



**North Norfolk Shoreline Management Plan (SMP)  
Strategic Environmental Assessment  
Environmental report**

**August 2009**

## **Non-technical summary**

### What is a SMP?

A Shoreline Management Plan (SMP) is a large-scale assessment of the risks associated with coastal processes. It aims to reduce the risks to the social, economic, natural and historic environment through effective and sustainable shoreline management. A SMP aims to manage risk by using a range of methods that reflect both national and local priorities, to reduce the threat of flooding and erosion to people and their property, as well as benefiting the environment, society and the economy in line with the Government's 'sustainable development principles'.

### The north Norfolk coast

The north Norfolk coast is a mix of areas of established and viable coastal communities. These, in combination with the surrounding landscape and coastal habitats, are of high tourism and conservation value. Coastal communities in this area benefit from the natural values of landscape and ecology, but equally rely on navigation access along coastal creeks and the coastal road (the A149). The North Norfolk SMP has sought to promote and maintain these interest features, while ensuring the sustainability of communities over all epochs of the SMP.

The coast in this area is a designated Area of Outstanding Natural Beauty (AONB). It is of particularly high conservation value due to its largely undeveloped, sparsely populated nature and the extent and diversity of natural habitats it encompasses. This diversity includes fresh and brackish open water, saltmarsh, mudflats, saltmeadows and shingle habitats. The saltmarsh habitat is considered the best and most extensive in the UK and one of the best examples in Europe. Each of these habitats in turn supports a range of species of high conservation value, including birds, plants and invertebrates. The high conservation value is reflected in the fact that most of the coastline is subject to statutory nature conservation and landscape designations. These designations have important implications for any prospective developments, management or policies relating to the north Norfolk coast.

### Provision of a SEA for the SMP

Providing a SEA for SMPs is not a statutory requirement. The reason for providing a SEA is Government policy as the intent is to ensure that the process is transparent and has due regard to the coastal environment. Under Directive 2001/42/EC of the European Parliament and European Council on the assessment of the effects of certain plans and programmes on the environment, a Strategic Environmental Assessment (SEA) must be undertaken for plans and programmes that are required by legislative, regulatory or administrative provisions. SMPs clearly set a framework for

future development and have much in common with the kind of plans and programmes for which the Directive is designed and therefore are subject to the SEA process. SEA provides a systematic appraisal of the potential environmental consequences of high-level decision-making. By addressing strategic level issues, the SEA process shapes the selection of the preferred option. It also directs individual schemes towards the most appropriate solutions and locations as well as helping to ensure that resulting schemes comply with legislation and other environmental requirements.

The SEA is therefore intended to ensure that consideration of the socio-economic and environmental issues relating to the coast has been central in developing and evaluating policy. Within the SEA process, and in the same way as that used throughout the SMP process, the term 'environment' has been used to cover the following receptors (as defined in Environmental Assessment of Plans and Programmes Regulations, SI 1633 2004):

- population and communities (including human health, critical infrastructure etc)
- cultural heritage, including architectural and archaeological heritage
- material assets
- biodiversity, fauna and flora
- soil
- water
- air
- climatic factors
- landscape.

### The assessment

The assessment has been provided for the suite of policies in the SMP and outlined in **Section 5** of the environmental report.

The SEA process has developed two distinct and key documents - a scoping report and an environmental report. The scoping report established an environmental baseline for the Norfolk coastline. Doing this developed a series of SEA assessment criteria, by which the SMP policies could be assessed. The scoping report underwent a three week consultation period with the North Norfolk SMP Client Steering Group (made up of statutory consultees, including the relevant local authorities and government agencies). Following the consultation period and feedback by the statutory consultees, the environmental assessment of the preferred SMP policies was undertaken using the SEA assessment criteria agreed through the consultation period. This report is the end of that process. The suite of environmental issues identified and agreed through the scoping report on the north Norfolk coast are:

- Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities.
- Threats from inappropriate coastal management to coastal communities, traditional activities and culture.
- Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce.
- Threats from inappropriate coastal management on the coastal landscape and AONB with regard to the provision of a mosaic of landscape features that is characteristic of the north Norfolk coast.
- Potential loss of historic and archaeological features on a dynamic coastline.
- Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types.
- Threat to the environmental conditions to support biodiversity and the quality of life.
- Continuing coastal processes required to maintain the integrity of critical coastal habitat and species.

The method used to identify and predict the significant likely environmental effects related to implementing the North Norfolk SMP involved using an evidence-based assessment and expert judgement. The appraisal took the form of a qualitative assessment based on professional judgement and supported by peer-reviewed literature, with the outcomes being scored in seven categories between major positive and major negative. Each assessment was carried out at “super-frontage” level, with each super-frontage having been defined early in the SMP process as an almost discrete unit, where management decisions within each super-frontage do not affect neighbouring super-frontages.

The analysis has been recorded in a series of detailed tables that fully document the effect of each management area with regard to the assessment criteria. A full record of the assessment is in **appendix I**.

As well as providing the results of this assessment, the environmental report also provides monitoring and mitigation measures to ensure that the effects of the SMP on the north Norfolk coastline are minimised as far as possible. The specification of monitoring, and the actions to implement the monitoring requirements, will be included in the SMP’s action plan. This approach provides the most robust means for delivery, as the action plan is a) directly linked to SMP delivery and b) builds on the organisational roles developed within the SMP process.

## Conclusions

The SMP has been successful in its attempts to provide management that offers a sustainable approach to the environmental values of the north Norfolk coast. The assessment confirms that, by seeking to maintain the

viability of the coastal creek systems as navigable waterways, which stabilise near-shore sandbars, the SMP provides benefits for coastal communities and habitat.

In providing this balance, the SMP has devised a strategic approach to management that focuses on holding coastal communities, while allowing the economic and environmental sustainability of these communities, the features which support them and the natural environment. On the basis of this assessment, the North Norfolk SMP is considered to have been successful in providing this balance. No major adverse effects have been identified, with most of the remaining effects being either major or minor positive.

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# 1 Introduction and background

## 1.1 The Norfolk Shoreline Management Plan (SMP)

This report is the Strategic Environmental Assessment (SEA) environmental report (ER) for the second Norfolk Shoreline Management Plan (SMP). The SMP2 runs from Old Hunstanton to Kelling Hard and covers around 44 kilometres of coastline.

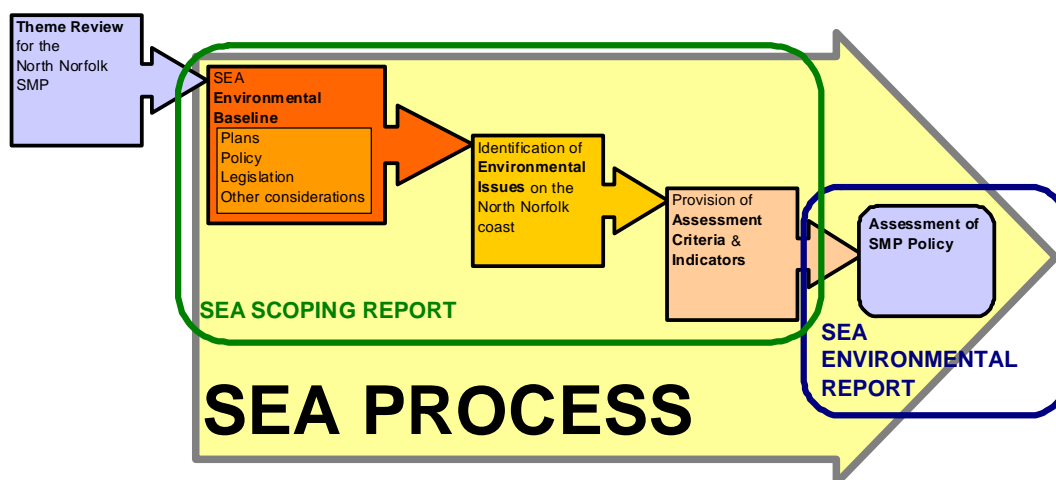
## 1.2 The SMP context for the SEA

The SEA process to accompany the production of the SMP is intended to ensure that consideration of the environmental issues relating to the coast is central to developing and evaluating policy. This **environmental report** provides the means to support a structured evaluation of the environmental issues relating to the north Norfolk coast based on using the assessment criteria that were developed in the **scoping report** (See appendix V). In this SEA environmental report, the preceding scoping report and in the same way as that used throughout the SMP process (Defra, 2006), the term environment is used to cover the following **receptors** (as defined by SI 1633):

Receptors
<ul style="list-style-type: none"><li>• Biodiversity, fauna and flora</li><li>• Population and communities (including human health, critical infrastructure etc)</li><li>• Material assets</li><li>• Soil</li><li>• Water</li><li>• Air</li><li>• Climatic factors</li><li>• Cultural heritage, including architectural and archaeological heritage</li><li>• Landscape</li></ul>

The role of this report within the SMP SEA processes is presented in **Figure 1.1**.

**Figure 1.1 SEA process within the development of a SMP**



### 1.3 Why we are using Strategic Environmental Assessment (SEA)

SEA provides a systematic appraisal of the potential environmental consequences of high-level decision-making (that is, plans, policies and programmes). By addressing strategic level issues, SEA aids the selection of the preferred options, directs individual schemes towards the most appropriate solutions and locations and helps to ensure that resulting schemes comply with legislation and other environmental requirements.

Under Directive 2001/42/EC of the European Parliament and European Council on the assessment of the effects of certain plans and programmes on the environment, a strategic environmental assessment (SEA) must be undertaken for plans and programmes that are required by legislative, regulatory or administrative provisions. SMPs clearly set a framework for future development and have much in common with the kind of plans and programmes for which the Directive is designed. However, a SEA is not a statutory requirement for SMPs and this is therefore not a statutory document.

The Defra SMP guidance (Defra, 2006) states that the environmental effects of all policies must be considered before deciding which policies will be adopted. Consideration should be given to both the positive and negative effects of options on wildlife and habitats, populations and health, soil, water, air, climate factors, landscape, cultural heritage and the intrinsic relationship between these. As a result, Defra has recommended that assessment of SMP policies using the approach described in the Directive is adopted. The legislative act that transposes the Directive into domestic law is the Environmental Assessment of Plans and Programmes Regulations (SI 1633, 2004). The main aim of the EU Directive is to *"provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development"*.

This document represents the second stage in the process of providing a SEA for the North Norfolk SMP, with the third and final stage being the provision of a post-adoption statement.

During the preparation of this document we have used, where applicable, the guidance provided by the following:

- Defra (2004). Guidance on Strategic Environmental Assessment.
- Defra (2006). Shoreline Management Plan guidance: Volume 1: Aims and requirements.
- Environment Agency (2008). Internal Environment Agency guidance on SEA of internal Plans and Programmes.
- Environment Agency (2005). SEA Good Practice Guidelines.
- ODPM (2005). A Practical guide to the SEA Directive.

#### 1.4 Scope and structure of this report

This report has six sections. This introduction is **section one**. There are also six appendices.

The purpose of this report is to build on the content and findings of the **scoping report** and clearly express the manner in which the SMP is likely to affect the key environmental issues and associated receptors on the north Norfolk coast.

The sections in this SEA environmental report are as follows:

**Section one** introduces this document and sets the context for using SEA within the SMP process. This section also explains the reasoning behind the SMP itself and describes potential implications of the SMP on the wider environment.

**Section two** describes the context and method for the SEA, including prediction and evaluation methods as well as data gaps and uncertainties.

**Section three** describes the baseline of the study area in relation to the SI 1633 SEA receptors.

**Section four** presents the identified environmental issues and the derived assessment criteria.

**Section five** presents the assessment of the SMP at super-frontage and plan level and draws conclusions relating to the overall effects of the plan.

**Section six** provides an account of mitigation and monitoring measures needed to address uncertainties or adverse effects of the SMP.

**Appendix I** presents a detailed assessment of SMP policy, in the form of assessment tables.

**Appendix II** presents a summary of consultation responses.

**Appendix III** presents a consideration of the effects of SMP policy on environmental receptors.

**Appendix IV** presents a summary of the SMP option appraisal.

**Appendix V** is the SEA scoping report.

**Appendix VI** is the SEA addendum. This was out for public consultation between January and February 2010.

## **1.5 Shoreline Management Plans (SMPs)**

### **1.5.1 SMP aims and objectives**

A Shoreline Management Plan (SMP) is a large-scale assessment of the risks associated with coastal processes. It 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 that reflect both national and local priorities, to (Defra, 2006):

- Reduce the threat of flooding and erosion to people and their property and
- 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. They were based on sediment cell boundaries that 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, due to different requirements, such as the area covered by a coastal authority. However, for the SMP reviews a behavioural systems<sup>1</sup> 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

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

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.
- 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.

**Table 1.1 Options used in SMP development**

<b>SMP option</b>	<b>Description of option</b>
Hold the line (HtL)	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)	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 inland side of the original defences).
No active intervention (NAI)	No investment in coastal defences or operations.

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**.

In developing a SMP, an epoch- (time periods) based approach is used for planning purposes. The three epochs are now to 2025 (short term), 2026 to 2055 (medium term) and 2056 to 2105 (long term).

### 1.5.2 Implications of SMP policy on the wider environment

Each of the SMP policies presented in **Table 1.1** has the potential to affect the wider 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)	<ul style="list-style-type: none"> <li>• Protects communities and infrastructure located in the coastal flood zone.</li> <li>• Protects habitats inland of defences.</li> <li>• Protects freshwater resources (for example abstractions and boreholes).</li> <li>• Provides stability to areas of coastline, within a wider management context.</li> <li>• Protects economic assets located behind defences.</li> <li>• Provides protection to ecological, cultural and historical assets inland of the defences.</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal squeeze (loss of habitat).</li> <li>• Interrupts coastal processes.</li> <li>• May increase flood and coastal erosion risk elsewhere.</li> <li>• Promotes unsustainable land use practices in the coastal flood zone.</li> <li>• Diverts limited resources away from an adaptation response to rising sea levels.</li> <li>• Requires ongoing commitment to future investment in maintenance and improvement.</li> </ul>
Advance the line (AtL)	<ul style="list-style-type: none"> <li>• Provides additional space for communities.</li> <li>• Protects communities and infrastructure located in the coastal flood zone.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces extent of coastal habitat.</li> <li>• Changes functionality of habitat.</li> <li>• Increased coastal squeeze.</li> </ul>



<b>SMP option</b>	<b>Positive impacts</b>	<b>Negative impacts</b>
	<ul style="list-style-type: none"> <li>• Protects habitat inland of defences.</li> <li>• Protects freshwater resources (for example abstractions and boreholes).</li> <li>• Protects economic assets located behind defences.</li> <li>• Provides protection to ecological, cultural and historical assets landward of the defences.</li> </ul>	<ul style="list-style-type: none"> <li>• Interrupts coastal processes.</li> <li>• Effect on marine habitat.</li> <li>• May increase rate of coastal erosion either side of the advanced line.</li> </ul>
Managed realignment (MR)	<ul style="list-style-type: none"> <li>• Coastal habitats allowed to move landwards under rising sea levels.</li> <li>• Creates habitat to aid UKBAP (United Kingdom Biodiversity Action Plan) and local BAP (Biodiversity Action Plan) targets.</li> <li>• Habitat created for juvenile fish and other aquatic organisms (benefits to environment and fishing communities).</li> <li>• Reduces flood risk.</li> <li>• Promotes natural coastal processes.</li> <li>• Contributes towards a more natural management of the coast.</li> <li>• Creates high tide roosts and feeding areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces extent of habitat inland of defences.</li> <li>• Changes nature of habitat inland of defence.</li> <li>• Effect on aquifers and abstractions.</li> <li>• Loss of communities or community assets.</li> <li>• Loss of heritage and cultural features.</li> </ul>
No active intervention (NAI)	<ul style="list-style-type: none"> <li>• Coastal habitats allowed to move landwards under rising sea levels.</li> <li>• Promotes natural coastal processes.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of certainty of effects and time for adaptation.</li> <li>• Increased risk of inundation to inland habitats under rising sea levels.</li> </ul>

SMP option	Positive impacts	Negative impacts
	<ul style="list-style-type: none"> <li>• Contributes towards a more natural management of the coast.</li> </ul>	<ul style="list-style-type: none"> <li>• Effect on aquifers and abstractions.</li> <li>• Loss of communities or community assets.</li> <li>• Loss of heritage and cultural features.</li> </ul>

### 1.5.3 Implications of SMP policy on environmental receptors

Defra SEA guidance (Defra, 2005) identifies a series of environmental receptors that should form the initial basis and scope of the SEA. The receptors are the environmental features that may be affected by the effects of the SMP.

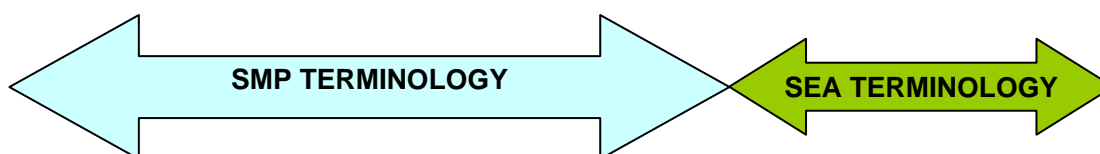
The SMP guidance requires that the SMP is developed in response to a consideration of the environmental features of the coast, features that need to be assessed to determine the nature and characterisation of the coast. There is a difference of language here between the building block of the SEA and the SMP. It is therefore necessary to clarify how SMP features relate to SMP receptors and to then establish how the SMP may affect the receptors. A cross reference of the way in which SEA receptors relate to SMP terminology is provided in **table 1.3**.

The SEA regulations require that for each environmental receptor, an initial appraisal is provided relating to how the SMP may affect each specific receptor. This is provided in **appendix III**. A summary of the overall potential effects of the SMP on the environment is provided in table 1.3. The receptors developed for the North Norfolk SMP SEA have been aggregated from the SI1633 receptors due to the nature of the SMP process and its application across the coast. So biodiversity, fauna and flora has been separated into two receptors, habitats and species, as the assessment of effects on these receptors can be better quantified by this division.

Collectively, the effects on receptors can then be traced back to establish how the SMP may influence the environment. This step provides clarity relating to how the environment has been considered in producing the SMP and assessed in the context of the SEA. Simply, the SMP process provides an integral element in developing SMP policy and how policy options are evaluated and developed.

**Table 1.3 SMP and SEA terminology**

SMP issues and objectives	SMP theme review	SEA receptor
Environment	Natural environment	Habitats
		Species
		Air and water
	Agriculture	Soil
	Landscape and character	Landscape
		Material assets
Population		
Heritage	Historic environment	Cultural heritage
Commercial	Current and future land use	Population and communities
Recreation		Population and communities
Hard assets		Population and communities



The assessment in **tables 1.4** and **1.5** provide an illustration that all SMP policy options have the potential to have an effect on all SEA receptors, with the exception of air. Air has been scoped out as a receptor potentially affected by the SMP, as no pathway was identified for this effect. SMP policy concerns itself with land, water and the tidal interface as a spatial area, no instances were identified where SMP policy could have any effect, positive or negative, on air quality.

The identification of receptors that may be affected by the SMP will provide the focus for the subsequent assessment.

## **1.6 SMP consultation**

As well as the consultation for the SEA, the North Norfolk SMP has followed the procedures for guidance specified in the SMP guidance. A full account of the consultation provided, and the responses to feedback, is provided in **appendix II** of the SMP

## **1.7 SEA scoping report and the response to consultation**

The SEA scoping report established the environmental baseline (including key environmental issues) and developed a suite of **assessment criteria** that have been used in this report for assessing **SMP policy**. The scoping report is provided for information as appendix V.

The **scoping report** was used as a basis for a three-week consultation period (as agreed with the National Environment Assessment Service (NEAS)) between 3 and 25 March 2009. This sought to agree the suite of assessment criteria and the key environmental and socio-economic criteria contained in the **scoping report**. During this period, the consultees listed below were invited to provide comments on the environmental baseline and the assessment criteria.

