Appendix M
Appropriate Assessment

APPENDIX M – CONTENTS

M1 INTRODUCTION

M1.1 Appropriate Assessment

The need for an 'Appropriate Assessment' arises under the requirements of the EC Habitats Directive (92/43/EEC) and its implementation in the UK under The Conservation of Habitats and Species Regulations 2010. Under Regulation 21, Appropriate Assessment is required for a plan or project, which either alone or in combination with other plans or projects, is likely to have a significant effect on a European site and is not directly connected with or necessary for the management of the site. A European site is defined as being either a Special Area of Conservation (SAC) or a Special Protection Area (SPA). Government policy as outlined in the addendum to Planning Policy Statement 9 (PPS 9) (DCLG, 2005) is that Wetlands of international importance designated under the Ramsar Convention (Ramsar sites) should also be subject to the provisions of the Habitats Regulations. Ramsar sites, SPAs and SACs, are collectively referred to hereafter as 'international sites'.

Appropriate Assessment is the process to support a decision by the 'Competent Authority', in this case the Environment Agency (EA), as to whether the proposed plan or project would have an adverse effect on the integrity of any international site. The phrase "the integrity of the site" is not defined in the Habitats Directive or the Habitats Regulations. However, it is usually taken to mean the coherence of the site's ecological structure and function across its whole area that allows it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. An adverse effect on integrity is likely to be one that prevents the site from maintaining the same contribution to favourable conservation status of the qualifying feature(s) for which it was designated.

Where it is not possible to determine that a plan or project under consideration will not have an adverse effect on the integrity of a European or Ramsar site, alternative solutions that avoid harming site integrity must be sought. If alternatives are not possible, then the plan or project can only proceed on the basis of imperative reasons of over-riding public interest (IROPI). If IROPI is agreed by the Secretary of State, compensatory measures must be secured to offset damage done by the plan or project in advance of loss, so that the overall coherence of the SAC/SPA network is maintained.

The conservation status and integrity of the site is defined through the site's conservation objectives and it is against these objectives that the effects of the plan or project must be assessed. Conservation objectives set out the physical, chemical and biological thresholds and limits of human activity and disturbance that should be met to achieve the integrity of the site. Conservation objectives serve both as criteria against which site condition can be assessed and reported against, and also as a basis for assessing plans or projects which may affect the site. Conservation objectives for

European Marine Sites are set out in the relevant Regulation 35 documents (so called as their production is a requirement of Regulation 35 of the Habitats Regulations) for each site, which for English European Marine Sites are the responsibility of Natural England.

M1.2 Shoreline Management Plans (SMPs)

M1.2.1 SMP aims and objectives

A Shoreline Management Plan (SMP) is a large-scale assessment of the risks associated with coastal processes and aims to reduce the risks to the social, economic, natural and historic environment. A SMP aims to manage risk by using a range of methods which reflect both national and local priorities, to (Defra, 2006):

- reduce the threat of flooding and erosion to people and their property
- benefit the environment, society and the economy as far as possible, in line with the Government's 'sustainable development principles'.

The first generation of SMPs were produced for the coastline of England and Wales in the late 1990s and were based on sediment cell boundaries which related to the movement of sand and shingle along the coast. The boundaries of these cells were originally set at locations where the net 'along shore' movement of sand and shingle changed direction. In some instances, the area covered by a SMP differed from these sediment cell boundaries for other reasons, such as the area covered by a coastal authority. However, for the SMP reviews a behavioural systems[1] approach was recommended, leading to slightly different boundaries compared to the first generation (Defra, 2006). The objectives of a SMP must be in line with the Government's strategy for managing risks from floods and coastal erosion and should (Defra, 2006):

- set out the risks from flooding and erosion to people and the developed, historic and natural environment within the SMP area
- identify opportunities to maintain and improve the environment by managing the risks from floods and coastal erosion
- identify the preferred policies for managing risks from floods and erosion over the next century
- identify the consequences of putting the preferred policies into practice
- set out procedures for monitoring how effective these policies are
- inform others so that future land use, planning and development of the shoreline takes account of the risks and the preferred policies

[1] The current programme of SMPs around the coast is a review of the first generation of reports produced in the 1990s and reflects the availability of new coastal processes information, new considerations (site designations etc) and less uncertainty about climate change.

- discourage inappropriate development in areas where the flood and erosion risks are high
- meet international and national nature conservation legislation and aim to achieve the biodiversity objectives.

The most appropriate option for shoreline management will depend on the section of coastline in question and on technical, environmental, social and economic circumstances. The four options considered for shoreline management in the second generation SMPs are presented in **table 1.1**.

Table 1.1 Options used in SMP development

SMP option	Description of option
Hold the line (HTL)	Hold the existing defence line by maintaining or changing the standard of protection. This policy will cover those situations where work or operations are carried out in front of the existing defences (such as beach recharge, rebuilding the toe of a structure, building offshore breakwaters and so on), to improve or maintain the standard of protection provided by the existing defence line. You should include in this policy other policies that involve operations to the back of existing defences (such as building secondary floodwalls) where they form an essential part of maintaining the current coastal defence system.
Advance the line (ATL)	Advance the existing defence line by building new defences on the seaward side of the original defences. Using this policy should be limited to those policy units where significant land reclamation is considered.
Managed realignment (MR)	Allowing the shoreline to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences).
No active intervention (NAI)	No investment in coastal defences or operations.

Within the development of an SMP, an epoch (time period) based approach is used for planning purposes, with the three epochs being 0 – 20 (2005 – 2025), 20 – 50 (2025 – 2055) and 50 – 100 (2055 – 2105) years from now.

M1.2.2 Implications of SMP policy on the natural environment

Each of the SMP policies presented in **table 1.1** has the potential to affect the natural environment in one or more ways. **Table 1.2** presents potential implications of each option.

Table 1.2 Potential generic implications of each SMP option

SMP option	Positive impacts	Negative impacts
Hold the line (HTL)	• Protection of habitat landward of defences. • Provides stability to areas of coastline, within a wider management context.	• Coastal squeeze (loss of habitat). • Interrupts coastal processes.
Advance the line (ATL)	• Protection of habitat landward of defences.	• Reduces area of coastal habitat. • Changes functionality of habitat. • Increases coastal squeeze. • Interrupts coastal processes. • Affects marine habitats. • May increase rate of coastal erosion either side of the advanced line.
Managed realignment (MR)	• Coastal habitats allowed to move landwards under rising sea levels. • Creates habitat for juvenile fish and other aquatic organisms (benefits to environment and fishing communities). • Promotes natural coastal processes. • Contributes towards a more natural management of the coast • Creation of high tide roosts and feeding areas.	• Reduces area of habitat landwards of defences. • Changes nature of habitat landward of defence.

SMP option	Positive impacts	Negative impacts
	• Mudflat and Saltmarsh are an important carbon store.	
No active intervention (NAI)	• Coastal habitats allowed to move landwards under rising sea levels. • Promotes natural coastal processes. • Contributes towards a more natural management of the coast.	• Increased risk of flooding to landward habitats under rising sea levels.

M1.3 Guidance for the Appropriate Assessment of SMPs

The Office of the Department for Communities and Local Government (DCLG) has produced draft guidance on how to determine the need for an Appropriate Assessment for a given plan and for providing an assessment if one is needed. Also, Natural England has provided an internal draft document relating to the provision of Appropriate Assessments for Regional Spatial Strategies and sub-Regional Strategies. More specific guidance on assessing Shoreline Management Plans in terms of the Habitats Regulations is available from the Environment Agency. These three documents: "Planning for the Protection of European Sites: Appropriate Assessment" (DCLG, 2006), "The Assessment of Regional Spatial Strategies under the Provisions of the Habitats Regulations – Draft Guidance" (English Nature, 2006) and "Appropriate Assessment of Flood Risk Management Plans Under the Habitats Regulations" (Environment Agency, 2007) currently provide the most cohesive source of guidance relating to the provision of Appropriate Assessments for Shoreline Management Plans. Although these documents relate explicitly to land use plans, given that SMPs have the potential to influence the development of land, this guidance has been applied in this report to SMP policy. In this respect, there are clear parallels between Regional Spatial Strategies and SMPs, and the relevant elements of guidance relating to RSS have therefore been adapted here for SMP use. In 2006 Royal Haskoning provided Defra with a guidance note relating to Appropriate Assessment provision for SMPs, following the completion of an Appropriate Assessment for the River Tyne to Flamborough Head SMP2. This guidance was a fundamental consideration in establishing the scope of this particular Appropriate Assessment. These documents have therefore been used as a guide in establishing the scope of the Appropriate Assessment for The Wash SMP2. However, the Environment Agency work instruction "Appropriate Assessment of Flood Risk Management Plans under the Habitats Regulations" provides specific advice on undertaking

appropriate assessments of SMPs, so the approach and method adopted here complies with this guidance.

The assessment will also be structured with regard to the existing suite of guidance that is relevant to providing an Appropriate Assessment and producing an SMP. Key source documents are therefore:

- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats Directive (EC, 2000)
- Environment Agency work instructions and guidance on SMPs, Catchment Flood Management Plans (CFMPs) and Appropriate Assessment
- Natural England's Habitats Regulations Guidance Note series
- Assessing Projects under the Habitats Directive – A Guide for Competent Authorities (Tyldesley & Hoskin, 2008).

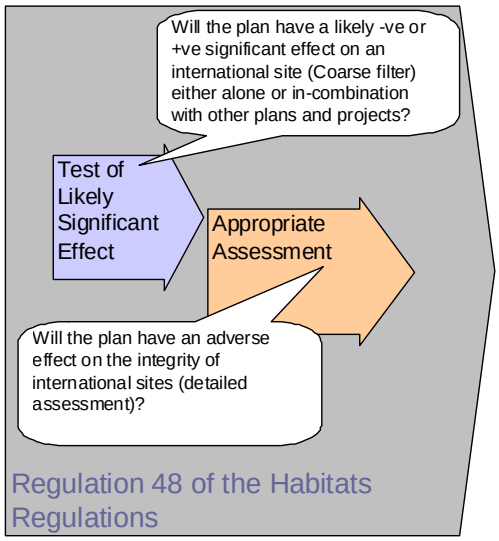
Appropriate Assessment is simply a mechanism to establish the actual scale and implications of effects and to decide whether a course of action is acceptable or unacceptable in terms of its impacts on the integrity of international sites.

M1.4 Identification of Competent Authority for the SMP

One of the first steps in addressing SMPs under the Habitats Regulations is identifying the competent authority. In this instance, Royal Haskoning is undertaking the technical analysis which forms the basis of the Appropriate Assessment, but the ultimate responsibility for signing it off and ensuring compliance with the Habitats Regulations falls to the competent authority.

For the purposes of this assessment, the competent authority is the Environment Agency.

M1.5 Requirement for an Appropriate Assessment for SMP2



Due to the integrated nature of the SMP process, the opportunity to develop The Wash SMP2 in accordance with the Habitats Regulations at a policy level has allowed the selection of policy based on likely significant effects to international sites. However, it should also be remembered that the requirement to take account of the effects on designated habitats is only one of the drivers which shapes the policy of the SMP. Other factors include the effects on agriculture, tourism and the local economy. The potential therefore exists for a preferred policy to emerge which has the potential to have an adverse effect on the integrity of an international site. The Habitats Regulations require that any plan or project which (either alone or in combination) is considered **likely to have a significant effect** on an international site will need to provide an appropriate assessment of the implications on international sites. This means that if the plan, either alone or in combination with other plans and projects, is considered likely to have a significant effect (either positive or negative), an Appropriate Assessment will be needed.

M1.5.1 The determination of whether The Wash SMP would have a likely significant effect on the international sites on The Wash.

Determining likely significant effect requires a coarse filter approach to be taken to establish the likely effects of the SMP in relation to the sensitivity of the features on international sites and their conservation objectives (collectively, the integrity of the site). This can be addressed by a series of structured questions:

Q. Does either The Wash or its coastal hinterland contain any sites designated under the Ramsar convention or Habitats or Birds Directives (international sites)?

A. The Wash contains a wide variety of coastal, intertidal and marine sites (as outlined in **section 3** of this report).

Q. What are the sensitivities of the international sites?

A. The sites are sensitive to changes in their morphology as a result of coastal processes and sea level fluctuations. For example:

Intertidal sites are located seaward of existing defences along the majority of The Wash frontage. Intertidal habitat (saltmarsh and mudflat) are sensitive to the effects of sea level rise leading to loss of intertidal habitat or shifts in the composition of habitat type. Within the mosaic of habitat required for SPA bird species, features need to be present which offer the range of ecological function required for each designated species. A loss of mudflat has the potential to impact populations of species which feed on these areas, even if this is accompanied by an equivalent gain of saltmarsh.

Coastal sites, such as saline lagoons at Snettisham, are sensitive to shifts in foreshore management practice. The lagoons are manmade features and are maintained by the presence of a defended shingle ridge and a secondary line of defence landward of the lagoons. Changes to management of either the shingle ridge or the old defence line, has the potential to lead to loss of this habitat type.

It should be noted that The Wash contains a wide range of designated marine habitat (sub-tidal sandbanks, *Sabellaria spinulosa* reef, etc.). It is considered that on the basis of the understanding of the manner in which The Wash behaves – as a sediment sink, the potential effects of SMP policy on sub-tidal features is not significant.

