputs.

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

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

- contribute to the success of the SMP and improve decision-making in the coastal zone by
 - raising awareness of environmental management issues relating to tidal flooding and coastal erosion;
 - allowing stakeholder input into the environmental decision-making in the context of the SMP;
 - informing the development of the SEA 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 environmental assessment of policy options;
 - giving the public an opportunity to comment on the preferred policies; and
 - ensuring that the completed SMP influences coastal management decisions, plans and strategies (e.g. development planning).
- meet regulatory requirements for consultation under the EU SEA Directive.

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

- Invitations to provide data and comments on key concerns;
- Circulation of documents for comment
- Stakeholder meetings and workshops

K6.2 STAKEHOLDERS

The consultation groups ('stakeholders') that were actively consulted are listed in **Appendix B 'Stakeholder Engagement'** and have included: -

- Client Steering Group (CSG) – Client Steering Group comprises representatives from three local authorities, the Environment Agency and other key bodies with a remit to agree the various stages of the SMP as it progresses. Other members of the group are; Natural England, who provide guidance on nature conservation; Kent County Council, with coastal management interests; English Heritage, who provide guidance on heritage issues, and a representative from Herington Consulting, who provides local and strategy knowledge. This group has met throughout the SMP development, agreeing to the outputs once they have been discussed with stakeholders.
- Key Stakeholder Forum (KSF) - The KSF includes representatives from local, regional and national interest groups including conservation bodies, residential groups and business and commercial parties. This group has met periodically throughout the SMP development process to input information and review outputs as the study progressed. The KSF acts as a focal point for discussion and consultation throughout the development of the SMP.
- Elected Members Forum (EMF) - The EMF comprises a representative from each of the local and district authorities and from each of the Area Environment Agency offices in Kent, attending with a remit to agree the various stages of the SMP as it progresses. Again, this group has met throughout the plan development, agreeing to the outputs once they have been discussed with the KSF. Local Authority Elected Members have been involved from the beginning, thereby reducing the likelihood that the policies will not be approved by the planning authorities. They were involved through a Forum, building trust and understanding between Elected Members, the CSG and KSF.

Statutory, non-statutory and local organisations and members of the general public have also been involved in the development of the SMP and associated SEA process.

K6.3 STAGES OF CONSULTATION

Tables presenting the stakeholder strategy for both the SMP and SEA are provided in **Appendix B 'Stakeholder Engagement'**.

A summary of the stakeholder strategy for the purposes of SEA is provided in Table 6.1.

Table 6.1 Summary of Stakeholder Strategy

Stage	Purpose of stakeholder involvement for the SEA	Stakeholders	Method of involvement
SEA Baseline and Scoping (Stage 1: SMP Scoping) – initial stakeholder contact	<ul style="list-style-type: none"> • Inform interested parties that a SMP is being prepared • Request environmental baseline information and gather views on SEA Environmental Baseline Report (Theme Review) to ensure all relevant environmental issues/features are included 	Elected Members Key Stakeholders Stakeholders	Letter and Questionnaire (different letters sent to different groups) Telephone / email

Stage	Purpose of stakeholder involvement for the SEA	Stakeholders	Method of involvement
	<ul style="list-style-type: none"> • To discuss, assess and prioritise existing heritage data in relation to the SMP policy units, to inform SMP and SEA baseline • To agree a method for assessing and prioritising non-statutory and non-designated heritage features • To identify key archaeological features and prioritise according to risk of loss • To test SMP policies in relation to heritage features identified 	Environment Agency, Kent County Council, Canterbury City Council, English Heritage	Heritage Workshop
Stage 2: Assessments to support policy – Draft Issues and Objectives Tables	<ul style="list-style-type: none"> • Check that all relevant issues & features have been identified • Check that the benefits identified are correct & that we have included all beneficiaries • Check that the revised SEA objectives are acceptable 	Client Steering Group Elected Members Key Stakeholders	Draft Issues Table and accompanying note sent via email and/or by post Draft Issues and Objectives Table circulated Meetings / presentations: Key Stakeholders Forum 1 Elected Members Forum 1
Stage 3: Policy Development	<p>The objectives of the stakeholder forums were to establish:</p> <ul style="list-style-type: none"> • Understand the vision(s) of various stakeholders for the shoreline over each epoch • Any 'overriding drivers' for directing future policy, and specific policy options that the stakeholders wish to see appraised • Identify environmental constraints • Discuss areas of agreement, conflict & potential scope for compromise and acceptance of future change • Discuss draft preferred policies • Agree draft preferred policies for consultation 	Client Steering Group Elected Members Key Stakeholders	Briefing note explaining role of meetings. Meetings and presentations: Key Stakeholder Forum 2 Elected Members Forum 2 Key Stakeholder Forum 3 Elected Members Forum 3 Summary note issued summarising key conclusions.
Stage 4: Public Examination/ Consultation	<ul style="list-style-type: none"> • Provide opportunity for comment on draft SMP 	Wider public	Distribution of summary leaflet and SMP document made available for viewing. Additional meeting undertaken with the NFU
Stage 5: Finalise SMP	<ul style="list-style-type: none"> • Review output from public examination & the responses • Produce a Consultation Report on findings 	Client Steering Group Elected Members	Proposed changes to draft plan, Consultation Report and Action Plan reviewed by CSG. Outcomes relayed

Stage	Purpose of stakeholder involvement for the SEA	Stakeholders	Method of involvement
	<ul style="list-style-type: none"> • Discuss feedback and finalise SMP • Draft and agree Action Plan 		to the EMF. Meetings: Elected Members Forum 4 Elected Members Forum 5
Stage 6: SMP Dissemination	<ul style="list-style-type: none"> • Inform stakeholders of the final plan 	Local Authorities, Natural England, Environment Agency and Defra, Wider public	Disseminate SMP (and possibly Summary leaflets)

K7 Options Appraisal

K7.1 IDENTIFICATION AND REVIEW OF ALTERNATIVE POLICY SCENARIOS

The four generic SMP policy 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)⁸.

Table 7.1 SMP Policy Options

SMP 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.

Two baseline scenarios were assessed during the development of the SMP:

- A 'with present management' scenario (which will comprise a combination of one or more of the generic SMP policy options summarised in Table 7.1), which assumes that the present management practices will be continued indefinitely, regardless of economic or technical constraints; and,
- A 'no active intervention' scenario which assumes that defences are no longer maintained and will fail over time.

A discussion of how policies have been developed, key policy drivers and preferred scenario identification is provided in Section A6 in **Appendix A 'SMP Development'**.

K7.2 ENVIRONMENTAL APPRAISAL OF ALTERNATIVE SMP POLICY OPTIONS

An environmental assessment of the alternative SMP policy options on SEA receptors in each coastal section is provided in **Annex 1 of this appendix**.

Table 7.2 provides a summary of generic environmental impacts associated with the four alternative SMP policy options.

Table 7.2 SMP Policy Options

SMP option	Potential positive impacts	Potential negative impacts
Hold the Line	<ul style="list-style-type: none"> • Protection of communities (residential, industrial, agricultural and commercial assets) and 	<ul style="list-style-type: none"> • Coastal squeeze (loss of intertidal habitat) • Interruption of coastal processes

⁸ Defra (2006): *Shoreline Management Plan Guidance Volumes 1 and 2*

SMP option	Potential positive impacts	Potential negative impacts
	<p>infrastructure</p> <ul style="list-style-type: none"> • Protection of habitat landward of defences • Protection of economic assets located behind defences • Protection of recreational, cultural and historical assets landward of the defences • Protection of potential sources of contamination 	<ul style="list-style-type: none"> • Promotion of unsustainable land use practices • Ongoing commitment to future investment for maintenance and improvement of defences • Reduced visual amenity and views of sea in some areas through raising of defences
Advance the Line	<ul style="list-style-type: none"> • Provision of additional space for communities • Protection of communities and infrastructure from coastal flooding/erosion • Protection of habitat landward of defences • Protection of freshwater resources (e.g. abstractions and boreholes) • Protection of economic assets located behind defences • Protection of recreational, cultural and historical assets landward of the defences • Protection of potential sources of contamination 	<ul style="list-style-type: none"> • Reduction in extent of intertidal habitat • Change in function of the existing habitats • Increased coastal squeeze • Interruption of coastal processes • Potential increase in rate of coastal erosion either side of the advanced line • Uncertainty of effects • Reduced visual amenity and change in landscape
Managed Realignment	<ul style="list-style-type: none"> • Landward migration of coastal habitat under rising sea levels to realigned defence • Creation of wetland habitat in line with UKBAP and local BAP targets • Creation of habitat for juvenile fish and other aquatic organisms (benefits to environment and fishing communities) • Reduction of flood/erosion risk to some areas • Promotion of natural coastal processes and contribution towards a more natural management of the coast • Maintenance of geological SSSI 	<ul style="list-style-type: none"> • Increased flooding/erosion of realigned area • Change in condition or reduction of terrestrial/freshwater habitat landward of defences • Impact upon aquifers and abstractions • Loss of some assets in hinterland of defences (e.g. residential, industrial, agricultural and commercial assets) • Loss of recreational, heritage and cultural features
No active intervention	<ul style="list-style-type: none"> • Opportunities for landward migration of intertidal habitats under rising sea levels 	<ul style="list-style-type: none"> • Uncontrolled flood/erosion risk to properties and land • Uncertainty of effects and time for

SMP option	Potential positive impacts	Potential negative impacts
	<ul style="list-style-type: none"> • Works with natural coastal processes • Contribution towards a more natural management of the coast • Potential discovery of unknown archaeology • Maintenance of geological SSSI 	<p>adaptation</p> <ul style="list-style-type: none"> • Loss of freshwater habitats and defences fail • Impact upon aquifers and abstractions • Uncontrolled loss of economic and community assets • Loss of heritage and cultural features (e.g. Scheduled Monuments) • Risk of flooding/erosion of contaminated areas • Deteriorating defences become unsightly • Damage to infrastructure and loss of agricultural land

K8 Environmental effects of the preferred policy options

K8.1 THE PREFERRED PLAN

Based upon the output from the testing of policy scenarios (**Appendix G – Shoreline Interaction and Response Assessments and Objectives Assessments**), the preferred scenarios were identified.

The preferred plan should best achieve the defined SEA objectives and be the most sustainable, technically feasible, environmentally acceptable and socio-economically viable.

The outcomes of the ‘Objectives Assessment’ were reviewed, in combination with the ‘Shoreline Interaction and Response Assessments’ to consider which combination of policies represents the best approach to meet objectives throughout the whole SMP frontage.

Each scenario/policy was appraised according to the extent to which each of the defined SEA objectives (**Appendix E**) for individual locations was achieved. In most instances, consideration of whether the objective is met is based upon the predicted position (e.g. the extent of retreat) and form (e.g. existence of a beach) of the shoreline.

The policies were assessed in terms of:

- Yes – achieved SEA objective
- No – did not achieve SEA objective
- Partly – partly achieved SEA objective

The preferred policy was then chosen on the basis of:

- The highest performance in terms of SEA objectives achieved
- The predicted physical processes and shoreline response for each policy
- A discussion meeting with the client steering group
- A discussion meeting with the elected members
- A discussion meeting with the key stakeholders

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

K8.2 ENVIRONMENTAL ASSESSMENT OF PREFERRED PLAN

An environmental assessment of the preferred policy scenarios for each sub-cell is presented in **Annex 2 of this appendix**, along with mitigation measures where negative effects have been identified and potential environmental enhancement opportunities.

A summary of the environmental effects of the preferred plan in each coastal section is provided in Table 8.1.

Table 8.1 Environmental Effects of the Preferred Plan

Coastal Section	Environmental Effects of SMP
<p>Grain Tower to Colemouth Creek - E4 01</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - continued protection of material assets, infrastructure, agricultural land, recreational assets and Coastal Artillery Defences Scheduled Monument.</p> <p><i>Potentially adverse impacts</i> - designated landscape of industrial area maintained but with increasing defences over lifetime of SMP, which may adversely affect landscape character. Potential coastal squeeze of internationally designated intertidal habitat and nationally important BAP habitat in confined channel locations, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”. Potential loss of unknown heritage buried in intertidal zone.</p>
<p>Colemouth Creek to Bee Ness Jetty - E4 02</p> <p>Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - continued protection of infrastructure and most areas of agricultural land except in realigned areas in medium-term. Designated estuary landscape will be maintained however some features will change through realignment. Establishment of intertidal habitat in realigned areas in long-term.</p> <p><i>Potentially adverse impacts</i> - areas of Grade 4 land lost due to managed realignment will become intertidal. Potential coastal squeeze of internationally designated intertidal habitats, as sediment supply decreases in the estuary in medium-term. Potential loss of internationally designated coastal grazing marsh, dependant on realignment extent. Potential loss of buried unknown heritage. Potential loss of wharf, footpath and Medway Micro Lights if defences realigned in these locations in medium-term.</p>
<p>Kingsnorth Power Station - E4 03</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increased defences, which may adversely affect landscape character in medium-term.</p> <p><i>Potentially adverse impacts</i> - potential coastal squeeze of internationally designated intertidal habitats and nationally important BAP habitat with coastal squeeze in long-term, as sediment supply decreases in the estuary. Potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potential”.</p>
<p>Kingsnorth Power Station to Cockham Wood - E4 04</p> <p>Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations in the short-term.</p>	<p><i>Beneficial impacts</i> - defences will provide an appropriate level of protection to the marina, residential areas and Kingsnorth Power Station. Creation of internationally and nationally important saltmarsh habitat in realigned areas. Managed realignment will result in future changes to habitat drained by Damhead Creek due to tidal flooding, and will contribute to WFD objective 2 “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/ potentials” by accepting a sustainable change in this river water body.</p> <p><i>Potentially adverse impacts</i> - potential loss of internationally designated intertidal habitats and nationally important BAP habitat due to coastal squeeze in areas where holding the line in the long-term, as sediment supply decreases in the estuary. Potential loss of buried unknown heritage and loss of footpaths where managed realignment is implemented in short-term.</p>
<p>Cockham Wood - E4 05</p> <p>Natural erosion will continue.</p>	<p><i>Beneficial impacts</i> - allows natural processes to operate along the frontage, maintaining landscape and geological features (e.g. the stratigraphic features of Tower Hill to Cockham Wood SSSI).</p> <p><i>Potentially adverse impacts</i> - narrowing of beach with coastal squeeze of nationally important intertidal BAP habitat. In medium-term, initiation of cliff erosion, therefore impact on nationally designated site in long-term. Damage to/loss of Cockham Wood Fort Scheduled Monument and potential loss of buried unknown heritage. It will become increasingly difficult to access the foreshore route of the Saxon Shore Way as shoreline retreats naturally though the alternative inland route of Saxon Shore Way will not be compromised.</p>
<p>Lower Upnor to Medway Bridge - E4 06</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, residential and commercial properties, recreational facilities, Scheduled Monuments, infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increased defences, which may adversely affect landscape character.</p> <p><i>Potentially adverse impacts</i> - potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.</p>
<p>Medway Bridge to North Halling - E4 07</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained.</p> <p><i>Potentially adverse impacts</i> - potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.</p>
<p>North Halling to Snodland - E4 08</p> <p>Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - defences will provide an appropriate level of protection to material assets and infrastructure (e.g. railway at Holborough). Areas of land affected by managed realignment will become intertidal. Transition of habitats from freshwater to brackish to saline in realigned areas. Designated estuary landscape will be maintained, however, some features will change through realignment. Potential for a more ‘natural’ shoreline. Managed realignment will result in future changes to habitat drained by tributary of the Medway Estuary at Holborough, due to tidal flooding, and will contribute to WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials” by accepting a sustainable change in this river water body.</p> <p><i>Potentially adverse impacts</i> - managed realignment may impact on current and future commercial traffic in the estuary. Dependant on managed realignment extent, potential loss of grazing marsh and nationally important BAP habitat at Halling, pasture at Snodland and nationally designated freshwater marshes at Holborough Marshes. Potential loss of buried unknown heritage and footpaths where managed realignment is implemented. Potential for contamination of water resources under a managed realignment policy.</p>