#### **Consultees for the SEA scoping report**

- Environment Agency
- Natural England
- English Heritage
- Wells Harbour Commissioner
- Norfolk Coastal Partnership
- Norfolk County Council
- North Norfolk District Council
- Borough Council of King's Lynn and West Norfolk

Feedback was obtained from the Environment Agency, Natural England and from North Norfolk District Council. The feedback provided mirrored the comments previously received which focussed on ensuring that the assessment criteria were more specific to:

- the range of designated sites and habitats under UK and environmental legislation and
- the range of heritage features that should form the basis of any assessment.

The changes to the assessment criteria have been included in this report, and ensure that ecological and heritage based features are assessed in the appropriate manner to a consistent level of detail.

#### **Questions posed during the consultation period on the SEA scoping report**

1. Has the scoping report correctly identified the environmental issues on the north Norfolk coast? (that is, are there additional issues that need to be addressed?)
2. Has the baseline (in combination with the theme review, Rapid Coastal Zone Assessment Survey, baseline scenarios and coastal characterisation report) provided an appropriate level of detail to support the assessment?
3. Do the assessment criteria provide an appropriate way to assess the environmental effects of the SMP?
4. Is the suggested method considered robust and appropriate to the assessment of the environmental effects of the SMP?

As well as this consultation, this process has also heavily involved the National Environmental Assessment Service (NEAS), an arm of the Environment Agency, who have shaped the assessment. The changes to the assessment criteria resulting from consultation have been included in this report and ensure that ecological and heritage-based features are assessed in the appropriate manner to a consistent level of detail. Also, the consultation process provided the opportunity to scope out certain SEA receptors that were deemed as not being relevant to assessing SMP policy. The receptors defined in SI 1633, but scoped out of this assessment were:

- climatic factors and
- air.

These receptors were scoped out through consultation due to the intangible manner in which SMP policy (being abstract and aspirational) could be regarded as directly influencing these receptors.

## 1.8 Synergies with other parallel processes

The SEA will form a component of the wider assessment mechanisms for the SMP which also includes:

- The Appropriate Assessment under the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora).
- Consideration of the requirements of the Water Framework Directive (Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy).

As a component of the **environmental report**, monitoring measures will be specified post-assessment. The actual specification of monitoring, and the actions to enact the monitoring requirements, will be included in the SMP action plan (discussed below).

## 1.9 Evaluation of the plan and alternatives

The function of a SMP is to consider the coast as a whole from the perspective of managing coastal flood and erosion risk. The behaviour of the north Norfolk coastline is driven by its geomorphological make-up, with spits (for example Blakeney Point), dissipative beaches (wide, flat and shallow-sloped with bars and creeks), barrier islands (Scolt Head), salt marshes and dunes. Also, there are channels that provide access to coastal settlements such as Cley-next-the-Sea, Wells-next-the-Sea, Burnham Overy Staithe and Brancaster Staithe, with these channels being vital for both local economy and tourism. It is therefore evident that no one aspect of the coastal environment dominates and that there is a complex interdependence between different values along this linear coast. This means that a decision taken in one SMP policy development zone (PDZ) within a “super-frontage”

(see **section 2.2**) has the potential to affect both neighbouring PDZs and the community use and ecological value of the coastline.

As a result, if SMP policy at each super-frontage was to be assessed individually and in-combination, there would be a multiplier effect along the coastline so that each management unit would need to be assessed not only for the four options detailed above, but for each option in combination with one of four options for the two adjacent management units across each of the three SMP epochs, resulting in a total of 960 assessments. It was therefore considered inappropriate and unmanageable for a simple and rigid procedure of policy appraisal to be applied to each super-frontage. Further reasoning for this decision was based on the fact that in many PDZs within each super-frontage only a limited number of policy options is actually appropriate. For example, a policy of managed realignment would be wholly inappropriate for a coastal community, as would a policy of advance the line on a dynamic and natural shoreline. The assessment of each SMP policy option for each management area was therefore deemed too unwieldy and so unnecessary within the context of a SMP, especially in the light of the fact that the “spirit of SEA” was applied throughout policy development.

## 2 Context and method

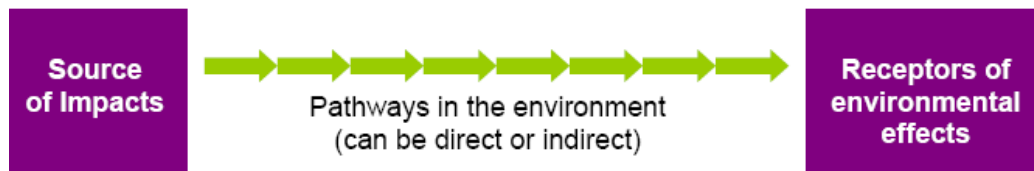
The SEA process is clearly defined in the SEA regulations and guidance suite. The basic process follows the provision of a scoping report (see appendix V). This included the environmental baseline, identified key environmental issues, outlined the methods to be used and offered a series of assessment criteria.

Following consultation on the scoping report and the development and assessment of SMP policy, this report will detail and record the actual assessment of the preferred policy option. Subsequent to this, a **post-adoption statement** will be provided that will explain how environmental considerations have been taken into account and detail the manner in which the assessment will be used to ensure that the actual effects of the SMP are accounted for through monitoring and response.

### 2.1 Prediction and evaluation methods

The methods we will use to identify and predict the likely significant environmental effects of implementing the plan are described below. To assess the environmental effects of implementing the SMP, we will adopt an evidence-based, expert judgement system. This approach is based on the widely accepted source-pathway-receptor model (SPR) (**figure 2.1**).

**Figure 2.1 The source-pathway-receptor model as applied to SEA**



The appraisal will be a qualitative exercise based on professional judgment and supported by peer-reviewed literature or iterative discussion where possible. It is important to stress that, given the nature of SMP policy, which is high level and so lacks the detail of an actual scheme, the assessment will be based on established effects wherever possible, but will also rely heavily on expert judgement of anticipated effects. The performance of SMP policy within each SEA unit against each assessment criterion will be given a significance classification as well as a short descriptive summary (for example, widespread negative effects with no uncertainty). For each SMP management area, the assessment table will also include a more comprehensive reasoning of the judgement process used for determining the environmental effects and likely significance of each area. In particular, the following considerations will be paramount in determining environmental effects and likely significance:

- Value and sensitivity of the receptors
- Is the effect permanent / temporary?
- Is the effect positive / negative?
- Is the effect probable / improbable?
- Is the effect frequent / rare?
- Is the effect direct / indirect?
- Will there be secondary, cumulative and / or synergistic effects?

**Table 2.1 Environmental impact significance categorisation**

Significance of SMP policy	
	SMP policy is likely to result in a significant positive effect on the environment.
	SMP policy is likely to have a positive or minor positive effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a neutral or negligible effect on the environment.
	SMP policy is likely to have a negative or minor negative effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a significant negative effect on the environment.
	The relationship between the SMP policy and the environment is unknown or unquantifiable.

This assessment is based on available information and considers the relatively abstract nature of SMP policy (in comparison to scheme-level data). The receptors are specified in the SEA practical guidance (ODPM, 2005) and are listed in **section 1.3**.

The use of appropriate receptors is considered in developing assessment criteria (presented in **appendix I**), whereby how each receptor (in response to the environmental issues of the north Norfolk coast) is affected by the SMP is clearly described. Where gaps in knowledge exist (relating to the information required to support an assessment of the link between policy and receptor), expert judgement is used or a decision of unquantifiable effect recorded.

## 2.2 Developing SEA assessment areas

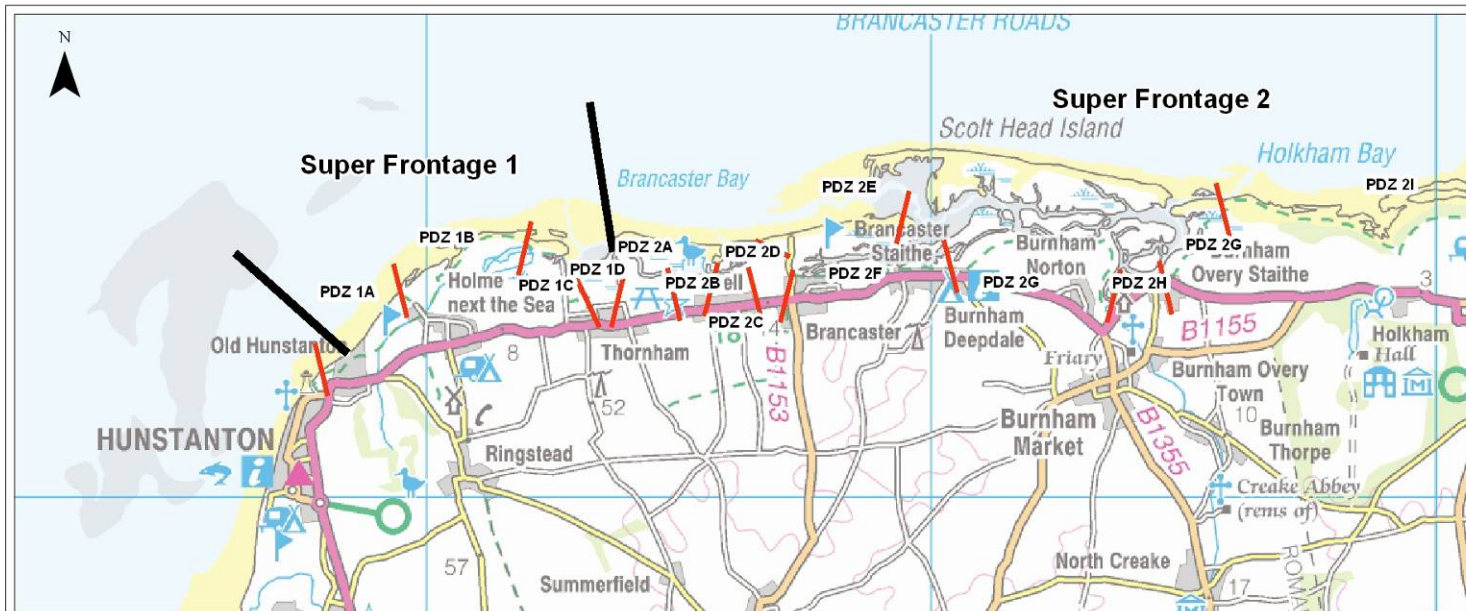
The assessment is being provided at a SEA assessment unit level. These units have been derived from the three “super-frontages” defined in the baseline scenarios report (Royal Haskoning, 2008). A super-frontage is defined as an area of coastline that is geomorphologically discrete from other super-frontages (that is, any geomorphological process occurring within that frontage does not affect or occur across other super-frontages) and each super-frontage may consist of an unspecified number of PDZs.



The three super-frontages in the North Norfolk SMP have been defined as (from west to east along the north Norfolk coast and presented in **figure 2.2**):

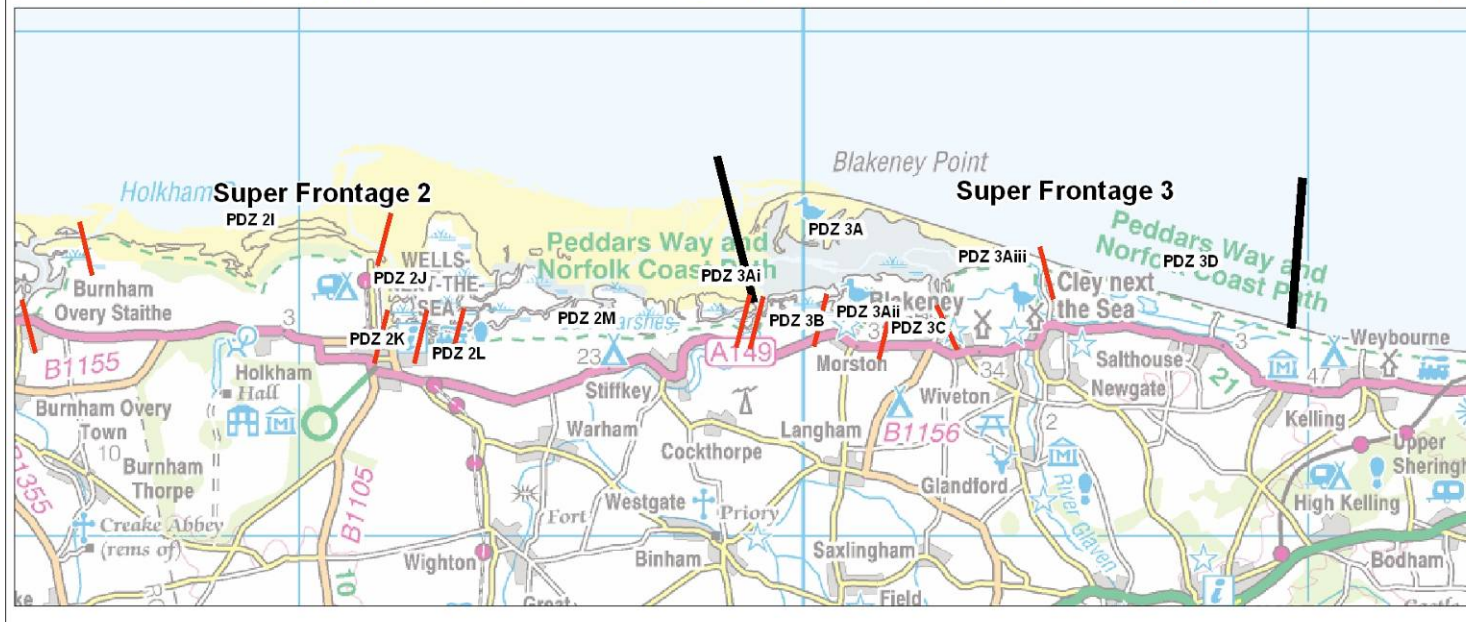
- **Super-frontage 1** – start of dunes at Old Hunstanton to western extent of Brancaster Bay
- **Super-frontage 2** – western extent of Brancaster Bay to western extent of Blakeney spit and
- **Super-frontage 3** – western extent of Blakeney spit to Kelling Hard.

The development of policy within this SMP has been devised in response to a consideration of the environmental, social and economic features on the coast and of the coastal processes and systems that shape the coast. Each super-frontage has been defined to offer the most appropriate spatial breakdown of the coast, where processes can be managed (as appropriate) at a scale that is driven by wider management objectives. Simply, the super-frontage is the level at which the SMP 'makes sense' in regard to the intent of management, with the constituent PDZs being the mechanism to deliver the management intent of SMP policy in each super-frontage.



Key:

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Title:  
 Super Frontages in North Norfolk SMP

Project:  
 North Norfolk  
 Shoreline Management Plan 2

Client:  
 Environment Agency

Date:  
 July 2009

Scale @ A4:  
 1:125,000

Figure:  
 2.2

It therefore follows that the SEA of SMP policy is undertaken at the super-frontage scale. On further consideration however, a decision was reached to further breakdown each super-frontage based on the intent of management. Within super-frontage 2 and 3 this was either to allow natural coastal processes or hold the line (HtL) in some areas, while providing managed realignment (MR) in others to provide wider benefits. The assessment has therefore been provided at the following scales:

- **Super-frontage 1 (SF1)**
- **Super-frontage 2a (SF2a)** (for areas where the coast is being allowed to evolve naturally or the line is being held)
- **Super-frontage 2b (SF2b)** (for areas where MR is being pursued)
- **Super-frontage 3a (SF3a)** (for areas where the coast is being allowed to evolve naturally or the line is being held) and
- **Super-frontage 3b (SF3b)** (for areas where MR is being pursued).

This breakdown enables the assessment to consider policy as an intent of management for areas of coast intended to address the objectives contained in the SMP. An assessment at any other level would not provide an appropriate mechanism to consider how SMP policy will affect the environmental issues of the north Norfolk coast.

The assessment is therefore based on a consideration of SMP policy within the super-frontage defined above over the timescale of the SMP. A consideration of each alternative policy choice for each policy is not considered appropriate and would not contribute to an understanding of the actual options available, as discussed in **section 1.9**.

## **2.3 Mitigation and monitoring**

Any mitigation measures or monitoring that are required as a result of this assessment will be clearly specified and listed in this report and ultimately included in the SMP's action plan. This approach provides the most robust mechanism for delivery, since the action plan is a) directly linked to SMP delivery and b) builds on the organisational roles developed within the SMP process.

## 3 STUDY AREA AND ISSUES

### 3.1 Definition of study area and issues

The North Norfolk Shoreline Management Plan (SMP) study area covers around 44 kilometres of coastline, stretching from Old Hunstanton (Ordnance Survey Grid Reference TM 555 936) to Kelling Hard (Ordnance Survey Grid Reference TM 283 311) and is presented in **figure 3.1**. A detailed social and environmental baseline is provided in the SEA **scoping report (appendix V)**, to which the reader should refer for more detailed information on the study area. A concise account of the baseline and the environmental issues identified on the north Norfolk coast is provided in **section 3.2** and offers a reference point within this report to the factors that have shaped the form and content of the assessment. The scope of the socio-economic and environmental baseline was agreed through the consultation process.

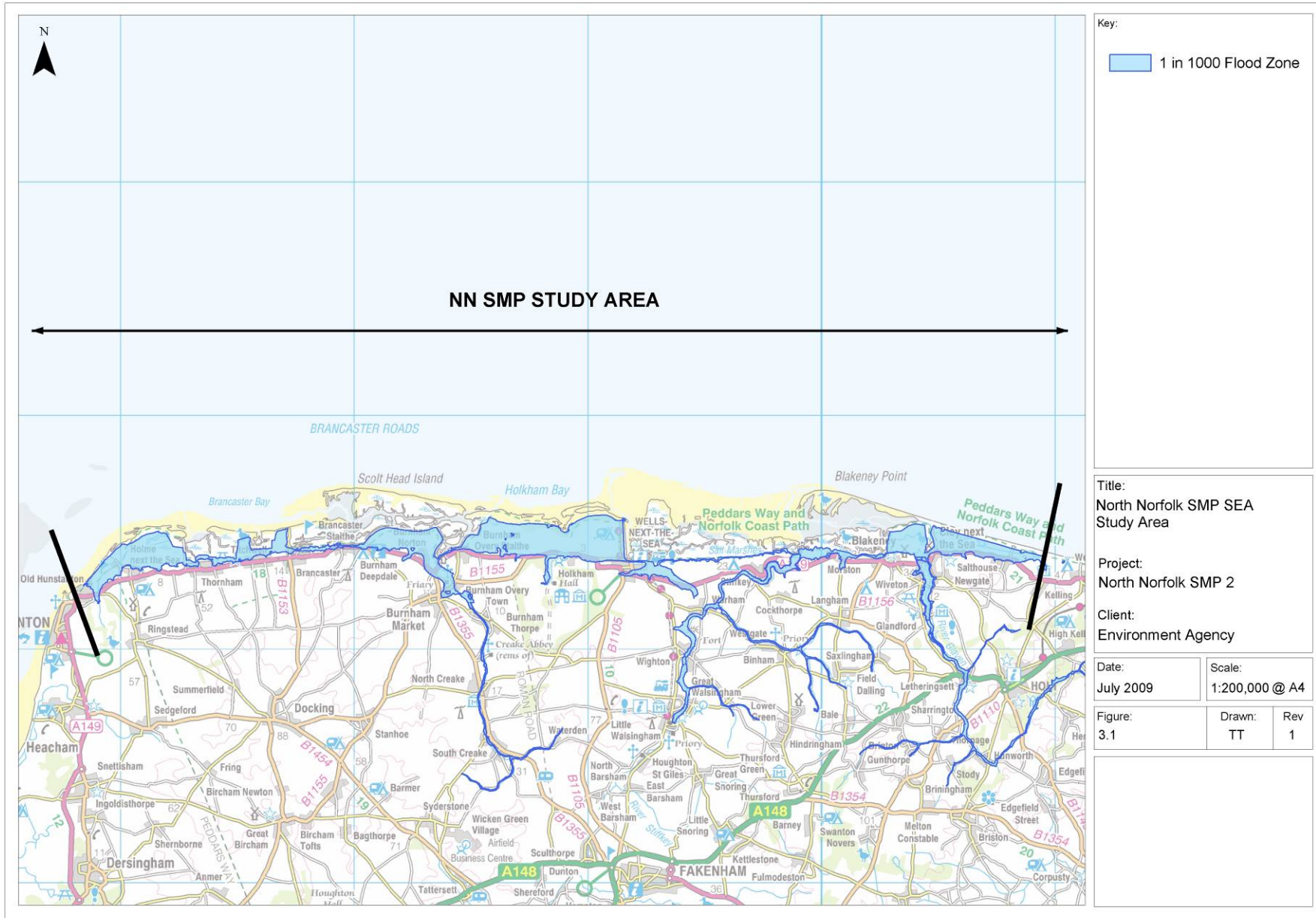
The issues identified provide the focus for providing and using assessment criteria. Simply, the assessment criteria have been produced in response to the environmental issues on the north Norfolk coast.