Q. Does the SMP have the potential to effect (either positively or negatively) the integrity of international sites?

A. The SMP has four policy options, which have the potential to lead to changes in the form and function of intertidal habitat, levels of flooding and management regimes. Collectively, the SMP has the potential to alter the structure and function of The Wash, through holding the line which may lead to intertidal habitat being lost through coastal squeeze, or through Managed Realignment which may affect the ecological function and balance of foreshore areas. Additionally, the SMP may alter the structure of features which are critically linked to sediment supply, such as shingle ridges. It is

important to remember that the question here relates to either positive or negative effects, and relate to the plan as a whole and not as individual policies.

Q. Is the SMP likely to have a significant effect on the international sites on the Wash Coast?

A. Given that there are features in the international sites of The Wash which may be effected by matters which the SMP addresses, it cannot be ruled out that there will be a likely significant effect. This effect may be positive or negative as SMP policy responds to Habitats Regulations or other drivers. **It therefore follows that an Appropriate Assessment is required for The Wash SMP.**

M2 METHODOLOGY

M2.1 Development of assessment areas – Policy Development Zones

The assessment is being provided at Policy Development Zone (PDZ) level, in the same way as that used in the Strategic Environmental Assessment (SEA). These units have been derived from the baseline scenarios report which is section F3 of Appendix F of this SMP.

The four PDZs within The Wash SMP have been defined as (from west to east along The Wash):

- PDZ 1 – Gibraltar Point to Wolferton Creek;
- PDZ 2 – Wolferton Creek to South Hunstanton;
- PDZ 3 – Hunstanton Town
- PDZ 4 – Hunstanton Cliffs

The development of policy within this SMP has been devised in response to a consideration of the environmental, social and economic features of The Wash and of the coastal processes and systems which shape the coast. Each PDZ has been defined to offer the most appropriate spatial breakdown of the coast, where processes can be managed (as appropriate) at a scale which is driven by wider management objectives. Essentially, the Policy Development Zone is the level at which the SMP 'makes sense' when establishing the intent of management.

It therefore follows that an assessment of SMP policy is undertaken at the PDZ scale.

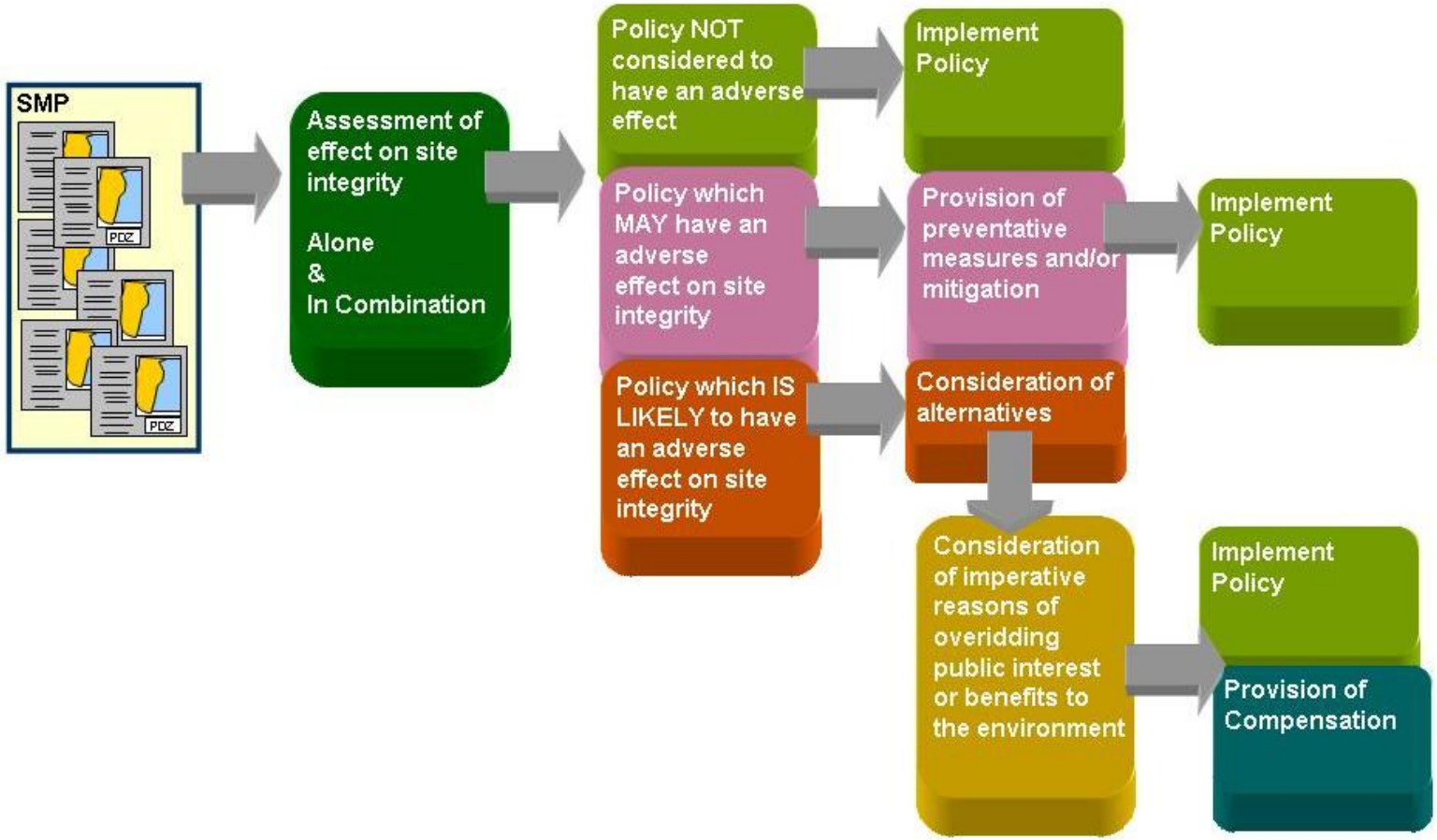
M2.2 Assessment method

As has been stated previously, the method for this exercise has been developed in accordance with the guidance of Defra, DCLG and Natural England. Additionally, Appropriate Assessment methods devised for large scale developments have been evaluated to ensure that the approach provided is based on actual practical implementation of the Habitats Regulations. Equally, the method has been devised to ensure that the approach taken meets the requirements of the Habitats Regulations and is specific to the particulars of an SMP, with the intent of offering a level of assessment which is appropriate for policies of this type.

The need to ensure that the assessment is in fact appropriate to the evaluation of policy has also been recognised. It should be clearly understood that the actual development required to implement coastal defence options, which may occur as policy is implemented, would itself be likely to require an Appropriate Assessment. It is therefore not the intent of the policy level assessment here to provide a level of detail which would duplicate a site specific proposal based Appropriate Assessment.

The process has been broken down into a series of clearly defined steps that will provide a transparent and accountable assessment of the SMP polices. These steps are outlined below and where necessary references are provided to the specific guidance or the contents of Circular 06/2005 Biodiversity and Geological Conservation. A summary of the suggested method is illustrated in **figure 2.1**, which shows how the overall assessment will progress and how key tasks relate to one another.

Figure 2.1 Appropriate Assessment methodology



M2.3 Assessment of the SMP Policies

The assessment of the SMP policies has been supported by a tabulated account based on an adaptation of the favourable condition tables for the SSSIs (Sites of Special Scientific Interest) which underpin the European sites. These tables are presented as **the annex to this appendix**. The annex shows the key features of the site, the attributes relevant to such features, the identified management targets for the site and known sensitivities or management issues. Each policy within the assessment has then been evaluated and tabulated against each feature in regard to the potential impacts of the policy, preventative measures that could be taken, mitigation and a commentary on the effects of the policy on the site features and targets. On the basis of this exercise, an assessment has been provided in regard to the overall impacts of each policy on the overall integrity of the European site. This exercise has been recorded at the PDZ level, so that the policies for each zone have been assessed in regards to the possible impacts on the European features within that zone. PDZs have been devised to provide discreet, spatial areas for applying policy; however, if a policy may affect a neighbouring PDZ, this has been included in the assessment. The favourable condition tables have been refined to the extent that they relate only to the features relevant to the European sites and not to features which are not covered by the Habitats or Birds Directives (79/409/EEC).

Although Ramsar features and sites do not have favourable condition tables, the conservation objectives set out in the Regulation 35 package have been produced to broadly protect the underlying habitat and environmental conditions required by Annex 1 and 2 habitats and species. Given the close correlation between Ramsar and European features, the conservation objectives within the Regulation 35 package is generally adequate to protect Ramsar features. Nonetheless, where Ramsar features need consideration over and above those of European features, the high level generic conservation objective for international sites have been applied to Ramsar sites and their features, subject to natural change to maintain in favourable condition the Ramsar features and their supporting habitats.

The tables to record and summarise the appropriate assessment have been underpinned by any ecological assessment, survey or analysis which supports the assessment process. For each PDZ, a commentary and determination has been provided which will clearly express the likely effects of the policies on each international site (over three epochs) and illustrate the measures which could be taken to avoid any adverse impacts identified. The level of assessment has been provided at an 'appropriate' level for a policy based assessment and in recognition of the fact that further assessment would be provided when the actual scheme. This acknowledges the need to provide a level of assessment that is 'appropriate' and refers to the ECJ ruling where the Advocate General's opinion was that the assessment for policy should be as rigorous an assessment as can reasonably be

undertaken. We have provided the assessment to consider policy provided and not to second guess the content and detail of schemes and strategies.

M2.4 Assessment of impacts over different SMP epochs

The complications of applying the Habitats Regulations at the policy level are further enhanced by the different timescales (or epochs), over which they apply (20 years, 50 years and 100 years). The possibility exists that SMPs or their policies will result in short-term adverse impacts, but that in the longer-term the SMP will enable site integrity to be maintained. On the basis of the assessment provided here however, no issues have been identified relating to temporal adverse effects for longer term benefit.

M2.5 Provision of an 'in-combination' assessment

The 'in-combination' assessment will build on the assessment of policy and the summary tables provided in the 'alone assessment' stage. It will then consider the impacts of SMP policy in combination with all other SMP policies, the other plans identified as being relevant to this assessment, or approved projects yet to be implemented. The specific focus of this stage will be about considering those plans and projects which are likely to have the same effect as the policies of the SMP. In the context of the SMP, this is likely to relate to other plans or projects which may have effects of coastal habitat or processes which support habitat or species. The plans and projects considered relevant to this study are discussed in section 5 of this document. An assessment for each SMP PDZ has been provided which accounts for the 'in-combination' effects of other plans or projects (from the list provided in **section 5**) that have similar effects to that of the specific policy within the PDZ. An accompanying rationale has been provided to support this.

The 'in-combination' assessment has been summarised in regard to the overall conclusions which can be drawn to provide a clear summary for each SMP PDZ so that the effects of the policies within the unit alone, and 'in combination' with other plans and projects is clearly expressed.

M2.6 Consideration of preventative measures and mitigation

The assessment provided will offer a simple breakdown of policy (at the PDZ level) as follows:

- PDZs containing policy which are not considered to have an adverse effect on international sites;
- PDZs containing policy where an adverse effect cannot be ruled out depending on the details at scheme level or other avoidance measures; and
- PDZs containing policy which are considered to have an adverse effect on the integrity of sites.

This classification has been provided for effects that are either due to the policies within the PDZ alone, or in combination with other policy, plans or projects.

M3 SITES AND FEATURES FOR CONSIDERATION IN THE APPROPRIATE ASSESSMENT

M3.1 Sites within or adjacent to SMP2 Policy Development Zones

The area of land within The Wash hinterland which is below sea level, and protected from coastal inundation is significant. However, in recognition of likely practical constraints on shoreline management options, the study area has been defined as those international sites within the main "A" roads which run parallel to shoreline, these being the A52 and A16 to the west, the A17 to the south and the A149 to the East (**figure 3.1**). International sites located further afield or outside The Wash have not been examined further as effects on these sites as a result of SMP policy cannot be considered.