<p>Snodland to Allington Lock - E4 09 Undertake engineering works to hold the defence line and construct secondary defences in suitable locations in medium-term</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to properties, material assets, infrastructure and agricultural land during this period. Areas of land affected by managed realignment will become intertidal. Transition of habitats from freshwater to brackish to saline in realigned areas. Designated landscape of the industrial area maintained. However, some features will change through realignment. Potential for a more 'natural' shoreline.</p> <p><i>Potentially adverse impacts</i> - managed realignment may impact on future commercial traffic in the estuary. Dependant on managed realignment extent, potential loss of nationally designated wetland at Abbey Mead Lake. Potential loss of footpaths where managed realignment is implemented and potential for contamination of water resources.</p>
<p>Allington Lock to North Wouldham - E4 10 Undertake engineering works to hold the defence line. construct secondary defences in suitable locations in medium-term</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets (including industrial areas), infrastructure and Aylesford Bridge Scheduled Monument and Aylesford Conservation Area. Areas of agricultural land affected by managed realignment will become intertidal. Designated estuary landscape will be maintained. However, some features will change through realignment. Potential for a more 'natural' shoreline. Transition of habitats from freshwater to brackish to saline in realigned areas.</p> <p><i>Potentially adverse impacts</i> - dependant on managed realignment extent, potential loss of nationally designated freshwater habitat at Burham in medium-term. Potential loss of Medway Valley Walk where managed realignment is implemented.</p>
<p>Wouldham Marshes - E4 11 Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets and infrastructure. Areas of land affected by managed realignment will become intertidal. Designated estuary landscape will be maintained, however, some features will change through realignment. Potential for a more 'natural' shoreline. Overall AONB landscape value maintained.</p> <p><i>Potentially adverse impacts</i> - managed realignment may impact on current and future commercial traffic in the estuary. Potential loss of freshwater grazing marsh at River Medway and Marshes and Wouldham SNCI. Transition of habitats from freshwater to brackish to saline in realigned areas. Potential loss of buried unknown heritage and footpaths where managed realignment is implemented.</p>
<p>Medway Bridge to west St Mary's Island - E4 12 Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to properties, recreational facilities, material assets, infrastructure and Chatham Historic Dockyard and Conservation Areas. Estuary landscape maintained but larger defences may adversely affect character of the landscape.</p> <p><i>Potentially adverse impacts</i> - potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials".</p>
<p>St Mary's Island to The Strand - E4 13 Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to properties, recreational facilities along Gillingham waterfront, material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained. No net loss of internationally designated intertidal habitats and nationally important BAP habitat.</p> <p><i>Potentially adverse impacts</i> - due to coastal squeeze, loss of intertidal habitat will occur in areas where holding the line as will accretion elsewhere. Potential loss of unknown heritage buried in intertidal zone and potential impacts on the historic revetments with policies of managed realignment upstream. Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials".</p>
<p>The Strand to West Motney Hill - E4 14 Undertake engineering works to hold the defence line. construct secondary defences in suitable locations in medium-term</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to properties, recreational assets, material assets, infrastructure (e.g. A289) and agricultural land. Designated estuary landscape will be maintained however some features will change through realignment. Potential for visual enhancement with a more natural coastline as managed realignment is established. Establishment of intertidal habitat in realigned areas in medium-term.</p> <p><i>Potentially adverse impacts</i> - potential loss of internationally designated intertidal habitats due to coastal squeeze where holding the line in medium-term, as sediment supply decreases in the estuary. Potential loss of buried unknown heritage and footpaths where MR is implemented. Potential further loss of land within the Country Park if defences realigned further. Potential for contamination of water resources under a managed realignment policy.</p>
<p>West Motney Hill to Ham Green - E4 15 Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets and infrastructure. Designated estuary landscape will be maintained however some features will change through realignment. Potential for visual enhancement with a more natural coastline as managed realignment is established. Establishment of intertidal habitat in realigned areas.</p> <p><i>Potentially adverse impacts</i> - coastal squeeze of intertidal habitat in some areas and accretion elsewhere. Potential loss of internationally designated coastal grazing marsh and nationally important BAP habitat, dependant on realignment extent. Potential loss of buried unknown heritage and footpaths where managed realignment is implemented. Potential for contamination of water resources under a managed realignment policy.</p>
<p>Ham Green to East of Upchurch - E4 16 Natural erosion of defences and high land.</p>	<p><i>Beneficial impacts</i> - designated landscape will be maintained.</p> <p><i>Potentially adverse impacts</i> - potential damage to one property and green houses at Ham Green in medium-term. Loss of Grade 1 agricultural land (approximately 0.5m/yr) in medium-term and potential loss of internationally designated intertidal habitat in medium-term with coastal squeeze as sea levels rise. Potential loss of buried unknown heritage. Erosion may cause damage to pathway.</p>
<p>East of Upchurch to East Lower Halstow - E4 17 Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to residential properties, material assets, infrastructure and Lower Halstow Conservation Area. Areas of agricultural land affected by managed realignment will become intertidal. Designated estuary landscape will be maintained. However, some features will change through realignment. Potential for visual enhancement with a more natural coastline as managed realignment is established. Establishment of intertidal habitat in realigned areas.</p> <p><i>Potentially adverse impacts</i> - potential loss of internationally designated intertidal habitats with coastal squeeze, as sediment supply decreases in the estuary in long-term. Potential loss of small area of freshwater habitat dependant on realignment extent. Potential loss of buried unknown heritage. Potential loss/damage to Saxon Shore Way, where managed realignment implemented.</p>

<p>Barksore Marshes - E4 18</p> <p>Construct secondary defences and Allow natural processes, i.e. inundation and erosion and natural erosion of defences.</p>	<p><i>Beneficial impacts</i> - defences will continue to protect residential properties and infrastructure though standard of protection of infrastructure will reduce in long-term. Designated estuary landscape will be maintained, however, some features will change visually due to realignment. No net loss of internationally designated intertidal habitat. Establishment of intertidal habitat in realigned area.</p> <p><i>Potentially adverse impacts</i> - areas of Grade 3 agricultural land affected by managed realignment will become intertidal. Potential loss of internationally designated coastal grazing marsh. Potential loss of buried unknown heritage and pathways. Potential for contamination of water resources.</p>
<p>Funton to Raspberry Hill - E4 19</p> <p>Natural erosion of defences and higher land</p>	<p><i>Beneficial impacts</i> - designated estuary landscape will be maintained. No net loss of internationally designated intertidal habitat.</p> <p><i>Potentially adverse impacts</i> - damage to/loss of road. Potential coastal squeeze of saltmarsh with sea level rise. Potential loss of buried unknown heritage. Damage to access to estuary viewing locations.</p>
<p>Chetney Marshes - E4 20</p> <p>Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.</p>	<p><i>Beneficial impacts</i> - Defences will provide an appropriate level of protection to property, material assets, infrastructure and some agricultural land. Designated estuary landscape will be maintained. No net loss of internationally designated intertidal habitat and establishment of intertidal habitat in realigned area. There may be hydromorphological and physical changes to the Iwade at the tidal interface but this will improve rather than deteriorate the ecological potential associated with WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.</p> <p><i>Potentially adverse impacts</i> – managed realignment along the Swale frontage may impact on future commercial traffic in the Swale estuary. Potential loss of internationally designated coastal grazing marsh. Potential loss of buried unknown heritage.</p>
<p>Kingsferry Bridge to Milton Creek - E4 21</p> <p>Undertake engineering works to hold the defence line</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, recreational features (e.g. Saxon Shore Way), infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increased defences, which may adversely affect landscape character. No loss of internationally designated coastal grazing marsh.</p> <p><i>Potentially adverse impacts</i> – Potential loss of internationally designated intertidal habitat due to coastal squeeze in confined channel locations in medium-term. Continued accretion elsewhere. Potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/ accelerated erosion in the Swale Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.</p>
<p>Milton Creek - E4 22</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to residential and commercial properties, community facilities, material assets, Saxon Shore Way, industry, infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increased defences, which may change landscape character. No loss of internationally designated saline lagoon.</p> <p><i>No known strategic level adverse impacts</i></p>
<p>Murston Pits to Faversham Creek - E4 23</p> <p>Undertake engineering works to hold the defence line and construct secondary defences in suitable locations in medium-term</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to residential properties, recreational features, material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained. However, some features will change through realignment. Establishment of intertidal habitat in realigned areas.</p> <p><i>Potentially adverse impacts</i> – potential loss of internationally designated freshwater habitat dependant on managed realignment extent in medium-term. Potential loss of buried unknown heritage and Saxon Shore Way where managed realignment is implemented.</p>
<p>Faversham to Nagden - E4 24</p> <p>Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increased defences. No loss of internationally designated coastal grazing marsh or intertidal habitats in medium-term.</p> <p><i>Potentially adverse impacts</i> – potential for coastal squeeze against fixed defences in the long-term, leading to a loss of intertidal habitat as sea levels rise. Potential loss of unknown heritage buried in intertidal zone.</p>
<p>Shell Ness to Sayes Court - E4 25</p> <p>Construct secondary defences in short-term.</p>	<p><i>Beneficial impacts</i> – Establishment of intertidal habitat in realigned areas. Estuary landscape will be maintained though potential for a more ‘natural’ shoreline.</p> <p><i>Potentially adverse impacts</i> – loss of land to saline inundation. Potential loss of internationally designated freshwater habitat. Potential loss of buried unknown heritage. Property at Shell Ness no longer protected (as managed realignment policy between Leysdown-on-Sea and Shell Ness (Isle of Grain to South Foreland SMP2). Potential loss of footpaths where managed realignment is implemented.</p>
<p>Sayes Court to North Elmley Island - E4 26</p> <p>Construct secondary defences in short-term.</p>	<p><i>Beneficial impacts</i> – secondary defences will provide an appropriate level of protection to residential properties, material assets and some areas of agricultural land. Estuary landscape will be maintained. Establishment of saline habitat in realigned areas</p> <p><i>Potentially adverse impacts</i> – potential loss of internationally designated freshwater habitat.. Potential loss of buried unknown heritage and footpaths where managed realignment implemented.</p>
<p>North Elmley Island to Kingsferry Bridge - E4 27</p> <p>Undertake engineering works to hold the defence line and construct secondary realigned defences in medium-term</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to residential properties, material assets, infrastructure and agricultural land. Establishment of intertidal habitat in realigned areas. Designated landscape of the industrial area maintained.</p> <p><i>Potentially adverse impacts</i> – managed realignment may impact on future commercial traffic in the Swale estuary. Potential loss of internationally designated freshwater habitat in medium-term. Potential loss of buried unknown heritage. Potential loss of footpaths where managed realignment is implemented.</p>
<p>Kingsferry Bridge to Rushenden - E4 28</p> <p>Undertake engineering works to hold the defence line. And construct secondary defences in medium-term. MR of disposal site in medium-term.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to residential and commercial properties, material assets, infrastructure and agricultural land. Establishment of intertidal habitat in realigned areas. Designated landscape of the industrial area maintained, however some features will change through realignment.</p> <p><i>Potentially adverse impacts</i> – managed realignment may impact on future commercial traffic in the Swale estuary. Some loss of internationally designated freshwater habitat in medium-term and creation of intertidal in realigned areas. Potential loss of internationally designated intertidal habitat due to coastal squeeze against fixed defences in confined channel locations, as sea levels rise. Potential loss of buried unknown heritage and footpaths where managed realignment is implemented. Potential for contamination issues associated with managed realignment at Rushenden disposal</p>

	site.
<p>Rushenden to Sheerness - E4 29 Undertake engineering works to hold the defence line.</p>	<p><i>Beneficial impacts</i> - defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land. Designated landscape of the industrial area maintained but with increasing defences, which may change landscape character.</p> <p><i>Potentially adverse impacts</i> – potential loss of internationally designated intertidal habitat due to coastal squeeze in confined channel locations. Potential loss of unknown heritage buried in intertidal zone. Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.</p>
<p>Medway Islands - E4 30 Natural processes will be allowed to operate, i.e. erosion and inundation of islands.</p>	<p><i>Beneficial impacts</i> - designated landscape maintained. General stability/accretion of intertidal habitats.</p> <p><i>Potentially adverse impacts</i> - Damage to/erosion of built heritage assets (e.g. Hoo Fort and Darnet Fort SMs) and potential loss of buried unknown heritage. Potential erosion of Hoo Island dredging disposal site in medium-term. Some loss of internationally designated intertidal habitats in contemporary eroding areas. Potential for contamination issues associated with the landfill site on Hoo Island.</p>

As many of the proposed SMP 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 (Natural Habitats &c.) Regulations 1994, under Regulation 48(1) ("Habitats Regulations"). The Appropriate Assessment is a legal requirement of the final plan. The effect of the Plan on the European sites in the estuaries has been assessed through the Appropriate Assessment.

A retrospective Water Framework Directive (WFD) assessment has been prepared by Halcrow and can be viewed in **Appendix L ‘Water Framework Directive Assessment’** of the SMP. This WFD-related retrospective assessment takes into consideration the potential effects of SMP policy options on the ecological quality elements of the coastal and transitional water bodies directly affected by the SMP, and the associated river water bodies, which may also experience some indirect effect (such as shifting in the upper tidal limit in rivers).

Measures to monitor the environmental effects of implementing the Plan are provided in Section K8.5.

K8.3 CUMULATIVE 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 SMP 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 Receptor	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP with relevant Plans and Programmes
Biodiversity, Flora and Fauna	<p>Along many parts of the SMP frontage, intertidal habitat is designated under international legislation for its conservation interests. The SMP 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 as sea levels rise. Localised intertidal areas will become increasingly subject to erosion due to coastal squeeze with increased water levels and fluvial flows. However, these will be countered by habitat growth within the middle reaches of the estuary and these recommended policies are therefore deemed technically and environmentally viable, for the duration of the Shoreline Management Plan.</p> <p>In some areas, the inland migration of designated intertidal habitat may result in the loss of internationally designated freshwater or terrestrial habitat. The low lying areas along this frontage are notable for their freshwater habitats, which are covered by Local and National BAPs and much of which are designated as being internationally or nationally important. The proposed long term realignments in locations around the Medway and Swale estuaries would displace some SPA and Ramsar designated freshwater habitats. This will potentially require mitigation through the creation of equivalent habitat elsewhere. However, the creation of important brackish, intertidal and saltmarsh habitats and the promotion of a 'naturally functioning' shoreline under this policy provide important nature conservation benefits i.e. improving the existing habitats and creating new, dynamic habitats. Effects on European designated sites are addressed in the Appropriate Assessment (Appendix J).</p> <p>Coastal management can have significant impact on habitats and landforms, both directly and indirectly. In places, coastal defences may be detrimental to nature conservation interests, e.g. coastal squeeze of internationally designated intertidal habitats in front of defences. However, in other locations the presence of defences sustains, albeit temporally, the present interests of a site, e.g. freshwater habitats at Luddenham Marshes. However, sometimes the preservation of freshwater marshes may be at the 'expense' of alternative, more dynamic habitats i.e. saltmarsh. Coastal habitats may also form the coastal defence, e.g. the shell spit at Shell Ness.</p> <p>Careful management of the shoreline is therefore 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.</p>	<p>Catchment Flood Management Plans (e.g. The North Kent Rivers CFMP) have the potential to affect the designated nature conservation sites. Policies and actions in these documents will seek to ensure that there are no adverse effects.</p> <p>Coastal squeeze as a result of climate change and rising sea levels will require the provision of compensatory habitat (both intertidal and freshwater/terrestrial) in some areas.</p>
Soils and Geology	<p>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 (stratigraphic) interests and the nationally designated geological site.</p> <p>The relic shell and sand spit at Shell Ness will continue to provide a degree of natural flood protection at the eastern mouth of the Swale. However, under the proposed plan to construct set back defences, the spit will be allowed to reorientate naturally as sea levels rise.</p>	<p>The Regional Spatial Strategy (South East Plan) and Local development documents must ensure that the requirements of PPS25 are fully implemented to ensure no release of contaminants to coastal/estuarine waters.</p>
Water	<p>In most areas along the coastal frontage, the preferred SMP policy provides protection from flooding or erosion to the majority of potentially polluting features such as landfill sites.</p> <p>In addition, the majority of preferred policies will not compromise the WFD objectives. However, in a few policy units, potential coastal squeeze and/or accelerated erosion may result in the failure of WFD objective 2 with associated potential changes in the surface water ecological status.</p>	<p>Local Development Document policies provide protection for the water environment. Implementation of the SMP will try to ensure full adherence to these policies (wherever possible) through coastal management activities.</p> <p>The Regional Spatial Strategy (South East Plan) and Local development documents (e.g. Swale Borough Local Plan 2008) must ensure that the requirements of PPS25 are fully implemented.</p>
Landscape	<p>In general the Plan is not to construct new defences in currently undefended areas so most of the coastline and the character of the AONBs and Special Landscape Areas will remain as today.</p> <p>However, the recommended long-term plan for the SMP is to sustain the current urban areas through proactive management of the existing defences, recognising that defences will be need to be upgraded in the long term. In some areas the construction of new, more substantial defences, may be required in the medium or longer-term and the visual and landscape impacts would need to be considered further at strategy or scheme level.</p> <p>Where a no active intervention policy is recommended, there is the potential for unsightly defences as they deteriorate in the long-term and this effect would require further consideration at strategy or scheme level.</p> <p>Opportunities for forming a less managed / free functioning dynamic shoreline in other areas have been taken to create a more natural estuary landscape, reducing the extent of man-made structures along the frontages. This is deemed to provide a more sustainable and aesthetically appealing landscape than a policy of defending the whole estuary, which would involve construction of new, more substantial defences.</p> <p>In general, the plan will maintain the landscape quality of the majority of frontages.</p>	<p>The SMP policies will be developed and implemented in accordance with the policies of the AONB Management Plans.</p>