### 3.2 Landscape

The north Norfolk coast was designated as an Area of Outstanding Natural Beauty (AONB) in March 1968, with the designated area covering a total of 450 km<sup>2</sup> (North Norfolk Coast AONB, 2007). Stretching from Old Hunstanton to Bacton, the AONB includes the remote coastal marshes of the North Norfolk heritage coast which comprises a varied landscape of mud and sand flats, shingle, dunes, reedbeds, saltmarsh and grazing land.

The coastline and coastal fringes are also home to a number of nationally and locally designated sites such as Sites of Special Scientific Interest (SSSIs) and Local or County Wildlife Sites. The settlements along the coast serve as important centres for local commerce and the entire coastline forms the focal point of tourist activities.

Much of the present day landscape of north Norfolk is the direct result of glacial deposition. Erosion and deposition of the soft underlying strata are prominent features of the western section of the study area. The ecological character of the landscape features a range of habitats including coastal vegetated shingle, saline lagoons, reedbeds, freshwater marshes, mudflats, lowland meadows and coastal dunes. The coastal fringe is bordered by gently rolling countryside that is mainly used for arable agriculture. Pasture and rough grassland, meadows and small stands of woodland are also common features of the coastal fringe. A number of shallow valleys run inland from the coast along which flow rivers such as the Glaven and Burn. Many of these shallow valleys include SSSIs and other locally designated wildlife sites.



Key:

1 in 1000 Flood Zone

Title:  
North Norfolk SMP SEA Study Area

Project:  
North Norfolk SMP 2

Client:  
Environment Agency

Date: July 2009	Scale: 1:200,000 @ A4
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Figure: 3.1	Drawn: TT	Rev 1
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The coastal skyline is prominent and largely undeveloped, providing extensive views and the 'big skies' that are widely quoted in literature and promotional material related to north Norfolk. A number of settlements have developed along the coast, supported originally as fishing communities and nowadays especially by tourism and related activities. Villages throughout north Norfolk tend to be nucleated and non-linear with development outside settlements being relatively sparse.

Transport infrastructure throughout the region is relatively sparse with the A149 loosely following the coast and joining Hunstanton and Cromer and a number of settlements in between. Small harbours form prominent features in Wells-next-the-Sea and Blakeney, while settlements off the A149 are linked by a network of minor roads and lanes.

A number of key issues affect the landscape character of the area which includes (North Norfolk DC, 2009 and King's Lynn and West Norfolk BC, 2009):

- A decrease in woodland and tree cover.
- Loss of landscape features such as hedgerows and farm ponds.
- Soil erosion as a result of autumn cultivation of arable crops.
- Loss of saltmarsh through coastal squeeze.
- An increase in the size and number of large farm units which may lead to further homogenisation of the north Norfolk landscape.
- Increased pressure for new uses of land considered 'marginal' for smallholdings, leisure activities etc.

### 3.3 The historic environment

North Norfolk has been progressively submerged by rising sea levels over the last 10,000 to 12,000 years. The Norfolk coast path, a historic path dating as far back as Roman times, runs parallel to the north Norfolk coast. There are 120 scheduled monuments (SMs) in the King's Lynn and West Norfolk Borough Council administrative area and 84 in the North Norfolk District Council administrative area. 14 SMs in North Norfolk and seven in King's Lynn and West Norfolk are cited by English Heritage (NDS, 2008) as being at risk. Although protected by law, SMs are threatened by a wide range of human activities and natural processes. SMs within the SMP study area (that is, within the 1 in 1,000 year flood zone) are presented in **table 3.1**.

The historic environment does, however, contain a wider range of features than designated sites and buildings. These additional features have been addressed in the Rapid Coastal Zone Assessment Survey which was used when producing the policies for the SMP.

**Table 3.1 Scheduled monuments within the 1 in 1,000 year flood zone (MAGIC, 2009)**

<b>Name</b>	<b>Easting</b>	<b>Northing</b>
Blakeney Chapel, site of	604388.809917	345247.168206
Medieval undercroft known as the Guildhall, Blakeney	602820.715326	344074.881821
Tumulus on Warborough Hill, Stiffkey	596059.260908	343412.689
Iron age hill fort, 900 metres north east of Dale Hole Cottage, Holkham	587447.470973	344726.249654
Roman fort (Branodunum), Brancaster	578415.278161	343999.013776
Village cross, 150 metres south of St Mary's church, Titchwell	576236.842167	343721.291284
St Mary's Carmelite friary and holy well, Burnham Market	583893.252446	342787.065443

**Figure 3.2** shows all SMs, registered parks and gardens and listed buildings within the study area. There are no battlefields within the study area and no historic wreck sites were deemed relevant to this study.

### **3.4 Habitats and species**

The north Norfolk coast is almost completely covered by international and national designations for nature conservation. The area contains protected areas for marine, intertidal and terrestrial habitats that interact in a dynamic manner, with shifts in habitat type occurring along the coast and protected areas of transitional habitat from the sea to the edge of agricultural land. Underpinning these designations is a complex geomorphology with coastal form being determined by the movement of sand dunes and shingle ridges that front the coast. The area is also important for a wide range of bird species which attracts birdwatchers from across the country.





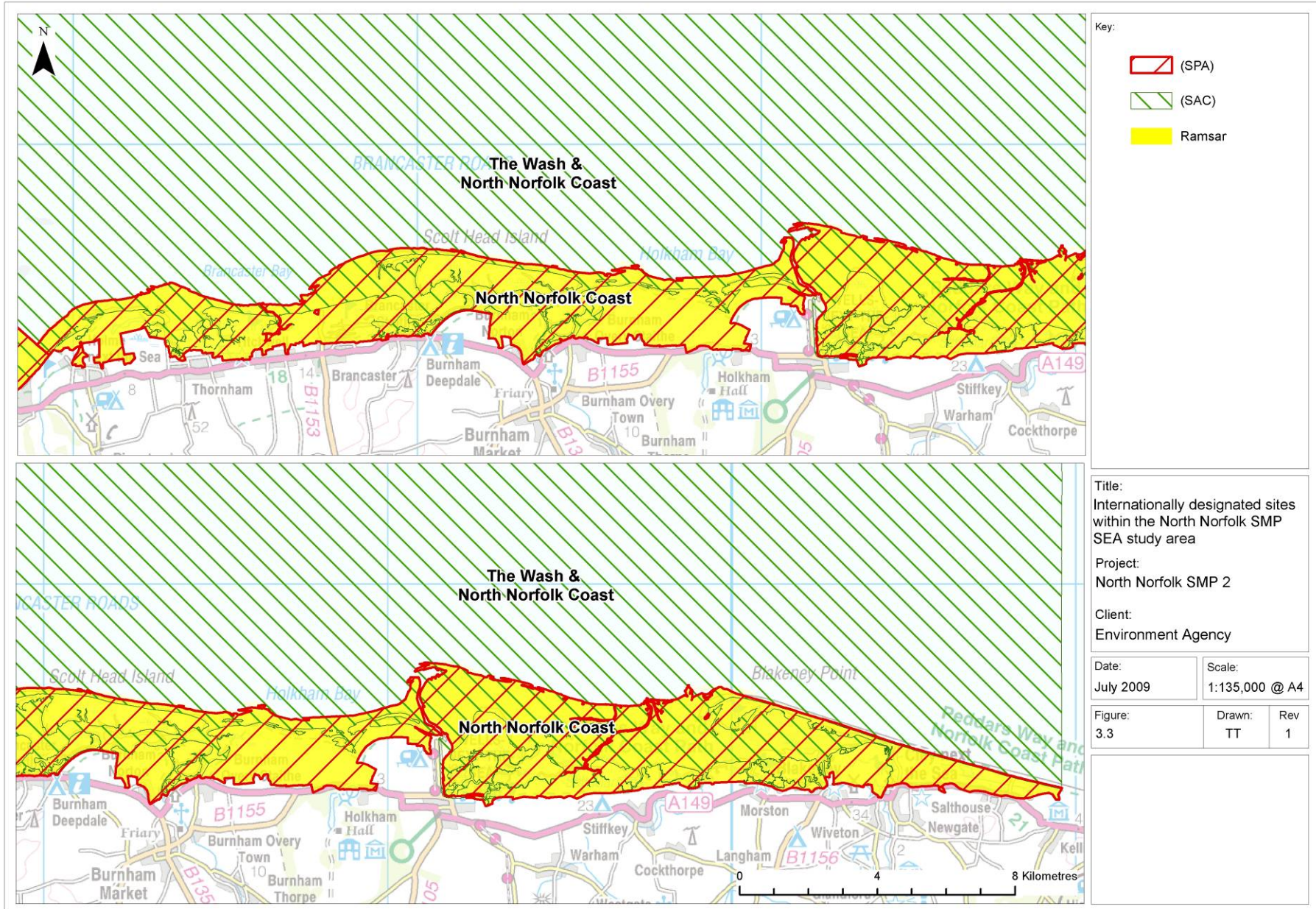
### 3.4.1 Statutory international designations

Nature conservation designations seek to conserve areas of conservation importance and the habitats and species that are the basis of their statutory designation. However, as the designations are derived from discrete and different pieces of legislation, each varies in the nature and mechanisms of their protection. The inherently dynamic nature of coastal environments and the potential of flood risk management structures and practices to both constrain (for example by holding or advancing the line) and create (for example from no active intervention or managed realignment) habitat ensures that SMP policy has a highly significant bearing on both natural habitats and designated sites. All internationally designated sites within the study area (either coastal or in the 1 in 1000<sup>†</sup> year coastal flood zone) are presented in **table 3.2** and **figure 3.3**

**Table 3.2 Internationally designated sites within or adjacent to the study area**

International site type	Legislation site designated under	Site name	Area (ha)
Ramsar site	Ramsar Convention	North Norfolk Coast	7,862
		The Wash	62,211
Special Area of Conservation (SAC)	Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive)	The Wash & North Norfolk Coast	107,761
		North Norfolk Coast	3,208
Special Protection Area (SPA)	Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive)	The Wash	62,211
		North Norfolk Coast	7,887

<sup>†</sup> The 1 in 1000 year flood zone indicates that any land within this zone has a 0.1 per cent probability of tidal inundation each year.

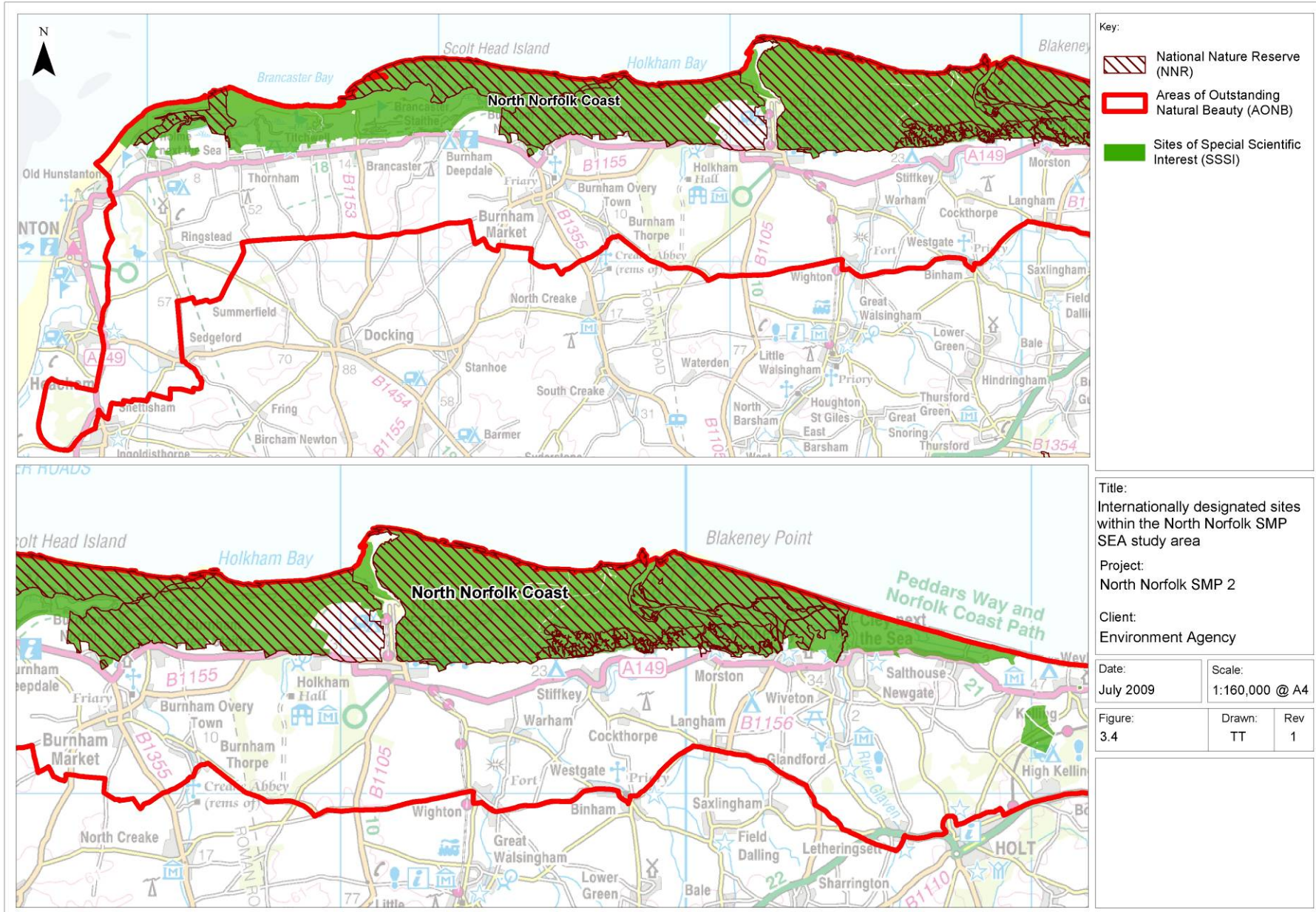


### 3.4.2 Statutory national designations

The north Norfolk coastline also contains several sites designated under national legislation. These are presented in **table 3.3** and **figure 3.4**.

**Table 3.3 Sites designated under national conservation legislation on the north Norfolk coast**

<b>SSSI name</b>	<b>Area (ha)</b>
Morston Cliffs	0.86
Cockthorpe Common, Stiffkey	7
North Norfolk Coast	7,861
Stiffkey Valley	44
The Wash	62,045
Weybourne Cliffs	41
Weybourne Town Pit	0.6
Wiveton Downs	29
Wells chalk pit	4
<b>NNR name</b>	<b>Area (ha)</b>
Blakeney	1,097
Holkham	3,851
Holme Dunes	192
Scolt Head Island	737



### 3.5 Key tourism features

Key tourism features within the North Norfolk SMP SEA study area are listed in **table 3.4**. The key features that support tourism relate to the high quality coastal environment (with stunning beaches such as Holkham), a ribbon of attractive historic settlements with active coastal communities and the opportunity to observe a variety of bird and mammal species. The reason for the buoyancy and sustainability of tourism on the north Norfolk coast is the unique combination of these features, which appeal to a wide cross-section of society.

**Table 3.4 Key tourism features along the north Norfolk coast and within the SEA study area**

Location	Attraction
Blakeney Point	Wildlife, particularly birds and seals.
Cley-next-the-Sea	The village attracts a significant number of tourists. The shingle beach is accessible via a number of long footpaths crossing freshwater and saltwater marshes. Cley is popular for its shopping opportunities and pubs in an attractive setting inland from the coast. Cley Marshes NWT reserve offers good bird watching opportunities with a network of footpaths linking the village to the shingle ridge and beach
Hunstanton	Hunstanton is the only coastal resort in the east of England where the sun can be seen to set over the sea. It is a popular summer seaside destination and is close to Sandringham and the RSPB reserves at Titchwell and Snettisham.
Wells-next-the-Sea	Wells is an important tourist destination and centre for local business and commerce. The harbour serves fishing, wildlife watching tours and other small pleasure boats. A narrow gauge railway runs from the beach south to the town, 1.2 miles away. There is a large caravan park behind the beach, adjacent to a landlocked brackish pond that is used for recreation.
Holkham village and bay	Holkham beach, with its sand dunes, pine woodlands and marshlands is visited by significant numbers of tourists and birdwatchers each year. Eighteenth-century Holkham Hall and the surrounding tourist-based infrastructure also attract large numbers of visitors. Holkham provides a focal point for beach visitors on the north Norfolk coast with substantial numbers of visitors during the summer. The beach also has a large number of beach huts and is popular for walking and swimming. Holkham bay has also been featured in a number of films.

Holme-next-the-Sea	Holme provides a spectrum of small-scale coastal activities that are typical of the north Norfolk coast, typified by smaller more intimate resort villages. The village includes the beach, golf course and nearby nature reserve.
Titchwell	Titchwell is a small village located inland from the coast. It does, however, lie on the key access route to the RSBP reserve at Titchwell which is one of the most visited nature reserves in the country. In response to this, Titchwell offers a range of accommodation and a number of shops supplying optical equipment to bird watchers.
Brancaster	Brancaster is a popular small coastal village with an attractive small harbour, range of pubs, family beach and golf course.
Brancaster Staithe	This village offers some of the best sailing facilities on the north Norfolk coast with associated pubs and restaurants.
Burnham Overy Staithe	This area provides a range of waterside attractions and is the access point for ferry services to Scolt Head Island. The area is also a key sailing destination.
Morston quay	The quayside is a popular destination for tourists, sailors and for boat trips for recreation and fishing.
Blakeney	Blakeney is a focal point for coastal walkers and visitors and provides a range of boat-based trips to see the seal communities out on the spit.

### 3.6 Critical Infrastructure

Critical infrastructure within the North Norfolk SMP SEA study area is presented in **table 3.5**. The A149 is the main road in the area; loosely following the line of the coast and linking the main coastal settlements. Settlements off the A149 are served by a network of B-class roads, with much of the remaining road network being single-tracked and unclassified. The North Norfolk SMP study area does not have any motorways or key rail infrastructure.

**Table 3.5 Critical transport infrastructure within the North Norfolk SMP SEA study area**

Critical infrastructure	Description
A149	Provides the main east-west route between settlements on the north Norfolk coast. The A149 runs from King's Lynn to Cromer and links the settlements of Hunstanton, Brancaster, Wells, Stiffkey, Blakeney, Cley and Salthouse.
Wells-next-the-Sea harbour	Main harbour in the North Norfolk SMP study area

Brancaster Staithe harbour	Fishing and recreational harbour
Blakeney harbour	Fishing and recreational harbour (including seal trips)
Burnham Deepdale harbour	Fishing and recreational harbour
Burnham Overy Staithe harbour	Fishing and recreational harbour
Thornham harbour	Fishing and recreational harbour
Morston harbour	Fishing and recreational harbour (including seal trips)

### 3.6.1 Navigation of coastal creeks

Although not traditionally regarded as infrastructure, the commercial viability of the communities on the coast depends on access to the sea via the coastal creek system. Blakeney for example critically depends on navigable access along the creek to enable fishing and recreational boats to operate, to support harbourside activities and to enable boat-based tourism to occur.

Due to ongoing coastal processes and also due to sea level rise, there is the risk that the creeks will silt up and navigable access (via dredging) would become impossible and unsustainable. This would have major economic implications for the harbour-based activities and tourism in general for the communities listed in **table 3.5**. Maintaining navigation is therefore essential to ensure the long term future of such settlements and tourism income on the coast as a whole.