Sites concentrated on The Wash and inside the boundary described above are:

Sites designated Special Protection Area (SPA) under the Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds):

The Wash SPA
Gibraltar Point SPA

Sites Designated Special Areas of Conservation (SAC) under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora):

The Wash and North Norfolk Coast SAC
Saltfleetby and Theddlethorpe Dunes and Gibraltar Point SAC

Sites designated under the Ramsar Convention (The Convention on Wetlands of International Importance especially as Waterfowl Habitat):

The Wash Ramsar
Gibraltar Point Ramsar Site


Gibraltar Point
PDZ4
PDZ3
Old Hunstanton
PDZ2
River Welland
PDZ1
A17 Bridge
Guy's Head
Vinegar Middle
THE WASH
SKEGNESS
BOSTON
KING'S LYNN
0 5 10 Kilometres
Key:
PDZ Boundaries
SMP Area
Environment Agency Flood Zone 2
Source:
Reproduced from Ordnance Survey Maps with the permission of the Controller of HM Stationary Office. Crown copyright reserved Licence AL 100026380
Title
Wash SMP2 Boundaries
Project:
The Wash
Shoreline Management Plan 2
Client:
Environment Agency
Date:
July 2009
Scale:
1: 250,000
Figure
3.1

Table 3.1 Special Protection Areas (SPA) within or adjacent to SMP2 PDZs

SPA Name	Site Features
The Wash SPA	**Article 4.1 qualification (79/409/EEC)** o *Sterna albifrons*, Eastern Atlantic – breeding (1.4% of the GB breeding population) o *Sterna hirundo*, Northern/Eastern Europe – breeding (1.2% of the GB population) o *Cygnus columbianus bewickii,* Western Siberia/North-eastern& North Western Europe (0.9% of the GB population) o *Limosa lapponica* Western Palearctic – wintering (21.4% of the GB population) **Article 4.2 qualification (79/409/EEC)** **Over-winter, the area regularly supports** o *Anas acuta*, North-Western Europe (1.5% of the GB population) o *Anas Penelope*, Western Siberia/North-western/North Eastern Europe (1.2% of the GB population) o *Anas strepera*, North-Western Europe (0.9% of the GB population) o *Anser brachyrhynchus*, Eastern Greenland/Iceland/UK (14.8% of the GB population) o *Arenaria interpres*, Western Palearctic – Wintering (1.1% of the GB population) o *Branta bernicla bernicla*, Western Siberia/Western Europe (7.4% of the population) o *Bucephala clangula*, North-Western/Central Europe (0.7% of the GB population) o *Calidris alba*, Eastern Atlantic/Western& South Africa (0.3% of the GB population) o *Limosa limosa islandica*, Icelandic – Breeding (11.6% of the GB) o *Melanitta nigra*, Western Siberia/Western & Northern Europe/North-western Africa (0.2% of the GB population) o *Numenius arquata*, Europe – Breeding (1.1% of the GB population) o *Pluvialis squatarola*, Eastern Atlantic – Wintering (5.8% of the GB population) o *Tadorna tadorna*, North-western Europe (5.3% of the GB population) o *Tringa totanus*, Eastern Atlantic – wintering (1.7% of the GB population) **Article 4.2 qualification (79/409/EEC): An internationally important assemblage of birds.** o 400367 waterfowl (5 year peak mean 01/04/1998)

Gibraltar Point SPA	**Article 4.1 qualification (79/409/EEC)** **During the breeding season** o *Sterna albifrons*, Eastern Atlantic – breeding (1% of the GB breeding population) **Over winter** o *Limosa lapponica*, Western Palearctic – wintering (1.4% of the GB population) **Article 4.2 qualification (79/409/EEC)** Over-winter the area regularly supports: o *Calidris alba*, Eastern Atlantic/Western & Southern Africa – wintering (0.1% of the GB population) o *Pluvialis squatarola*, Eastern Atlantic – wintering (1.2% of the GB population)

Table 3.2 Special Areas of Conservation (SAC) within or adjacent to SMP2 PDZs

SAC name	Site Features
The Wash and North Norfolk Coast SAC	**Annex I Habitats (as a primary reason for selection):** Large shallow inlets and Bays The Wash is the largest embayment in the UK, and represents **Large shallow inlets and bays** on the east coast of England. It is connected via sediment transfer systems to the north Norfolk coast. Together, The Wash and North Norfolk Coast form one of the most important marine areas in the UK and European North Sea coast, and include extensive areas of varying, but predominantly sandy, sediments subject to a range of conditions. Communities in the intertidal include those characterised by large numbers of polychaetes, bivalve and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm ('ross worm') *Sabellaria spinulosa*. The embayment supports a variety of mobile species, including a range of fish and common seal. **Annex I Habitats (as a primary reason for selection):** Sandbanks which are slightly covered by seawater all the time On this site sandy sediments occupy most of the subtidal area, resulting in one of the largest expanses of sublittoral **sandbanks** in the UK. It provides a representative example of this habitat type on the more sheltered east coast of England. The subtidal sandbanks vary in composition and include coarse sand through to mixed sediment at the mouth of the embayment. Sublittoral communities present include large dense beds of brittlestars *Ophiothrix fragilis*. Species include the sand-mason worm *Lanice conchilega* and the tellin *Angulus tenuis*. Benthic communities on sandflats in the deeper, central part of The Wash are particularly diverse. The subtidal sandbanks provide important nursery grounds for young commercial fish species, including plaice *Pleuronectes platessa*, cod *Gadus morhua* and sole *Solea solea*. **Annex I Habitats (as a primary reason for selection):** Mudflats and sandflats not covered by seawater at low tide The Wash, on the east coast of England, is the second-largest area of intertidal flats in the UK. The sandflats in the embayment of The Wash include extensive fine sands and drying banks of coarse sand, and this diversity of substrates, coupled with variety in degree of exposure, means that there is a high diversity relative to other east coast sites. Sandy

SAC name	Site Features
	intertidal flats predominate, with some soft mudflats in the areas sheltered by barrier beaches and islands along the north Norfolk coast. The biota includes large numbers of polychaetes, bivalves and crustaceans. Salinity ranges from that of the open coast in most of the area (supporting rich invertebrate communities) to estuarine close to the rivers. Smaller, sheltered and diverse areas of intertidal sediment, with a rich variety of communities, including some eelgrass *Zostera* spp. beds and large shallow pools, are protected by the north Norfolk barrier islands and sand spits. **Annex I Habitats (as a primary reason for selection):** Samphire (glasswort) *Salicornia* spp. And other annuals colonising mud and sand The largest single area of this vegetation in the UK occurs at this site on the east coast of England, which is one of the few areas in the UK where saltmarshes are generally accreting. The proportion of the total saltmarsh vegetation represented **by *Salicornia* and other annuals colonising mud and sand** is high because of the extensive enclosure of marsh in this site. The vegetation is also unusual in that it forms a pioneer community with common cord-grass *Spartina anglica* in which it is an equal component. The inter-relationship with other habitats is significant, forming a transition to important dune, salt meadow and halophytic scrub communities. **Annex I Habitats (as a primary reason for selection):** Atlantic salt meadows This site on the east coast of England is selected both for the extensive ungrazed saltmarshes of the North Norfolk Coast and for the contrasting, traditionally grazed saltmarshes around The Wash. The Wash saltmarshes represent the largest single area of the habitat type in the UK. The Atlantic salt meadows form part of a sequence of vegetation types that are unparalleled among coastal sites in the UK for their diversity and are amongst the most important in Europe. Saltmarsh swards dominated by sea-lavenders *Limonium* spp. are particularly well-represented on this site. In addition to typical lower and middle saltmarsh communities, in North Norfolk there are transitions from upper marsh to freshwater reedswamp, sand dunes, shingle beaches and mud/sandflats. **Annex I Habitats (as a primary reason for selection):** Mediterranean and thermo-Atlantic halophilous scrubs The Wash and North Norfolk Coast, together with the North Norfolk Coast, comprises the only area in the UK where all the more typically Mediterranean species that characterise Mediterranean and thermo-Atlantic halophilous scrubs occur

SAC name	Site Features
	together. The vegetation is dominated by a shrubby cover up to 40 cm high of scattered bushes of shrubby sea-blite *Suaeda vera* and sea-purslane *Atriplex portulacoides*, with a patchy cover of herbaceous plants and bryophytes. This scrub vegetation often forms an important feature of the upper saltmarshes, and extensive examples occur where the drift-line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast. At a number of locations on this coast perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community. **Annex I Habitats (as a primary reason for selection):** Biogenic reefs The Wash is the largest embayment in the UK with extensive areas of subtidal mixed sediment. In the tide-swept approaches to The Wash, with a high loading of suspended sand, the relatively common tube-dwelling polychaete worm *Sabellaria spinulosa* forms areas of biogenic reef. These structures are varied in nature, and include reefs which stand up to 30 cm proud of the seabed and which extend for hundreds of metres. The reefs are thought to extend into The Wash where super-abundant *S. spinulosa* occurs and where reef-like structures such as concretions and crusts have been recorded. The site and its surrounding waters are considered particularly important as it is the only currently known location of well-developed stable *Sabellaria* reef in the UK. The reefs are particularly important components of the sublittoral as they are diverse and productive habitats which support many associated species (including epibenthos and crevice fauna) that would not otherwise be found in predominantly sedimentary areas. As such, the fauna is quite distinct from other biotopes found in the site. Associated motile species include large numbers of polychaetes, mysid shrimps, the pink shrimp *Pandalus montagui*, and crabs. *S. spinulosa* is considered to be an important food source for the commercially important pink shrimp *P. montagui* (see overview in Holt *et al*. 1998). **Annex I Habitats (present as a qualifying feature, but not a primary reason for selection of this site):** Coastal lagoons **Annex II Species (as a primary reason for selection):** Common seal *Phoca vitulina* The Wash, on the east coast of England, is the largest embayment in the UK. The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for common seal *Phoca vitulina* breeding and hauling-out. This site is the largest colony of common seals in the UK, with

SAC name	Site Features
	some 7% of the total UK population. **Annex II Species (present as a qualifying feature, but not a primary reason for selection of this site):** Otter *lutra lutra*
Saltfleetby and Theddlethorpe Dunes and Gibraltar Point SAC	**Annex I Habitats (as a primary reason for selection):** Shifting dunes along the shoreline with *Ammophila arenaria* The dune system on the composite site Saltfleetby–Theddlethorpe Dunes and Gibraltar Point contains good examples of Shifting dunes within a complex site that exhibits a range of dune types. At this site the *Ammophila*-dominated dunes are associated with lyme-grass *Leymus arenarius* and sand sedge *Carex arenaria*. These shifting dunes are part of a successional transition with Fixed dunes with herbaceous vegetation and Dunes with *Hippophae rhamnoides*. **Annex I Habitats (as a primary reason for selection):** Fixed dunes with herbaceous vegetation (priority feature – **check all features**) Within this dune complex on the east coast of England there are extensive areas of fixed dune vegetation within largely intact geomorphologically-active systems, with representation of early successional stages on the seaward side, and more stable areas. The lime-rich dunes support a rich and diverse flora, dominated in places by red fescue *Festuca rubra* and with unusual species including pyramidal orchid *Anacamptis pyramidalis*, bee orchid *Orchis apifera*, sea-holly *Eryngium maritimum*, lesser meadow-rue *Thalictrum minus* and sea campion *Silene maritima*. The fixed dunes are part of a successional transition, and the rapidly-accreting dunes on the seaward sand bars and shingle banks make this an important site for research into the processes of coastal development. **Annex I Habitats (as a primary reason for selection):** Dunes with *Hippophae rhamnoides* This site supports a good example of Dunes with *Hippophae rhamnoides* in the main part of its natural range in the UK. This habitat develops on dune areas and is present in a range of successional stages from early colonisation to mature scrub associated with other species such as elder *Sambucus nigra*, hawthorn *Crataegus monogyna* and ivy *Hedera helix*, typically associated with an understorey of ruderal species. These stands of scrub are important for both migratory and breeding birds. **Annex I Habitats (as a primary reason for selection):** Humid dune slacks The Humid dune slacks at this site are part of a successional transition between a range of dune features,

SAC name	Site Features
	and some have developed from saltmarsh to freshwater habitats after becoming isolated from tidal inundation by sand deposition. There is a range of different communities present, many of which are species-rich. The species present depend on the wetness of the slack, its location within the system and the management history. Some of the drier slacks support a very wide range of species; this has been encouraged by management. The wetter slacks often have more permanent standing water and are composed of stands of sedges and rushes. **Annex I Habitats (present as a qualifying feature, but not a primary reason for selection of this site):** Embryonic shifting dunes

Table 3.3 Ramsar sites within or adjacent to SMP2 PDZs

Ramsar name	Site Features
The Wash Ramsar	**Ramsar Criterion 1** – The Wash is a large shallow bay comprising very extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels. **Ramsar Criterion 3** – Qualifies because of the inter-relationship between its various components including saltmarshes, intertidal sand and mud flats and the estuarine waters. The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which together with other organic matter forms the basis of the high productivity of the estuary. **Ramsar Criterion 6** – Species/populations occurring at levels of international importance (as identified at designation): *Species with peak counts in spring/autumn:* o Oystercatcher o Grey plover o Red knot o Sanderling o Curlew o Redshank o Turnstone *Species with peak counts in winter*: o Common redshank, *Tringa totanus tetanus* (0.7% of GB population) o Pink-footed goose o Dark bellied brent goose o Shelduck, pintail o Dunlin o Bar tailed godwit
Gibraltar Point Ramsar	**Ramsar criterion 1** – The dune and saltmarsh habitats present on the site are representative of all the stages of colonization and stabilisation. There is a fine example of freshwater marsh containing sedges *Carex* spp., rushes *Juncus* spp., and ferns, including adder's-tongue fern *Ophioglossum vulgatum*. Also most northerly example of nationally rare saltmarsh/dune communities containing sea heath *Frankenia laevis*, rock sea lavender *Limonium binervosum* and shrubby seablite *Suaeda vera*. **Ramsar criterion 2** – Supports an assemblage of wetland invertebrate species of which eight species are listed as rare in the British Red Data Book and a further four species listed as vulnerable. **Ramsar criterion 5** – Assemblages of international importance- Species with peak counts in winter: 53072 waterfowl (5 year peak mean 1998/99-

	2002/2003) **Ramsar criteria 6** – Species/populations occurring at levels of international importance *Species with peak counts in spring/autumn*: o Grey plover o Sanderling o Bar tailed godwit *Species with peak counts in winter*: o Bar tailed godwit o Dark bellied brent goose

M3.2 Conservation Objectives

Conservation objectives are Natural England's (NE) interpretation of the detailed habitat and environmental conditions necessary to maintain favourable conservation status and site integrity. Conservation objectives therefore serve as basis for evaluating plans and projects under the Habitats Regulations. Conservation objectives for The Wash provide a detailed and comprehensive account of the conditions which comprise favourable conservation status/site integrity and the acceptable limits of impacts compatible with site integrity. Conservation objectives are currently being reviewed by Natural England – the majority of conservation objectives now have a more quantitative base, with the current exception being mud/sandflat and sub-tidal habitat. This process will run along similar timescales to the SMP. However, it is not felt that this will pose problems for the SMP and its appropriate assessment, as the fundamental principles of the conservation objectives are unlikely to change.