SEA Environmental Receptor	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP with relevant Plans and Programmes
Historic Environment (Cultural Heritage)	<p>There are a wide range of heritage sites along the coast and many more of these will be protected through the SMP policies than would survive under a no active intervention policy. Significant protected features include the following Scheduled Monuments (SMs); coastal artillery defences on the Isle of Grain, Upnor Castle, Temple Manor, Bishop’s Palace at Halling, Aylesford Bridge, Chatham Dockyard, Oare Gunpowder Works, Castle Rough, Sayes Court, Queenborough Castle and Sheerness Defences. There are also many unscheduled sites of importance that are protected, along with areas of archaeological potential. Many listed buildings and Conservation Areas within the urban areas will also be protected under the recommended plan.</p> <p>However, policies which promote long term realignment will invariably impact upon the historic environment, as the coverage of the coastal heritage resource is so extensive. There may be possible damage to or loss of historic environmental features due to flooding and/or erosion including:</p> <ul style="list-style-type: none"> • Several Scheduled Monuments (e.g. Cockham Wood Fort, Hoo Fort and Darnet Fort); • Historic revetments; and • Unknown buried heritage <p>These increased risks under the recommended long term plan for this SMP, must be recognised and consideration should be given to an appropriate programme of survey, recording and investigation to record these important sites, and those potential features not yet identified.</p>	<p>Local Development Document policies provide protection for the historic environment. Implementation of the SMP will try to ensure full adherence to these policies (wherever possible) through coastal management activities.</p>
Material Assets and Infrastructure	<p>The proposed SMP policies are unlikely to affect marine activities and in many areas will protect port, marina and harbour facilities.</p> <p>Major infrastructure in the SMP area, including major roads, railways and other transport links, the Ports of Chatham and Sheerness, and power stations at Kingsnorth and Grain, will continue to be protected under the recommended policies. However, where there is a change in management policy and a return to natural processes is considered beneficial for European sites through either MR or NAI or where a hold the line policy is no longer acceptable economically or technically, there is potential for some impacts on infrastructure such as a small local road between Funton and Raspberry Hill, a dredging disposal site and impacts on current and future commercial traffic in the estuaries.</p> <p>Some re-routing of infrastructure will be required in the medium and longer term under this SMP 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.</p>	<p>Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities.</p> <p>The South East Plan and Local development documents must ensure that the requirements of PPS25 are fully implemented.</p> <p>The South East Plan and other development plans will influence the nature and location of new infrastructure. The SMP should help to influence and ensure that new infrastructure is located appropriately where the risks from coastal flooding or erosion can be managed appropriately.</p>
Land Use	<p>Agriculture represents an important part of the local economy and along the estuary shorelines there are various grades of agricultural land. Some areas of agricultural land (including Grade 1 agricultural land) will be exposed to coastal flooding and erosion under Managed Realignment or No Active Intervention policies. It should be noted that degree of exposure will be dependant on the extent of Managed Realignment, which will be subject to further studies following the SMP.</p>	<p>Local Development Plans (e.g. Swale Borough Local Plan 2008) influence changes in Grades 1 to 3a agricultural land; some high grade agricultural land in the study area will be affected by the preferred SMP policy options.</p>
Population and Human Health	<p>For much of the coastline, the preferred SMP 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.</p> <p>For urban and industrial areas of the SMP shoreline the recommended plan is to maintain existing defences where it is economically viable, to do so, in the long term. This is to minimise risk to property and assets along the extensively developed sections of the estuaries. However, for some significant sections of the shoreline, a change in management policy has been identified in the longer term where a long term Hold the Line policy will not be economically viable, technically sustainable, or environmentally acceptable. In these locations policies of No Active Intervention or Managed Realignment need to be considered. The SMP has identified areas where a more naturally functioning coastline would be to the benefit of the natural environment and to estuarine processes. However, there would be potential changes to land and environmental assets should these policies be implemented.</p> <p>For the proposed recommended plan, the maximum number of built assets lost to erosion by year 2105 would potentially be 4 (3 heritage assets, 1 residential and 1 commercial building). This compares to the No Active Intervention baseline where, erosion losses throughout the SMP frontage could total 101 residential, 24 commercial properties and 3 heritage assets. Consequently the plan provides for protection from erosion to over 100 properties over the next 100 years.</p> <p>The above figures only relate to losses through shoreline erosion. In addition, there are vast numbers of assets that could potentially be at risk from inundation under No Active Intervention policies on the flood risk frontages. These include around 170 properties on and around the Isle of Grain, 160 properties around Kingsnorth, 4,200 properties in the Medway Towns (Strood, Frindsbury, Chatham, Rochester and Gillingham), 1,350 properties between Medway Bridge and Allington Lock, 180 properties between Gillingham and Kingsferry Bridge, 4,300 properties in the Sittingbourne and Faversham areas and 8,200 properties on the Isle of Sheppey (Sheerness, Queenborough, Rushenden and Shell Ness). This gives a total of around 18,560 properties that could potentially be lost due to permanent or frequent inundation. Under the recommended policies the great majority of these assets will be protected, although a Managed Realignment option at Shell Ness (in conjunction with a Managed Realignment policy along the adjacent open coast – Policy Unit 4a 06 Leysdown-on-Sea to Shell Ness)</p>	<p>Consider implications of development in tidal floodplains or in coastal areas subject to erosion in consultation with the Local Authorities.</p> <p>The Regional Spatial Strategy (South East Plan) 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.</p>

SEA Environmental Receptor	Cumulative effects across the whole plan area (sum of Policy Unit impacts)	Interaction of SMP with relevant Plans and Programmes
	<p>will result in increased flood and erosion risk to properties.</p> <p>The proposed SMP policies will continue to provide protection to the estuaries' historic conservation areas (e.g. Rochester, Chatham Historic Dockyard and Queenborough) and the rural estuary environment that attract visitors (e.g. walkers, cyclists, photographers, birdwatchers). However, in some areas, access routes to the shoreline and public rights of way may be affected where policies have been identified where feasible, that lead to a more natural shoreline.</p>	

K8.4 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 SMP 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 **Section 6 – Action Plan** in the **main SMP 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.

It should also be noted that documenting the SEA process undertaken (i.e. retrospectively) after completion of the SMP may introduce some uncertainty and difficulties in ensuring clarity in the SEA decision-making process.

K8.5 MONITORING

Detailed monitoring and mitigation requirements will be investigated in detail as part of future strategy studies and schemes, rather than the SMP.

The approach to environmental monitoring activities or actions will comprise: -

- Development of habitat management and monitoring plans, where appropriate;
- Need to carry out Habitat Regulations Assessments at strategy/scheme level for some European sites (see Annex 2 for relevant coastal sections);
- Investigating opportunities for managed realignment for habitat creation (see Table 8.3);
- Continuing to consult key stakeholders and the general public during strategy development; and,

- Further studies at strategy or scheme level to investigate the potential impacts of flooding and erosion on important heritage features (known and unknown) at risk and to consider an appropriate programme of survey, recording and investigation to record these important sites, and those potential features not yet identified.

Specific monitoring with an SEA focus will be undertaken to inform subsequent levels of assessment (e.g. environmental assessment at strategy and scheme level). The **Action Plan** in the **main SMP document** identifies estuary wide and local studies that will be required to inform the policies. These studies will be undertaken to inform future reviews of the Medway Estuary and Swale SMP and the Isle of Grain to South Foreland SMP2.

Particular requirements relate to further (or ongoing) studies at various locations (see Table 8.3). Table 8.3 was developed for managed realignment and no active intervention policies, where opportunities for habitat creation were identified. It's development was based on:

- The action plan that was agreed with the elected members and client steering group
- A knowledge of the necessary studies based on the remaining uncertainties associated with the implementation of the policies

Table 8.3 was included in the public consultation documents.

Table 8.3: Monitoring and further study requirements for policy units.

Policy Unit		Requirements
E4 02	Colemouth Creek to Bee Ness Jetty	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 04	Power Station to Cockham Wood	Further studies to investigate Managed Realignment i.e. the viability of the policy; the flood risk consequences of undertaking managed realignment; future morphology of the estuary define the standard and alignment of defences.
E4 05	Cockham Wood	Monitoring to examine present and future shoreline evolution under a policy of No Active Intervention.
E4 08	North Halling to Snodland	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the combined effect of multiple realignments between Medway Bridge and Allington Lock; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 09	Snodland to Allington Lock	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the combined effect of multiple realignments between Medway Bridge and Allington Lock; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 10	Allington Lock to North Wouldham	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the

Policy Unit		Requirements
		estuary; the combined effect of multiple realignments between Medway Bridge and Allington Lock; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 11	Wouldham Marshes	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 14	The Strand to West Motney Hill	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; potential contamination; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 15	Motney Hill to Ham Green	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 16	Ham green to East of Upchurch	Monitoring to examine present and future shoreline evolution under a policy of No Active Intervention.
E4 17	East of Upchurch to East Lower Halstow	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 18	Barksore Marshes	Further studies to investigate Managed Realignment and No Active Intervention i.e. the viability of the policies; future morphology of the estuary; potential contamination; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences under Managed Realignment. Monitoring to examine present and future shoreline evolution under a policy of No Active Intervention.
E4 19	Funton to Raspberry Hill	Monitoring to examine present and future shoreline evolution under a policy of No Active Intervention.
E4 20	Chetney Marshes	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 22	Milton Creek	Further studies to consider the impact of groundwater extraction on the policy of hold the line.
E4 23	Murston Pits to Faversham Creek	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and

Policy Unit		Requirements
		alignment of defences.
E4 25	Shell Ness to Sayes Court	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 26	Sayes Court to North Elmley Island	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 27	North Elmley Island to Knigsferry Bridge	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 28	Kingsferry Bridge to Rushenden	Further studies to investigate Managed Realignment i.e. the viability of the policy; future morphology of the estuary; potential contamination; the flood risk consequences of undertaking managed realignment; define the standard and alignment of defences.
E4 30	Medway Islands	Monitoring to examine present and future evolution of island habitats under a policy of No Active Intervention.

Additional monitoring actions will be identified from further assessment and investigation at strategy or scheme level, where required to address the limitations of the SMP. These additional monitoring measures will be reflected and incorporated into the **SMP Action Plan**.

K8.6 WHAT HAPPENS NOW?

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

Generally, the policy recommendations in the SMP will be implemented through the development of 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. Environmental Statements and Appropriate Assessments (if required) will be prepared at scheme level, and these will be subject to public consultation.

The plan, which will require on-going review, will be informed by further understanding of changes in the environment, policy/legislation changes and environmental assessment. The process of implementation will be underpinned by monitoring of the shoreline to identify ongoing behaviour, 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.

ANNEX 1 ENVIRONMENTAL ASSESSMENT OF ALTERNATIVE SMP POLICY OPTIONS

Annex 1 Environmental Assessment of SMP Policy Options

Text highlighted in blue shows the preferred policy scenario.

Coastal Section	SMP Policy ⁹	SEA Receptors						
		Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
Grain Tower to Colemouth Creek	NAI	Limited opportunity to create intertidal habitat. Creation of transitional habitat as defences fail up to MHWS level, in limited locations. Loss of freshwater habitat as defences fail. Damage to habitat at Grain Pit SNCI.	Works with natural processes.	No known impacts on water quality.	Loss of industrial estuary landscape and historic defences, degradation of landscape as defences fail. Improved visual quality over time as more natural coastline landscape	Possible damage to Coastal Artillery defences Scheduled Monument and non-statutory features as defences fail.	Uncontrolled loss of important economic assets e.g. oil refinery site, Grain Power Station, Thamesport. Disruption/damage to infrastructure along the frontage to flooding and erosion. Reduced potential/loss of grade 4 agricultural land	No loss of properties on high ground in short and medium-term. Potential damage to/loss of properties from flood and erosion in long-term. Disrupt recreation, paths, access to foreshore and fishing as defences fail.
	HTL	No biodiversity opportunities. Net loss of mudflat and shingle beach due to coastal squeeze.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape will be maintained but increased defences	No loss of SM.	Protection of economic assets and infrastructure along the frontage and low-lying areas. No loss of agricultural land	No loss of properties on high ground. Potential loss of amenity beaches with coastal squeeze. Possible disruption to recreation with flood risk management works. No loss of public footpath.