## 3.7 Water quality and supply

### 3.7.1 Hydrology and water resources

The north Norfolk coast area contains chalk and crag groundwater aquifers. The chalk is the most important aquifer in the area and the water resources are exploited for public water supply and irrigation water. Licensed abstraction information is presented in **figures 3.5 – 3.8**.

Rivers (and their reaches) are scored depending on their sensitivity to abstraction and current usage. The North Norfolk Catchment Abstraction Management Strategy (CAMS) designates the rivers in the SMP area as being of the categories presented in **table 3.6** (Environment Agency, 2009).

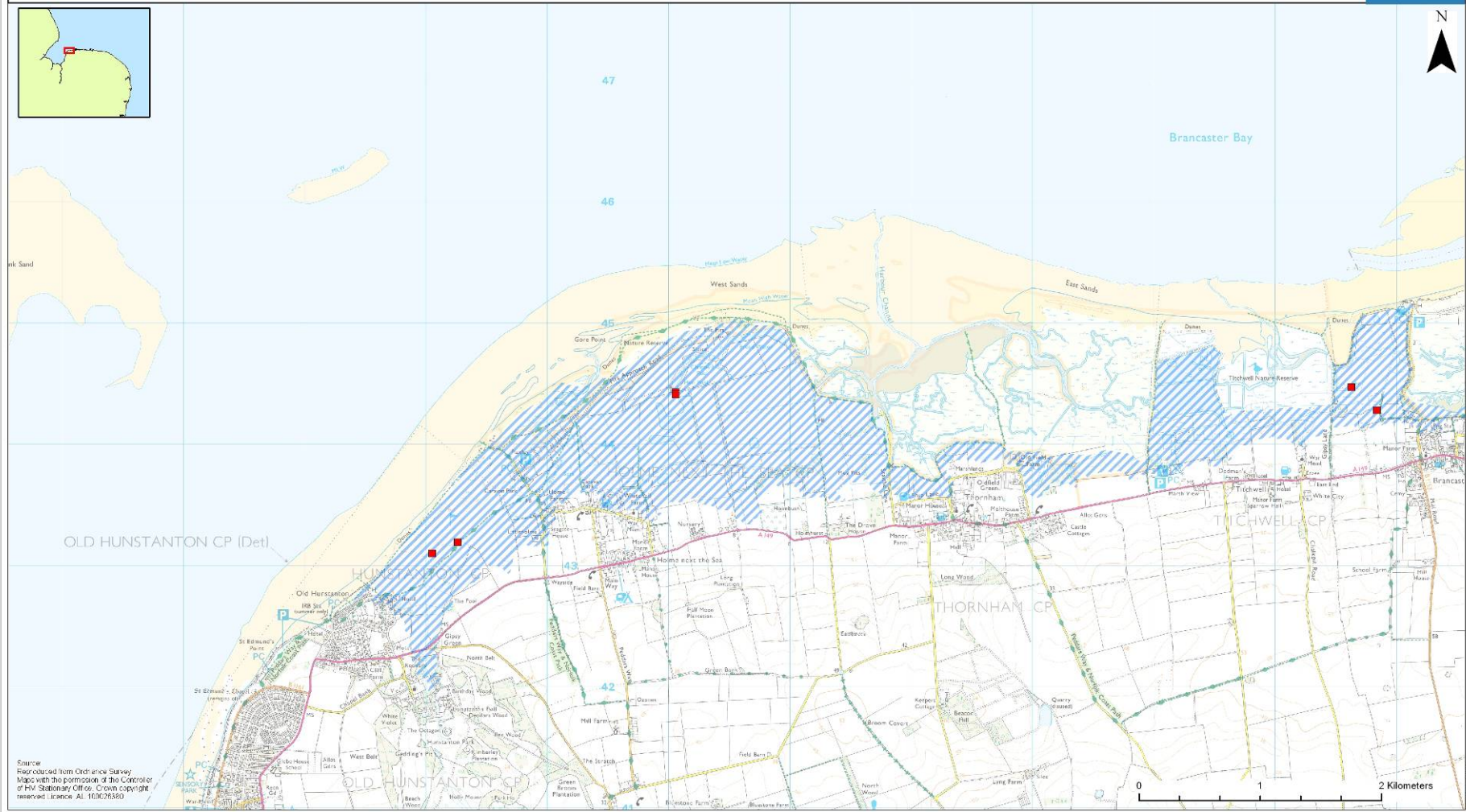
**Table 3.6 CAMS status of north Norfolk watercourses**

CAMS watercourse	CAM aim
WRMU 1 (River Burn)	No water available
WRMU 2 (River Stiffkey)	Currently over-abstracted, moving to over-licensed
WRMU 3 (River Glaven)	Over-licensed
WRMU 5 (Hun, Brancaster, Wells)	Water available

WRMU 6 (Cley Salthouse)	Water available
-------------------------	-----------------



Figure 3.5 Licensed abstraction sites within the 1 in 1000 yr flood zone



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**KEY:**

- EA Flood Zone 2
- Licence Abstraction Points
- Licence Abstraction Lines
- Licence Abstraction Polygons

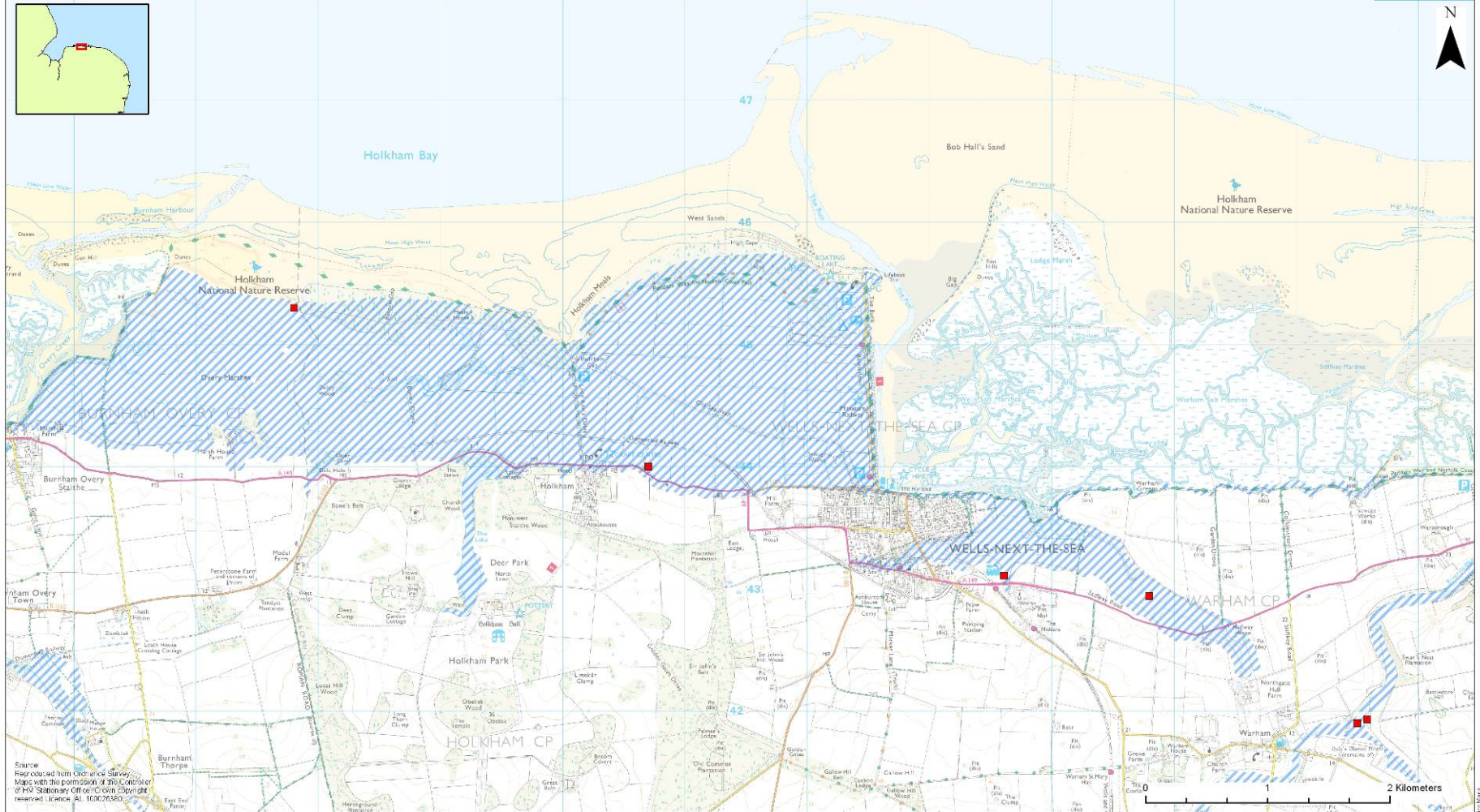
Figure 3.6 Licensed abstraction sites within the 1 in 1000 yr flood zone



**KEY:**

- EA Flood Zone 2
- Licence Abstraction Points
- Licence Abstraction Lines
- Licence Abstraction Polygons

Figure 3.7 Licensed abstraction sites within the 1 in 1000 yr flood zone



KEY:

- EA Flood Zone 2
- Licence Abstraction Points
- Licence Abstraction Lines
- Licence Abstraction Polygons

Figure 3.8 Licensed abstraction sites within the 1 in 1000 yr flood zone



**KEY:**

- EA Flood Zone 2
- Licence Abstraction Points
- Licence Abstraction Lines
- Licence Abstraction Polygons

## 4 ENVIRONMENTAL ISSUES AND ASSESSMENT CRITERIA

In this section the environmental issues for the North Norfolk coast are identified and a series of corresponding assessment criteria provided that will form the basis for assessing SMP policy.

### 4.1 Environmental issues

From a consideration of the policy, legislation and designations relevant to the north Norfolk coast, and supported by discussions with key stakeholders as part of the SMP process, a series of **environmental issues** have been identified. These issues are an expression of the problems that the SMP needs to address in providing policies for shoreline management. The issues suite has been developed to avoid relying on generic coastal management issues (although some issues are the same around the coast and are therefore included) and has provided an account of what other plans, management obligations and stakeholders consider to be the most critical environmental issues on the north Norfolk coast.

**The suite of issues provided is as follows:**

- 1. Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities.**
- 2. Threats from inappropriate coastal management to coastal communities, traditional activities and culture.**
- 3. Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce.**
- 4. Threats from inappropriate coastal management on the coastal landscape and AONB with regard to the provision of a mosaic of landscape features that is characteristic of the north Norfolk coast.**
- 5. Potential loss of historic and archaeological features on a dynamic coastline.**
- 6. Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types.**
- 7. Threat to the environmental conditions to support biodiversity and the quality of life.**
- 8. Continuation of coastal processes required to maintain the integrity of critical coastal habitat and species.**

In response to each specific issue a series of **assessment criteria** has been developed that will ensure that the assessment of SMP policy is focussed on the key environmental issues in this area.

## 5 ASSESSMENT

### 5.1 Assessment method

The assessment is provided at two levels:

- 1) Primary analysis of each management area (detailed assessment) and
- 2) A secondary analysis that seeks to establish the overall effects of all management areas (the plan as a whole).

The primary analysis has been recorded in a series of detailed tables that fully document the effect of each management area on the assessment criteria. A full record of the primary assessment is provided in **appendix I**. The assessment proved in **appendix I** is summarised in the **combined assessment table (table 5.1)**, which provides the basis for the secondary assessment. The assessment is recorded as a colour-coded record as outlined in table 1.2 which is as follows:

SMP policy is likely to result in a significant positive effect on the environment.
SMP policy is likely to have a positive or minor positive effect on the environment (depending on scheme specifics at implementation).
SMP policy is likely to have a neutral or negligible effect on the environment.
SMP policy is likely to have a negative or minor negative effect on the environment (depending on scheme specifics at implementation).
SMP policy is likely to have a significant negative effect on the environment.
The relationship between the SMP policy and the environment is unknown or unquantifiable.

As described previously, due to the nature of SMP policy, a consideration of each of the four available SMP policy options for each PDZ (or indeed, super-frontage) is not appropriate, as the effects of policy choice in one PDZ are typically determined by others in the same super-frontage. A more appropriate response to considering alternative options is to use the baseline scenarios that form the basis of SMP development. In this respect, alternatives will be considered where the SMP has been identified as having a negative effect and will be provided as realistic, alternative management approaches to a given area or issue, rather than a consideration of singular policy options. This is considered to offer a realistic assessment rather than a procedurally based theoretical one. In this respect the SEA will mirror and have direct regard to the real alternatives within the context of the SMP. To this end, a narrative will be provided to link the assessment of alternatives for SMP policy to the assessment criteria for the SMP. Central to this is the

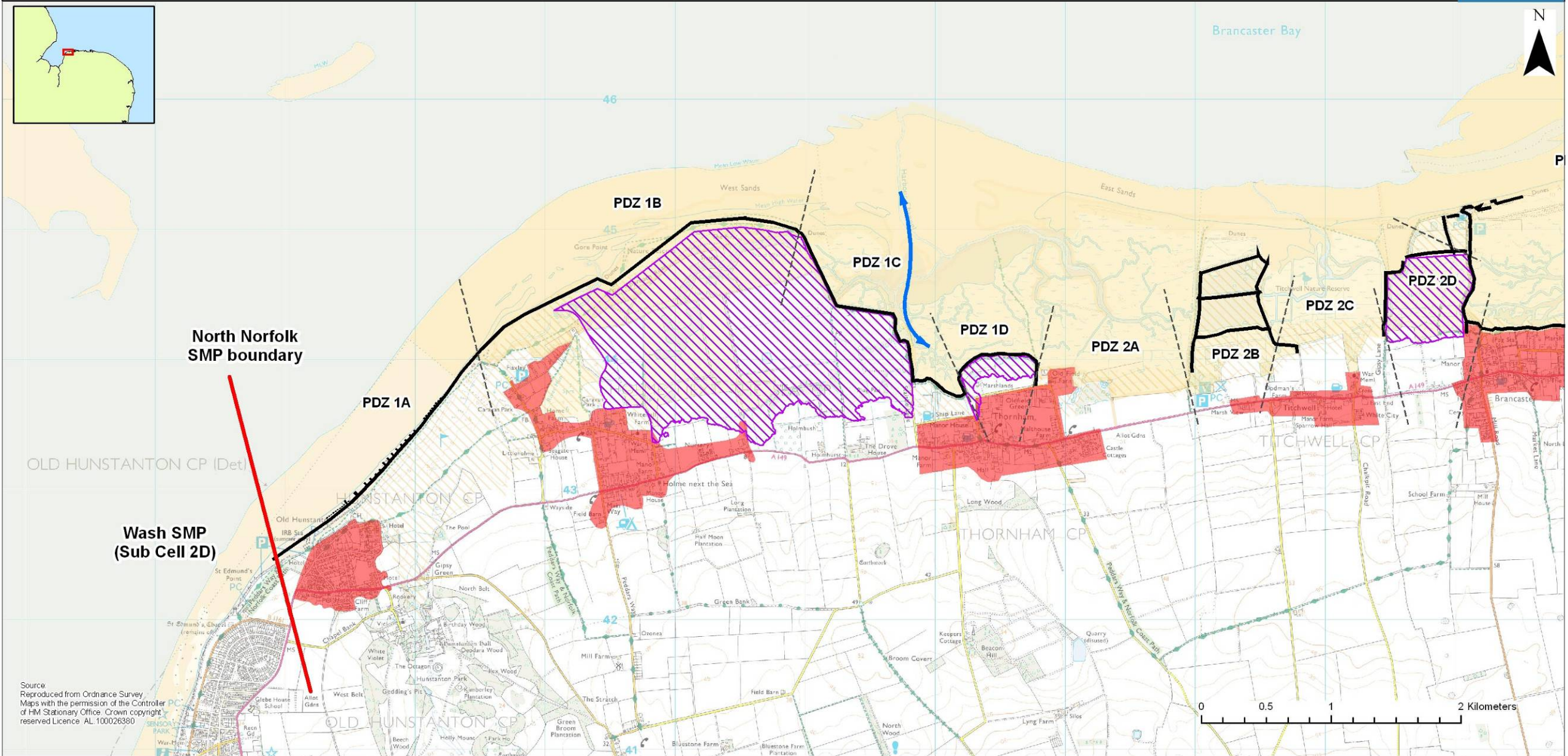
linking of **SMP principles** to **SEA assessment criteria**. This will be described within the assessment.

The secondary assessment seeks to identify the manner in which the effects of the plan as a whole manifest themselves (against the assessment criteria) and provides an account of the overall effects of the plan coupled with mitigation measures for areas where the plan has an adverse effect on key issues on the north Norfolk coast. **Appendix I** therefore provides the detail that supports the assessment and conclusions described below.

## **5.2 The preferred policy suite**

**Figures 5.1 – 5.4** show the preferred policy suite for the North Norfolk SMP area.

North Norfolk Shoreline Management Plan 2  
 Figure 5.1 Super Frontage 1 (1A – 1D)  
 Old Hunstanton to Thornham



Source: Reproduced from Ordnance Survey Maps with the permission of the Controller of HM Stationary Office. Crown copyright reserved Licence AL 100026380

**KEY: Policy (for full details see relevant policy statement)**

Policy Unit	Policy Plan	Short-term (present - 2025)	Medium-term (2025 - 2055)	Long-term (2055 - 2105)
1A	Old Hunstanton Dunes	Hold the existing line	Sustain natural defence with minimum intervention *	Sustain natural defence with minimum intervention *
1B	Holme Dunes	Sustain natural defence with minimum intervention	Sustain natural defence with minimum intervention	Sustain natural defence with minimum intervention
1C	Thornham Sea Bank	Hold the existing line	Hold the existing defence line or breach of frontline defence after construction of landward defence *	Hold the line at the realigned position *
1D	Thornham	No active intervention	No active intervention	No active intervention

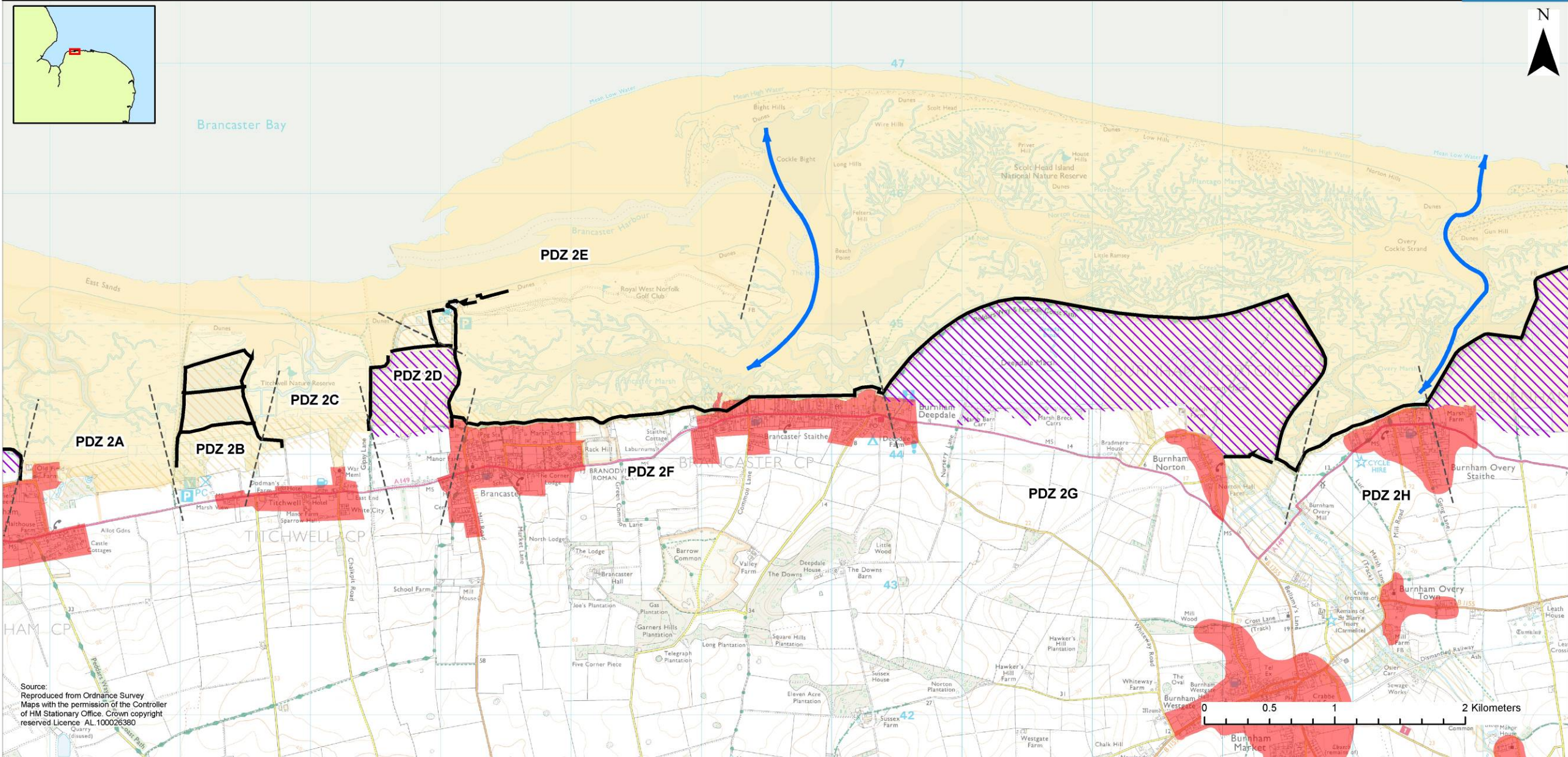
- Key**
- Policy Development Zones boundaries
  - Indicative Navigation Routes
  - Settlements
  - International Designations
  - ▨ Current Flood Zone
  - ▨ New Intertidal Area
- Present Day Defences**
- Defence Line