For qualifying **species**, the conservation objectives can be generalised as follows:

- to avoid deterioration of the Habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and

- to ensure for the qualifying species that the following are maintained in the long term:

    - populations of the species as a viable component of the site
    - distribution of the species within site
    - distribution and extent of habitats supporting the species
    - structure, function and supporting processes of habitats supporting the species
    - no significant disturbance of the species

For qualifying **habitats** the conservation objectives can be generalised as follows**:**

- to ensure for the qualifying habitats the following are maintained in the long term:

    - extent of habitat on the site
    - distribution of habitat within site
    - structure and function of habitat
    - processes supporting the habitat
    - distribution of typical species of the habitat
    - viability of typical species as components of the habitat
    - no significant disturbance of typical species of habitat

M4 CURRENT CONDITION ASSESSMENT

The majority of SPA, SAC and Ramsar Sites are 'underpinned' by Sites of Special Scientific Interest (SSSI) designation. On such SPA/SAC sites, condition monitoring is undertaken by Natural England at the SSSI level according to JNCC common standards.

The relevance of SSSI condition status to those of SPA and Ramsar features depends on the correspondence of SSSI features with SPA/Ramsar features. SSSI features are based on BAP broad habitat classifications. These are comprehensive categories, and can be considered to encompass all qualifying features.

This is the case in The Wash, where there is a close correspondence between SSSI features and Ramsar and SPA features. This means that condition assessments, and more importantly reasons for unfavourability, can be considered reliable indicators of the conservation status and impacts on site integrity with respect to Ramsar and SPA features.

SSSIs are typically divided into a series of units for the purposes of management and monitoring. Analysis of condition data for SSSI units along The Wash indicates that a few units are currently unfavourable due to inappropriate coastal management issues in The Wash and North Norfolk Coast SSSIs. The most common cause for unfavourable condition throughout all of the identified SSSIs is erosion with further possible factors including overgrazing, lack of appropriate management, drainage issues and fisheries.

Natural England's Site information System (ENSIS) contains information on the "remedies" required to enable SSSIs to meet favourable condition by 2010. This will identify any units where the Environment Agency, via its flood risk management role is responsible for delivering favourable condition. This would, however, be expected to correspond closely to SSSI condition assessment data

M5 OTHER PLANS AND PROJECTS

A range of envisaged or ongoing plans or projects must be considered in combination with SMP policy. The following plans have therefore been identified as being of a type and scope which require consideration within the in-combination assessment of the SMP. The plans or projects identified are therefore those which in this case relate to the development of land in the coastal zone, or strategies which may affect the physical or biological conditions which are critical to meeting conservation objectives for the international sites.

It should be repeated that in-combination effects relating to SMP policy are only those where an effect of SMP policy, when combined with the effect of another plan or project, will have an adverse effect on the integrity of the site. It is not the intent of the assessment to use SMP policy to alleviate the effects of plans where the selected policy has no effect, but an alternative policy could help to address adverse effects of other plans. This is an important distinction to remember within the assessment. Although it is the intent to provide SMP policy which provides positive benefits, the Appropriate Assessment is devised to solely address possible adverse effect, not opportunities for remediation.

M5.1 Land Use Plans

Land use plans are produced by local authorities, and set out the broad framework for planning and development in the local authority area. The area potentially affected by The Wash SMP 2 policies is covered by four local authorities, each of which has a land use plan. The four local authorities are:

- South Holland District Council
- King's Lynn and West Norfolk (appropriate assessment available)
- Boston Borough Council
- East Lindsey District Council

The main issue for land use plans in the context of shoreline management plans and their compatibility with the Habitats Regulations is where land is allocated for housing, employment or other uses, development of which may prejudice SMP policies. For example, housing allocations in areas currently prevented from flooding by flood defence structures or practices would make it more difficult to undertake managed retreat or abandon existing defences. Managed realignment or No active intervention options may be preferred, or necessary in response to coastal squeeze, which may be adversely affecting international sites.

Planning Policy Statement (PPS) 25 sets out government policy on development in relation to flood risk. Broadly speaking this seeks to avoid development in flood prone areas or undertaking development that will enhance flood risk. PPS 25 requires local authorities to undertake Strategic

Flood Risk Assessments to assist in developing local plans so they achieve these objectives.

Adherence to PPS 25 guidance will ensure that the likelihood of development occurring which will prejudice SMP policies, is minimised. It does not however completely preclude these possibilities. The housing development provided in these plans does not specify locations that would need additional defences. It follows therefore, that the actual in-combination effects would be confined to:

- effects of increased visitation (through population growth) on sites sensitive to disturbance (typically SPA sites with ground nesting species or those species which may be disturbed at high tide roosts or during feeding in intertidal areas);
- impacts on the water quality of The Wash through increase population; and
- impacts on water resources on The Wash through increased demand on supply as population increases.

It is considered that the effects of the SMP, which in The Wash are limited to shifts in coastal habitat type and potential loss of habitat, have no clear synergistic effect with the possible effects of development plans. For example, whilst there may be a link between effects on the SPA of shifts in the saltmarsh-mudflat ratio (through the SMP) and the effects of dog walkers in coastal areas leading to disturbance, it is considered that such in-combination effects are unknown and abstract in their nature. Additional studies into each particular effect would be required, and this would fall outside of the scope of what would be required for this level of assessment.

In summary therefore, it is considered that there are no in-combination effects of the SMPs and land use plans and that there are mechanisms in place to consider the effects of each particular plan.

M5.2 Maintenance Dredging

Given the importance of The Wash for navigation and the number of rivers present which enable navigation of water craft inland, a significant amount of maintenance dredging takes place within The Wash. The Marine and Fisheries Agency (M&FA) is responsible for administering licences for maintenance dredging under the Food and Environmental Protection Act (FEPA) (1985).

It is considered that the effects of dredging are now well established and localised. No examples have been found where a location or scenario exists for the SMP to have an in-combination effect with dredging activity.

M5.3 Fisheries and Aquaculture

As outlined in **section 4**, condition assessment data indicates that fisheries are a significant cause of unfavourability in The Wash, and thus can be regarded as adversely affecting site integrity. The Eastern Sea Fisheries Joint Committee is responsible for consenting and regulating fisheries activities within The Wash.

The effects of SMP policy in The Wash are evident on the nearshore areas, where policy has the potential to lead to shifts in coastal habitat type or extent. The effects of fisheries are considered to be largely confined to localised physical effects and shifts in population dynamics. No examples have therefore been found where SMP policy and fisheries management have common or comparable effects on features.

M5.4 Activities Regulated and Consented by the Environment Agency

The Environment Agency regulates and consents a range of activities which have the potential to affect site integrity. Relevant consents include discharge and abstraction consents, IPPC licences and waste licences. Although most new applications received by the Environment Agency for these licences are reviewed under Regulation 21 of the Habitats Regulations, many of these applications are granted in perpetuity, for continuously operated activities. In order to ensure that such activities are compatible with the requirements of the Habitats Regulations, specifically to ensure that these can be determined as having no adverse effect on integrity, the Environment Agency has reviewed all consents during the Regulation 63 Review of Consents (RoC) Project.

No in-combination effects were established through the course of this assessment between the RoC process and The Wash SMP.

M6 THE 'ALONE' ASSESSMENT OF SMP POLICY

The assessment is based on a consideration of the designated international features within or around The Wash, the sensitivity of the features, the effects of policy and the need for preventative measures. This transparent approach to the assessment ensures that the actual level of assessment remains appropriate and that the assessment is critically focussed on the effects of policy on the integrity of the sites (and not on wider ecological considerations unrelated to designated features).

The level of assessment is intended to provide a level of detail commensurate with the nature of SMP policy. SMP policy is relatively abstract (relating to a simple statement of intent for areas) and the actual level of impact and effects will be largely determined by the particulars of subsequent strategies and schemes. It is at those stages that more detailed levels of assessment are possible and required. At the SMP stage the assessment should consider the anticipated effects of a policy action, not the specific details of measures to implement the policy.

The assessment has been provided in detailed assessment sheets in **the annex at the end of this appendix**. The first stage of the assessment provided an initial appraisal of SMP policy within each assessment unit, with a view to establishing those where shoreline policy would demonstrably not have a significant effect on international sites. The assessment of effects on international sites follows the 'reverse burden of proof paradigm', where if any doubt exists as to the effect of policy, then "no adverse effect on integrity" (NAEOI) cannot be concluded. As such, only those sites where NAEOI can definitely be proved, or where the basis of established expert opinion discounts any adverse effect, can be assessed as "passing" the appropriate assessment test.

M6.1 Summary of Wash SMP Policy under Assessment

For a detailed description of the policy for each SMP, and the context for such management, the SMP should be referred to. A summary of SMP policy is however provided in **table 6.1**.

Table 6.1 Preferred policy for The Wash SMP2

Policy Development Zone		Policy Plan			
		Now - 2025	2025 - 2055	2055 - 2105	Comment
1	Gibraltar Point to Wolferton Creek	HTL	HTL or MR	HTL or MR	The policies for the medium and long term are conditional. They depend on the results of monitoring and research into climate change, the effect on designated habitat, shoreline response and the role of defences.
2	Wolferton Creek to South Hunstanton	HTL	HTL / MR / NAI	HTL / MR / NAI	The policies for the medium and long term are conditional. They will be determined through a collaborative process. The current regime of shingle recycling is consented by Natural England and will progress until an adverse effect on this feature becomes likely.
3	Hunstanton Town	HTL	HTL	HTL	The plan is to hold the current line throughout all epochs; however there will be a need for continued monitoring of the frontage in order to ensure that the town does not develop into an unsustainable promontory.
4	Hunstanton Cliffs	NAI	NAI	NAI / HTL	For epoch 3 the intent is to sustain cliff top features, but it is uncertain whether this requires intervention, and whether this intent can be implemented in a sustainable manner.

M6.2 PDZs considered to have no adverse effect on the integrity of international sites

The nature of The Wash coast means that SMP policy in all PDZs has the potential to affect international sites, as the entire length of the coastline is designated SAC, SPA or Ramsar (or indeed, all of these designations). As such, an appraisal was undertaken of all four PDZs within The Wash SMP area.

No Adverse Effect on Integrity (NAEOI) was considered for the following PDZs:

PDZs deemed to have No Adverse Effect on Integrity (NAEOI):

PDZ 2, PDZ3 and PDZ 4

For further information relating to the assessment of these assessment units, please refer to **the annex to this appendix**. A summary of the factors leading to the assessment of these PDZs is, however, provided below.

M6.2.1 PDZ 2 (Wolferton Creek to South Hunstanton)

SMP policy in this PDZ provides for a HTL policy in epoch 1, during which time a collaborative approach to the sustainable management of this frontage will be developed by key stakeholders. As such, the SMP offers options of HTL, MR or NAI for epochs 2 and 3, thereby providing the full range of options in the pursuit of sustainable management of this frontage. The frontage in this PDZ is a complex situation, where holiday homes have been developed on and around a maintained (managed) shingle ridge. The ridge provides protection for designated saline lagoons (which are a priority habitat under the Habitats Directive, and can only be lost through natural change or where there are imperative reasons of overriding public interest (IROPI) relating to public health and safety). Landward of the lagoons lies an old sea wall/dyke. The issues on this frontage relate to providing sustainable management in response to the effects of sea level rise.

This sites which have the potential to be affected by this PDZ are:

- The Wash SPA and Ramsar site; and
- The Wash and North Norfolk Coast SAC.

Key issues in epoch 1 (during the HTL policy)

The key issues relating to this assessment are whether a continuation of the existing management regime will have an adverse effect on either the saline lagoons, the shingle ridge (as a habitat required for SPA bird species such as little tern) or the sandbanks at Snettisham Scalp.

At present, the line is held by recharge of sediment from Snettisham Scalp, with it being considered that the current regime of management is not having an adverse effect on the integrity of the site. The lagoons are being maintained in situ and the coastal features such as the sandbank on the scalp appear to be in a stable state. The shingle ridge requires recharge to offer its defence function, but only the northern end of the ridge is not designated as SAC habitat or lies within the SPA.

It is considered therefore that in epoch 1, the HTL policy would not have an adverse effect on the integrity of any international site.

Key issues during epochs 2 and 3 (the development of a sustainable approach to management)

The key issue here relates to whether a) it is possible to provide a sustainable approach to management of this frontage in these epochs which will not have an adverse effect on at least one international site; and b) whether the SMP provides certainty that adverse effects on site integrity will be avoided in the development of a sustainable approach to management.

This frontage offers a variety of subtidal, intertidal, coastal and brackish features in an area that has a history of intervention for purposes of protecting communities at Snettisham and Heacham. At the present time, this management is not having an adverse effect on the integrity of the features of these sites; however, management may change in epochs 2 and 3, if it is not considered sustainable. The issue for this assessment therefore relates to whether the SMP can ensure that, in providing a sustainable approach to management, this can or will be provided without having any adverse effect on international sites. The possibility exists that the alternatives for management do not offer an option where at least one feature will be adversely affected.