⁹ HTL = Hold the line
 ATL = Advance the line
 MR = Managed realignment
 NAI = No active intervention

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
	ATL	Potential to create new habitat landward of the defences. Adverse effects on coastal processes. Net loss of mudflat and shingle beach due to coastal squeeze. Opportunity to create coastal grazing marsh.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacting on visual estuary landscape	Possible loss of/damage to SM (Grain Tower) dependent on advanced position. Loss of submerged features	Will enhance economic assets but loss of pipelines and jetties in estuary. No loss of agricultural land	Increased protection to the Isle of Grain. Loss of amenity beach, possible creation of new recreation area. No loss of public footpath.
	MR	Potential to create intertidal habitat in limited locations. Possible erosion of some habitat in the long-term as sea levels rise and sediment supply reduced. Loss of freshwater habitat. Possible loss of Grain Pit SNCI dependent on realignment.	Works with natural processes.	No known impacts on water quality.	Loss of industrial estuary landscape and historic defences, dependent on realignment position. Opportunity to improve visual quality over time as more natural coastline landscape quality	Possible loss of SM dependent on realignment position. Potential loss of buried features	No benefits in the short-term given that important economic assets and infrastructure are located on the shoreline. Loss of grade 2 and grade 4 land in medium/long-term dependent on realignment. Disruption to/loss of infrastructure and economic assets dependent on realignment position in medium/long-term.	Possible loss/disruption to public rights of way dependent on realignment position. Opportunity to incorporate new paths into realignment.
Colemouth Creek to Bee	NAI	Some loss of intertidal habitat	Works with natural processes.	No known impacts on water quality.	Degradation of landscape as defences		Loss of oil refinery site, in medium term as	Potential loss of residential and

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
Ness Jetty		with coastal squeeze in contemporary eroding areas, accretion elsewhere in short term. Potential to create intertidal habitat in medium-term as defences fail.			fail. Improved visual quality over time as more natural coastline landscape		defences fail. No loss of Thamesport. Potential damage to industrial area around Kingsnorth Power Station. Loss of infrastructure and agricultural land as defences fail in medium-term.	commercial properties in Lower Stoke Village and edge of Middle Stoke Village in medium-term as defences fail Damage/loss of recreational facilities (e.g. public footpath) as defences fail in medium-term.
	HTL	Some loss of intertidal habitat with coastal squeeze in contemporary eroding areas, accretion elsewhere	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape will be maintained but increased defences		No loss of important economic assets e.g. oil refinery site, Thamesport. No loss of major infrastructure. No loss of agricultural land.	No loss of properties in Lower Stoke Village. No loss of recreational facilities to flooding but possible disruption during construction of FRM works.
	ATL	Loss of intertidal habitat as defences constructed seaward and with coastal squeeze. Opportunity to enhance coastal grazing marsh, as long as reclaimed land not used for development.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacting on visual estuary landscape		No loss of important economic assets e.g. oil refinery site, Thamesport. No loss of major infrastructure. No loss of agricultural land.	No loss of properties in Lower Stoke Village. Loss of moorings and wharfage at Stoke Saltings in short-term. No loss of recreational features.
	MR	No loss of	Works with natural	No known impacts on	Loss of industrial		No loss of important	No loss of properties

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		intertidal habitat.	processes.	water quality.	estuary landscape and historic defences, dependent on realignment position. Opportunity to improve visual quality over time as more natural coastline landscape quality		economic assets e.g. oil refinery site, Thamesport. Potential loss/relocation of/disruption to major infrastructure. Loss of grade 1 and 4 agricultural land dependent on realignment position in short, medium and long-term. Loss of some recreational features dependent on realignment position.	in Lower Stoke Village. Disruption to footpath and opportunities for new footpath on retreated defences.
Kingsnorth Power Station	NAI	Opportunity to create intertidal habitat in medium-term. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Works with natural processes.	No known impacts on water quality.	Degradation of visual amenity as defences fail in medium-term and loss of estuary landscape features.	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	Loss/damage to infrastructure as defences fail in medium-term.	No loss of residential, commercial properties or community facilities in Hoo St Werburgh. Disruption to/loss of footpaths as defences fail in medium-term
	HTL	Some loss of intertidal habitat with coastal squeeze. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	No loss of infrastructure	No loss of residential, commercial properties or community facilities in Hoo St Werburgh.

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
	ATL	Opportunity to create coastal grazing marsh from short-term however no habitat creation opportunities if reclaimed land used for development. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences impact on visual quality of estuary landscape.	No loss of Cockham Wood Fort but potential loss of submerged interests unacceptable.	No loss of infrastructure	No loss of residential, commercial properties or community facilities in Hoo St Werburgh. Loss of moorings in short-term
	MR	Opportunity to create intertidal habitat from short-term. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Works with natural processes.	No known impacts on water quality.	Loss of industrial estuary features, potential to enhance visual quality	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	Loss/disruption to infrastructure dependent on realignment, from short-term.	No loss of residential, commercial properties or community facilities in Hoo St Werburgh. Disruption to footpath on existing defences in short-term. Opportunities for new footpath on retreated defences.
Power Station to Cockham Wood	NAI	Some loss of intertidal habitat in short-term with coastal squeeze but no net loss in medium/long-term. No loss of habitat	Works with natural processes.	Potential release of contaminants from Kingsnorth Power Station in medium-term.	Degradation of visual amenity as defences fail in medium-term but improved visual quality and more natural coastline as defences fail.	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	Loss/damage to Kingsnorth Power Station and infrastructure as defences fail in the medium-term.	Potential damage to residential and commercial properties, and community facilities in and in the vicinity of Hoo St Werburgh

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		at Tower Hill to Cockham Wood SSSI.						as defences fail in the medium-term. Disruption to/loss of footpaths as defences fail in medium-term.
	HTL	Some loss of intertidal habitat with coastal squeeze. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Restricts natural geomorphological and erosional processes.	Prevents release of contaminants from Kingsnorth Power Station in medium-term.	Landscape maintained but increased defences	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	Protection of Kingsnorth Power Station	No loss to properties or community facilities in and in the vicinity of Hoo St Werburgh
	ATL	Loss of intertidal habitat as defences constructed seawards. Opportunity to create coastal grazing marsh from short-term however no habitat creation opportunities if reclaimed land used for development. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Restricts natural geomorphological and erosional processes.	Prevents release of contaminants from Kingsnorth Power Station in medium-term.	Hard defences impact on visual quality of estuary landscape.	No loss of Cockham Wood Fort but potential loss of submerged interests unacceptable.	Protection of Kingsnorth Power Station	No loss to properties or community facilities in and in the vicinity of Hoo St Werburgh. Loss of moorings in short-term

Coastal Section	SMP Policy ⁹	SEA Receptors						
		Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
	MR	Opportunity to create intertidal habitat from short-term. No loss of habitat at Tower Hill to Cockham Wood SSSI.	Works with natural processes.	Potential release of contaminants from Kingsnorth Power Station in medium-term, dependent on realignment extent.	Potential to enhance visual quality	No loss of Cockham Wood Fort but potential loss of non-statutory heritage features.	Protection of Kingsnorth Power Station. Loss/damage to infrastructure dependent on realignment from short-term.	No loss to properties or community facilities in and in the vicinity of Hoo St Werburgh. Disruption to footpath on existing defences in short-term. Opportunity for new footpath on retreated defences.
Cockham Wood	NAI	No net loss of intertidal habitat.	Beneficial to the stratigraphic features of Tower Hill to Cockham Wood SSSI	No known impacts on water quality.	Landscape maintained	Damage to Cockham Wood Fort SM (short-term) and loss in medium/long-term.	No loss of major infrastructure	No loss of properties or community facilities. Potential loss of footpath and loss of access to foreshore in short-term.
	HTL	Net loss of intertidal habitat due to coastal squeeze, in front of defences.	Potential damage to Tower Hill to Cockham Wood SSSI, obscuring exposures and potentially affecting access to interest features.	No known impacts on water quality.	Will degrade historic/estuary landscape and new hard defences.	No loss of Cockham Wood Fort from flood and erosion but potential damage from FRM works.	No loss of major infrastructure	No loss of properties or community facilities. No loss of footpath around SM, but potential increased erosion of paths either side
	MR	No net loss of intertidal habitat.	Beneficial to the stratigraphic features of Tower Hill to Cockham Wood SSSI, depending on	No known impacts on water quality.	Landscape maintained	Damage to Cockham Wood Fort SM from short-term.	No loss of major infrastructure	No loss of properties or community facilities. Potential loss of footpath and loss of access to foreshore in short-

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
			extent of realignment.					term
Lower Upnor to Medway Bridge	NAI	Erosion of habitat at Temple Marsh	Works with natural processes.	No known impacts on water quality.	Degradation of urban landscape quality as defences fail.	Potential damage to Temple Manor, Strood SM in short-term with potential loss in medium-term. Damage to Upnor Castle in medium-term and potential loss in long-term. Potential loss of non-statutory heritage features unacceptable.	Disruption/damage to infrastructure with increasing inundation.	Potential damage to a limited number of properties and community facilities at Frindsbury and Strood, Kower and Upper Upnor, and industrial areas on medway City Estate with increasing inundation. Disruption to/damage to/loss of recreational facilities including footpaths as defences fail in the short-term.
	HTL	No loss of habitat at Temple Marsh	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences	Protection of Temple Manor, Strood and Upnor Castle SMs	No loss of major infrastructure	No loss of residential and commercial properties or recreational facilities
	ATL	No loss of habitat at Temple Marsh	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacts on visual landscape of river and urban area and potential loss of estuary landscape features in medium-term	Protection of Temple Manor, Strood and Upnor Castle SMs. Loss of submerged heritage features unacceptable from short-term.	No loss of major infrastructure	No loss of residential and commercial properties. Loss of moorings. Opportunity to enhance/potential to create new recreation facilities in reclaimed area in the short-

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
								term.
	MR	No loss of habitat at Temple Marsh	Works with natural processes.	No known impacts on water quality.	Opportunity to improve visual quality.	Protection of Temple Manor, Strood and Upnor Castle SMS	No loss of major infrastructure. Secondary defences protect infrastructure.	No loss of residential and commercial properties. Secondary defences protect commercial assets.
Medway Bridge to North Halling	NAI	Potential habitat creation opportunities.	Works with natural processes.	No known impacts on water quality.	Degradation of river landscape quality as defences fail in the short-term but improved visual quality in the medium-term as more natural shoreline	Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Loss of infrastructure as defences fail in the short-term	Potential damage to residential properties on the edge of Halling/North Halling/Cuxton as defences fail in the short-term and if railway defences fail in the medium-term. Damage to/loss of recreational facilities (including footpath) as defences fail in the short-term.
	HTL	No known impacts on intertidal or designated habitats.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained.	Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	No loss of infrastructure	No loss of residential properties or recreational assets.
	MR	Potential for habitat creation.	Works with natural processes.	No known impacts on water quality.	Opportunity to improve visual quality. Potential loss of river valley features and degradation of visual landscape but more	Loss of buried heritage acceptable as long as survey, record and monitor finds.	No loss of infrastructure in short-term but potential loss in medium-term depending on realignment.	Potential loss of properties at Cuxton dependent on realignment in medium-term. Loss of recreation area

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
					natural river in medium-term.			
North Halling to Snodland	NAI	Loss of existing freshwater habitats at Halling, Holborough Marshes and Snodland Meadow, as defences fail in the short-term. Opportunity to create intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Landscape maintained at Halling but degradation of visual features as defences fail in the short-term More natural shoreline in medium/long-term.	Damage/loss of Bishops Palace at Halling SM in medium/long-term. Loss of non-statutory heritage features unacceptable at Halling in medium-term.	Damage to railway at Holborough as defences fail in the short-term with potential medium-term loss.	Damage to properties on the edge of Halling/north Halling/Snodland dependent on where defences fail in short-term and loss of properties in medium-term. Damage and potential loss of commercial properties and industrial areas along river frontage (inc near Halling and Cuxton Industrial Estate). Damage/disruption to recreational facilities as defences fail from short-term.
	HTL	Protection of freshwater habitat	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences	Protection of of Bishops Palace at Halling SM. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Protection of railway at Holborough	No loss of properties or recreational facilities
	MR	Loss of existing	Works with natural	No known impacts on	Loss of river valley	Protection of of Bishops	Protection of railway at	No loss of residential

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		freshwater habitats at Halling, Holborough Marshes and Snodland Meadow from the short-term. Opportunity to create intertidal habitat.	processes.	water quality.	features but improved visual quality as more natural shoreline elsewhere	Palace at Halling SM. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Holborough	properties but possible damage to commercial properties, dependent on realignment from short-term. Disruption to existing footpath. Opportunities for new footpath on retreated defences.
Snodland to Allington Lock	NAI	Loss of freshwater habitats at Leybourne Lakes, as defences fail in the short-term. Opportunity to create intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Degradation of heritage/river valley landscape in the short-term and visual amenity compromised	Damage to/loss of SM and Aylesford Conservation Area in the medium-term. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Damage to/loss of industrial areas, including paper mills at New Hythe from short-term. Damage/disruption to railway.	Damage/loss of properties in New Hythe, Lunsford, Leybourne Lakes and Aylesford, and community facilities from short-term. Damage/disruption to recreational facilities as defences fail from short-term.
	HTL	Protection of freshwater habitats at Leybourne Lakes	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Protection of SM and Aylesford Conservation Area. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Protection of industrial areas and major infrastructure	Protection of properties, community or recreational facilities.
	MR	Loss of freshwater habitats at Leybourne Lakes.	Works with natural processes.	No known impacts on water quality.	Landscape maintained but defences further inland in sections.	Protection of SM and Aylesford Conservation Area. Loss of buried	Protection of industrial areas and major infrastructure	No loss of properties or community facilities as defences

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		Opportunity to create intertidal habitat.				heritage acceptable as long as survey, record and monitor finds.		seaward of road. Disruption to existing footpath. Opportunities for new footpath on retreated defences.
Allington Lock to North Wouldham	NAI	Loss of freshwater habitats at River Medway and Marshes, Wouldham SNCI and Burham Marshes, and loss of rough grassland adjacent to Burham Marshes, as defences fail in the short-term. Opportunity to create intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Degradation of heritage/river valley landscape in the short-term and visual amenity compromised	Damage to/loss of SMs and Aylesford Conservation Area in the short-term. Loss of non-statutory heritage features unacceptable	Loss of industrial areas in Forstal and Aylesford, and infrastructure in short-term. Reduced potential of grades 2 and 3 agricultural land as defences fail in short-term and loss in medium-term.	Loss of residential properties at Forstal, Aylesford, near Burham and Wouldham from short-term. Loss of commercial properties and community facilities at Forstal and Aylesford from short-term. Loss of access to foreshore
	HTL	Protection of freshwater habitats and rough grassland at River Medway and Marshes, Wouldham SNCI and Burham Marshes.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Protection of SMs and Aylesford Conservation Area. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Protection of industrial areas in Forstal and Aylesford, agricultural land and infrastructure	Protection of residential properties
	MR	Loss of freshwater habitats at River	Works with natural processes.	No known impacts on water quality.	Landscape maintained but defences further	Protection of SMs and Aylesford Conservation	Potential loss of industrial areas in	Potential loss of residential and

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		Medway and Marshes, Wouldham SNCI and loss of rough grassland. Opportunity to create intertidal habitat.			inland in sections.	Area. Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Forstal and Aylesford and some infrastructure in medium-term, dependent on realignment. Loss of grades 2 and 3 agricultural land.	commercial properties, and community facilities in medium-term, dependent on realignment. Disruption to existing footpath. Opportunities for new footpath on retreated defences.
Wouldham Marshes	NAI	Loss of freshwater habitats at River Medway and Marshes, Wouldham SNCI, as defences fail in the short-term.	Works with natural processes.	No known impacts on water quality.	Some landscape features lost, visual quality of river and marsh landscape remains	Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Loss of infrastructure in short-term. Reduced potential of agricultural land as defences fail in short-term and loss in medium-term.	Loss of residential properties near Burham and Wouldham from short-term. Loss of access to river. Damage/disruption to recreational facilities as defences fail from short-term.
	HTL	Protection of freshwater habitats at River Medway and Marshes, Wouldham SNCI	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Protection of agricultural land and infrastructure	Protection of residential properties and recreational facilities
	MR	Loss of freshwater habitats at River Medway and Marshes, Wouldham SNCI.	Works with natural processes.	No known impacts on water quality.	Some landscape features lost, visual quality of river and marsh landscape remains	Loss of non-statutory heritage features acceptable as long as survey, record and monitor finds.	Protection of infrastructure Loss of grades 2 and 4 agricultural land.	Protection of residential properties Disruption to existing footpath. Opportunities for new

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
								footpath on retreated defences.
Medway Bridge to West St Mary's Island	NAI	Potential for habitat creation	Works with natural processes.	No known impacts on water quality.	Degradation of landscape quality as defences fail in medium-term	Damage to/loss of Chatham Historic Dockyard and Star Hill to Sun Pier Conservation Areas in medium-term. Loss of non-statutory heritage features unacceptable from medium-term	Loss of infrastructure in medium-term. Disruption to/damage to Chatham Dock as defences fail in medium-term.	Damage/loss of residential properties and community facilities at St Mary's Island and at Rochester Riverside, and commercial properties along Rochester waterfront and at St Mary's Island in medium-term. Damage/disruption to recreational facilities (e.g. footpath) as defences fail in medium-term.
	HTL	No known impacts on intertidal or designated habitat.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Protection of Chatham Historic Dockyard and Star Hill to Sun Pier Conservation Areas Loss of non-statutory heritage features unacceptable from medium-term	Protection of infrastructure	Protection of properties and recreational facilities
	ATL	Loss of marine habitat	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacts on visual landscape of river and urban area.	Protection of Chatham Historic Dockyard and Star Hill to Sun Pier Conservation Areas Loss of non-statutory	Protection of infrastructure	Protection of properties. Loss of moorings in short-term. Opportunities to enhance recreational