**Notes:**

\* These policies are subject to monitoring and study in epoch 1



**North Norfolk Shoreline Management Plan 2**  
**Figure 5.2 Super Frontage 2 (2A – 2H)**  
**Thornham to Holkham Dunes**



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**KEY:** Policy (for full details see relevant policy statement)

Policy Unit	Policy Plan		
	Short-term (present - 2025)	Medium-term (2025 - 2055)	Long-term (2055 - 2105)
2A Thornham to Titchwell	No active intervention	No active intervention	No active intervention
2B Titchwell RSPB Reserve	Hold the line at retreated alignment	Hold the existing defence line	Hold the line
2C Titchwell Village	No active intervention	No active intervention	No active intervention
2D Reclaimed grazing marsh at Brancaster	Hold the existing defence line	Hold the existing defence line or breach of frontline defence, no construction of landward defence *	No active intervention
2E Royal West Norfolk Golf Club	Hold the existing defence line	Hold the existing defence line	Hold the existing defence line
2F Brancaster and Brancaster Staithe	Hold the existing defence line	Hold the existing defence line	Hold the existing defence line
2G Scott Head Island			
2G.1 Deepdale and Norton Marshes	Hold the existing defence line	Hold the existing defence line or breach of frontline defence after construction of landward defence *	Hold the line at the realigned position
2G.2 River Burn Outfall	Hold the existing defence line	Hold the existing defence line	Hold the existing defence line
2G.3 Overy Marshes	Hold the existing defence line	Hold the existing defence line	Hold the existing defence line or breach of frontline defence after construction of landward defence *
2H Burnham-Overy-Staithe	Hold the existing defence line	Hold the existing defence line	Hold the existing defence line

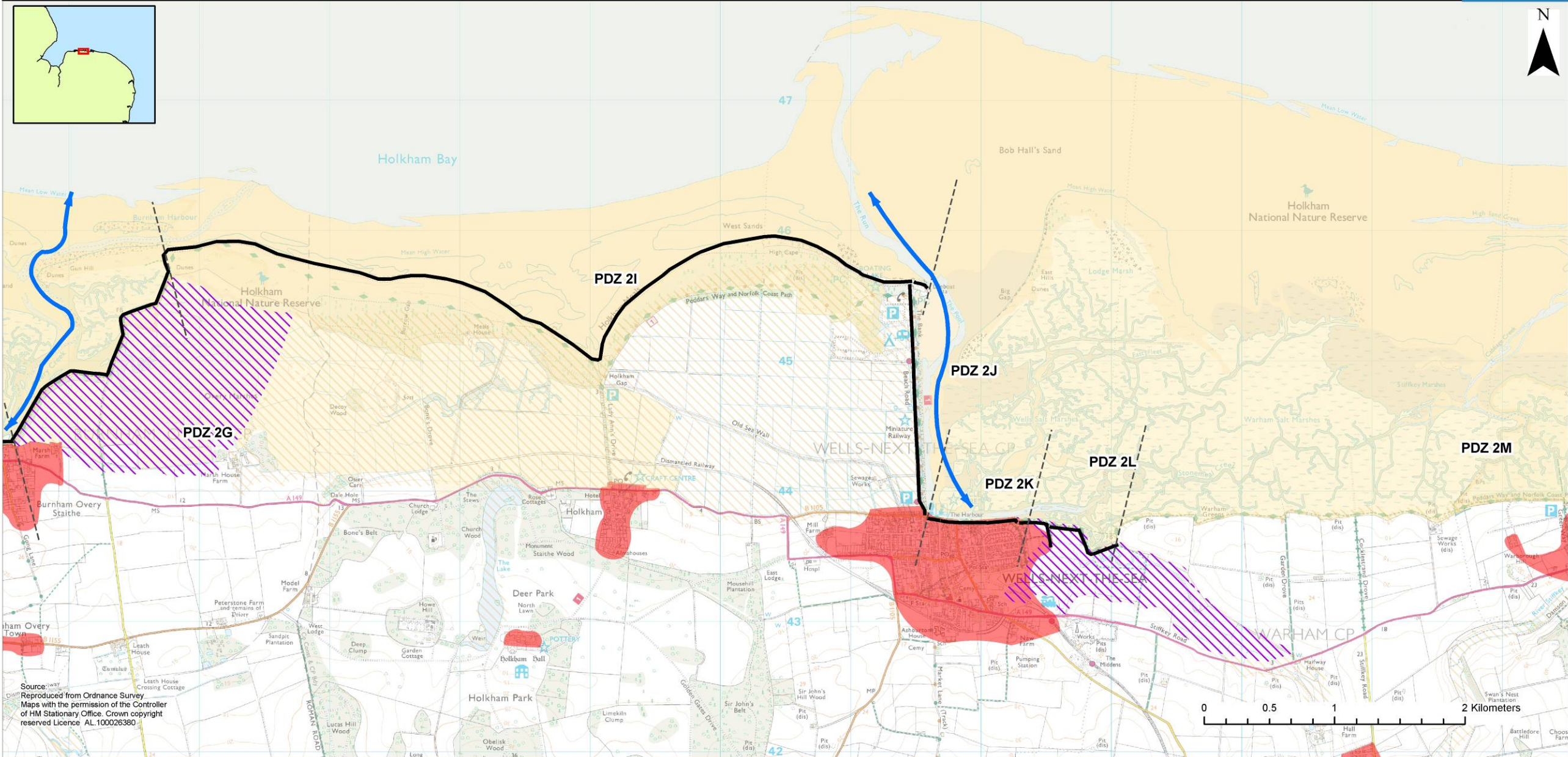
**Key**

- Policy Development Zones boundaries
- Indicative Navigation Routes
- Settlements
- International Designations
- Current Flood Zone
- New Intertidal Area
- Present Day Defences
- Defence Line

**Notes:**

\* These policies are subject to monitoring and study in epoch 1

**North Norfolk Shoreline Management Plan 2**  
**Figure 5.3 Super Frontage (2I – 2M)**  
**Holkham Dunes to Stiffkey**



**KEY:** Policy (for full details see relevant policy statement)

Policy Unit	Policy Plan		
	Short-term (present - 2025)	Medium-term (2025 - 2055)	Long-term (2055 - 2105)
2I	Holkham Dunes	Sustain natural defence with minimum intervention	Sustain natural defence with minimum intervention
2J	Wells Flood Embankment	Hold the existing defence line	Hold the existing defence line
2K	Wells Quay	Hold the existing defence line	Hold the existing defence line
2L	Wells East Bank	Managed realignment to sustain flood defence but increase natural processes	Hold the line at the realigned position
2M	Stiffkey Bay	No active intervention	No active intervention

**Key**

- Policy Development Zones boundaries
- Indicative Navigation Routes
- Settlements
- International Designations
- ▨ Current Flood Zone
- ▨ New Intertidal Area

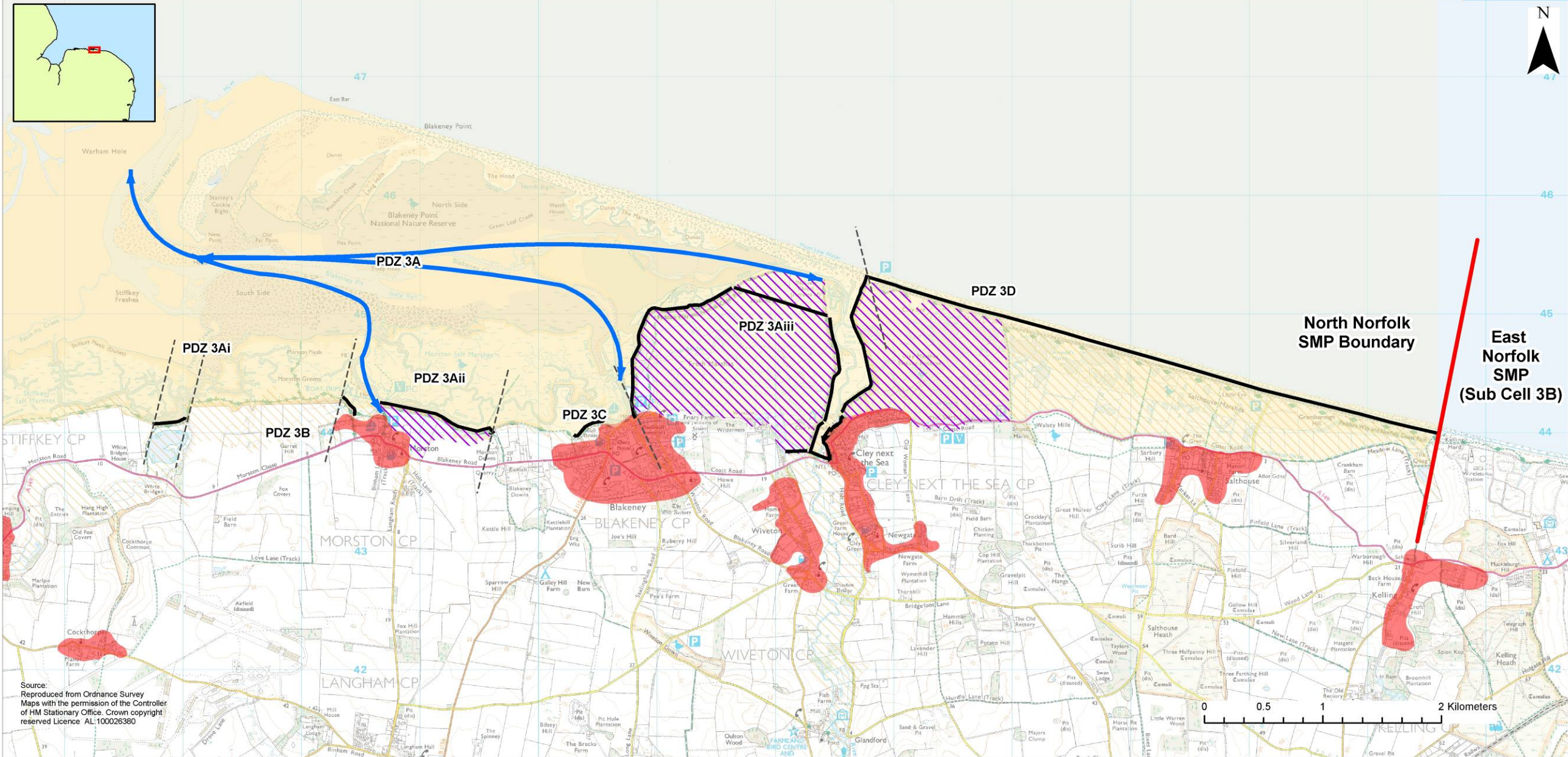
**Present Day Defences**

- Defence Line

**Notes:**

\* These policies are subject to monitoring and study in epoch 1

North Norfolk Shoreline Management Plan 2  
Figure 5.4 Super Frontage 3 (3A – 3D) Stiffkey to Kelling Hard



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Policy Unit	Policy Plan		
	Short-term (present - 2025)	Medium-term (2025 - 2055)	Long-term (2055 - 2105)
3A	Reclaimed areas behind Blakeney Spit		
3A.1	River Stiffkey Outfall	Hold the existing defence line	Hold the existing defence line
3A.2	Morston	Breach of frontline defence after construction of landward defence	Hold the line at the realigned position
3A.3	Blakeney Freshes Marshes	Hold the existing defence line	Hold the existing defence line or breach of frontline defence after construction of landward defence *
3A.4	River Glaven Outfall	Hold the existing defence line	Hold the existing defence line
3A.5	Cley Marshes	Hold the existing defence line	Hold the existing defence line
3B	Stiffkey to Morston	No active intervention	No active intervention
3C	Blakeney	Hold the existing defence line	Hold the existing defence line
3D	Cley to Salthouse	Sustain natural defence with minimum intervention	Sustain natural defence with minimum intervention

**Key**

- Policy Development Zones boundaries
- Indicative Navigation Routes
- Settlements
- International Designations
- Current Flood Zone
- New Intertidal Area

**Present Day Defences**

- Defence Line

**Notes:**

- \* These policies are subject to monitoring and study in epoch 1

### **5.3 Consideration of policy – the level at which the assessment has been provided**

The development of policy within this SMP has been devised in response to considering the environmental, social and economic features on the coast and of the coastal processes and systems that shape the coast. The policy is framed in ‘super-frontages’ (of which there are three in the SMP area, see **section 2.2**) which are amalgams of a number of PDZs. The super-frontages have been defined to offer the most appropriate spatial breakdown of the coast, where processes can be managed (as appropriate) at a scale that is driven by wider management objectives. Where a super-frontage contains an element of realignment, this has been recorded as **b**, in addition to the non-realigned component of the frontage **a**.

**Table 5.1 Combined assessment tables for SEA**

SEA receptor (based on SI 1633)	SEA assessment criteria	SEA assessment unit				
		SF1	SF2a	SF2b	SF3a	SF3b
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>						
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>						
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the North Norfolk coast?					
	Will the SMP policy result in a change in the operation of natural coastal processes?					
	Will the SMP policy result in a change in the condition of European sites? <sup>§</sup>					
	Will the SMP policy result in a change to SSSI condition? <sup>**</sup>					
	Will the SMP policy result in a net change in priority BAP habitat extent?					
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>						
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?					

<sup>§</sup> Areas assessed as “unquantifiable” are awaiting further clarification from Natural England – please see Appropriate Assessment report.

<sup>\*\*</sup> Areas assessed as “unquantifiable” are awaiting further clarification from Natural England – please see Appropriate Assessment report.

SEA receptor (based on SI 1633)	SEA assessment criteria	SEA assessment unit				
		SF1	SF2a	SF2b	SF3a	SF3b
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>						
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?					
	Will the SMP policy result in a change to identified key economic activities and locations?					
Soil	Will the SMP policy result in a change in the quality of agricultural soils?					
Water	Will the SMP policy result in changes to features covered by local WFD objectives?					
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>						
Material assets	Will the SMP policy result in a change to existing shellfish classifications?					
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities					
	Will the SMP policy result in changes which will affect the A149?					
	Will the SMP policy change the quality or security of abstraction for					

SEA receptor (based on SI 1633)	SEA assessment criteria	SEA assessment unit				
		SF1	SF2a	SF2b	SF3a	SF3b
	PWS or irrigation?					
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>						
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?					
<b>Protection of historic and archaeological features on a dynamic coastline</b>						
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZA?					
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features that is characteristic of the north Norfolk coast</b>						
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?					

## **5.4 Primary analysis – a detailed assessment of SMP policy in each SMP assessment unit**

The detailed assessment of SMP policy in each SEA assessment unit is provided in **appendix I**. It is a reassuring confirmation that a consideration of environmental issues has been a key focus in the delivery of policy for the North Norfolk SMP. With respect to this, it can be seen that the preferred policy option contributes towards an enhancement of environmental values.

A consideration of the overall assessment provided in **table 5.1** does not highlight any particular SEA assessment units which have a range of negative effects across the identified environmental issues. Every area considered scores a majority of positive (major or minor) or neutral effects. Negative effects, which are considered to be of a minor nature, are distributed sparsely over each of the areas considered with only five negative effects being identified (one in assessment area F1, F2a and F2b and two in F3b). Assessment area F3a has been assessed as having no negative effects when assessed against the derived SEA criteria. Taking each area in turn, there are clear trends that emerge in response to the effects of policy.

### **5.4.1 Assessment unit F1**

This frontage provides a range of positive effects for issues relating to effects on the biodiversity of the area with all issues (from an overall perspective, to international and national sites) having either a major or minor positive effect. This stems from the balance of policies at PDZ level in this frontage that are intended to foster a natural development of the coastline, which is desirable given the habitat and species in this area.

Also, this super-frontage is considered to have a major positive effect on allowing navigation to continue in coastal channels and a minor positive effect on the coastal landscape.

All other effects are neutral apart from the effects on agricultural land. Due to the proposed realignment at Holme (PDZ1C), there will be a loss of a small area of low quality agricultural land. This is considered to be a minor negative effect.

Overall, SMP policy in assessment area F1 is considered to have either a neutral or positive effect on the identified environmental issues.

### **5.4.2 Assessment unit F2a**

SMP policy in assessment area F2a is considered to have a predominantly minor positive effect. The policy suite is considered to be beneficial to maintaining and enhancing biodiversity, as well as enhancing the protection of key tourism, economic and social assets. The intention of SMP policies within assessment area F2a is to hold the line adjacent to key assets and to



allow natural change on areas of open coast. This brings with it benefits of protecting key areas of coast, but also ensuring that the coast retains a dynamic and sustainable context.

This frontage scores the only minor negative effect on water quality under the Water Framework Directive (WFD) assessment, where a minor negative score was recorded for the potential of policies 2K and 2M for having the potential to affect either ecological status (GES) or potential (GEP), to compromise the WFD environmental objectives being met in other water bodies and / or potentially affecting groundwater. Due to the potential for this effect (which is documented in detail in the Water Framework Directive Assessment) a minor negative effect was recorded.

### **5.4.3 Assessment unit F2b**

SMP policy in assessment unit F2b takes a strategic approach to providing areas of realignment in order to maintain access and navigation to coastal channels, which in turn is likely to increase the tidal prism and stabilise dune areas. This approach brings benefits across the assessment area in providing increased areas of intertidal habitat, stabilising areas of relatively more static habitat, maintaining key tourism assets supported by the channels and ensuring that key features of the coastal landscape are protected.

Accordingly, this suite of policies has been assessed as having positive effects across most issues, with the only neutral effects being recorded for issues relating to the WFD assessment, shellfisheries and the maintenance of the A149 (although the transport link would be maintained, albeit in a realigned position, with the location being decided at scheme level). The realignment would also lead to the loss of some low grade agricultural land, hence the negative score for this indicator. In all other aspects SMP policy across assessment unit F2b provides the wider benefits of enhancing both ecological features and the features that support coastal communities.

There is also the outstanding issue of realignment over terrestrial designated habitat. This has the potential to have an adverse effect on habitat used for birds species (via a shift from grazing marsh to intertidal habitat). The primary issue relates to the use of grazing marsh habitat by geese species. This issue is the subject of ongoing dialogue with Natural England and will be addressed in detail in the Habitats Regulations Assessment (Appropriate Assessment) for this plan.