The SMP provides the following guidance to support policy:

It is possible that parts of the current alignment can be held, but it is also possible that landward realignment or even No active intervention may be required for part of the frontage. The plan, and the timing, location and extent of any changes, will need to achieve the best balance between all the socio-economic and environmental constraints and opportunities. There are strong indications that the caravan site owners and residents would be willing to make significant funding contributions to achieve a Hold the line policy.

The development of the collaborative approach to management will form through the development of the 2012 review of the flood defence strategy and will serve to inform the development of SMP3. The SMP refers to this process explicitly as the mechanism by which policy will be determined.

Since any strategy or SMP which emerges from this collaborative process will require an assessment under the Habitats Regulations, it would not be appropriate for this assessment to pre-empt either the findings of that assessment, nor to anticipate the findings of the process. It is considered however, that an approach to management could be developed through the collaborative process (and SMP3 and flood risk strategies) which could avoid any adverse effect on integrity of international sites. The Habitats

Regulations provide direction where it may be more appropriate for an assessment to rely on another, more appropriate measure:

Regulation 65(2)
Nothing in regulation 61(1) or 63(2) requires a competent authority to assess any implications of a plan or project which would be more appropriately assessed under that provision by another competent authority.

The collaborative process (and the SMP and strategies this would feed) would appear to be the most appropriate and timely mechanism for this assessment. The issue which the process will need to establish is if such an approach to management from a Habitats Regulations perspective will be considered sustainable and socially acceptable.

Reliant on the development of collaborative process and subsequent plans and strategies (by competent authorities) to determine policy selection for later epochs and the requirement for specific assessment under the regulations for that strategy, it is considered that it is possible to conclude no adverse effect on integrity of the sites, for the SMP in epoch 2 and 3.

M6.2.2 PDZ 3 (Hunstanton Town)

SMP policy in this PDZ provides for the ongoing protection of the coastal town of Hunstanton. The policy provides for a continuation of historical management, where the frontage is defended and the beach is maintained via a combination of beach recharge, sea walls and a groyne field. The intent of this is to prevent erosion of the frontage and maintain the beach which is critical to Hunstanton's status as a tourist destination.

Although SMP policy does not provide the specifics for the manner in which the HTL policy will be pursued, it is assumed that the line will be held over the three epochs via a series of measures inline with present management practice (mentioned above).

It is considered that the HTL policy in this PDZ will not lead to the loss of any designated feature (for example, through coastal squeeze), or disrupt sediment supply from the cliffs in PDZ4 (to the north) to areas south of Hunstanton.

Accordingly, an assessment of no adverse effect on integrity has been concluded for SMP policy in this PDZ.

M6.2.3 PDZ 4 (Hunstanton Cliffs)

This PDZ provides for the natural development (through erosion) of the sea cliffs, with the NAI policy proposed in epochs 1 and 2 ensuring that the cliffs will develop in response to wider coastal processes and will continue to provide a supply of sediment to intertidal and marine areas to the south. This is considered to foster natural change on this area of coast and is not considered to represent an adverse effect on the integrity of any international site.

SMP policy in epoch 3 does however provide a policy option of either NAI or HTL, depending on the degree to which the rate of erosion of the cliff top over previous epochs has threatened the properties on Cliff Parade in north Hunstanton. It is considered that for the reasons above, a NAI policy would not have an adverse effect on the integrity of international sites. The potential HTL policy does however require further consideration. By epoch 3, if the rate of erosion threatens the residential properties, then the cliffs will be positioned well outside (landward) of the existing boundary of both The Wash SPA and Wash and North Norfolk Coast SAC. As such, the provision of direct measures to Hold the line of the cliffs, in that advanced location would lie outside of either site. The outstanding issue is therefore whether holding the line would cause adverse effect in the two aforementioned sites. Based on an understanding of the requirements of these sites for sediment feed and the amount of sediment that the erosion of the cliffs would provide (in this scenario) in epochs 1 and 2, it is considered that a HTL policy would not have any adverse effect on either site.

Accordingly, an assessment of no adverse effect on integrity has been concluded for SMP policy in this PDZ.

M6.3 PDZs where no adverse effect on the integrity of international sites cannot be concluded

Of the PDZs appraised within this appropriate assessment, it has been deemed not possible to conclude NAEOI of international sites in the following PDZ:

PDZ where no adverse effect on the integrity of international sites cannot be concluded:

PDZ 1

A consideration of SMP policy in this PDZ is made more complicated by the fact that, due to the uncertainties relating to how The Wash as a system will respond to sea level rise and management, conditional policies are provided for epochs 2 and 3. In terms of this assessment, under the terms of the Directive, we are faced with seeking to offer an assessment which is required to prove, beyond reasonable scientific doubt, that a given policy will not have an adverse effect on site integrity. Such an exercise is problematic when the

uncertainties are such that even the selection of policy is undecided. An important consideration at this stage relates to the situation where options are provided in response to uncertainty, matters will be clarified as time progresses and monitoring and analysis informs each subsequent SMP revision.

M6.3.1 PDZ 1 Gibraltar Point to Wolferton Creek

SMP policy in this PDZ provides for a HTL policy in epoch 1, followed by either a HTL or MR policy in epochs 2 and 3, with the selection of a preferred policy being dependent on the degree to which coastal squeeze is or is not evident along this frontage (and also, the actual quantity and quality of habitat being lost through coastal squeeze). A policy for managed realignment will be selected if an erosional scenario develops and drivers exist to pursue measures which address adverse effects on international sites.

The sites which have the potential to be affected by this PDZ are:

- The Wash SPA and Ramsar site;
- Gibraltar Point SPA and Ramsar site;
- The Wash and North Norfolk Coast SAC; and
- Saltfleetby and Theddlethorpe Dunes and Gibraltar Point SAC.

Key issues in epoch 1 (during the HTL policy)

The key issue here relates to whether the action of holding the line (on the existing line of defences) would have an effect on coastal habitat or the function of habitat for bird species. The effects are confined to the potential loss of intertidal habitat (saltmarsh and mudflat) or shifts in the relative ratios of either, as a total of overall intertidal habitat.

The first key question relates to whether the existing defence (the line to be held), is expected to significantly affect the above factors. If the defence is considered to be a significant contributory factor to changes in habitat type and composition through epoch 1, then further assessment will be required relating to the actual impacts of such effects.

The matter of whether the coastal defences would have a significant effect through epoch 1 has been given careful consideration, based on an appraisal of scientific research in this area, and the canvassing of the views of professional experts on coastal processes, both generally and specifically within The Wash. This assessment has provided a comprehensive, considered account of the best understanding available, on the expected effects of the sea wall through epoch 1. An important question for this assessment is to what extent predicted saltmarsh accretion in epoch 1 will come at the expense of mudflat and to what extent any impact is caused by

the presence of the earth embankments (and SMP HTL policy). The current understanding on both aspects is provided below:

Predicted development of salt marsh and mudflat during epoch 1

The intertidal area in The Wash has generally been accreting for the last 2000 years. This is a natural process for an embayment which is being fed by large amounts of sediments from the Holderness coast and other sources, but accretion has been enhanced by a wide range of human interventions.

The SMP process has included a range of analyses, based on existing knowledge, to predict future developments. For epoch 1, it was agreed that the best estimate is based on extrapolation of observed trends in the last decades. These have been derived from the Environment Agency's monitoring programme combined with various available research reports and papers. **Section 4** of SMP **appendix C** provides further details and references.

As far as the saltmarsh is concerned, recent trends are generally accretional, with vertical accretion generally outpacing sea level rise. The rate of horizontal accretion varies throughout The Wash, which is probably due to a range of factors (see next section).

For the mudflat, the monitoring generally shows a trend of vertical accretion, although this is slower than the rate of sea level rise. As far as horizontal development is concerned, the accretion of saltmarsh obviously comes at the expense of mudflat area on its landward edge. For the seaward edge, there is information on the position on the low water mark, which shows a general seaward movement up to around 1970, but a mixture of erosion, accretion and stability since then.

For PDZ1, GIS analysis was undertaken based on these assumptions, which led to the following predicted changes in intertidal area for epoch 1: a saltmarsh gain of approximately 1110 ha and a net mudflat loss of approximately 880ha (1110 ha loss on the landward edge, 230ha gain on the seaward edge).

Role of the earth embankments

The development of the intertidal area in The Wash is governed by a wide range of factors, on a number of different spatial and temporal scales.

On the largest scale, sea level rise and the abundant availability of sediment lead to a generally accretional development of both saltmarsh and mudflat. On the scale of The Wash as a whole, the lay-out of the channels, the orientation of the shoreline in relation to predominant winds, the occurrence of storm events and the influence of centuries of human intervention (including reclamation) cause a variability at the level of sub-frontages (scale:

tens of kilometres). In addition, there are a range of factors which determine smaller scale developments.

Various researchers have stated that the construction of embankments along the coastline of The Wash has caused accelerated accretion of saltmarsh, in particular Kestner (1958, 1962). He suggested that both the height and width of saltmarsh increase through accretion up to an equilibrium point following embankment construction; 92% of the widening would occur within 18 years after embanking.

Other researchers have disputed the specific physical process that Kestner suggested as a cause (reduction of ebb flow velocity causing accretion) and also some of the quantitative findings, identifying additional drivers (Stoddart *et al*., 1987; Pye, 1995). The orientation of frontages with respect to predominant wave attack was identified as an important factor. More recent research (Newcastle University, 1998; Pethick, 2002) has identified that there is a strong relationship between mudflat width and horizontal development of the salt marsh: a wide mudflat reduces wave attack and therefore allows horizontal saltmarsh accretion. This suggests a (dynamic) equilibrium: the saltmarsh width increases until the mudflat is so narrow that the waves are no longer attenuated and stop the accretion. In reality there is in fact such a dynamic equilibrium, influenced by long-term changes and by storm events.

Based on the available knowledge, it is considered that the presence of the earth embankments has an impact on horizontal saltmarsh accretion, but:

- it is a second order impact on top of the large scale ongoing accretional process in The Wash
- it is one of many impacts at this level, together with the lay-out of the large channels, the orientation of frontages to predominant wind directions and the occurrence of storm events
- the impact is mostly on the rate of accretion and less on the (dynamic) equilibrium width which is governed by mudflat width and frontage orientation
- the impact weakens in time as the saltmarsh width reaches a (dynamic) equilibrium and with the most recent reclamations having taken place almost 30 years ago, **is unlikely to be significant in epoch 1**.

Based on this assessment therefore, on the basis of a consideration of the best available scientific data and analysis, **it is considered that since the existing defences are unlikely to have a significant effect during epoch 1, we are able to conclude no adverse effect on integrity for the HTL policy of epoch 1.**

Key issues in epoch 2 (for the HTL or MR policy options)

The SMP provides two policy options for epochs 2 and 3; a HTL or MR policy option. The key issue relating to this assessment is simply, therefore, whether the effects of sea level rise in epochs 2 and 3, coupled with the response of The Wash to management, would lead to either option having an adverse effect on the integrity of international sites. This can be expressed in a more specific manner, given that the sensitivity of the features on this frontage are:

a) Loss of intertidal SAC habitat, generally (overall loss of intertidal habitat) or specifically (the loss of specific habitat. E.g. mudflat); and
b) The effects of a) on SPA bird species.

This assessment therefore needs to establish whether we can conclude no adverse effect for either option, with a key element of this being the trigger for determining which option will be pursued through to SMP policy. The MR option provides for a management response which will be driven in part by a need to provide additional intertidal habitat to offset anticipated losses due to coastal squeeze against existing defences.

If monitoring indicates that a loss of intertidal is expected (i.e., if an erosional scenario occurs), then managed realignment will be required. In this context managed realignment would offer habitat outside of, but adjacent to the boundaries of international sites, and this is therefore considered compensation, to address an adverse effect. If monitoring indicates that no loss of intertidal is expected, then the HTL policy would be unlikely to have an adverse effect on the integrity of International sites. The trigger is therefore fed by monitoring. The SMP offers the following by way of clarifying how this decision will be made:

If monitoring and research show that the current accretional trend is likely to reverse, and that the subsequent loss of foreshore is likely to threaten the integrity of the flood defences and the habitats, then localised **landward realignment will be re-considered and assessed against continuing to hold the existing alignment**. In an erosional future, a Hold the line policy is likely to lead to a legal requirement (through the Habitats Regulations) to compensate for the loss of intertidal habitats, and a need to review defence stability and performance. In practice this will be addressed through targeted localised managed realignments within PDZ1, providing a more effective and sustainable sea defence solution by creating a wider foreshore as well as helping to conserve the natural environment.

The SMP is based on the current legal and policy framework. The plan recognises that society may change its priorities in the future, resulting in changes in legislation and Government policy. In addition, the SMP's action plan sets in motion a programme of monitoring and study which will

enhance technical knowledge and understanding of the intertidal area. Both these potential changes in society's priorities and the enhanced knowledge could influence the choice of policies. Therefore the policies need to be reviewed through future SMP reviews which happen every five to 10 years or through similar integrated plans.

The SMP therefore specifies that if loss of intertidal habitat is expected, and if drivers for habitat compensation remain, then managed realignment will be provided to offset loss.