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
						heritage features unacceptable from short-term		facilities (e.g. footpath).
St Marys Island to The Strand	NAI	Loss of intertidal habitat in historically eroding areas, accretion in others in short term. No net loss of intertidal habitat in medium/long-term.	Works with natural processes.	No known impacts on water quality.	Degradation of landscape quality in the medium-term as defences fail.	Loss of non-statutory heritage unacceptable in medium-term	Disruption/damage to major infrastructure as defences fail in medium term and loss of infrastructure in long-term.	Potential damage to properties, recreational and community facilities along Gillingham waterfront as defences fail in medium-term. However, most properties are landward of A289. Loss of footpaths on or near defences in medium-term.
	HTL	Loss of intertidal habitat in historically eroding areas, with coastal squeeze, accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Protection of infrastructure	Protection of properties and recreational facilities along Gillingham waterfront
	MR	No loss of intertidal habitat	Works with natural processes.	No known impacts on water quality.	Opportunity to enhance visual quality of landscape.	Loss of non-statutory heritage unacceptable in long-term	Loss of infrastructure due to realignment in long-term.	Loss of properties and community facilities along Gillingham waterfront due to realignment in long-term. Disruption to existing footpath. Opportunities for new footpath on retreated

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
								defences.
	ATL	Loss of intertidal habitat	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacts on visual landscape of river and urban area.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Protection of infrastructure	Protection of properties along Gillingham waterfront. Loss of moorings in short-term.
The Strand to West Motney Hill	NAI	Some initial erosion but no net loss of intertidal habitat in medium/long-term. Opportunity to create intertidal habitat in medium-term	Works with natural processes.	No known impacts on water quality.	Loss of some landscape features in the medium-term, however, visual landscape amenity not compromised.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Damage to/loss of A289 in medium-term.	No loss of residential properties but damage to and loss of commercial properties and community facilities along Gillingham waterfront, and residential properties at Lower Twydall as defences fail in medium-term. Disruption to recreational assets and loss of footpaths in medium-term.
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in the long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Protection of A289	No loss of properties or community facilities.
	MR	Opportunity to create intertidal habitat in short-	Works with natural processes.	No known impacts on water quality.	Loss of some landscape features in the short-term,	Loss of non-statutory heritage acceptable as long as survey, record	Protection of A289	No loss of properties or community facilities. Disruption

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		term			however, visual landscape amenity not compromised.	and monitor finds		to footpath on existing defence in short-term. Opportunities for new footpath on retreated defences. Possible loss of recreational facilities in short-term dependent on realignment.
	ATL	Loss of intertidal habitat.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, impacts on visual landscape of river and urban area.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds. Wrecks may constrain ATL.	Protection of A289	No loss of properties or community facilities.
Motney Hill to Ham Green	NAI	Some erosion of intertidal habitat due to coastal squeeze in the short term; also accretion in some areas. No net loss of intertidal habitat in medium/long-term. Loss of coastal grazing marsh as defences fail in the medium-term. Opportunity to create intertidal	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features, maintain visual quality of landscape	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Loss of infrastructure as all defences fail in the medium-term and erosion at Bedlams Bottom in the long-term. Loss/reduced potential of Grades 1, 2, 3 and 4 agricultural land as all defences fail in the medium-term.	Damage to/loss of residential properties at Bayford and commercial properties at Otterham Creek as defences fail in medium term. Disruption to recreation (e.g. paths, access to foreshore etc) in the medium-term.

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		habitat in medium-term						
	HTL	Some erosion of intertidal habitat due to coastal squeeze in the short term; also accretion in some areas. Net loss of intertidal habitat in the long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of properties or recreational features.
	MR	Loss of coastal grazing marsh. Opportunity to create intertidal habitat in short-term	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features, maintain visual quality of landscape but with retreated defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Possible loss of infrastructure from the short-term dependent on realignment position. Loss of Grades 1, 2, 3 and 4 agricultural land in the short-term.	No loss of properties; defences would be seaward of properties. Possible loss/disruption to recreational features in the short-term.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of residential properties but possible disturbance to commercial interests at Otterham Creek in the short-term. Loss of moorings in short-term.
Ham Green to East of	NAI	Some initial erosion of	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features in	Loss of non-statutory heritage acceptable as	Potential loss of agricultural land as	Possible loss of one residential property in

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
Upchurch		intertidal habitat but no net loss in medium and long-term.			long-term, maintain visual quality of landscape	long as survey and record finds	shoreline erodes in medium-term.	medium term and one property in long-term as shoreline erodes. Potential loss of footpath as shoreline erodes in medium-term.
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of agricultural land.	No loss of properties or recreational facilities
	MR	No net loss of intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features, maintain visual quality of landscape but with retreated defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Loss of Grade 1 agricultural land from short-term	No loss of properties but potential loss of recreational facilities, dependent on realignment.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of agricultural land.	No loss of properties. Loss of moorings in short-term
East of Upchurch to East Lower Halstow	NAI	Some initial erosion of intertidal habitat but no net loss in	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features in medium-term	Loss of historic wharf in medium-term within Lower Halstow Conservation Area. Loss	Loss of infrastructure as all defences fail in medium-term. Potential loss of Grade 1	Damage/loss of properties at Bayford as defences fail in medium term.

Coastal Section	SMP Policy ⁹	SEA Receptors							
		Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health	
		medium and long-term. Opportunity for intertidal habitat creation in medium-term. Loss of coastal grazing marsh as defences fail in medium-term.					of non-statutory heritage acceptable as long as survey and record finds	agricultural land as all defences fail in medium-term.	Potential loss of footpath as shoreline erodes in medium-term.
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of residential properties or recreational facilities	
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation. Loss of coastal grazing marsh in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features, maintain visual quality of landscape but with retreated defences.	Possible loss of Lower Halstow Brickworks in short-term, dependent on realignment. Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure. Loss of Grade 1 agricultural land from short-term	No loss of residential properties but potential loss of recreational facilities, dependent on realignment.	
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of residential properties. Loss of moorings in short-term	

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		redevelopment.						
Barksore Marshes	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh as defences fail in short-term.	Works with natural processes.	No known impacts on water quality.	Visual quality maintained; more natural shoreline	Loss of non-statutory heritage acceptable as long as survey and record finds	No loss of infrastructure. Reduced potential/ loss of Grade 3 agricultural land in short-term.	No loss of residential properties.
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of residential properties or recreational facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation. Loss of coastal grazing marsh in short-term.	Works with natural processes.	No known impacts on water quality.	Visual quality maintained; more natural shoreline	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure. Loss of Grade 3 agricultural land from short-term	No loss of residential properties or recreational facilities.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of residential properties. Loss of moorings in short-term

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		reclaimed land is used for redevelopment.						
Funton to Raspberry Hill	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term.	Works with natural processes.	No known impacts on water quality.	Visual quality maintained; more natural shoreline	Loss of non-statutory heritage acceptable as long as survey and record finds	Potential damage to/loss of local road. Reduced potential/loss of Grade 2 agricultural land in short-term.	No loss of properties or recreational facilities
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of properties or recreational facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features. Visual quality maintained but with retreated defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	Loss of local road in the short-term. Loss of Grade 2 agricultural land from short-term	No loss of properties or recreational facilities
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of properties or recreational facilities
Chetney Marshes	NAI	No net loss of intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Visual quality maintained; more	Loss of non-statutory heritage acceptable as	Damage to pylons and roads in short-term.	No loss of properties. Loss of footpaths in

Coastal Section	SMP Policy ⁹	SEA Receptors						
		Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh in short-term			natural shoreline	long as survey and record finds	Reduced potential/ loss of Grade 4 agricultural land in short-term.	short-term.
	HTL	Some erosion of intertidal habitat due to coastal squeeze and net loss in long-term.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of properties or recreational facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation. Loss of coastal grazing marsh in short-term only.	Works with natural processes.	No known impacts on water quality.	Visual quality maintained; more natural shoreline.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure. Loss of Grade 4 agricultural land from short-term	No loss of properties. Potential loss of public footpath in short-term, dependent on realignment.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds	No loss of infrastructure or agricultural land.	No loss of properties or recreational facilities except moorings in the short-term.
Kingsferry	NAI	Some initial	Works with natural	No known impacts on	Degradation of	Potential loss of heritage	Reduced potential/	Loss of industry on

Coastal Section	SMP Policy ⁹	SEA Receptors						
		Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
Bridge to Milton Creek		erosion of mudflat but no net loss in medium and long-term. Opportunity for intertidal habitat creation in medium-term. Loss of coastal grazing marsh as defences fail in medium-term.	processes.	water quality.	landscape quality as defences fail; loss of features in medium-term	as defences fail in the medium-term. Some loss of non-statutory heritage acceptable along Swale as long as survey and record finds.	loss of agricultural land at Coldharbour Marshes in medium-term as defences fail. Disruption/damage to infrastructure on the floodplain as defences fail in the medium-term.	floodplain in medium-term. Potential for disruption to footpaths in the medium term as defences fail and other recreational facilities in the short term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Potential loss of submerged heritage in areas of coastal squeeze. Some loss of non-statutory heritage acceptable along Swale as long as survey and record finds.	No loss of infrastructure or agricultural land.	No loss of industry or recreational facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh in short-term only.	Works with natural processes.	No known impacts on water quality.	Loss of industrial and historic estuary landscape features	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	Relocation/ loss of infrastructure in short-term, dependent on realignment position. Loss of Grade 4 agricultural land from short-term Possible loss of/disruption to Ridham Dock industrial area, dependent on realignment	Loss of industry in short-term dependent on realignment. Loss of creekside paths in short-term.
	ATL	Loss of intertidal	Restricts natural	No known impacts on	Hard defences, visual	Potential loss of	No loss of	No loss of industry.

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	geomorphological and erosional processes.	water quality though potential to compromise objectives of WFD.	estuary landscape impacts	heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	infrastructure or agricultural land.	or recreational facilities except moorings in the short-term.
Milton Creek	NAI	Some initial erosion of mudflat but no net loss in medium and long-term. Opportunity for intertidal habitat creation in medium-term. Loss of coastal grazing marsh as defences fail in medium-term. Continued accretion in the creek and creation of transitional habitat in the medium-term	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features in medium-term	Potential loss of heritage as defences fail in the medium-term. Some loss of non-statutory heritage acceptable along Swale as long as survey and record finds.	Loss of industry on floodplain and relocation of/loss of infrastructure in medium-term. No loss of agricultural land.	Loss of residential and commercial properties at Kemsley, Sittingbourne, Conyer, Oare and Faversham and community facilities on floodplain in the medium-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Potential loss of submerged heritage in areas of coastal squeeze. Some loss of	No loss of industry or infrastructure. No loss of agricultural land. or	No loss of residential or commercial properties or community facilities

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		confined locations; accretion in others. Continued accretion in Milton Creek and potential loss of habitat due to coastal squeeze in the long-term.				non-statutory heritage acceptable along Swale as long as survey and record finds.		
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh in short-term only. Opportunity to enhance Milton Creek in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	Relocation/ loss of infrastructure in short-term, dependent on realignment position. No loss of agricultural land. Possible loss of industry, dependent on realignment	Possible loss of residential and commercial properties and community facilities, dependent on realignment position in short-term.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	No loss of industry or infrastructure. No loss of agricultural land.	No loss of residential or commercial properties or community facilities

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		redevelopment. Opportunity to enhance Milton Creek in medium-term.						
Murston Pits to Faversham	NAI	Some initial erosion of mudflat but no net loss in medium and long-term. Opportunity for intertidal habitat creation in medium-term. Loss of coastal grazing marsh as defences fail in medium-term. Damage to habitat at Conyer Pits in medium-term.	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features in medium-term; maintain visual quality of landscape	Potential loss of heritage as defences fail in the medium-term. Some loss of non-statutory heritage acceptable along Swale as long as survey and record finds. Loss/damage to historic creeks in medium-term.	Disruption to industry and reduced potential of agricultural land at Luddenham as defences fail in the medium-term. Disruption/damage to operation of Harty Ferry in the medium-term.	Damage to residential (e.g. at Kemsley, Sittingbourne, Conyer, Oare and Faversham), commercial and community properties as defences fail in the medium-term with loss of properties in the long-term. Disruption to some recreational facilities including footpaths in the medium-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences; maintain visual quality of landscape	No loss or damage to non-statutory heritage.	No loss of industry or infrastructure.	No loss of residential or commercial properties or community facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale	Possible loss of infrastructure and loss of Grade 4 agricultural land in short-term,	No loss of residential and commercial properties and community facilities.

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		creation in short-term. Loss of coastal grazing marsh in short-term only. Potential loss of habitat at Conyer Pits in short-term.				as long as survey, record finds and monitor.	dependent on realignment position.	Potential loss of quayside frontages, creekside paths and disabled facilities from the short-term, dependent on realignment position. Disruption to footpaths on existing defences. Opportunities for new footpath on retreated defences.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Damage to historic creeks from short-term. Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	No loss of industry or infrastructure. Potentially faster flows through restricted channel may affect Harty ferry operations from the short-term.	No loss of residential or commercial properties or community facilities. Loss of moorings in short-term.
Faversham to Nagden	NAI	Some initial erosion of mudflat but no net loss in medium and long-term. Opportunity for intertidal habitat creation in medium-term.	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features in medium-term; maintain visual quality of landscape	Potential loss of heritage as defences fail in the medium-term. Some loss of non-statutory heritage acceptable along Swale as long as survey and record finds. Loss/damage to historic	Damage to industry as defences fail in medium term with potential loss in long-term. Disruption to infrastructure in the medium-term and loss of infrastructure in	Damage to residential (e.g. at Kemsley, Sittingbourne, Conyer, Oare and Faversham), commercial and community properties

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		Loss of coastal grazing marsh as defences fail in medium-term.				creeks in medium-term.	long-term. Reduced potential of agricultural land in medium-term and loss in long-term.	as defences fail in the medium-term with loss of properties in the long-term. Disruption to recreation (e.g. footpaths) in the medium-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	No loss or damage to non-statutory heritage.	No loss of industry, agricultural land or infrastructure	No loss of residential or commercial properties, recreational features or community facilities.
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh in short-term only.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features; maintain visual quality of landscape	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	Possible loss of industry dependent on realignment position in the short-term. No loss of infrastructure. Loss of grade 3 agricultural land from short-term.	No loss of residential and commercial properties and community facilities. Disruption to footpath on existing defences. Opportunities for new footpath on retreated defences.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Potential loss of heritage. Some loss of non-statutory heritage acceptable along Swale as long as survey, record finds and monitor.	Possible disruption to industry using the estuary for transportation from the short-term. No loss of infrastructure or agricultural land.	No loss of residential or commercial properties, recreational features or community facilities.