### **5.4.4 Assessment unit F3a**

SMP policies within assessment unit F3a area are similar to those in F2a, given that they largely provide a hold the policy for defended coastal communities and take a no active intervention approach on open coast. The overall effect of this approach maintains the status quo to some degree and

therefore offers largely neutral effects. This approach does, however, maintain key community assets which are essential for the local economy (including tourism) and contributes towards the coastal landscape and the protection of heritage features.

The overall assessment of SMP policy in assessment unit F3a is therefore generally neutral, with some minor positive effects of tourism, economic, landscape and cultural heritage values. No negative effects are anticipated.

#### **5.4.5 Assessment unit F3b**

In the same way that SMP policy in assessment units F2a and F3a are alike in their approach, so are F2b and F3b. SMP policy intends to offer managed realignment as a mechanism to stabilise coastal channels, as well as dune areas and Blakeney spit. The assessed effects are similar to those of F2b with positive effects being concentrated on ecological features and the maintenance of key assets that support local communities. These benefits (positive effects) do, however, have some adverse effects and this area has been identified as having two minor negative effects: the loss of low grade agricultural land on the realignment sites and the loss of a scheduled monument at the Blakeney Chapel site.

As outlined above in 5.3.3, this area may also be affected by the loss of bird habitat, which will be considered via other mechanisms.

The approach taken provides numerous positive benefits, but the realignments also have some recognised adverse effects.

### **5.5 Secondary analysis – the overall effects of the plan**

Across the plan area negative effects were identified that related to three assessment criteria:

- Will the SMP policy result in a change in the quality of agricultural soils?
- Will the SMP policy result in changes to features covered by local WFD objectives? and
- Will the SMP policy result in changes to historic features identified through the Rapid Coastal Zone Assessment Survey (RCZAS) for heritage features?

Consideration is therefore required of what this combined effect will be, what alternatives are available and what mitigation is needed in response to these issues.

### 5.5.1 Loss of agricultural soils

Loss of agricultural land in this context is defined as agricultural land not currently designated for nature conservation interests. Managed realignments in three assessment units (F1, F2b and F3b) would lead to the loss of grade 3 and 4 agricultural land as a result of the proposed realignments. These areas have been purposely chosen due to the proposed socio-economic benefits, topography, suitability for realignment and the fact that they largely do not contain other features (such as community assets, major designated habitat or heritage features). The loss of agricultural land is considered unavoidable if the wider benefits of managed realignment are to be accrued. It should be considered that the grade of land is low, typically of use for marginal grazing activity, although it is likely that a similar regime could be maintained (such as saltmarsh grazing).

The drivers for this loss are to maintain navigable access to coastal creek systems, which are critically important to the local economy; the managed realignments are an essential component of the wider management intent to use coastal channels to enable sustainable management of the coast and its key assets, with navigable access, as well as providing a balance of dynamic and static coastal habitat.

#### *Alternative approaches*

The agricultural areas could be maintained through approaches to hold the line as opposed to MR within these PDZs. This would leave two options available:

- 1) To manage the coast without realignment or
- 2) To realign over other areas, for example community assets.

Managing the coast without realignment is likely to lead to the continuing siltation of the channels, preventing navigation and associated activities. It would also lead to the gradual landward movement of spits which would isolate coastal communities from the sea, as well as affecting habitats and species designated under the Habitats and Birds directives (see **sections 3.3.1 and 3.3.2**). The effects of this management option would be to lead to a negative effect on all features that depend on access to the sea. Since communities in this area depend on tourism (boat trips, harbourside activities etc.) the long-term effects would be extremely significant on the local economy and landscape.

It is considered, therefore, that the preferred option, which has only one minor negative effect on this feature, is definitely preferred.

Alternative sites for realignment would lead to the loss of significant coastal assets through inundation. It is not considered a feasible approach to offer

the loss of coastal settlements or infrastructure in preference to the loss of low grade agricultural land.

### **5.5.2 Effects on WFD features**

Only two PDZs within assessment unit F1 have been identified as having the potential to have an adverse effect on WFD features. The detail relating to these potential effects and the measures to address this is provided in detail in the WFD assessment.

### **5.5.3 Loss of heritage features**

The realignment over Blakeney Freshes in assessment area F3b (PDZ3Aiii) would lead to the loss of a grade 2 listed building, the ruins of Blakeney Chapel. The chapel is currently located behind the shingle ridge and is in an unmaintained state. The realignment in this area is important to ensure the wider benefits of allowing for the natural development of the shingle ridge and the increased tidal prism to maintain Blakeney channel.

#### Alternative approaches

Hold the line in assessment area F3a would be the only alternative management option. This approach would lead to the increased siltation of Blakeney channel and the loss of coastal access to the community (and the associated effects of this described above). The loss of this one listed building needs to be considered in the context of ensuring the vibrancy and sustainability of the community at Blakeney, which depends on the navigation afforded by the channel. The loss of the chapel is considered unavoidable in the context of wider management.

#### Mitigation

English Heritage will need to be consulted, a programme for the investigation (or transportation) of the chapel produced and a cost for these measures derived.






## **5.6 Consideration of alternatives within the SMP process**





Within the context of developing policy within the SMP, the initial stages provided an assessment of the baseline scenarios (no active intervention and with present management), in response to the issues that had been identified in the early stages of developing the SMP. This process (which came before the SEA began) identified areas of coast where the management choice was simple (the defence of established settlements or an approach of no active intervention on an open coast). The remaining areas were identified as requiring further analysis to consider the relative merits of policy options. The options were considered against the SMP principles which were agreed by the Client Steering Group (CSG) and Elected Members Forum (EMF).

**Table 5.2** provides a cross reference of SMP principles and SEA assessment criteria. The use of this table, and the SMP assessment graphics provided in **appendix IV**, provide an account of how alternatives were considered for the areas of the coast where management decisions were not considered simple.

The phasing of the SEA into the process of this SMP did not allow the SMP principles to be developed at the same time. Accordingly, issues have been defined in a slightly different manner. **Table 5.2** is intended to show parallels between the two processes at this point.

**Table 5.2 Parallels between SMP policy appraisal and SEA assessment criteria**

SMP principles	SEA assessment criteria
 Reliance on Defences	Will the SMP policy result in a change in flood risk to coastal communities?
 Ensure local policies do not affect wider coastal processes	Will the SMP policy result in a change in the operation of natural coastal processes?
	Will the SMP policy result in changes to features covered by local WFD objectives?
 Impact of coastal change on local industry, infrastructure and property	Will the SMP policy result in a change to identified key economic activities and locations?
	Will the SMP policy result in a change in the quality of agricultural soils?
	Will the SMP policy result in a change to existing shellfish classifications?
 Allowing adaptation of communities to coastal change	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities
	Will the SMP policy result in changes which will affect the A149?
 Value of North Norfolk to wider society	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities

	Allowing planning system to respond to changes in shoreline management	Will the SMP policy result in changes which will affect the A149?
	Maintaining protected sites and species	Will the SMP policy result in a change in the condition of European sites?
		Will the SMP policy result in a change to SSSI condition?
	Maintaining and enhancing coastal biodiversity	Does SMP policy provide a sustainable approach to habitat management on the North Norfolk coast?
		Will the SMP policy result in a net change in priority BAP habitat extent?
	Historic environment, heritage and culture	Will the SMP policy result in changes to historic features identified through the RCZA?
		Will the SMP policy result in changes in the quality of the coastal landscape?

The tables in **appendix IV** provide an account of the options appraisal for PDZ 2D, 2E, 2F, 2G, 2H, 2J (SF2b) and 3D (SF3b). The analysis provided in these tables is consistent and accords with the secondary assessment provided above. It is important to note however, that the SMP principles and SEA assessment criteria have been developed in response to differing guidance and drivers so the nuance of some criteria is subtly different. Nevertheless, the SMP assessment tables support the assessment of effects provided in **section 5.5** above.

## 5.7 Overall assessment of the North Norfolk SMP

The north Norfolk coast is a mix of areas of established and viable coastal communities, which themselves and in combination with the surrounding landscape and coastal habitats, are of high tourism and conservation value. The North Norfolk SMP has sought to promote and maintain these interest features, while ensuring the sustainability of communities over all epochs of the SMP.

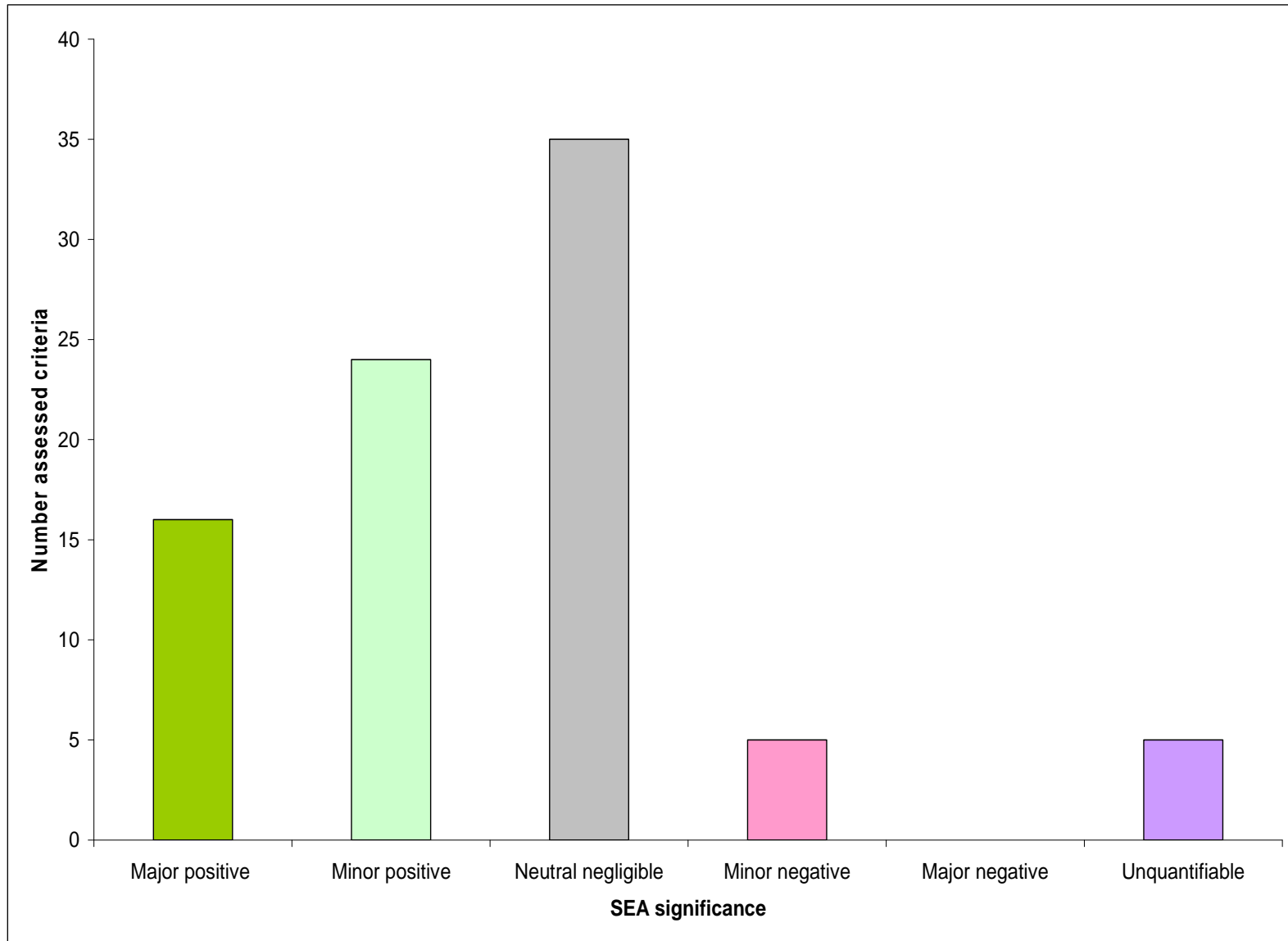
In providing this balance, the SMP has devised a strategic approach to management that focuses on holding coastal communities, while allowing the economic and environmental sustainability of these communities, the features that support them and the natural environment. On the basis of this assessment, the North Norfolk SMP is considered to have been successful in providing this balance. No major adverse effects have been identified, with most of the remaining effects being either major or minor positive. The overall significance of SMP effects across the SMP area is presented in **table 5.3** and **figure 5.5**.

**Table 5.3 Overall significance of SMP policy when appraised against assessment criteria**

Significance of SMP policy	Number of policies appraised as significant under assessment criteria
SMP policy is likely to result in a significant positive effect on the environment.	16
SMP policy is likely to have a positive or minor positive effect on the environment (depending on scheme specifics at implementation).	24
SMP policy is likely to have a neutral or negligible effect on the environment.	35
SMP policy is likely to have a negative or minor negative effect on the environment (depending on scheme specifics at implementation).	5
SMP policy is likely to have a significant negative effect on the environment.	0
The relationship between the SMP policy and the environment is unknown or unquantifiable <sup>§§</sup> .	5

<sup>§§</sup> Areas assessed as “unquantifiable” are awaiting further clarification from Natural England – please see Appropriate Assessment report.

**Figure 5.5** Graphical representation of overall significance of SMP policy when appraised against assessment criteria





## **6 MITIGATION AND MONITORING**

Of the minor adverse effects identified in this assessment, some are addressed within the wider context of synergies and balance in relation to the effects of other management areas, while some require specific mitigation. SMP policies in some management areas work against natural processes, for example, in order to hold key areas of coast to protect other socio-economic or environmental values. It is the manner in which policy is applied across the whole SMP area, in order to provide balance, that is the important factor in such examples so mitigation is not appropriate or required.

However, the SMP does require mitigation for singular effects, where an adverse effect has been identified. It is considered that, in this context, the following measures are required to support the SMP to avoid an adverse effect on the environmental values of the north Norfolk Coast.

### **6.1 Monitoring and management**

#### **6.1.1 Loss of BAP habitat**

One of the main effects of SMP policy will be the shift in transitional habitat composition, due in part to the promotion of natural change under a scenario of rising relative sea levels. There is a need, therefore, to ensure that existing monitoring of BAP habitat in the plan area is provided in a manner that will highlight shifts in BAP habitat extent and informs the BAP recording process. This mechanism is required to ensure that wider mechanisms exist for BAP habitat creation which addresses emerging requirements based on the effects of the SMP.

#### **6.1.2 Impacts on SSSIs**

The SMP has the potential to affect the condition of SSSIs through changes in habitat and coastal management (due to the number of SSSIs on the coast), with knock-on effects on the high level targets relating to SSSIs in favourable condition. A key tool, therefore, in managing and monitoring change on the north Norfolk coastline is the continued monitoring of SSSI units. This enables an early determination of where favourable condition may be threatened by inappropriate coastal management (SMP policy). It is considered that the existing monitoring programme undertaken by Natural England would be sufficient for this purpose, but there is a need to feed any initial findings into the SMP action plan and the development of subsequent SMP policy at the earliest stage.

#### **6.1.3 Expenditure on coastal defence**

The SMP provides policy direction that is indicative of expenditure required on the coast. Where SMP policy relates to the provision, enhancement or replacement of defences, the policy will be instrumental in securing funding

for schemes (since it is a key consideration in determining applications for funding).

It is not the intent or role of the SMP to secure funding or actively to seek mechanisms to provide funding. It therefore follows that, in providing policy direction, the SMP fulfils its role in identifying the areas where funding will be required. To this end, it is considered outside the scope of the SMP to provide funding measures as mitigation for policy.

#### **6.1.4 Investigation of coastal cultural and archaeological sites**

Where implementing SMP policy would lead to the loss of sites/features that are important to the historic environment, two options are available:

1. Relocation of features to a more sustainable location and
2. Provision of a site investigation to investigate and record the content and value of sites.

The SMP has only identified one site where a listed building would be lost, Blakeney chapel. There may, however, be other 'unknown' sites that may only come to light as the SMP is implemented or indeed as the coast erodes. Within the SMP action plan therefore, English Heritage will be instrumental in establishing what the specific nature of losses may be and where losses are known, a figure for investigation established so that this funding can be sought from Government. The intent of addressing this matter within the SMP action plan will be to ensure that English Heritage is provided with the appropriate funding mechanism to investigate threatened sites.

## **7 THE NEXT STEPS IN THE SEA PROCESS**

This report is provided for consultation simultaneously with the SMP itself. Comments should be provided either in writing or electronically to:

**Kit Hawkins**  
**Senior Environmental Scientist**  
**Royal Haskoning**  
**Rightwell House**  
**Bretton**  
**Peterborough**  
**PE3 8DW**

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### **7.1 The purpose of consultation**

The purpose of consultation for this report is to establish:

- Have the environmental issues been correctly identified?
- Does the report correctly identify the assessment criteria that should be used to assess the plan?
- Is the information provided correct?
- If issues or detail have been omitted which should be a key element of the assessment?

Answers to these questions, or other issues relating to the environmental effects of the plan, would be welcome as a component of consultation. Feedback received will shape the finalisation of this report and the evaluation of the environmental effects of the SMP. The final consideration and endorsement of the plan will be provided in response to these issues.

### **7.2 Subsequent documents**

Following the completion of this report, a post-adoption statement will be provided that will detail how the environmental considerations of this process have been integrated into the SMP and how the consultation and response to consultation has been considered within the SEA process.