A loss of intertidal habitat in the event of an erosional scenario would therefore be addressed via compensation adjacent to the site. This does not avoid an adverse effect, but it provides a robust approach to ensure compliance with the Habitats Regulations through delivering compensation.

Consequently, it is not possible to conclude that the policy options for epoch 2 and 3 for this frontage will not have an adverse effect on intertidal habitat, and bird species which use such habitat.

M6.4 Conclusion

The consideration of the effects of SMP policy on the features and conservation objectives of the International sites in this area has been central to policy production in this process. However, due to the lack of any available option which would provide mitigation measures (within the international site boundary) to avoid any adverse effect through coastal squeeze that would occur in an erosional future, it has not been possible for the appropriate assessment of The Wash SMP to conclude no adverse effect on the integrity of the International sites.

It therefore follows that SMP policy in PDZ 1 for epochs 2 and 3 cannot be concluded not to have an adverse effect on the integrity of International sites. Since the assessment is of the plan, rather than a constituent policy, it is concluded therefore that the SMP will have an adverse effect on the integrity of International sites.

M7 THE IN-COMBINATION ASSESSMENT OF SMP POLICY

As discussed previously, two aspects of in-combination effects need consideration: the cumulative effects of SMP policy in adjacent assessment units and the effects of SMP policy in each assessment unit in combination with other plans and projects. This in-combination assessment also needs to consider the issues discussed in **section 6** and the other plans and projects outlined in **section 5**.

The intent is simply to establish if the effects of SMP policy in combination with the effects of other plans and projects would have an adverse effect on the integrity of international sites.

M7.1 The in-combination assessment with other plans and projects

The assessment of SMP policy in **the annex to this appendix** provides a clear account of the expected effects of SMP policy in each AA assessment unit. In simple terms (as outlined above), the only tangible effect of SMP policy is the potential changes in habitat extent or shifts in habitat morphology. Therefore, the outstanding issue here is if the habitat change or loss as a result of the SMP would have an in-combination effect with other plans and projects.

Of the other plans and projects identified, only one is considered relevant to this assessment, following the detailed assessment in **the annex to this appendix** - land use plans.

The central impacts of land use plans are the loss of habitat if development is suggested by policy on areas covered by international designations, disturbance from increased numbers of visitors due to increased population (a function of housing policy) or tourism initiatives. None of the land use plans which cover The Wash provide for development on any international site and the remaining effect therefore is one of disturbance. Disturbance relates to the physical disturbance, through visitation, primarily on bird species. Ground-nesting species in particular are susceptible to disturbance. The delivery of the SMP seeks to maintain the natural evolution of the coast, while providing for management if required to maintain a flood defence function. It therefore follows that there is no combined adverse effect on this feature.

The SMP therefore is not considered to have any in-combination effects with land use plans along the Wash coastline.

M7.2 The collective assessment of SMP policy

The PDZ concept was developed in regards to the fact that each zone was geomorphically discrete and that management decisions taken within one frontage would have no (or very limited) impacts on neighbouring PDZs.

Within the super-frontage concept, the development of assessment units was undertaken with direct relevance to the intent of management in each assessment unit. This has enabled each assessment unit to be considered as a singular unit and also collectively within each PDZ.

The assessment in **the annex to this appendix** has provided for upstream and downstream effects, so the effect of a SMP policy with each assessment unit has been considered on adjacent assessment units. During this assessment (at the 'alone' stage) the effects of policy outside each assessment unit was fully considered.

It therefore remains to be considered whether SMP policy in one PDZ has an effect that is deemed acceptable on its own, but which would affect site integrity in combination with the effect of another policy; or where a series of small-scale similar effects cumulatively contribute to an overall, adverse effect on the integrity of sites. The cumulative effects are addressed by the very nature of an appropriate assessment. There is no '*de minimus*' in this process – if there is an adverse effect (no matter how small) on site integrity, the singular policy would not be acceptable.

No examples were found where SMP policy in one PDZ has been assessed as having an effect which was additional to any anticipated singular effects. The singular effect of the SMP relates mainly to the potential loss of intertidal habitat in epoch 2 and 3 and the provision of a response to management to address this.

M7.3 Conclusion

Based on the alone and in-combination assessment, it can be concluded that The Wash SMP2 will have an adverse effect on the integrity of International sites.

The outcome of the assessment is that no adverse effect on the integrity of international sites cannot be concluded.

M8 REFERENCES

Defra (2006) *Shoreline Management Plan guidance: Volume 1: Aims and requirements: March 2006*. Department for Environment, Food and Rural Affairs, London, UK

DCLG (2005) *Biodiversity and Geological Conservation (PPS9 Addendum).*

DCLG (2006) *Planning for the Protection of European Sites: Appropriate Assessment.* HMSO. Available online at http://www.communities.gov.uk/archived/publications/planningandbuilding/planning2

English Nature (now Natural England) (2006) *The Assessment of Regional Spatial Strategies under the Provisions of the Habitats Regulations – Draft Guidance.*

Environment Agency (EA) (2007) *Appropriate Assessment of Flood Risk Management Plans Under the Habitats Regulations*

European Community (EC) (2000) *Managing Natura 2000 Sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC.*

ODPM (2005) *Biodiversity and Geological Conservation: Circular 06/2005*

Tyldesley, D. and Hoskin, R. (2008) *Assessing projects under the Habitats Directive: guidance for competent authorities.* Report to the Countryside Council for Wales, Bangor.

Natura 2000 data forms are available at: http://www.jncc.gov.uk/page-4

ANNEX TO APPENDIX M

APPROPRIATE ASSESSMENT OF SMP2 POLICIES

PDZ 1 Gibraltar Point to Wolferton Creek				
	Policy Plan			
	2025	2055	2105	Comment
Policy	HTL	HTL or MR	HTL or MR	The policies for the medium and long term are conditional. They depend on the results of monitoring and research into climate change, shoreline response and the role of defences.
Designated sites				
Site	**Designation**	**Key Features (for full account see table 4.1)**		
The Wash	SPA Ramsar Site	Internationally important populations of regularly occurring Annex 1 species: Little Tern, Common tern, Bewick's Swan, Bar-tailed godwit Internationally important populations of regularly occurring migratory species: Shoveler, Wigeon, Gadwall, Pink-footed goose, Turnstone, Brent goose, Goldeneye, Sanderling, Black-tailed godwit, Scoter, Curlew, Grey plover, Shelduck, Redshank Ramsar Criterion 1: Large shallow bay comprising extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels. Ramsar Criterion 3: The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary. Ramsar Criterion 5: Assemblages of International Importance – 292541 waterfowl (5 year peak mean 98/99-02/03). Ramsar Criterion 6: Species/populations occurring at levels of international importance. Species with peak counts in spring/autumn; Eurasian oystercatcher, Grey plover, Red knot, Sanderling, Eurasian curlew and Ruddy turnstone. Species with peak counts in winter; Pink-footed goose, Dark-bellied Brent goose, common shelduck, northern pintail, Dunlin, Bar-tailed godwit.		

Gibraltar Point	SPA Ramsar Site	Internationally important populations of regularly occurring Annex 1 species: Little tern, Bar-tailed godwit Internationally important populations of regularly occurring migratory species: Sanderling, Grey plover. Ramsar Criterion 1: Dune and saltmarsh habitats present on the site are representative of all the stages of colonisation and stabilisation. Fine example of Freshwater marsh containing sedges *Carex spp*., rushes *Juncus* spp., and ferns including *Ophioglossum vulgatum*. Also contains the most northerly example of nationally rare saltmarsh/dune communities containing *Frankenia laevis*, and *Limonium binervosum* and *Suaeda vera* Ramsar Criterion 2: Supports wetland invertebrate species of which eight species are listed as rare in the British Red Data Book and a further four species listed as vulnerable Ramsar Criterion 5: Assemblages of International Importance - 53072 waterfowl (5 year peak mean 98/99-02/03) Ramsar Criterion 6: Species/populations occurring at levels of international importance.Species with peak counts in spring/autumn; Grey plover, Sanderling, Bar-tailed godwit Species with peak counts in winter; Dark-bellied Brent goose
The Wash and North Norfolk Coast	SAC	Annex I Habitats (as a primary reason for selection): Large shallow inlets and bays, sandbanks which are slightly covered by seawater all the time, mudflats and sandflats not covered by seawater at low tide, samphire (glasswort) and other annuals colonising mud and sand, Atlantic salt meadows, Mediterranean and thermo-Atlantic halophilous scrubs, biogenic reefs Annex I Habitats (present as a qualifying feature but not a primary reason for selection of site): Coastal Lagoons Annex II Species (as a primary reason for selection): Common seal Annex II Species (present as a qualifying feature, but not a primary reason for selection): Otter
Saltfleetby and Theddlethorpe Dunes and Gibraltar Point	SAC	Annex I Habitats (as a primary reason for selection): Shifting dunes along the shoreline with *Ammophilia arenaria*, fixed dunes with herbaceous vegetation (priority feature), dunes with *Hippophae rhamnoides*, humid dune slacks Annex I Habitats (present as a qualifying feature but not a primary reason for selection of site): Embryonic shifting dunes

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Saltmarsh - provides a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Coastal squeeze - much of the older and botanically more diverse saltmarsh has been lost due to a long history of land-claim. However *Salicornia* is a colonising species in the area and exists throughout the bay.	Managed grazing in some areas to promote diversity. Some areas are left ungrazed to improve diversity.
Intertidal banks of sand and mud - flats support high concentrations of marine worms, shellfish, algae and marine invertebrates which provide a food source.	The Wash is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. Loss of area would reduce food source for internationally important numbers of birds, commercial fish stocks and a seal colony. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works. .	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Sand dunes	Due to development and increased human activity behind the dunes, coastal squeeze is becoming an issue.	To maintain areas of sand dunes and allow landward migration wherever possible.

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Shallow waters - provide a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Inundation from sea level rise or overtopping during storm surges. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Reefs - *Sabellaria spinulosa*	Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Potential effect of policy	The effects of the HTL policy in this area relate to and are confined to the specific impact caused by holding the line at the existing defences. As described in the main report, the intertidal area in this PDZ is expected to shift with a gain of saltmarsh and a commensurate loss of mudflat.	
	Epoch 1 The main causal factors of this shift is considered to be an influx of sediment into the Wash from the Holderness Coast. In previous decades, the existing defences may also have contributed towards a seaward movement of saltmarsh, however the system is now considered to have reached its equilibrium point in response this defence (as detailed in the main report). It is considered then through epoch 1 that the existing defences will not make any significant contribution towards the seaward movement of the saltmarsh boundary.	

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
	No other factors have been identified where the existing defences would have any significant effect on the features of this site.	
	Epoch 2 & 3 The plan offers two management options (MR or HtL) based on whether the Wash is eroding due to SLR and intertidal habitat needs creating to offset loss. The SMP automatically triggers a MR response, if an erosional scenario is predicted and drivers exist for the pursuit of compensatory habitat as a result of this. The policy therefore provides measures to address an adverse effect in the event of an erosional scenario..	
Preventative Measures	Mitigation	Implications for the integrity of the site
	The pursuit of a MR policy option to be selected if intertidal habitat loss is envisaged. This realignment would need to provide intertidal habitat, in advance of expected losses to levels agreed with Natural England. Since the realignments would be located adjacent to the site, but outside of the site boundaries, this is considered compensation, rather than mitigation.	For Epoch 1, we can conclude no adverse effect on integrity. For Epoch 2 & 3 however, due to the potential for an adverse effect in an erosional scenario, we cannot rule out an adverse effect on site integrity.