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		reclaimed land is used for redevelopment.						
Shellness to Sayes Court	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of freshwater habitat in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features in medium-term; maintain visual quality of landscape	Some loss of non-statutory heritage acceptable as long as survey and record finds.	Reduced potential of agricultural land in short term as defences fail, with loss of Grades 4 and 5 agricultural land in the medium-term. Damage and disruption to local roads from the short-term.	Damage to residential properties at Shellness as defences fail in the short-term. Disruption to recreational facilities including public footpaths in short-term as defences fail.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of agricultural land or infrastructure	No loss of residential properties or recreational facilities.
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh from short-term only.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features; maintain visual quality of landscape but with retreated defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	Loss of low grades 4 and 5 agricultural land from the short-term. No loss of infrastructure	No loss of residential properties or recreational facilities.
	ATL	Loss of intertidal habitat. Opportunity to	Restricts natural geomorphological and erosional	No known impacts on water quality though potential to	Hard defences, visual estuary landscape impacts	Some loss of non-statutory heritage acceptable as long as	No loss of agricultural land or infrastructure.	No loss of residential properties but loss of moorings and beach

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	processes.	compromise objectives of WFD.		survey and record finds and monitor.		from the short-term.
Sayes Court to North Elmley Island	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of freshwater habitat in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of estuary landscape features in short-term; maintain visual quality of landscape	Some loss of non-statutory heritage acceptable as long as survey and record finds.	Reduced potential of agricultural land as defences fail in the short-term with loss of Grades 4 and 5 in the medium-term. Potential damage and disruption to local roads from the short-term.	Damage to scattered residential properties. Disruption to recreational facilities including access to the foreshore and public footpaths from the short-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of agricultural land or infrastructure	No loss of residential properties or recreational facilities.
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh from short-	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features; maintain visual quality of landscape but with retreated defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	Loss of grades 4 and 5 agricultural land from the short-term. No loss of infrastructure.	No loss of residential properties or recreational facilities (except disruption to the footpath). Opportunities for new footpath on retreated defences.

		SEA Receptors						
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		term.						
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of agricultural land or infrastructure. Potentially faster flows through restricted channel may affect Harty ferry operations from the short-term.	No loss of residential properties. Loss of moorings in the short-term.
North Elmley Island to Kingsferry Bridge	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of freshwater habitat and habitats on defence embankments in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of landscape features in short-term; visual quality of landscape maintained	Some loss of non-statutory heritage acceptable as long as survey and record finds.	Reduced potential of Grade 4 and 5 agricultural land in short-term as defences fail. Damage and disruption to A429 as defences fail in short-term and electricity pylons in the medium-term.	Damage to scattered residential properties on Minster Marshes as defences fail in short-term. Disruption to recreational facilities including public footpaths as defences fail in short-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations; accretion in others.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of agricultural land or infrastructure	No loss of residential properties or recreational facilities.
	MR	No net loss of intertidal habitat.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features;	Some loss of non-statutory heritage	Loss of low Grade 4 and 5 agricultural land	No loss of residential properties or

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
		Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh from short-term.			maintain visual quality of landscape but with retreated defences.	acceptable as long as survey and record finds and monitor.	from short-term. No loss of infrastructure.	recreational facilities.
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of agricultural land or infrastructure	No loss of residential properties. Loss of moorings in short-term.
Kingsferry Bridge to Rushenden	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of freshwater habitat in short-term.	Works with natural processes.	No known impacts on water quality.	Loss of landscape features in short-term; visual quality of landscape maintained	Some loss of non-statutory heritage acceptable as long as survey and record finds.	Damage and erosion of Rushenden Dredging Disposal site as defences fail in short-term. Damage and disruption to A429, railway and sewage works as defences fail in short-term and loss of this infrastructure in medium-term. Reduced potential of Grade 4 agricultural land at Neatscourt as	Possible damage to residential properties and community facilities at Rushenden, adjacent to frontage and commercial properties at Neats Court, in short-term as defences fail. Potential inundation of Rushenden/ Queenborough Regeneration area in

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
							defences fail in short-term.	short-term and loss of area in long-term. Disruption of recreational facilities including public footpaths in short-term and loss of paths on defences in medium-term
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality.	Landscape maintained but increased defences.	No loss of non-statutory heritage	Protection of Rushenden Dredging Disposal site. No loss of infrastructure or agricultural land	No loss of properties, recreational facilities or community facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Loss of coastal grazing marsh from short-term.	Works with natural processes.	No known impacts on water quality.	Loss of some estuary landscape features; maintain visual quality of landscape but with retreated defences.	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	No loss of Protection of Rushenden Dredging Disposal site. No loss of infrastructure. Loss of Grade 4 agricultural land at Minster Marshes dependent on realignment position in short-term.	No loss of properties or community facilities. Possible loss of access to foreshore at Rushenden in short-term, dependent on realignment position. Disruption to footpath on existing defences and loss of footpath across Neatscourt Marshes. Opportunities for new footpath on retreated

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
	ATL	Loss of intertidal habitat. Opportunity to create coastal grazing marsh, however no habitat creation opportunities if reclaimed land is used for redevelopment.	Restricts natural geomorphological and erosional processes.	No known impacts on water quality though potential to compromise objectives of WFD.	Hard defences, visual estuary landscape impacts	Some loss of non-statutory heritage acceptable as long as survey and record finds and monitor.	Protection of Rushenden Dredging Disposal site. No loss of infrastructure or agricultural land.	defences. No loss of properties, recreational facilities or community facilities
Rushenden to Sheerness	NAI	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term.			Degradation of landscape quality as defences fail.	Damage to Queenborough Conservation Area from short-term and Queenborough Castle Scheduled Monument in medium-term. Some loss of non-statutory heritage acceptable as long as survey and record finds (Sheerness). Possible damage to historic landscape at Queenborough and Rushenden in short-term.	Disruption/damage to Sheerness Port in the short-term with loss of port in medium/long-term. Potential erosion of bunds adjacent to Rushenden Dredging Disposal Site from short-term. Loss/damage to infrastructure from short-term. No loss of agricultural land.	Loss of residential and commercial properties, and damage to/loss of community facilities in Sheerness (including town centre assets), Queenborough and Rushenden from short-term. Loss of Queensborough/Rushenden regeneration and moorings as defences fail in short-term. Disruption of recreational facilities including footpaths and access to

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
								foreshore, as defences fail, in short-term.
	HTL	Loss of mudflat in historically eroding areas due to coastal squeeze in confined locations.			Landscape maintained but increased defences.	Some loss of non-statutory heritage acceptable as long as survey, record and monitor finds.	No loss of agricultural land.	No loss of properties, recreational facilities or community facilities
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in medium-term.			Degradation of heritage landscape at Queenborough.	Some loss of non-statutory heritage acceptable as long as survey, record and monitor finds.	No loss of agricultural land.	No loss of residential properties or community facilities but loss of/relocation of commercial properties north of Queenborough in medium-term. Potential loss of moorings in medium-term, dependent on realignment position.
	ATL	Loss of intertidal habitat as defences constructed seaward.		Possible damage to/loss of oyster beds at Queenborough from the short-term.	Hard defences, visual estuary landscape impacts	Damage to Queenborough Conservation area from short-term. Some loss of non-statutory heritage acceptable as long as survey, record and monitor finds (Sheerness and Rushenden). Damage to historic landscape at	No loss of agricultural land.	No loss of properties or community facilities. Loss of moorings and disruption to recreation and estuary in Queenborough creek from short-term.

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
						Queenborough in short-term.		
Medway Islands	NAI	Initial intertidal habitat loss in short-term with coastal squeeze in contemporary eroding area and accretion elsewhere. No net loss of intertidal habitat in medium/long-term. Opportunity for intertidal habitat creation in medium-term. Loss of coastal grazing marsh as defences fail in medium-term.			Loss of some landscape features in medium-term. Visual quality maintained.	Loss of non-statutory heritage acceptable as long as survey and record finds	Erosion of Hoo Island dredging disposal site in medium-term	No loss of recreational facilities.
	HTL	Intertidal habitat loss from short-term with coastal squeeze in contemporary eroding area and accretion elsewhere. Net loss of intertidal habitat in long-term.			Hard defences, impacts on visual quality of estuary landscape from short-term.	Loss of non-statutory heritage acceptable as long as survey, record and monitor finds.		No loss of recreational facilities.

SEA Receptors								
Coastal Section	SMP Policy ⁹	Biodiversity, Flora & Fauna	Soils and Geology	Water	Landscape	Historic Environment	Land Use, Infrastructure & Material Assets	Population & Human Health
	MR	No net loss of intertidal habitat. Opportunity for intertidal habitat creation in short-term. Potential loss of coastal grazing marsh			Loss of some estuary landscape features. Visual quality maintained.	Loss of buried heritage acceptable as long as survey, record and monitor finds.	Damage to Hoo Island dredging disposal site in short-term	No loss of recreational facilities.
	ATL	Loss of intertidal habitat as defences constructed seaward.			Hard defences, visual estuary landscape impacts	Loss of submerged interests not acceptable from short-term.		Loss of moorings from short-term

ANNEX 2 ENVIRONMENTAL ASSESSMENT OF PREFERRED POLICY SCENARIOS

Location reference:	Grain Tower to Colemouth Creek
Policy Unit reference:	E4 01

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	<ul style="list-style-type: none"> + Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land. 	<ul style="list-style-type: none"> + Designated landscape of the industrial area maintained. 	<ul style="list-style-type: none"> - Potential coastal squeeze of internationally designated intertidal habitat and nationally important (BAP) habitat in confined channel locations. ● No loss of internationally designated coastal grazing marsh. 	<ul style="list-style-type: none"> ● Coastal artillery Defences SM will remain protected. - Potential loss of unknown heritage buried in intertidal zone. 	<ul style="list-style-type: none"> ● Footpaths will remain. + Defences will continue to provide the appropriate standard of protection to built assets during this period. 	No known impacts on soils and geology	<ul style="list-style-type: none"> - Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
20-50 years	Undertake engineering works to hold the defence line.	As above	As above but with increased defences. — Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required in short-term. Landscape and visual impacts associated with defence raising should be considered further at strategy or scheme level.	The need for mitigation in relation to impacts on international conservation designations will be considered within an HRA.	Need to monitor and record finds.	No mitigation required	No mitigation required	The effects of coastal squeeze/accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme level.

Location reference:	Colemouth Creek to Bee Ness Jetty
Policy Unit reference:	E4 02

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will continue to provide the appropriate level of protection to infrastructure and most areas of agricultural land - Areas of Grade 4 land affected by managed realignment will become intertidal. 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained however some features will change through realignment. 	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere. + Creation of internationally and nationally important intertidal habitat. - Potential loss of small areas of internationally designated coastal grazing marsh and nationally important (BAP) habitat, dependant on 	<ul style="list-style-type: none"> - Potential loss of buried unknown heritage. 	No known impacts on population and human health.	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
				realignment extent.				
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Construct secondary defences in suitable realignment locations	As above, also - Potential of further loss of land if defences realigned further.	As above	As above	As above	- Potential loss of wharf and Medway Micro Lights if defences realigned in these locations. - Potential loss of footpath in some areas	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Construct secondary defences in suitable realignment locations.	As above	As above	- Potential coastal squeeze of internationally designated intertidal habitats and nationally important (BAP) habitat, as sediment supply decreases in the estuary. + Establishment of habitat in realigned areas. - Potential further loss of	As above	As above	As above	As above

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
				internationally designated coastal grazing marsh and nationally important (BAP) habitat, if defences realigned further.				
Mitigation Measures/Environmental Opportunities		Any proposals for changes in land use and new or replacement assets should be designed to account for larger changes in the third epoch. No mitigation has been identified for losses of agricultural land.	Potential for visual enhancement with a more natural coastline as MR is established.	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds.	Re-routing of footpaths where MR is implemented.	No mitigation required	No mitigation required

Location reference:	Kingsnorth Power Station
Policy Unit reference:	E4 03

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere. ● No loss of internationally designated coastal grazing marsh. ● No loss of habitat at Tower Hill to Cockham Wood SSSI. 	<ul style="list-style-type: none"> - Potential loss of unknown heritage buried in intertidal zone. ● No loss of Cockham Wood Fort. 	<ul style="list-style-type: none"> ● No recreation and amenity issues relating to this industrial coastal unit. + No loss of properties or community facilities in Hoo St Werburgh. 	No known impacts on soils and geology.	<ul style="list-style-type: none"> - Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
								deterioration of surface water ecological status/potential”
20-50 years	Undertake engineering works to hold the defence line.	As above	As above, but with increased defences. Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	<ul style="list-style-type: none"> ● Potential coastal squeeze of internationally designated intertidal habitats and nationally important (BAP) habitat with coastal squeeze, as sediment supply decreases in the estuary. ● No loss of internationally designated coastal grazing marsh. 	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required	No biodiversity opportunities	Need to monitor and record any finds.	No mitigation required	No mitigation required	The effects of coastal squeeze/ accelerated erosion

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
				No mitigation required				on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme level.

Location reference:	Kingsnorth Power Station to Cockham Wood
Policy Unit reference:	E4 04

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will provide an appropriate level of protection to the marina. - Areas of land affected by managed realignment will become intertidal. + Protection of Kingsnorth Power Station 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained however some features will change through realignment. 	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere. + Creation of internationally and nationally important saltmarsh habitat in realigned areas. - Effect on small areas of internationally designated coastal grazing marsh and nationally important (BAP) habitat, 	<ul style="list-style-type: none"> - Potential loss of buried unknown heritage. ● No loss of Cockham Wood Fort. 	<ul style="list-style-type: none"> - Potential loss of footpaths where MR is implemented. + Defences will provide an appropriate level of protection to residential areas. 	No known impacts on soils and geology.	<ul style="list-style-type: none"> + Managed realignment will result in future changes to habitat drained by Damhead Creek due to tidal flooding, and will contribute to WFD objective 2 "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential

				dependant on realignment extent.				relates to HMWB or AWB) or result in a deterioration of surface water ecological status/ potentials” by accepting a sustainable change in this river water body.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain the realigned defence line.	As above	As above	As above	As above	<ul style="list-style-type: none"> ● No loss of recreational assets. + Defences will provide an appropriate level of protection to residential areas. + No loss of community facilities in the vicinity of Hoo St Werburgh. 	As above	As above
50-100	Undertake engineering	As above	As above	○ Potential loss of	As above	As above	As above	As above

<i>years</i>	works to defences to Hold the Line of sections of defences protecting key assets. Maintain the realigned defence line.			<p>internationally designated intertidal habitats and nationally important (BAP) habitat with coastal squeeze, as sediment supply decreases in the estuary.</p> <p>+ Establishment of habitats in realigned areas.</p> <p>- Potential further loss of coastal grazing marsh and nationally important (BAP) habitat, if defences realigned further.</p>				
Mitigation Measures/Environmental Opportunities	No mitigation required.	Potential for visual enhancement with a more natural coastline as MR is established.	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds.	Opportunity to re-route footpaths on retreated defences where MR is implemented.	No mitigation required.	No mitigation required	

Location reference:	Cockham Wood
Policy Unit reference:	E4 05

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Natural erosion will continue.	— Damage to / erosion of built heritage asset.	+ Landscape maintained.	+ Allows natural processes to operate along the frontage.	<ul style="list-style-type: none"> — Damage to / erosion of Cockham Wood Fort SM. — Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> — It will become increasingly difficult to access the foreshore route of the Saxon Shore Way as shoreline retreats naturally. ● The alternative inland route of Saxon Shore Way will not be compromised. 	+ The stratigraphic features of Tower Hill to Cockham Wood SSSI will continue to be exposed and work with natural processes.	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Natural erosion will continue.	As above	As above	— Narrowing of beach with coastal squeeze, of nationally important intertidal (BAP) habitat.	As above	As above	As above	As above
50-100 years	Natural erosion will	— Loss of built	As above	As above, also	— Loss of Cockham	As above	As above	As above

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
	continue.	heritage asset.		- Initiation of cliff erosion, therefore impact on nationally designated site and nationally important (BAP) habitat.	Wood Fort SM. - Potential loss of buried unknown heritage.			
Mitigation Measures/Environmental Opportunities		Survey, monitor and record the SM to pro-actively implement exit plan strategy if and when required.	Potential for visual enhancement with a natural coastline.	Potential requirement for replacement habitat may need to be considered.	Survey, monitor and record the SM to pro-actively implement exit plan strategy if and when required.	Opportunity to relocate footpaths.	No mitigation required	No mitigation required

Location reference:	Lower Upnor to Medway Bridge
Policy Unit reference:	E4 06

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of habitat at Temple Marsh.	- Potential loss of unknown heritage buried in intertidal zone. + Protection of SMs.	+ No loss of residential and commercial properties or recreational facilities.	No known impacts on soils and geology.	- Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a

								deterioration of surface water ecological status/potentials”.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above but with increased defences, also — Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required.	No mitigation required in short-term. Landscape and visual impacts associated with defence raising should be considered further at strategy or scheme level.	No mitigation required	Need to monitor and record any finds.	Opportunity to enhance recreation and amenity features.	No mitigation required.	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme level.