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# **Appendix I**

## **Environmental assessment**



Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the North Norfolk coast?	PDZ1A provides a sustainable approach to habitat management by minimising the need for intervention in the dune system (while retaining the option for management if required). PDZ1B provides for the continued management of the dune system/frontage to provide sustainable management based on monitoring. PDZ1C provides for realignment in epoch 2 to offer a more sustainable line of defence (based on topography). PDZ1D takes an approach of NAI which offers totally sustainable defence for this frontage.  Overall, the management in this SF provides for a more sustainable approach based on moving the coastline towards a less managed, more natural, system.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	As described above, the overall intent of management is to move towards natural development of the frontage, allowing natural processes to develop, especially in epoch 2.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of European sites?	The SMP policy in this SF allows for the natural development of the frontage (dune habitat) while allowing intertidal habitats to migrate towards land (through realignment in 1C). Also, the realignment at Holme will increase the tidal prism in Thornham harbour channel and help to maintain a mosaic of sub-littoral and intertidal habitats. The overall effect is therefore considered to be minor positive.	European sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	As stated above. The effect is considered minor positive.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat extent?	The overall effect of SMP policy across this frontage will be to provide no net loss of BAP habitat. However, realignment at Holme will create BAP habitat over existing non-BAP habitat – leading to a gain in BAP habitat. The overall effect is therefore considered to be major positive.		Area of priority BAP habitats for each epoch and scenario
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	Across the SF there will be no increased flood risk as a result of this suite of policies. The realignment in 1C at Holme will bring defences closer to communities, but at no increase in flood risk. The overall effect is therefore neutral.	Coastal communities	Number of properties in the tidal flood zone compared to the current number

Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	In PDZ 1A the policy, coupled with rising sea level, may lead to the encroachment of the beach into Holme dunes which currently contains a golf course. However, time is provided for adaptation and response to this scenario. Other activities are considered to be unaffected. The overall effect is therefore neutral.	Tourism and recreation features	Number of locations where tourism or recreation activities will be affected
	Will the SMP policy result in a change to identified key economic activities and locations?	<b>Section six</b> provides an account of mitigation and monitoring measures needed to address uncertainties or adverse effects of the SMP.		Number of locations where economic activity will be affected
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	<b>Section six</b> provides an account of mitigation and monitoring measures needed to address uncertainties or adverse effects of the SMP.		Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No adverse effect is anticipated so the effect is neutral.	Shellfish classification	Predicted impact on shellfish classification
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	No anticipated loss of any critical infrastructure and a neutral overall effect.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	No effect so neutral overall effect.		Extent and frequency of A149 flooding
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction point in PDZ 1C is to support the current agricultural use of the land. In light of the planned realignment, the land use would change so this abstraction point would no longer be required. The overall effect is therefore neutral.	Abstraction	Number of abstraction points affected
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate in the existing channels and/or the operation of harbours?	The managed realignment at PDZ 1C is predicted to increase the tidal prism through the Thornham harbour channel, which will reverse the existing regime of accretion in this channel and aid navigation. The overall effect is therefore major positive.		Length of navigable channel and number of operable harbours

Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The SF does not lead to any increased risk to known heritage features. The overall effect is therefore neutral.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The overall effect in this SF is to allow for a more natural development of the frontage while losing no features that contribute significantly to the coastal landscape. The overall effect is therefore minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	This suite of policies provides a strategic approach to allowing the natural development of the coast on open coastal areas while HtL on defended frontages or frontages that protect key assets (communities, tourism features, freshwater habitats etc). The intent is to provide a balanced approach of allowing the natural evolution of the coast while ensuring that coastal communities are maintained in a sustainable manner. The policies therefore actively seek to provide a sustainable approach to habitat management and the effect is minor positive.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	These policies continue HtL at existing communities or defended assets. The approach on open coastal areas is to allow the natural coastal processes to drive the development of the coast, so overall the effect is considered minor positive.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of European sites?	Matter under consideration as part of Appropriate Assessment.	European sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	Matter under consideration as part of ongoing consultation with statutory consultees.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat extent?	The policies provide a balance of holding the line and allowing natural coastal evolution (as stated above). The overall effect on BAP habitat is expected to provide a shift in habitat but no overall loss, with an overall neutral assessment.		Area of priority BAP habitats for each epoch and scenario
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	The policies will HtL adjacent to existing communities or their assets through HtL policies. The effect is therefore minor positive.	Coastal communities	Number of properties in the tidal flood zone compared to the current number.
<b>Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	The HtL policies provide protection for both communities and the assets that are important to the local tourism industry (the Titchwell RSPB reserve, Royal West Norfolk golf club and the tourist centres Brancaster, Wells etc). The NAI policies also support the maintenance of sediment to the area's beaches. The overall effect is therefore a significant contribution towards	Tourism and recreation features	Number of locations where tourism or recreation activities will be affected

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		maintaining key tourism assets and the effect is considered major positive.		
	Will the SMP policy result in a change to identified key economic activities and locations?	As outlined above, key economic assets in this area largely relate to tourism or agriculture. This suite of policies seeks to maintain the sustainable location of features to support this so the overall effect is major positive.		Number of locations where economic activity will be affected
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	This suite of policies will maintain existing agricultural land inland of defences. It will not lead to any loss of agricultural land, as the NAI frontages are not considered likely to lead to the loss of significant areas of agricultural land. The effect is therefore neutral.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. Nor are any changes anticipated that will permanently prevent or compromise the environmental objectives being met in other water bodies or that will cause failure to meet good groundwater status or result in deterioration in groundwater status. Policies 2K and 2M have, however, been identified as having the potential to affect ecological status or potential, to compromise the environmental objectives being met in other water bodies and potentially affecting groundwater. The effect is therefore minor negative.	Water	To be determined
Threats to coastal communities, traditional activities and culture from inappropriate coastal management				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No anticipated effects on shellfisheries so the effect is neutral.	Shellfish classification	Predicted impact on shellfish classification
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	The policies provide for the protection of key coastal assets that have been previously defended so the effect is minor positive.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	The A149 will be maintained in this section of the coast by this suite of policies so the effect is minor positive.		Extent and frequency of A149 flooding
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	No licensed abstraction locations in any of the PDZs in this assessment area. The effect is therefore neutral.	Abstraction	Number of abstraction points affected

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate in the existing channels and/or the operation of harbours?	The policies will have a negligible effect on the evolution of channels and the effect is considered neutral.		Length of navigable channel and number of operable harbours.
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The existing coastal settlements (which include various listed buildings, a large registered park and garden and numerous SMs) will be maintained under this suite of policies. The overall effect is therefore minor positive.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies seek to maintain the sustainable location of historic coastal communities that are a key feature of the coastal landscape. The NAI policies also provide for the natural development of the coast. The combined effect is considered minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	This suite of PDZs seeks to provide managed realignment to increase the tidal prism behind dune systems to provide stability to both dunes and the actual channels. The policy for PDZ2I, while not actually providing a MR relating to a creek system, does provide for the sustainable management of the dune system. It is considered that the approach of using MR policies as a tool in coastal and habitat management represents a sustainable approach – using natural processes to maintain a diverse range of coastal habitats. The approach is therefore considered to be major positive.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in the operation of natural coastal processes?	The policies will provide a balance of allowing natural processes to drive areas of MR which would, without defence, have evolved into intertidal areas. The effects of the MR (increased tidal prism) will allow a more natural evolution of the coastline, where existing defences are believed to have reduced the tidal prism and may be leading to a weakening of tidal flow and a destabilisation of the fronting dunes. The overall approach is therefore major positive.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of European sites?	Matter under consideration as part of Appropriate Assessment.	European sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	Matter under consideration as part of ongoing consultation with statutory consultees.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat extent?	The policies provide MR over either freshwater habitat or typically agricultural land. Although freshwater BAP habitat is being lost by these realignments, the overall area of BAP habitat is increasing due to realignment over undesignated habitat/agricultural land. The overall effect is considered to lead to an overall net increase in BAP habitat so the effect is considered minor positive.		Area of priority BAP habitats for each epoch and scenario
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	The MR policies adjacent to existing communities will lead to the high water mark being nearer to properties than it is at present. The nature and wording of the policies will, however, ensure that the actual level of risk is not increased. The policies are intended to stabilise the fronting dunes (Scolt Head etc) and this habitat actively provides a significant defence for communities such as Brancaster, Wells etc. The increased stability of the	Coastal communities	Number of properties in the tidal flood zone compared to the current number

Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		natural defences is significant and the overall effect is considered to be minor positive.		
Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	Increasing the tidal prism in existing channels is conducive to maintaining tourism activities (such as fishing, seal watching, sailing etc) that rely on navigable access to the sea. Also, the stabilisation offered by this approach is intended to bring stability to systems at Brancaster bay and Holkham (two major tourist destinations). This suite of policies is therefore actively seeking to assist in offering a long-term sustainable future for tourism in this area.	Tourism and recreation features	Number of locations where tourism or recreation activities will be affected
	Will the SMP policy result in a change to identified key economic activities and locations?	As stated above, the policies will maintain assets relating to tourism along tidal creeks. This will also support commercial activities such as fishing etc. Also, as outlined above, the stability of the dune systems in this area provides defence for coastal communities.  The overall effect of policies is therefore considered to be major positive.		Number of locations where economic activity will be affected
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	The MR policies in this suite (apart from 2I) provide for a loss of agricultural land to intertidal. This loss, although only leading to the loss of grade 3 or 4 agricultural land, would reduce the area of agricultural land in this frontage so the effect is considered minor negative.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. No changes are anticipated that will permanently prevent or compromise the environmental objectives being met in other water bodies. PDZs 2D, 2G and 2I have a relatively greater potential to affect groundwater status (or result in a deterioration in groundwater status). The overall effect is neutral.	Water	To be determined
Threats to coastal communities, traditional activities and culture from inappropriate coastal management				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No expected effect on shellfisheries is anticipated as a result of this suite of policies so the effect is neutral.	Shellfish classification	Predicted impact on shellfish classification
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	The MR policies have been designed and located so as not to lead to the loss of any critical coastal infrastructure. Indeed, the policies support navigation of coastal channels which requires a range of harbourside infrastructure, moorings, port facilities etc. The effect is therefore major	Infrastructure	Critical infrastructure lost



Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		positive.		
	Will the SMP policy result in changes affecting the A149?	The A149 is not threatened by any of the MR policies in this area so the effect is neutral.		Extent and frequency of A149 flooding
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction points in PDZs 2D, 2G and 2L are to support the current agricultural use of the land. In light of the planned realignments, the land use would change so these abstraction points would no longer be needed. The licensed abstraction point at Holkham will not be affected and can continue to be used as present. In light of the reasoning above, the overall effect is neutral.	Abstraction	Number of abstraction points affected
Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities				
Material assets	Will the SMP policy change the ability to navigate in the existing channels and/or the operation of harbours?	As stated above in detail, the MR policies have a primary driver of maintaining the access and navigation of the coastal channels. The effect is therefore major positive.		Length of navigable channel and number of operable harbours
Protection of historic and archaeological features on a dynamic coastline				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The MR policies would not lead to the loss of any scheduled monuments or listed buildings. Most of these features (including conservation areas and registered parks and gardens) are located on this coast in or near to established communities such as Brancaster. These communities are actually afforded higher levels of protection through these policies, through stabilisation of the coastal dune system. The overall effect should therefore be considered minor positive.	Historic environment	Qualitative judgement
Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies will maintain the key structural elements of this coast (sand bars such as Scolt Head, sandy beaches such as Holkham and a network of tidal channels with associated settlements). There will be some transitional loss of foreshore habitat, but this is considered to offer a dynamic coastal landscape and is not considered sufficient to offset the benefits of maintaining large scale coastal structures. The effect is therefore considered minor negative.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	The PDZs in this policy suite provide for either a NAI approach (at 3B) or a HtL approach at 3Ai, 3Aiv and 3C adjacent to outfalls or defended communities (Blakeney). The MR policy at 3D is simply intended to monitor and realign the frontage only if required to protect communities at Cley and Salthouse. Overall, these policies seek to allow for the natural development of the coast, while maintaining areas important for coastal communities. The overall effect in respect to habitat is therefore to allow the development of open coast (which is sustainable and beneficial to habitat), but holding areas that may lead to squeeze of habitat. The overall effect is therefore neutral.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in the operation of natural coastal processes?	The overall effect of this suite of policies provides for the provision of management on previously-defended frontages and does not increase levels of defence. The effect is therefore considered to be neutral.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of European sites?	The HtL policies may lead to the loss of intertidal designated habitat (which would be considered an adverse effect). However, policies of NAI and also the MR lead more towards the more natural evolution of the shingle ridge at Cley and have the potential to lead to an increase in habitat, which may partially offset this. The overall effect is therefore considered to be neutral.	European sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	As above, the anticipated effect is considered neutral.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat extent?	The policies of HtL may lead to loss through squeeze (as stated above). However, the policies of NAI and MR may lead to increased provision of habitat. The overall effect will depend on how the coast responds over the course of the plan, but an overall net increase in BAP habitat is anticipated. The overall effect is therefore considered to be neutral.		Area of priority BAP habitats for each epoch and scenario
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	There is considered to be no increase in flood risk as a result of this suite of policies. The overall effect therefore is considered to be neutral.	Coastal communities	Number of properties in the tidal flood zone compared to the current number

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	No change in any tourism facilities is anticipated. The HtL policy at 3C provides for the defence of a key tourism-based area at Blakeney. The effect is considered minor positive.	Tourism and recreation features	Number of locations where tourism or recreation activities will be affected
	Will the SMP policy result in a change to identified key economic activities and locations?	No change in any economic assets is anticipated. However, as stated above, HtL policy at 3C provides ongoing defence of key economic assets and the effect is considered minor positive.		Number of locations where economic activity will be affected
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	No loss of any agricultural land is anticipated so the effect is neutral.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	Blakeney is a designated shellfish water. However, as the WFD assessment for this SMP determined, there will be no adverse effect on this fishery. The overall effect is therefore minor positive.	Shellfish classification	Predicted impact on shellfish classification
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	No loss of infrastructure is anticipated so the effect is neutral.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	No increased threat to the A149 so the effect is neutral.		Extent and frequency of A149 flooding
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	No licensed abstraction locations in any of the PDZs in this assessment area. The effect is therefore neutral.	Abstraction	Number of abstraction points affected.
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate in the existing channels and/or the operation of harbours?	The PDZs in this suite will not in themselves have any effect on channels so the effect is neutral.		Length of navigable channel and number of operable harbours

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The HtL policies defend existing areas that contain listed buildings at Blakeney and Morston. No features are known adjacent to the Cley ridge or the NAI frontage, 3B. The overall effect is therefore minor positive.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	This suite of policies will provide a mixture of holding key elements of the coast that have been historically defended and allowing the provision of a natural coast through NAI or MR. The effect is therefore minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	<p>PDZ3Aii The realignment at Morston in epoch 1 promotes a sustainable approach to habitat management by allowing landward migration of intertidal habitats under rising relative sea levels. The habitat over which this realignment will occur is not designated under national or international designations.</p> <p>PDZ3Aiii Despite the proposed loss of Blakeney Freshes as a result of realignment in epoch 2 (and the freshwater habitats that it supports), the conversion of this freshwater habitat to intertidal will ensure that less future management is required, ensuring that the management of this area is more sustainable than at present. However, this realignment depends on monitoring and study in epoch 1.</p> <p>PDZ3Av The loss of Cley marshes as a result of realignment in epoch 3 depends on a programme of monitoring and study in epochs 1 and 2. However, should the realignment proceed, it would offer a more sustainable approach to habitat management than the current regime.</p> <p>Overall, SMP policy across these three PDZs (if all realignments are to proceed) would be assessed as major positive.</p>	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	The three proposed realignments are predicted to increase the tidal prism in the area behind Blakeney Spit, so ensuring that the harbour channels are maintained. As a result, should these realignments proceed, SMP policy will result in a change in how natural coastal processes operate. The extent of hard defences within these three units will decrease in proportion. The effect is therefore minor positive.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of European sites?	Matter under consideration as part of Appropriate Assessment.	European sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	The proposed realignments in PDZs 3Aiii and 3Av would lead to a shift in habitat type from mainly freshwater (grazing marsh, reedbed and eutrophic standing water) to coastal habitat (saltmarsh, mudflat and sub-littoral sediment). This shift would lead to the SSSI units being assessed as being in failing condition until re-notification occurs. However, these realignments		Predicted condition assessment of SSSI units

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		will prevent the squeeze of coastal habitats against hard defences, which itself will lead to an adverse condition being recorded in the SSSI units as sea levels rise. When coupled with the realignment at Morston (3Aiii), which involves realignment into an undesignated area and will therefore prevent squeeze against existing defences, SMP policies in these PDZs are assessed as being minor positive.		
	Will the SMP policy result in a net change in priority BAP habitat extent?	Overall, most of the proposed realignments will involve a conversion from mainly freshwater UKBAP habitats (grazing marsh, reedbed and eutrophic standing water) to coastal UKBAP habitat (saltmarsh, mudflat and sub-littoral sediment). There will therefore be no net loss of UKBAP habitat, but rather conversion from one habitat type to another. However, the land over which the realignment at 3Aii will take place is not currently designated as UKBAP habitat so this realignment will create UKBAP habitat. Overall, therefore, there will be a gain in UKBAP habitat as a result of these realignments so SMP policies are assessed as being minor positive.		Area of priority BAP habitats for each epoch and scenario
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	No additional properties will be in the tidal flood zone as a result of SMP policies and flood risk to coastal communities will not change. The effect of SMP policies is therefore assessed as neutral.	Coastal communities	Number of properties in the tidal flood zone compared to the current number
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	The policies will support activities that depend on the stability of the channel and spit (fishing, bird watching, sailing etc). The realignments are central to this, as is policy to defend existing tourism locations such as Blakeney and Cley. The effect of this policy is therefore considered major positive.	Tourism and recreation features	Number of locations where tourism or recreation activities will be affected
	Will the SMP policy result in a change to identified key economic activities and locations?	The key economic activities of this area relate to tourism and the factors outlined above therefore apply. The effect is major positive.		Number of locations where economic activity will be affected
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	This loss, although only leading to the loss of grade 4 agricultural land, would reduce the area of agricultural land on this frontage so the effect is considered minor negative.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	Blakeney is a designated shellfish water. However, as the WFD assessment for this SMP determined, there will be no effect on this fishery. The overall effect is therefore neutral.	Shellfish classification	Predicted impact on shellfish classification
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	The policies in this area actively seek to maintain the access and navigation along the channels behind Blakeney Spit. The policies therefore have a major positive effect.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	The A149 would not be at any increased risk so the effect is neutral.		Extent and frequency of A149 flooding
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction point in PDZ 3D is to support the current agricultural use of the land. In light of the planned realignment, the land use would change and this abstraction point would therefore no longer be required. The overall effect is therefore neutral.	Abstraction	Number of abstraction points affected
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate in the existing channels and/or the operation of harbours?	As stated above, the managed realignment policies here are intended to increase the tidal prism and so strengthen these channels. The effect is therefore major positive.		Length of navigable channel and number of operable harbours
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The managed realignments in this area will lead to the loss of one listed building – the ruins of Blakeney chapel. This matter requires the attention of English Heritage to establish if a site investigation is necessary. Overall the effect is minor negative.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies will maintain the presence of the channels, which are a key historic and social feature in the landscape. The managed realignments will lead to a shift in the appearance of the coastal landscape to reflect the provision of a more dynamic system. Overall the combined effect is considered minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation

## **Appendix II**

### **Summary of consultation responses**



## Hawkins, K. (Kit)

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**From:** Peter Frew [Peter.Frew@north-norfolk.gov.uk]  
**Sent:** 11 March 2009 14:05  
**To:** Hawkins, K. (Kit)  
**Subject:** RE: North Norfolk SMP SEA Scoping Report for consultation - revised date

Kit

I have reviewed the document and can't see any changes I would wish to make. Neither can I see any omissions. Therefore in my view it can be issued for consultation.

Regards

Peter

Peter Frew C Eng, MICE  
Head of Coastal Strategy  
North Norfolk District Council  
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**Appendix III**

**Consideration of the effects of  
SMP policies on environmental receptors**

Potential positive effects of SMP policy on SEA environmental receptors

SMP option	Positive effect	Environmental receptors (based on SI 1633)								
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities	
<b>Hold the line (HtL)</b>	Protects communities and infrastructure located in the tidal flood zone.	<b>The SMP is not considered likely to have any effect on parameters for air quality.</b>	The protection of water abstraction sources	The protection of agricultural land	Protection of key features in the coastal landscape	Protection of key historical assets			Protection of key community assets	
	Protects habitats landward of defences.			The protection of soil as an integral element of habitat	Protection of key features in the coastal landscape		Protection of freshwater, saline or terrestrial habitat	Protection of freshwater, saline or terrestrial habitat		
	Protects freshwater resources (for example abstractions and boreholes).		The protection of water abstraction sources	The prevention of salinisation of soils						Protection of key community assets
	Provides stability to areas of coastline within a wider management context.				Provision of a natural and dynamic coastal landscape		Protection of freshwater, saline or terrestrial habitat	Protection of freshwater, saline or terrestrial habitat	Protection of key community assets	
	Protects economic assets located behind defences.					Protection of key historical assets			Protection of key community assets	
	Provides protection to ecological, cultural and historic assets inland of the defences.				Protection of key features in the coastal landscape	Protection of key historical assets	Protection of freshwater, saline or terrestrial habitat	Protection of freshwater, saline or terrestrial habitat	Protection of key community assets	
<b>Advance the line (AtL)</b>	Provides additional space for communities.			May provide for increased areas of agricultural land					Provides opportunity to increase area of land available for coastal communities	
	Protects communities and infrastructure located within the coastal flood zone.			The protection of agricultural land	Protection of key features in the coastal landscape				Protection of key community assets	
	Protects habitat inland of defences.			The protection of soil as an integral element of habitat			Protection of freshwater, saline or terrestrial habitat	Protection of freshwater, saline or terrestrial habitat		

SMP option	Positive effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
	Protects freshwater resources (for example abstractions and boreholes).		The protection of water abstraction sources						Protection of key community assets
	Protects economic assets located behind defences.			The protection of agricultural land		Protection of key historical assets			Protection of key community assets
	Provides protection to ecological, cultural and historic assets inland of the defences.				Protection of key features in the coastal landscape	Protection of key historical assets	Protection of freshwater, saline or terrestrial habitat	Protection of freshwater, saline or terrestrial habitat	Protection of key community assets
<b>Managed realignment (MR)</b>	Coastal habitats allowed to move towards land under rising sea levels				Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	
	Creates habitat to aid UKBAP (United Kingdom Biodiversity Action Plan) and local BAP (Biodiversity Action Plan) targets.				Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	
	Habitat created for juvenile fish and other aquatic organisms (benefits to environment and fishing communities).						Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	Protects the viability of commercial and recreational fishing
	Reduces flood risk.								Protection of key community assets
	Promotes natural coastal processes.			May lead to enhanced water quality		Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat
	Contributes towards a more natural management of the coast.		May lead to enhanced water quality		Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	
	Creates high tide roosts and feeding areas.				Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	

SMP option	Positive effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
No active intervention (NAI)	Coastal habitats allowed to move towards land under rising sea levels.				Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	
	Promotes natural coastal processes		May lead to enhanced water quality		Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	
	Contributes towards a more natural management of the coast.				Provision of a natural and dynamic coastal landscape		Provides for a dynamic transition of coastal habitat	Provides for a dynamic transition of coastal habitat	

Potential negative effects of SMP policy on SEA environmental receptors

SMP option	Negative effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
<b>Hold the line (HtL)</b>	Coastal squeeze (loss of habitat).	<b>The SMP is not considered likely to have any effect on parameters for air quality or climatic factors.</b>			Loss of intertidal elements from the coastal landscape	Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Interrupts coastal processes.		Adverse effects on water quality through turbidity changes etc.		Reduction in the dynamic quality of the coastal landscape		Shifts in habitat composition or function	Reduction in abundance and diversity of species	
	May increase flood and coastal erosion risk elsewhere.			Potential degradation of soil quality through intrusion		Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species	Increased risk to existing community features
	Promotes unsustainable land use practices in the coastal flood zone.								Impacts on sustainability of communities
	Diverts limited resources away from an adaptation response to rising sea levels.					Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species	Effects on the resourcing of other community related activities
	Requires ongoing commitment to future investment in maintenance and improvement.					Introduction of defence features into the area which detract from the coastal landscape	Need for expenditure on site investigation prior to loss through inundation		Potential impacts of expenditure on flood defence and the knock on effects of this to other areas of public and private expenditure
						Loss of intertidal elements from the coastal landscape	Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species
<b>Advance the line (AtL)</b>	Reduces extent of coastal habitat.								