SPA and Ramsar Site Feature	Gibraltar Point SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Sand dunes - actively accreting, all stages of dune development are represented with older dunes extensively colonised by scrub	Shaped by natural geomorphological forces. Sea defences up-drift may have modified the natural evolution of the site but recent beach restoration with imported material around 8-18km north of the site is expected to restore longshore drift patterns to a more natural state. Dunes have become unfavourable due to over-abundance of scrub and the rankness of some of the grassland.	A programme of scrub clearance and extension of grazing is being put in place.
Saltmarsh - most northerly example of nationally rare saltmarsh/dune communities containing sea heath, rock sea lavender and shrubby seablite. New saltmarsh is developing.	Subject to disturbance from general human activities - requires close management. Supports pioneer samphire marsh and rare sea heath marsh and shows full zonation of saltmarsh-sand dune transition community.	Maintain Lagoon Walk hard sea defences to avoid erosion at Lagoon Walk end of site and yacht club jetty.
Intertidal flats	Passage for overwintering and breeding birds - need abundant food sources and relatively undisturbed areas.	
Assemblage of wetland invertebrate species	Eight species are listed as rare in the British Red Data Book and a further four species listed as vulnerable	

SPA and Ramsar Site Feature	Gibraltar Point SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Freshwater marsh and open water - contains sedges, rushes and ferns. Marshes occur between two ridges and are protected from the sea by a seabank constructed in the late 19th Century.	Supports an assemblage of rare wetland invertebrate species. Marshes are supported by grazing.	
Potential effect of policy	As per comments above	
Preventative Measures	Mitigation	Implications for the integrity of the site
	As per comments above	As per comments above

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Sub Feature(s)	**Additional Information**	**Conservation Target**
All habitats	Threat from coastal squeeze as a result of land-claim and coastal defence works as well as sea-level rise and storm surges. Changes in sediment budget also threaten these habitats.	
Sandbanks - sandy sediments occupy most of the subtidal area	Sandbanks support sublittoral communities such as large dense beds of brittestars. Species include the sand-mason worm and the tellin. Benthic communities on sandflats in the deeper, central part of The Wash are particularly diverse. Subtidal sandbanks provide important nursery grounds for young commercial fish species including plaice, cod and sole.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Mudflats - sandy intertidal flats predominate with some soft mudflats in the areas sheltered by barrier beaches and islands.	These mudflats provide habitats for large numbers of polychaetes, bivalves and crustaceans.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

Large shallow inlets and bays	Support species of polychaetes, bivalves and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm *Sabellaria spinulosa*. The embayment also supports a large number of mobile species including a range of fish and the common seal.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Reefs - *Sabellaria spinulosa* forms areas of biogenic reef in The Wash. This is the only current known location of well developed stable Sabellaria spinulosa in the UK.	This is considered to be an important food source for the commercially important pink shrimp.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Salicornia and other annuals colonising mud and sand - one of the few areas in the UK where saltmarsh is accreting, this is the largest single area of vegetation. The proportion of total saltmarsh vegetation is high due to the extensive enclosure of marsh in this site.	It forms a pioneer community with common cord-grass *Spartina anglica* and through inter-relationships with other habitats forms a transition to important dune, salt meadow and halophytic scrub communities.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

Atlantic salt meadow - traditionally grazed saltmarshes around The Wash. The Wash saltmarshes represent the largest single area of the habitat in the UK.	Saltmarsh swards dominated by sea-lavenders are particularly well represented on this site.	Management plan being successfully implemented over grazing enclosure.
Mediterranean and thermo-Atlantic halophilous scrubs - the scrub vegetation forms an important feature of the upper saltmarshes and extensive examples occur where the drift line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast.	At many locations the perennial glasswort Sarcocornia perennis forms an open mosaic with other species at the lower limit of the sea-purslane community.	
Coastal lagoons NOT A PRIMARY REASON FOR SITE SELECTION		Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Common seal *Phoca vitulina* - This site is the largest colony of common seals in the UK, with some 7% of the total UK population.	The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for common seal Phoca vitulina breeding and hauling-out.	To continue to improve water quality, minimise human disturbance and maintain present diversity.

Otter *Lutra lutra* NOT A PRIMARY REASON FOR SITE SELECTION	Sensitive to reductions in water quality. Otters are sensitive to disturbance, although less so when the habitat is good. Removal of habitat such as reedbeds, woodland close to rivers, carr and individual riverside trees deprive otters of 'lying up' sites and foraging ground, as does reduction in tree and shrub regeneration by overgrazing of riverside pasture. Industrial contaminants and agricultural chemicals that lead to reductions in water quality also pose a threat.	To continue to improve water quality, minimise human disturbance and maintain present diversity.
Potential effect of policy	As per comments above	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
	As per comments above	As per comments above

SAC Site Feature	**Saltfleetby and Theddlethorpe Dunes and Gibraltar Point SAC** - two separate coastal complexes	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Mediterranean and thermo-Atlantic halophilous scrubs	The site is sensitive to changes in sedimentation rates along the coast caused by coastal protection schemes further north. The sites are visited by large numbers of tourists and disturbance from inappropriate access is a problem.	
Embryonic sand dunes - considered to be rare as its total extent in the UK is estimated to be less than 1000 hectares and this site supports a significant presence- NOT A PRIMARY REASON FOR SELECTION OF SITE	Visitor disturbance.	
Shifting dunes along the shoreline - considered to be one of the best areas in the UK for shifting dunes with *Ammophila arenaria* "white dunes".	Visitor disturbance.	
Fixed dunes with herbaceous vegetation - referred to as "grey dunes", this area is considered to be one of the best areas in the UK for these.	Visitor disturbance.	

Dunes with *Hippophae rhamniodes* - this is the only known outstanding locality in the UK and they are considered to be rare as its total extent in the UK is estimated to be less than 1000 hectares.	Visitor disturbance.	
Humid dune slacks - considered to be one of the best areas in the UK for humid dune slacks.	Visitor disturbance.	
Potential effect of policy	As per comments above	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**

PDZ 2 Wolferton Creek to South Hunstanton					
		Policy Plan			
		2025	2055	2105	Comment
Policy		HTL	HTL/MR/NAI	HTL/MR/NAI	The policies for the medium and long term are conditional. They will be determined through a collaborative process.
Designated sites					
Site		**Designation**		**Key Features (for full account see table 4.1)**	
The Wash		SPA Ramsar Site		**Internationally important populations of regularly occurring Annex 1 species**: Little Tern, Common tern, Bewick's Swan, Bar-tailed godwit **Internationally important populations of regularly occurring migratory species**: Shoveler, Wigeon, Gadwall, Pink-footed goose, Turnstone, Brent goose, Goldeneye, Sanderling, Black-tailed godwit, Scoter, Curlew, Grey plover, Shelduck, Redshank **Ramsar Criterion 1**: Large shallow bay comprising extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels. **Ramsar Criterion 3**: The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary. **Ramsar Criterion 5**: Assemblages of International Importance – 292541 waterfowl (5 year peak mean 98/99-02/03). **Ramsar Criterion 6**: Species/populations occurring at levels of international importance. Species with peak counts in spring/autumn; Eurasian oystercatcher, Grey plover, Red knot, Sanderling, Eurasian curlew and Ruddy turnstone. Species with peak counts in winter; Pink-footed goose, Dark-bellied Brent goose,	

			common shelduck, northern pintail, Dunlin, Bar-tailed godwit.
The Wash and North Norfolk Coast		SAC	**Annex I Habitats (as a primary reason for selection):** Large shallow inlets and bays, sandbanks which are slightly covered by seawater all the time, mudflats and sandflats not covered by seawater at low tide, samphire (glasswort) and other annuals colonising mud and sand, Atlantic salt meadows, Mediterranean and thermo-Atlantic halophilous scrubs, biogenic reefs **Annex I Habitats (present as a qualifying feature but not a primary reason for selection of site):** Coastal Lagoons **Annex II Species (as a primary reason for selection):** Common seal **Annex II Species (present as a qualifying feature, but not a primary reason for selection):** Otter

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Saltmarsh - provides a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Coastal squeeze - much of the older and botanically more diverse saltmarsh has been lost due to a long history of land-claim. However *Salicornia* is a colonising species in the area and exists throughout the bay.	Managed grazing in some areas to promote diversity. Some areas are left ungrazed to improve diversity.
Intertidal banks of sand and mud - flats support high concentrations of marine worms, shellfish, algae and marine invertebrates which provide a food source.	The Wash is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. Loss of area would reduce food source for internationally important numbers of birds, commercial fish stocks and a seal colony. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Sand dunes	Due to development and increased human activity behind the dunes, coastal squeeze is becoming an issue.	To maintain areas of sand dunes and allow landward migration wherever possible.
Shallow waters - provide a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Inundation from sea level rise or overtopping during storm surges. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in

	and flood defence works.	place to ensure sustainable management of shellfish stocks.
Reefs - *Sabellaria spinulosa*	Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Potential effect of policy	**Epoch 1** The policy of HTL in this epoch provides a continuation of previous management practice. The defence of the ridge, has been developed by stakeholders to avoid any adverse effects on the subtidal, intertidal or coastal habitat type. This is considered to have no adverse effect on site integrity.	
	Epoch 2 & 3 The policy for these epochs will be provided by the development of a collaborative management approach, fed by stakeholders to offer a sustainable future for this area. This process will inform subsequent strategies and SMP revisions. The options chosen, and the habitats effected are unknown at this time. It is reasonable, and in accordance with the regulations however to rely on the assessment for this process (via SMP3 and subsequent strategies) to determine a course of action, policy choice and approach, that will either avoid any adverse effect or will provide mitigation and/or compensation as appropriate.	

Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
The development of a collaborative approach to management (to feed SMP3 and strategy provision), which will provide policy based on the need for a sustainable approach for this area. This process (as it feeds SMP3 and strategy provision) will need to be accompanied by an assessment under the Habitats Regulations and will determine policy.		No adverse effect on site integrity for epoch 1 and a determination of no adverse effect on integrity in epoch 2 & 3 providing that the collaborative management approach to feed SMP3 and strategies, and it's assessment under the regulations, avoids an adverse effect or addresses such effects via mitigation or compensation.

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Sub Feature(s)	**Additional Information**	**Conservation Target**
All habitats	Threat from coastal squeeze as a result of land-claim and coastal defence works as well as sea-level rise and storm surges. Changes in sediment budget also threaten these habitats.	
Sandbanks - sandy sediments occupy most of the subtidal area	Sandbanks support sublittoral communities such as large dense beds of brittestars. Species include the sand-mason worm and the tellin. Benthic communities on sandflats in the deeper, central part of The Wash are particularly diverse. Subtidal sandbanks provide important nursery grounds for young commercial fish species including plaice, cod and sole.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Mudflats - sandy intertidal flats predominate with some soft mudflats in the areas sheltered by barrier beaches and islands.	These mudflats provide habitats for large numbers of polychaetes, bivalves and crustaceans.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Large shallow inlets and bays	Support species of polychaetes, bivalves and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

	an abundant reef-building worm *Sabellaria spinulosa*. The embayment also supports a large number of mobile species including a range of fish and the common seal.	
Reefs - *Sabellaria spinulosa* forms areas of biogenic reef in The Wash. This is the only current known location of well developed stable Sabellaria spinulosa in the UK.	This is considered to be an important food source for the commercially important pink shrimp.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Salicornia and other annuals colonising mud and sand - one of the few areas in the UK where saltmarsh is accreting, this is the largest single area of vegetation. The proportion of total saltmarsh vegetation is high due to the extensive enclosure of marsh in this site.	It forms a pioneer community with common cord-grass *Spartina anglica* and through inter-relationships with other habitats forms a transition to important dune, salt meadow and halophytic scrub communities.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Atlantic salt meadow - traditionally grazed saltmarshes around The Wash. The Wash saltmarshes represent the largest single area of the habitat in the UK.	Saltmarsh swards dominated by sea-lavenders are particularly well represented on this site.	Management plan being successfully implemented over grazing enclosure.

Mediterranean and thermo-Atlantic halophilous scrubs - the scrub vegetation forms an important feature of the upper saltmarshes and extensive examples occur where the drift line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast.	At many locations the perennial glasswort Sarcocornia perennis forms an open mosaic with other species at the lower limit of the sea-purslane community.	
Coastal lagoons NOT A PRIMARY REASON FOR SITE SELECTION		Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Common seal *Phoca vitulina* - This site is the largest colony of common seals in the UK, with some 7% of the total UK population.	The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for common seal Phoca vitulina breeding and hauling-out.	To continue to improve water quality, minimise human disturbance and maintain present diversity.
Otter *Lutra lutra* NOT A PRIMARY REASON FOR SITE SELECTION	Sensitive to reductions in water quality. Otters are sensitive to disturbance, although less so when the habitat is good. Removal of habitat such as reedbeds, woodland close to rivers, carr and individual riverside trees deprive otters of 'lying up' sites and foraging ground, as does reduction in tree and shrub regeneration by overgrazing of riverside pasture. Industrial contaminants and agricultural chemicals that lead to reductions in water quality also pose a threat.	To continue to improve water quality, minimise human disturbance and maintain present diversity.

Potential effect of policy	As per comments above	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
As per comments above		No adverse effect on the integrity of the site - as defined above

PDZ 3 Hunstanton Town

	Policy Plan			
	2025	**2055**	**2105**	**Comment**
Policy	HTL	HTL	HTL	The plan is to hold the current line throughout all epochs; however there will be a need for continued monitoring of the frontage in order to ensure that the town does not develop into an unsustainable promontory
Designated sites				
Site	**Designation**		**Key Features (for full account see table 4.1)**	
The Wash	SPA Ramsar Site		**Internationally important populations of regularly occurring Annex 1 species**: Little Tern, Common tern, Bewick's Swan, Bar-tailed godwit **Internationally important populations of regularly occurring migratory species**: Shoveler, Wigeon, Gadwall, Pink-footed goose, Turnstone, Brent goose, Goldeneye, Sanderling, Black-tailed godwit, Scoter, Curlew, Grey plover, Shelduck, Redshank **Ramsar Criterion 1**: Large shallow bay comprising extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels. **Ramsar Criterion 3**: The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary. **Ramsar Criterion 5**: Assemblages of International Importance – 292541 waterfowl (5 year peak mean 98/99-02/03). **Ramsar Criterion 6**: Species/populations occurring at levels of international importance. Species with peak counts in spring/autumn; Eurasian oystercatcher, Grey plover, Red knot, Sanderling, Eurasian curlew and Ruddy turnstone. Species with peak counts in winter; Pink-footed goose, Dark-bellied Brent goose, common shelduck, northern pintail, Dunlin, Bar-tailed godwit.	