Location reference:	Medway Bridge to North Halling
Policy Unit reference:	E4 07

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No nature conservation issues identified.	- Potential loss of unknown heritage buried in intertidal zone.	+ No loss of recreational features or residential properties.	No known impacts on soils and geology	- Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or

								AWB) or result in a deterioration of surface water ecological status/potentials ”.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above but with increased defences, also — Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required.	No mitigation required in short-term. Landscape and visual impacts associated with defence raising should be considered further at strategy or scheme level.	No mitigation required	Need to survey, record and monitor finds.	No mitigation required	No mitigation required	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme level.

Location reference:	North Halling to Snodland
Policy Unit reference:	E4 08

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will provide an appropriate level of protection to material assets and infrastructure (e.g. railway at Holborough). - Areas of land affected by managed realignment will become intertidal. - MR may impact on current and future commercial traffic in the estuary. 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained, however, some features will change through realignment + Potential for a more 'natural' shoreline. 	<ul style="list-style-type: none"> - Dependant on MR extent, potential loss of grazing marsh and nationally important (BAP) habitat at Halling, pasture at Snodland and nationally designated freshwater marshes and nationally important (BAP) habitat at Holborough Marshes. ● Transition of habitats from freshwater to brackish to saline in realigned areas. 	<ul style="list-style-type: none"> + No loss of SMs. - Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> - Potential loss of footpaths where MR is implemented. 	<ul style="list-style-type: none"> - Potential for contamination of water resources under a managed realignment policy. 	<ul style="list-style-type: none"> + Managed realignment will result in future changes to habitat drained by at tributary of the Medway Estuary at Holborough, due to tidal flooding, and will contribute to WFD objective 2, "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential relates

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
								to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials " by accepting a sustainable change in this river water body.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defence line.	As above	As above	+ Establishment of brackish and saline habitats in realigned areas.	As above	● No loss of recreational features.	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key	As above	As above	As above	As above	As above	As above	As above

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
	assets. Construct secondary defences in suitable realignment locations.							
Mitigation Measures/Environmental Opportunities			No mitigation required	Potential need to compensate for habitat losses	Need to monitor and record any finds	Opportunity to re-route public footpaths on retreated defences.	Need to investigate contamination issues.	No mitigation required

Location reference:	Snodland to Allington Lock
Policy Unit reference:	E4 09

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land during this period.	+ Designated landscape of the industrial area maintained.	● No loss of designated habitats.	● No loss of Aylesford Bridge SM or damage to Aylesford Conservation Area.	● No loss of recreation features. + Protection of properties.	- Potential for contamination of water resources under a managed realignment policy.	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	Defences will continue to provide the appropriate standard of protection to material assets and infrastructure. Areas of land affected by managed realignment will become intertidal. MR may impact on	● Designated estuary landscape will be maintained. However, some features will change through realignment. + Potential for a more 'natural' shoreline.	- Dependant on MR extent, potential loss of nationally designated wetland and nationally important (BAP) habitat at Abbey Mead Lake. ● Transition of habitats from freshwater to brackish to saline in	As above	● Potential loss of footpaths where MR is implemented. + Protection of properties.	As above	As above

		future commercial traffic in the estuary.		realigned areas.				
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain the realigned defence line.	Defences will continue to provide the appropriate standard of protection to built assets and infrastructure. Areas of land affected by managed realignment will become intertidal. MR may impact on future commercial traffic in the estuary.	As above	+ Establishment of brackish and saline habitats in realigned areas.	As above	● No loss of recreation features. + Protection of properties.	As above	As above
Mitigation Measures/Environmental Opportunities			No mitigation required	Potential need to compensate for habitat losses	No mitigation required	Re-routing of footpaths where MR is implemented.	Need to investigate contamination issues.	No mitigation required

Location reference:	Allington Lock to North Wouldham
Policy Unit reference:	E4 10

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection material assets (including industrial areas), infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of designated habitats. + Protection of freshwater habitats and rough grassland at SNCI and marshes	+ Protection of Aylesford Bridge SM and Aylesford Conservation Area.	● No loss of recreation features. + Defences will continue to provide the appropriate standard of protection to built assets.	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets	+ Defences will continue to provide the appropriate standard of	● Designated estuary landscape will be maintained. However, some	- Dependant on MR extent, potential loss of nationally designated freshwater habitat and nationally	As above	- Potential loss of Medway Valley Walk where MR is implemented. + Defences will	As above	As above

	and construct secondary defences in suitable locations.	<p>protection material assets (including industrial areas), infrastructure and agricultural land.</p> <p>– Areas of agricultural land affected by managed realignment will become intertidal.</p>	<p>features will change through realignment.</p> <p>+ Potential for a more 'natural' shoreline.</p>	<p>important (BAP) habitat at Burham.</p> <p>● Transition of habitats from freshwater to brackish to saline in realigned areas.</p>		<p>continue to provide the appropriate standard of protection to built assets.</p>		
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain realigned defences.	As above	As above	+ Establishment of brackish and saline habitats in realigned areas.	As above	● No loss of recreation features.	As above	As above
Mitigation Measures/Environmental Opportunities			No mitigation required	Potential need to compensate for habitat losses	No mitigation required	<p>Re-routing of footpaths – Medway Valley Walk where MR is implemented.</p> <p>Opportunity for new footpath on retreated defences.</p>	No mitigation required	No mitigation required

Location reference:	Wouldham Marshes
Policy Unit reference:	E4 11

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will continue to provide the appropriate standard of protection to material assets and infrastructure. - Areas of land affected by managed realignment will become intertidal. - MR may impact on current and future commercial traffic 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained, however, some features will change through realignment. + Potential for a more 'natural' shoreline. + Overall AONB landscape value maintained. 	<ul style="list-style-type: none"> - Potential loss of freshwater grazing marsh at River Medway and Marshes and Wouldham SNCI. ● Transition of habitats from freshwater to brackish to saline in realigned areas. 	<ul style="list-style-type: none"> - Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> - Potential loss of footpaths where MR is implemented. 	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
		in the estuary.						
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and maintain realigned defences.	As above	+ Potential for a more 'natural' shoreline. + Overall AONB landscape value maintained.	+ Establishment of brackish and saline habitats in realigned areas.	As above	● No loss of recreation features.	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and maintain realigned defences.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Potential need to compensate for habitat losses	Need to survey, monitor and record finds.	Potential to relocate public footpath on realigned defences.	No mitigation required.	No mitigation required

Location reference:	Medway Bridge to west St Mary’s Island
Policy Unit reference:	E4 12

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets and infrastructure.	● Estuary landscape maintained but larger defences may affect character of the landscape.	● No nature conservation issues identified.	- Potential loss of unknown heritage buried in intertidal zone. + Protection of Chatham Historic Dockyard and Conservation Areas.	+ Protection of properties and recreational facilities.	No known impacts on soils and geology.	- Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that will cause failure to meet surface water

								“good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required	No mitigation required	Need to survey, monitor and record finds.	No mitigation required	No mitigation required	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme

								level.
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Location reference:	St Mary’s Island to The Strand
Policy Unit reference:	E4 13

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere.	- Potential loss of unknown heritage buried in intertidal zone. - Potential impacts on the historic revetments with policies of managed realignment	+ Protection of properties and recreational facilities along Gillingham waterfront.	No known impacts on soils and geology.	- Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, “no changes that

					upstream.			will cause failure to meet surface water "good" ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials".
20-50 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required	No mitigation required	Need to survey, monitor and record finds.	Opportunity to enhance recreation and amenity features.	No mitigation required	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further

								consideration at strategy or scheme level.
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Location reference:	The Strand to West Motney Hill
Policy Unit reference:	E4 14

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection material assets, infrastructure (e.g. A289) and agricultural land.	+ Designated landscape of the industrial area maintained.	● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere.	- Potential loss of buried unknown heritage.	● No loss of recreational assets or properties. + Defences will continue to protect built assets.	- Potential for contamination of water resources under a managed realignment policy.	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Undertake engineering works to defences to Hold the Line of sections	As above, also - Areas of land affected by	● Designated estuary landscape will be maintained	As above, also + Creation of internationally and	As above	- Potential loss of footpaths where MR is	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
	of defences that protect key assets and construct secondary defences in suitable locations.	managed realignment will become intertidal.	however some features will change through realignment.	nationally important saltmarsh habitat.		implemented.		
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets. Maintain secondary defence line.	As above	+ Designated estuary landscape will be maintained. + Potential for visual enhancement with a more natural coastline as MR is established.	- Potential loss of internationally designated intertidal habitats and nationally important (BAP) habitat with coastal squeeze, as sediment supply decreases in the estuary. + Establishment of habitat in realigned areas.	As above	- Potential further loss of land within the Country Park if defences realigned further.	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Potential requirement to secure compensatory habitat to offset coastal squeeze losses.	Need to monitor and record any finds.	Re-routing of footpaths where MR is implemented.	Need to investigate contamination issues.	No mitigation required

Location reference:	West Motney Hill to Ham Green
Policy Unit reference:	E4 15

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will continue to provide the appropriate standard of protection to material assets and infrastructure. - Areas of land affected by managed realignment will become intertidal. 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained however some features will change through realignment. 	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere. + Creation of internationally and nationally important saltmarsh habitat. 	<ul style="list-style-type: none"> - Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> - Potential loss of footpaths where MR is implemented + Defences will continue to provide protection to built assets. 	<ul style="list-style-type: none"> - Potential for contamination of water resources under a managed realignment policy. 	There are no known impacts on water quality or water resources within this policy unit.

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
				- Potential loss of internationally designated coastal grazing marsh and nationally important (BAP) habitat, dependant on realignment extent.				
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defences.	As above	As above, also + Potential for visual enhancement with a more natural coastline as MR is established.	As above	As above	● No loss of recreational assets. + Defences will continue to provide protection to built assets.	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defences.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Potential requirement to secure compensatory habitat to offset coastal squeeze losses.	Need to monitor and record any finds.	Re-routing of footpaths where MR is implemented.	Need to investigate contamination issues.	No mitigation required

Location reference:	Ham Green to East of Upchurch
Policy Unit reference:	E4 16

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Natural erosion of defences and high land.	— No loss of material assets	+ Designated landscape will be maintained.	+ No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat.	— Potential loss of buried unknown heritage.	+ No loss of property and built assets. — Erosion may cause damage to pathway.	No known impacts on soils and geology.	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Natural erosion of high land.	— Loss of Grade 1 agricultural land (approximately 0.5m/yr).	As above	As above	As above	— Potential effect on one property and green houses at Ham Green. — Erosion may lead	As above	As above

						to the loss of pathway.		
50-100 years	Natural erosion of high land.	— Further loss of agricultural land (approximately 0.5m/yr).	As above	— Potential loss of internationally designated intertidal habitat and nationally important (BAP) habitat with coastal squeeze as sea levels rise.	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land. However, need to develop an exit plan for management of shoreline retreat and erosion, and other property if required. Potential to relocate greenhouses inland.	No mitigation required	Potential requirement to secure compensatory habitat to offset coastal squeeze losses.	Need to survey, monitor and record funds.	Re-rerouting of the Saxon Shore Way.	No mitigation required	No mitigation required

Location reference:	East of Upchurch to East Lower Halstow
Policy Unit reference:	E4 17

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	<ul style="list-style-type: none"> + Defences will continue to provide the appropriate standard of protection to material assets and infrastructure. - Areas of agricultural land affected by managed realignment will 	<ul style="list-style-type: none"> ● Designated estuary landscape will be maintained. However, some features will change through realignment. 	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitats and nationally important (BAP) habitat. However, due to coastal squeeze, loss will occur in some areas as will accretion elsewhere. + Creation of internationally and nationally important 	<ul style="list-style-type: none"> + Continued protection to Lower Halstow Conservation Area. - Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> - Potential loss/damage to Saxon Shore Way, where MR implemented. ● No loss of residential properties. 	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
		become intertidal.		saltmarsh habitat in realigned areas. — Potential loss of small area of freshwater habitat dependant on realignment extent.				
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintan secondary defences.	As above	+ Designated estuary landscape will be maintained, potential for visual enhancement with a more natural coastline as MR is established.	As above	+ Continued protection to Lower Halstow Conservation Area. — Potential loss of buried unknown heritage.	● No loss of recreation features.	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defences. locations.	As above	As above	● Potential net effect on internationally designated intertidal habitats and nationally important (BAP) habitat with coastal squeeze, as sediment supply decreases in the estuary. + Establishment of habitat in realigned	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
				<p>areas.</p> <p>– Potential loss of freshwater habitat if defences realigned further.</p>				
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds	Re-routing of pathway – Saxon Shore Way, where MR implemented.	No mitigation required	No mitigation required

Location reference:	Barksore Marshes
Policy Unit reference:	E4 18

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Construct secondary defences.	<p>+ Defences will continue to provide the appropriate standard of protection to infrastructure.</p> <p>– Areas of Grade 3 agricultural land affected by</p>	<p>● Designated estuary landscape will be maintained. However, visually some features will change through realignment.</p>	<p>● No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat.</p> <p>+ Creation of internationally and nationally important</p>	<p>– Potential loss of buried unknown heritage.</p>	<p>– Potential loss of pathways</p> <p>● No loss of residential properties</p>	<p>– Potential for contamination of water resources</p>	There are no known impacts on water quality or water resources within this policy unit.