The Wash and North Norfolk Coast	SAC	**Annex I Habitats (as a primary reason for selection):** Large shallow inlets and bays, sandbanks which are slightly covered by seawater all the time, mudflats and sandflats not covered by seawater at low tide, samphire (glasswort) and other annuals colonising mud and sand, Atlantic salt meadows, Mediterranean and thermo-Atlantic halophilous scrubs, biogenic reefs **Annex I Habitats (present as a qualifying feature but not a primary reason for selection of site):** Coastal Lagoons **Annex II Species (as a primary reason for selection):** Common seal **Annex II Species (present as a qualifying feature, but not a primary reason for selection):** Otter

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Features	**Additional Information**	**Conservation Target**
Intertidal banks of sand and mud - flats support high concentrations of marine worms, shellfish, algae and marine invertebrates which provide a food source.	The Wash is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. Loss of area would reduce food source for internationally important numbers of birds, commercial fish stocks and a seal colony. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Shallow waters - provide a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Inundation from sea level rise or overtopping during storm surges. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Reefs - *Sabellaria spinulosa*	Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.

Potential effect of policy	The key issue here relates to whether in holding the line on this frontage, is likely to affect coastal processes, the maintenance of which is necessary for the integrity of adjacent international sites. The actual mechanism to implement this policy will be determined at the scheme level, however a continuation of existing practices (groyne fields and sea walls) is expected. Whilst this will continue to trap a body of sediment (the beach) adjacent to this frontage, this is not expected to have any adverse effect on the features of international sites. No coastal squeeze issues are anticipated on this frontage.	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
		No adverse effect on the integrity of the site

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Sub Features	**Additional Information**	**Conservation Target**
All habitats	Threat from coastal squeeze as a result of land-claim and coastal defence works as well as sea-level rise and storm surges. Changes in sediment budget also threaten these habitats.	
Sandbanks - sandy sediments occupy most of the subtidal area	Sandbanks support sublittoral communities such as large dense beds of brittestars. Species include the sand-mason worm and the tellin. Benthic communities on sandflats in the deeper, central part of The Wash are particularly diverse. Subtidal sandbanks provide important nursery grounds for young commercial fish species including plaice, cod and sole.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Mudflats - sandy intertidal flats predominate with some soft mudflats in the areas sheltered by barrier beaches and islands.	These mudflats provide habitats for large numbers of polychaetes, bivalves and crustaceans.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Large shallow inlets and bays	Support species of polychaetes, bivalves and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayment and include dense brittlestar beds and areas of	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

	an abundant reef-building worm *Sabellaria spinulosa*. The embayment also supports a large number of mobile species including a range of fish and the common seal.	
Reefs - *Sabellaria spinulosa* forms areas of biogenic reef in The Wash. This is the only current known location of well developed stable Sabellaria spinulosa in the UK.	This is considered to be an important food source for the commercially important pink shrimp.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Salicornia and other annuals colonising mud and sand - one of the few areas in the UK where saltmarsh is accreting, this is the largest single area of vegetation. The proportion of total saltmarsh vegetation is high due to the extensive enclosure of marsh in this site.	It forms a pioneer community with common cord-grass *Spartina anglica* and through inter-relationships with other habitats forms a transition to important dune, salt meadow and halophytic scrub communities.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

Atlantic salt meadow - traditionally grazed saltmarshes around The Wash. The Wash saltmarshes represent the largest single area of the habitat in the UK.	Saltmarsh swards dominated by sea-lavenders are particularly well represented on this site.	Management plan being successfully implemented over grazing enclosure.
Mediterranean and thermo-Atlantic halophilous scrubs - the scrub vegetation forms an important feature of the upper saltmarshes and extensive examples occur where the drift line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast.	At many locations the perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community.	
Coastal lagoons NOT A PRIMARY REASON FOR SITE SELECTION		Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Common seal *Phoca vitulina* - This site is the largest colony of common seals in the UK, with some 7% of the total UK population.	The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for common seal *Phoca vitulina* breeding and hauling-out.	To continue to improve water quality, minimise human disturbance and maintain present diversity.

Otter *Lutra lutra* NOT A PRIMARY REASON FOR SITE SELECTION	Sensitive to reductions in water quality. Otters are sensitive to disturbance, although less so when the habitat is good. Removal of habitat such as reedbeds, woodland close to rivers, carr and individual riverside trees deprive otters of 'lying up' sites and foraging ground, as does reduction in tree and shrub regeneration by overgrazing of riverside pasture. Industrial contaminants and agricultural chemicals that lead to reductions in water quality also pose a threat.	To continue to improve water quality, minimise human disturbance and maintain present diversity.
Potential effect of policy	As per comment above	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
		No adverse effect on the integrity of the site

PDZ 4 Hunstanton Cliffs

	Policy Plan			
	2025	**2055**	**2105**	**Comment**
Policy	NAI	NAI	NAI/HTL	For epoch 3 the intent is to sustain cliff top features, but it is uncertain whether this requires intervention, and whether this intent can be implemented in a sustainable manner
Designated sites				
Site	**Designation**		**Key Features (for full account see table 4.1)**	
The Wash	SPA Ramsar Site		**Internationally important populations of regularly occurring Annex 1 species**: Little Tern, Common tern, Bewick's Swan, Bar-tailed godwit **Internationally important populations of regularly occurring migratory species**: Shoveler, Wigeon, Gadwall, Pink-footed goose, Turnstone, Brent goose, Goldeneye, Sanderling, Black-tailed godwit, Scoter, Curlew, Grey plover, Shelduck, Redshank **Ramsar Criterion 1**: Large shallow bay comprising extensive saltmarshes, major intertidal banks of sand and mud, shallow water and deep channels. **Ramsar Criterion 3**: The saltmarshes and the plankton in the estuarine water provide a primary source of organic material which, together with other organic matter, forms the basis for the high productivity of the estuary. **Ramsar Criterion 5**: Assemblages of International Importance – 292541 waterfowl (5 year peak mean 98/99-02/03). **Ramsar Criterion 6**: Species/populations occurring at levels of international importance. Species with peak counts in spring/autumn; Eurasian oystercatcher, Grey plover, Red knot,	

		Sanderling, Eurasian curlew and Ruddy turnstone. Species with peak counts in winter; Pink-footed goose, Dark-bellied Brent goose, common shelduck, northern pintail, Dunlin, Bar-tailed godwit.
The Wash and North Norfolk Coast	SAC	**Annex I Habitats (as a primary reason for selection):** Large shallow inlets and bays, sandbanks which are slightly covered by seawater all the time, mudflats and sandflats not covered by seawater at low tide, samphire (glasswort) and other annuals colonising mud and sand, Atlantic salt meadows, Mediterranean and thermo-Atlantic halophilous scrubs, biogenic reefs **Annex I Habitats (present as a qualifying feature but not a primary reason for selection of site):** Coastal Lagoons **Annex II Species (as a primary reason for selection):** Common seal **Annex II Species (present as a qualifying feature, but not a primary reason for selection):** Otter

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Sub Features	**Additional Information**	**Conservation Target**
Intertidal banks of sand and mud - flats support high concentrations of marine worms, shellfish, algae and marine invertebrates which provide a food source.	The Wash is the most important staging post and over-wintering site for migrant wildfowl and wading birds in eastern England. Loss of area would reduce food source for internationally important numbers of birds, commercial fish stocks and a seal colony. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.
Sand dunes	Due to development and increased human activity behind the dunes, coastal squeeze is becoming an issue.	To maintain areas of sand dunes and allow landward migration wherever possible.
Shallow waters - provide a primary source of organic material which together with other organic matter forms the basis for the high productivity of the estuary.	Inundation from sea level rise or overtopping during storm surges. Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Policies in place to ensure sustainable management of shellfish stocks.

SPA and Ramsar Site Feature	The Wash SPA and Ramsar	
Reefs - *Sabellaria spinulosa*	Intertidal areas are potentially affected by changes in sediment budget caused by dredging and coastal protection, construction of river training walls and flood defence works.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Potential effect of policy	The key issue here is whether the NAI approach, which allows for the natural development of the cliffs would have an adverse effect on the features of adjacent international sites. It is considered that this policy enables natural change, and therefore no adverse effect is anticipated on any features of international sites. The potential HTL policy in epoch 3 would be triggered if the levels of erosion at that time would threaten properties on the cliff top. If during epoch 3 levels of erosion were such that a HTL policy was required, the cliff frontage would be well outside of the boundary of any international site. The remaining issue would then be, if holding the line in this advance (landward) position would have any effect on designated features. The issue would be confined to the effect on intertidal banks of sand and mud, and it is not considered that a HTL policy in this epoch would provide any significant effect on these features due to sediment availability in the system locally.	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
		No adverse effect on the integrity of the site

SPA and Ramsar Site Feature	North Norfolk Coast SPA and Ramsar	
Sub Feature(s)	**Additional Information**	**Conservation Target**
Cliffs - site provides best exposure of the Ferriby Chalk Formation in Norfolk.	Erosion causes cliff face to retreat. Breeding colony of Fulmars on the cliff face - this is the largest colony on the east coast south of Flamborough Head.	
Sand flats - at base of cliffs	Coastal erosion	
Sand dunes	Issues with controlling bramble and sea buckthorn. Coastal squeeze could result in loss of dunes.	Rolling programme of creating new dune slacks in the dunes is in consideration.
Grazing marsh	Coastal erosion	Managed cattle grazing.
Potential effect of policy	The key issue here is whether the NAI approach, which allows for the natural development of the cliffs would have an adverse effect on the features of adjacent international sites. It is considered that this policy enables natural change, and therefore no adverse effect is anticipated on any features of international sites. The potential need to Hold the line (probably through reinforcement of the toe) may lead to a reduction in cliff face erosion in epoch 3 (if this option is required). The effects of this would have an adverse effect on the cliffs as a sub-feature of the SPA and the species which breed in this area (Fulmars) however by that time (if a HTL policy was triggered) these features would be located outside of the site. In addition to this, the HTL policy would be likely to be provided by toe reinforcement, and would not reduce the functionality of the entire cliff system.	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
		No adverse effect on the integrity of the site

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Sub Feature(s)	**Additional Information**	**Conservation Target**
All habitats	Threat from coastal squeeze as a result of land-claim and coastal defence works as well as sea-level rise and storm surges. Changes in sediment budget also threaten these habitats.	
Sandbanks - sandy sediments occupy most of the subtidal area	Sandbanks support sublittoral communities such as large dense beds of brittestars. Species include the sand-mason worm and the tellin. Benthic communities on sandflats in the deeper, central part of The Wash are particularly diverse. Subtidal sandbanks provide important nursery grounds for young commercial fish species including plaice, cod and sole.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Mudflats - sandy intertidal flats predominate with some soft mudflats in the areas sheltered by barrier beaches and islands.	These mudflats provide habitats for large numbers of polychaetes, bivalves and crustaceans.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Large shallow inlets and bays	Support species of polychaetes, bivalves and crustaceans. Sublittoral communities cover a diverse range from the shallow to the deeper parts of the embayments and include dense brittlestar beds and areas of an abundant reef-building worm *Sabellaria spinulosa*. The embayment also supports a large number of mobile species including a range of fish and the common seal.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Reefs - *Sabellaria spinulosa* forms areas of biogenic reef in The Wash. This is the only current known location of well developed stable Sabellaria spinulosa in the UK.	This is considered to be an important food source for the commercially important pink shrimp.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC. Byelaws developed to close areas of identified reef to protect it from trawling and dredging activities.
Salicornia and other annuals colonising mud and sand - one of the few areas in the UK where saltmarsh is accreting, this is the largest single area of vegetation. The proportion of total saltmarsh vegetation is high due to the extensive	It forms a pioneer community with common cord-grass *Spartina anglica* and through inter-relationships with other habitats forms a transition to important dune, salt meadow and halophytic scrub communities.	Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.

SAC Site Feature	The Wash and North Norfolk Coast SAC	
enclosure of marsh in this site.		
Atlantic salt meadow - traditionally grazed saltmarshes around The Wash. The Wash saltmarshes represent the largest single area of the habitat in the UK.	Saltmarsh swards dominated by sea-lavenders are particularly well represented on this site.	Management plan being successfully implemented over grazing enclosure.
Mediterranean and thermo-Atlantic halophilous scrubs - the scrub vegetation forms an important feature of the upper saltmarshes and extensive examples occur where the drift line slopes gradually and provides a transition to dune, shingle or reclaimed sections of the coast.	At many locations the perennial glasswort *Sarcocornia perennis* forms an open mosaic with other species at the lower limit of the sea-purslane community.	

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Coastal lagoons NOT A PRIMARY REASON FOR SITE SELECTION		Activities affecting sediment budget and anthropogenic causes of coastal squeeze will be addressed through the management scheme being developed jointly for the SPA and SAC.
Common seal *Phoca vitulina* - This site is the largest colony of common seals in the UK, with some 7% of the total UK population.	The extensive intertidal flats here and on the North Norfolk Coast provide ideal conditions for common seal *Phoca vitulina* breeding and hauling-out.	To continue to improve water quality, minimise human disturbance and maintain present diversity.
Otter Lutra *Lutra* NOT A PRIMARY REASON FOR SITE SELECTION	Sensitive to reductions in water quality. Otters are sensitive to disturbance, although less so when the habitat is good. Removal of habitat such as reedbeds, woodland close to rivers, carr and individual riverside trees deprive otters of 'lying up' sites and foraging ground, as does reduction in tree and shrub regeneration by overgrazing of riverside pasture. Industrial contaminants and agricultural chemicals that lead to reductions in water quality also pose a threat.	To continue to improve water quality, minimise human disturbance and maintain present diversity.
Potential effect of policy	As per comments above	

SAC Site Feature	The Wash and North Norfolk Coast SAC	
Preventative Measures	**Mitigation**	**Implications for the integrity of the site**
		No adverse effect on the integrity of the site