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
		managed realignment will become intertidal.		habitat in realigned area. - Potential loss of internationally designated coastal grazing marsh and nationally important (BAP) habitat.				
20-50 years	Allow natural processes, i.e. inundation and erosion and natural erosion of defences.	+ Remaining secondary defences will continue to provide protection to infrastructure. - Areas of land affected by managed realignment will become intertidal.	+ Designated landscape maintained. Visually more 'natural' shoreline.	● No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat. + Establishment of brackish / saline habitat in realigned area. - Potential loss of internationally designated coastal grazing marsh and nationally important (BAP) habitat with further inundation.	As above	As above	As above	As above
50-100 years	Allow natural processes, i.e. inundation and erosion.	- Standard of protection of infrastructure will reduce throughout	As above	As above	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
		this epoch. — Areas of land affected by managed realignment will become intertidal.						
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds.	Re-routing of pathways will be required.	Investigate contamination issues at strategy or scheme level.	No mitigation required

Location reference:	Funton to Raspberry Hill
Policy Unit reference:	E4 19

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Natural erosion of defences and higher land.	— Damage to road with more frequent periods of inundation.	● Designated estuary landscape will be maintained. However, some features will	● No net loss of internationally designated intertidal habitat and nationally important (BAP)	— Potential loss of buried unknown heritage.	● No loss of amenity and recreation features. ● No loss of	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.

			change through no active intervention.	habitat.		properties		
20-50 years	Natural erosion of higher land.	— Damage to road with more frequent periods of inundation and increased erosion.	● Designated landscape will be maintained.	● No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat. — However, potential for erosion on the seaward edge of saltmarsh as sea levels rise.	As above	— Damage to access to estuary viewing locations. ● No loss of properties	As above	As above
50-100 years	Natural erosion of higher land.	— Loss of road due to erosion.	● Designated landscape will be maintained.	— Potential coastal squeeze of saltmarsh with sea level rise.	As above	— Loss of access to estuary viewing locations. ● No loss of properties	As above	As above
Mitigation Measures/Environmental Opportunities		If no alternative roads inland, need to consider relocating or raising affected roads.	No mitigation required	Replacement habitat may need to be secured before any habitat is lost.	Need to monitor and record any finds	Consider relocating access and viewing locations at strategy or scheme level.	No mitigation required	No mitigation required

Location reference:	Chetney Marshes
Policy Unit reference:	E4 20

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable	+ Defences will provide an appropriate level of protection to material assets, infrastructure and some agricultural	● Designated estuary landscape will be maintained. However, some features will change through	● No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat. + Creation of	- Potential loss of buried unknown heritage.	+ Defences will provide an appropriate level of protection to property and built assets.	No known impacts on soils and geology.	+ There may be hydromorphological and physical changes to the Iwade at the tidal interface but this will improve rather than

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
	locations.	land. <ul style="list-style-type: none"> — Areas of land affected by managed realignment will become intertidal. — MR along the Swale frontage may impact on future commercial traffic in the Swale estuary. 	realignment.	internationally and nationally important habitat in realigned area. <ul style="list-style-type: none"> — Potential loss of internationally designated coastal grazing marsh and nationally important (BAP) habitat. 				deteriorate the ecological potential associated with WFD objective 2, “no changes that will cause failure to meet surface water “good” ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials”.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defences.	As above	As above	<ul style="list-style-type: none"> ● No net loss of internationally designated intertidal habitat and nationally important (BAP) habitat. + Creation of internationally and nationally important habitat in realigned area. — Potential loss of internationally 	As above	No loss of amenity or recreation features.	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
				designated coastal grazing marsh and nationally important (BAP) habitat if defences realigned further.				
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary defences. locations.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds	Re-routing of footpaths where MR is implemented.	No mitigation required	No mitigation required

Location reference:	Kingsferry Bridge to Milton Creek
Policy Unit reference:	E4 21

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to	+ Defences will	+ Designated	● No loss of	- Potential loss	+ Footpaths –	No known impacts	- Potential

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
	hold the defence line.	continue to provide the appropriate standard of protection material assets, infrastructure and agricultural land.	landscape of the industrial area maintained.	internationally designated coastal grazing marsh or intertidal areas (BAP habitats).	of unknown heritage buried in intertidal zone.	Saxon Shore Way will remain. ● No loss of recreational facilities.	on soils and geology	coastal squeeze/ accelerated erosion in the Swale Estuary, with associated failure of WFD objective 2, "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential relates to HMWB or AWB) or result in a deterioration of surface water ecological status/potentials".
20-50 years	Undertake engineering works to hold the defence line.	As above	As above, but with increased defences. Also, + Designated landscape of the	- Potential effect on internationally designated intertidal habitat and nationally important (BAP)	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
			industrial area maintained.	habitat due to coastal squeeze in confined channel locations. Continued accretion elsewhere. ● No loss of internationally designated coastal grazing marsh and nationally important (BAP) habitat.				
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to survey and record funds.	No mitigation required	No mitigation required	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme level.

Location reference:	Milton Creek
Policy Unit reference:	E4 22

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
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0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, industry infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of internationally designated saline lagoon (BAP habitats).	- Potential loss of unknown heritage buried in intertidal zone.	+ Footpaths – Saxon Shore Way will remain. ● No loss of residential or commercial properties or community facilities.	No known impacts on soils or geology.	There is potential for impacts of groundwater extraction on groundwater levels in this policy unit – uncertainty regarding impacts at this stage.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above, but with increased defences, also - Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required in short-term. Consideration should be given to the impacts of raising defences on landscape and views at strategy or scheme level.	No mitigation required	Need to survey and record funds.	No mitigation required	No mitigation required	Need to investigate the effect of groundwater extraction on groundwater levels.

Location reference:	Murston Pits to Faversham Creek
Policy Unit reference:	E4 23

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

<i>Time Period</i>	<i>Management Activities</i>	<i>Land Use, Infrastructure & Material Assets</i>	<i>Landscape</i>	<i>Biodiversity, Flora and Fauna</i>	<i>Historic Environment</i>	<i>Population & Human health</i>	<i>Soils and Geology</i>	<i>Water</i>
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Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of designated habitats.	- Potential loss of buried unknown heritage.	● No loss of recreation features or residential properties.	No known impacts on soils and geology	There is potential for impacts of groundwater extraction on groundwater levels in this policy unit – uncertainty regarding impacts at this stage.
20-50 years	Undertake engineering works to defences to Hold the Line of sections of defences that protect key assets and construct secondary defences in suitable locations.	As above, also - Areas of land affected by managed realignment will become intertidal.	+ Designated landscape maintained. However, some features will change through realignment.	- Potential loss of nternationally designated freshwater habitat and nationally important (BAP) habitat dependant on MR extent. ● Transition of habitats from freshwater to internationally and nationally important intertidal habitat in realigned areas.	As above	- Potential loss of Saxon Shore Way where MR is implemented. ● No loss of recreation features or residential properties	As above	As above
50-100 years	Undertake engineering works to defences to Hold the Line of sections of defences protecting key assets. Maintain secondary	As above	+ Designated landscape maintained. Potential for a more 'natural' shoreline.	+ Establishment of brackish and saline habitats in realigned areas.	As above	● No loss of recreation features or residential properties	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
	defences.							
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost in epoch 2.	Need to monitor and record any finds	Re-routing of footpaths – Saxon Shore Way where MR is implemented.	No mitigation required	Need to investigate the effect of groundwater extraction on groundwater levels.

Location reference:	Faversham to Nagden
Policy Unit reference:	E4 24

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of internationally designated coastal grazing marsh or intertidal habitats (BAP habitats).	- Potential loss of unknown heritage buried in intertidal zone.	+ Footpaths – Saxon Shore Way will remain. ● No loss of residential or commercial properties or recreational facilities.	No known impacts on soils or geology	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above but with increased defences, also - Larger defences may affect landscape character.	As above	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	● No loss of internationally designated coastal grazing marsh or intertidal habitats (BAP habitats). - However potential for coastal squeeze leading to a loss of	As above	As above	As above	As above

				intertidal habitat as sea levels rise.				
Mitigation Measures/Environmental Opportunities	No mitigation required	No mitigation required in short-term. Consideration should be given to the impacts of raising defences on landscape and views at strategy or scheme level.	Compensatory replacement habitat will need to be secured before any designated habitat is lost in epoch 3.	Need to monitor and record any finds	No mitigation required	No mitigation required	No mitigation required	No mitigation required

Location reference: Shell Ness to Sayes Court
Policy Unit reference: E4 25

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Construct secondary defences.	— Areas of land affected by managed realignment will become intertidal.	● Estuary landscape will be maintained. However some features will change through realignment.	— Potential loss of internationally designated freshwater habitat and nationally important (BAP) habitat.	● No loss of Sayes Court SM. — Potential loss of buried unknown heritage.	— Property at Shell Ness no longer protected (as MR policy between Leysdown-on-Sea and Shell Ness (Isle of Grain to South Foreland SMP2)). — Potential loss of footpaths where MR is implemented.	No known impacts on soils and geology	There is potential for impacts of groundwater extraction on groundwater levels in this policy unit – uncertainty regarding impacts at this stage.
20-50 years	Undertake engineering works to maintain the realigned defence line.	As above	+ Estuary landscape maintained. Potential for a more 'natural' shoreline.	— Potential loss of internationally designated freshwater habitat and nationally important (BAP) habitat.	As above	As above	As above	As above
50-100 years	Undertake engineering works to maintain the realigned defence line.	As above	As above	As above	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds	Develop an exit plan for the safe relocation of people and removal of properties at Shell Ness. Re-routing of footpaths where MR is implemented.	No mitigation required	Need to investigate the effect of groundwater extraction on groundwater levels.

Location reference:	Sayes Court to North Elmley Island
Policy Unit reference:	E4 26

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Construct secondary defences.	<ul style="list-style-type: none"> + Secondary defences will provide an appropriate level of protection to material assets and some areas of agricultural land. - Areas of land affected by managed realignment will become intertidal. 	<ul style="list-style-type: none"> ● Estuary landscape will be maintained, however some features will change through realignment. 	<ul style="list-style-type: none"> - Potential loss of internationally designated freshwater habitat and nationally important (BAP) habitat. ● Transition of habitat from freshwater to internationally and nationally important brackish and saline habitat in realigned areas. - Effect on sections of National Nature Reserve and RSPB Reserve. 	<ul style="list-style-type: none"> ● No loss of Sayes Court SM. - Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> - Potential loss of footpaths where MR is implemented. ● No loss of residential properties. 	No known impacts on soils and geology	There is potential for impacts of groundwater extraction on groundwater levels in this policy unit – uncertainty regarding impacts at this stage.
20-50 years	Undertake engineering works to maintain the realigned defence line.	As above	<ul style="list-style-type: none"> + Estuary landscape maintained, potential for a more 'natural' shoreline. 	<ul style="list-style-type: none"> + Establishment of brackish and saline habitats in realigned areas. 	As above	As above	As above	As above
50-100 years	Undertake	As above	As above	As above	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
	engineering works to maintain the realigned defence line.							
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost.	Need to monitor and record any finds	Re-routing of footpaths where MR is implemented.	No mitigation required	Need to investigate the effect of groundwater extraction on groundwater levels.

Location reference: North Elmley Island to Kingsferry Bridge

Policy Unit reference: E4 27

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of designated habitats.	- Potential loss of buried unknown heritage.	● No loss of recreation features or residential properties.	No known impacts on soils and geology	There is potential for impacts of groundwater extraction on groundwater levels in this policy unit – uncertainty regarding impacts at this stage.
20-50 years	Undertake engineering works to hold the defence line and construct secondary realigned defences.	+ Defences will provide the appropriate standard of protection to material assets, infrastructure and some agricultural land. - Areas of land affected by managed realignment will become intertidal. - MR may impact on	● Estuary landscape will be maintained, however some features will change through realignment.	- Potential loss of internationally designated freshwater habitat and nationally important (BAP) habitat. + Creation of internationally and nationally important habitat in realigned areas. - Effect on sections of National Nature Reserve dependant on realignment position.	As above	- Potential loss of footpaths where MR is implemented.	As above	As above

		future commercial traffic in the Swale estuary.						
50-100 years	Undertake engineering works to maintain the realigned defence line.	As above	+ Estuary landscape maintained, potential for a more 'natural' shoreline.	+ Establishment of brackish and saline habitats in realigned areas. - Potential for effect on edges of internationally designated saltmarsh and nationally important (BAP) habitat in confined areas.	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation has been identified for losses of agricultural land.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost in epoch 2.	Need to monitor and record any finds	Re-routing of footpaths where MR is implemented.	No mitigation required	Need to investigate the effect of groundwater extraction on groundwater levels.

Location reference:	Kingsferry Bridge to Rushenden
Policy Unit reference:	E4 28

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	● No loss of designated habitats.	- Potential loss of buried unknown heritage.	● No loss of recreation features, residential properties or commercial facilities.	No known impacts on soils and geology	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Construct secondary defences. Managed realignment of disposal site.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and some agricultural land. - Areas of land affected by managed realignment will become intertidal.	● Estuary landscape will be maintained, however some features will change through realignment.	- Some effect on internationally designated freshwater habitat and nationally important (BAP) habitat. + Creation of internationally and nationally important habitat in realigned areas. - Potential effect on internationally designated intertidal habitat and nationally	As above	- Potential loss of footpaths where MR is implemented.	- Potential for contamination issues associated with managed realignment at Rushenden disposal site.	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
		<p>— MR may impact on future commercial traffic in the Swale estuary.</p>		<p>important (BAP) habitat with coastal squeeze in confined channel locations, as sea levels rise.</p>				
50-100 years	<p>Undertake engineering works to maintain the realigned defence line.</p>	<p>As above</p>	<p>As above</p>	<p>+ Establishment of brackish and saline habitats in realigned areas.</p> <p>— Potential effect on edges of internationally designated saltmarsh and nationally important (BAP) habitat in confined areas.</p>	<p>As above</p>	<p>● No loss of recreation features.</p>	<p>As above</p>	<p>As above</p>
Mitigation Measures/Environmental Opportunities		<p>No mitigation has been identified for losses of agricultural land.</p>	<p>No mitigation required</p>	<p>Compensatory habitat will need to be secured before any designated habitat is lost in epoch 2.</p>	<p>Need to monitor and record finds</p>	<p>Re-routing of footpaths, possibly on retreated defences –where MR is implemented.</p>	<p>Need to investigate contamination issues associated with Rushenden disposal site at strategy or scheme level.</p>	<p>No mitigation required</p>

Location reference:	Rushenden to Sheerness
Policy Unit reference:	E4 29

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Undertake engineering works to hold the defence line.	+ Defences will continue to provide the appropriate standard of protection to material assets, infrastructure and agricultural land.	+ Designated landscape of the industrial area maintained.	- Potential loss of internationally designated intertidal habitat and nationally important (BAP) habitat due to coastal squeeze in confined channel locations.	- Potential loss of unknown heritage buried in intertidal zone.	+ Footpaths, amenity and recreational features will remain. ● No loss of properties or community facilities.	No known impacts on soils and geology	- Potential coastal squeeze/ accelerated erosion in constrained reach of Medway Estuary, with associated failure of WFD objective 2, "no changes that will cause failure to meet surface water "good" ecological status or potential (where potential relates to HMWB or AWB) or result

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
								in a deterioration of surface water ecological status/potentials”.
20-50 years	Undertake engineering works to hold the defence line.	As above	As above but with increased defences, also — Larger defences may affect landscape character.	As above, also ● No loss of internationally designated coastal grazing marsh.	As above	As above	As above	As above
50-100 years	Undertake engineering works to hold the defence line.	As above	As above	As above	As above	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation required	No mitigation required in short-term. Consideration should be given to the impacts of raising defences on landscape and views at strategy or scheme level.	Compensatory habitat will need to be secured before any designated habitat is lost in epoch 1.	Need to survey, monitor and record finds.	No mitigation required	No mitigation required	The effects of coastal squeeze/ accelerated erosion on the transitional water body will be considered during the River Basin Management Plan review and may require further consideration at strategy or scheme

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
								level.

Location reference:	Medway Islands
Policy Unit reference:	E4 30

ENVIRONMENTAL EFFECTS OF THE PREFERRED PLAN

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
0-20 years	Natural processes will be allowed to operate, i.e. erosion and inundation of islands.	<ul style="list-style-type: none"> — Damage to / erosion of built heritage assets. 	<ul style="list-style-type: none"> + Designated landscape maintained. 	<ul style="list-style-type: none"> ● Some effect on internationally designated habitats in contemporary eroding areas, otherwise stability / accretion of habitats. 	<ul style="list-style-type: none"> — Damage to / erosion of Hoo Fort and Darnet Fort SMs. — Potential loss of buried unknown heritage. 	<ul style="list-style-type: none"> ● No loss of recreational facilities. 	<ul style="list-style-type: none"> — Potential for contamination issues associated with the landfill site on Hoo Island. 	There are no known impacts on water quality or water resources within this policy unit.
20-50 years	Natural processes will be allowed to operate, i.e. erosion and inundation of islands.	<ul style="list-style-type: none"> — Damage to / erosion of built heritage assets. — Potential erosion of Hoo Island dredging disposal site. 	As above	As above	As above	As above	As above	As above

Time Period	Management Activities	Land Use, Infrastructure & Material Assets	Landscape	Biodiversity, Flora and Fauna	Historic Environment	Population & Human health	Soils and Geology	Water
50-100 years	Natural processes will be allowed to operate, i.e. erosion and inundation of islands.	— Loss of built heritage assets.	As above	— Potential loss of internationally designated habitats due to sea level rise and a reduced sediment supply to the estuary.	— Eventual loss of SMs as sea levels rise. — Potential loss of buried unknown heritage.	As above	As above	As above
Mitigation Measures/Environmental Opportunities		No mitigation identified at this level.	No mitigation required	Compensatory habitat will need to be secured before any designated habitat is lost in epoch 3.	Develop an exist strategy to record SMs before loss. Need to survey, monitor and record finds.	No mitigation required	Investigate contamination issues associated with Hoo island landfill site, at strategy or scheme level.	No mitigation required