SMP option	Negative effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
									community
	Changes functionality of habitat.						Shifts in habitat functionality	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Increased coastal squeeze.				Loss of intertidal elements from the coastal landscape	Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Interrupts coastal processes.		Adverse effects on water quality through turbidity changes etc.				Shifts in habitat functionality	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Effect on marine habitat.						Loss of habitat and shifts in habitat composition	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	May increase rate of coastal erosion either side of the advanced line.		Adverse effects on water quality through turbidity changes etc.	Potential degradation of soil quality through intrusion	Loss of intertidal elements from the coastal landscape	Loss of known or undiscovered archaeological resources	Loss of habitat and shifts in habitat composition	Reduction in abundance and diversity of species	Impacts on other features important for community purposes
<b>Managed realignment (MR)</b>	Reduces extent of habitat inland of defences.				Shifts in the habitat mosaic as a function of the local landscape	Loss of known or undiscovered archaeological resources	Loss of habitat	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Changes nature of habitat to inland of defence.				Shifts in the habitat mosaic as a function of the local		Loss of habitat and shifts in habitat composition	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides

SMP option	Negative effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
					landscape				to the community
	Effect on aquifers and abstractions.		Loss of abstraction points and intrusion into aquifers						Impacts on water supply to communities
	Loss of communities or community assets.		Loss of abstraction points and intrusion into aquifers	Potential degradation of soil quality through intrusion		Loss of heritage features			Reduction in the amenity of coastal communities
	Loss of heritage and cultural features.					Loss of heritage features			Reduction in the amenity of coastal communities
	Loss of agricultural land.			Loss of agricultural land/soil					Impacts on the character of local communities and the local economy
<b>No active intervention (NAI)</b>	Lack of certainty of effects and time for adaptation.						Loss of habitat and shifts in habitat composition	Reduction in abundance and diversity of species	Provision of community features in unsustainable locations
	Increased risk of inundation to inland habitats under rising sea levels.					Loss of known or undiscovered archaeological resources	Loss of habitat and shifts in habitat composition	Reduction in abundance and diversity of species	Loss of amenity from habitat and the function habitat provides to the community
	Effect on aquifers and abstractions.		Loss of abstraction points and intrusion into aquifers						Impacts on water supply to communities
	Loss of communities or community assets.		Loss of abstraction points and intrusion into	Loss of agricultural land/soil		Loss of heritage features			Reduction in the amenity of coastal communities

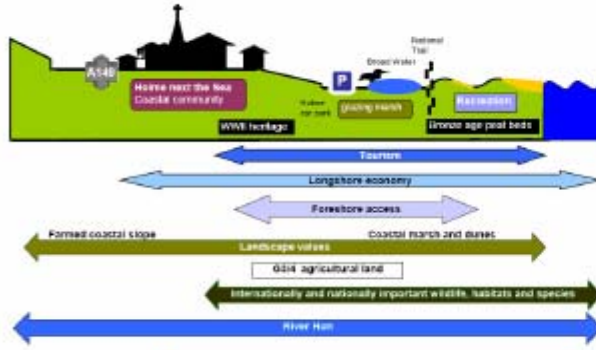


SMP option	Negative effect	Environmental receptors (based on SI 1633)							
		Air and climate	Water	Soil	Landscape	Historic environment	Habitats	Species	Population and communities
			aquifers						
	Loss of heritage and cultural features.					Loss of heritage features			Reduction in the amenity of coastal communities

## **Appendix IV**

### **Summary of SMP option appraisal**

PDZ 1A Old Hunstanton Dunes

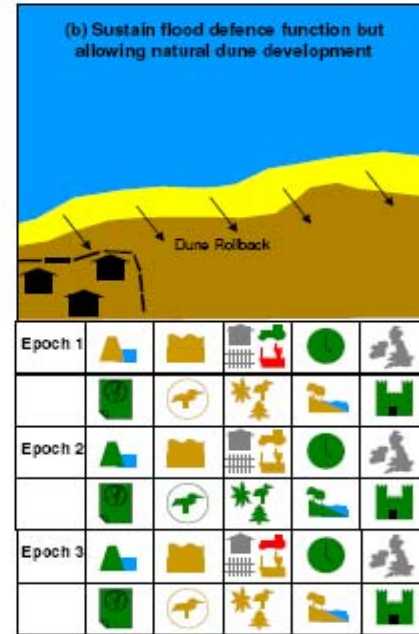
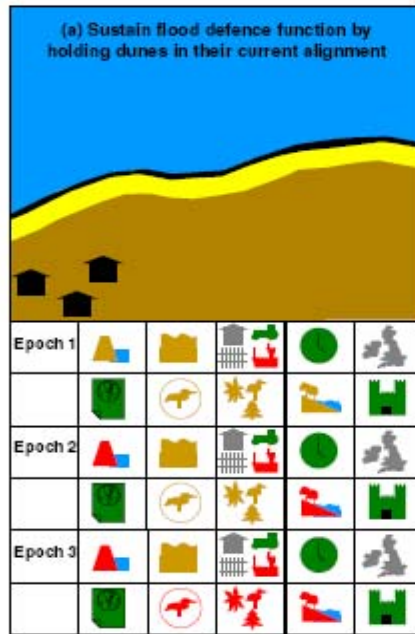


Principle:

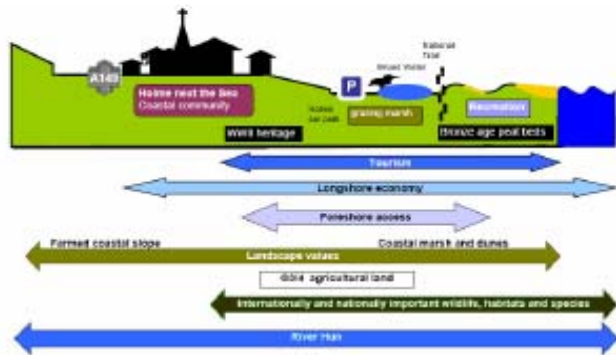
-  Reliance on Defences
-  Ensure local policies do not affect wider coastal processes
-  Impact of coastal change on local industry, infrastructure and property
-  Allowing adaptation of communities to coastal change
-  Value of North Norfolk to wider society
-  Allowing planning system to respond to changes in shoreline management
-  Maintaining protected sites and species
-  Maintaining and enhancing coastal biodiversity
-  Maintaining and enhancing the coastal landscape
-  Historic environment, heritage and culture

Result:

-  Negative
-  Positive
-  Positive
-  Not Applicable



PDZ 1C Thornham Sea Bank



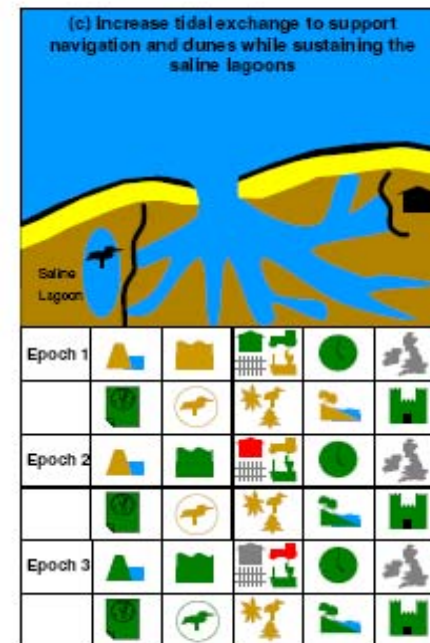
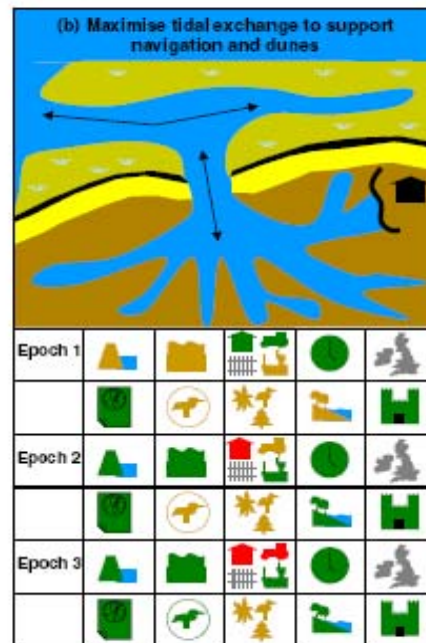
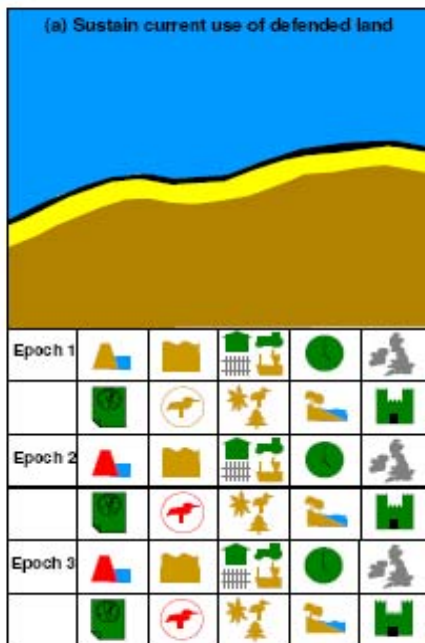
Principle:

- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
- Allowing adaptation of communities to coastal change
- Value of North Norfolk to wider society

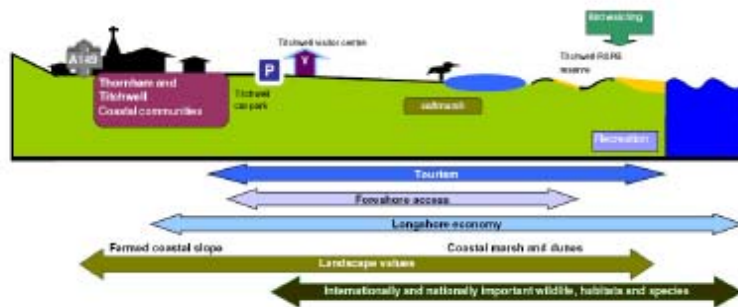
- Allowing planning system to respond to changes in shoreline management
- Maintaining protected sites and species
- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

Result:










- Negative
- Positive
- Positive
- Not Applicable







PDZ 1D Thornham

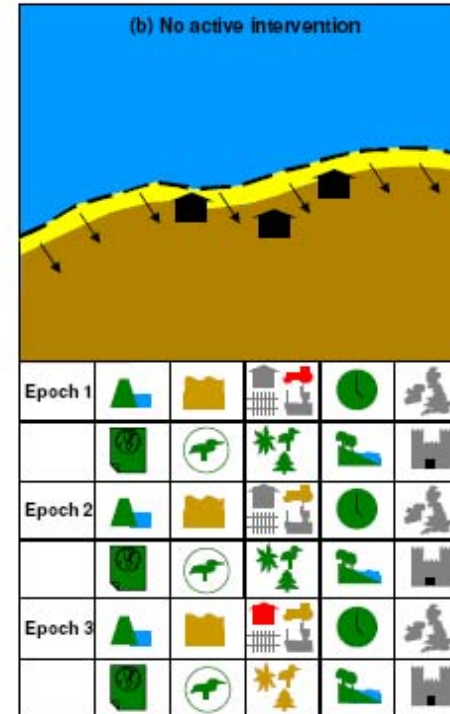
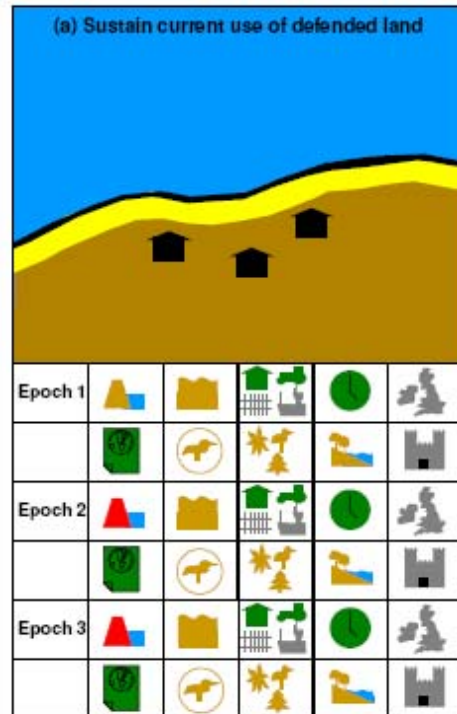


Principle:

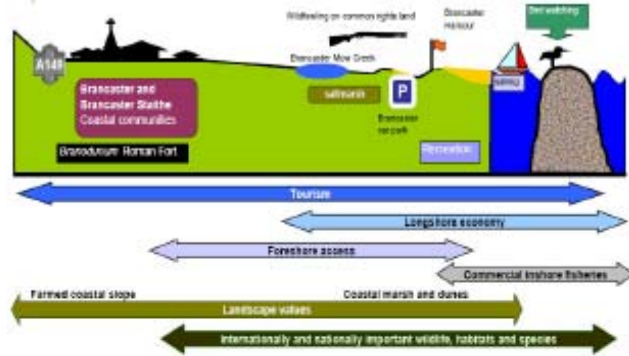
-  Reliance on Defences
-  Ensure local policies do not affect wider coastal processes
-  Impact of coastal change on local industry, infrastructure and property
-  Allowing adaptation of communities to coastal change
-  Value of North Norfolk to wider society
-  Allowing planning system to respond to changes in shoreline management
-  Maintaining protected sites and species
-  Maintaining and enhancing coastal biodiversity
-  Maintaining and enhancing the coastal landscape
-  Historic environment, heritage and culture

Result:

-  Negative
-  Not Applicable
-  Positive
-  Not Applicable



PDZ 2D Reclaimed Grazing Marsh at Brancaster

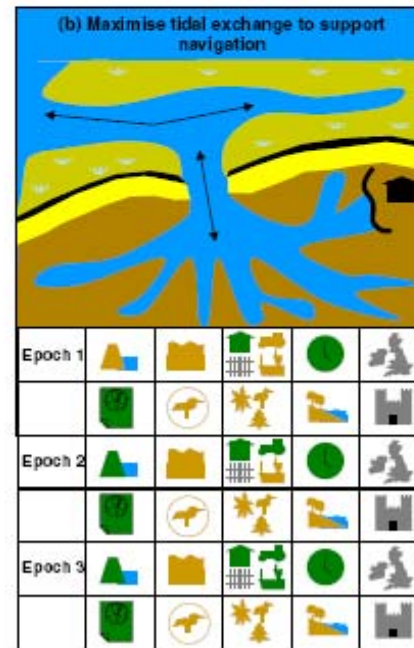
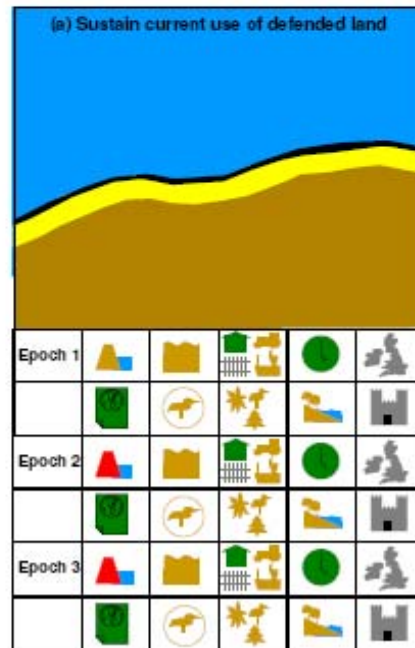


Principle:

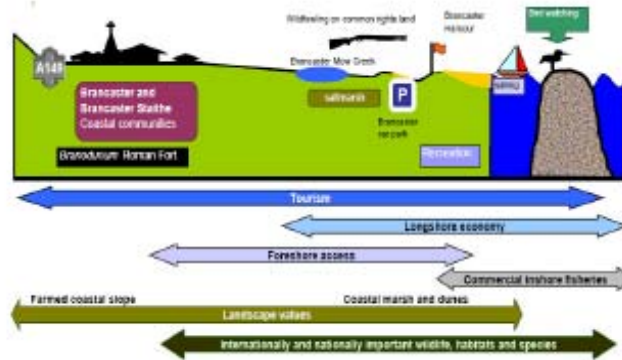
- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
- Allowing adaptation of communities to coastal change
- Value of North Norfolk to wider society
- Allowing planning system to respond to changes in shoreline management
- Maintaining protected sites and species
- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

Result:

- Negative
- 
- Positive
- Not Applicable



PDZ 2E Royal west Norfolk  
Golf Club

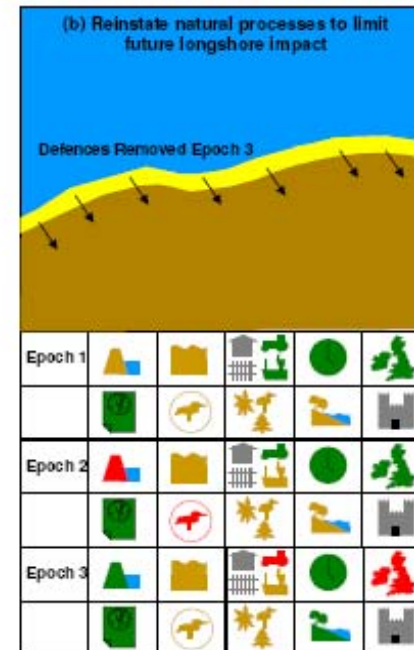
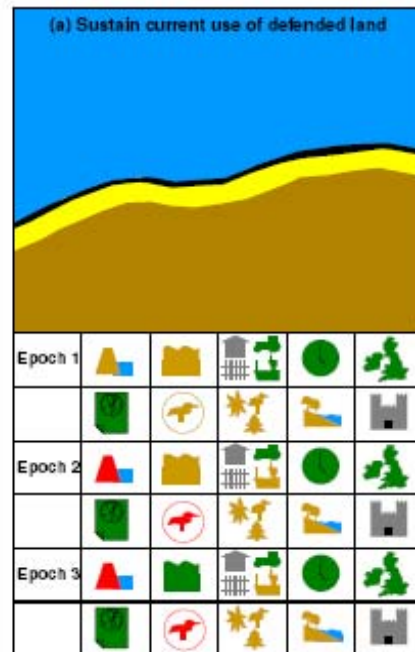


Principle:

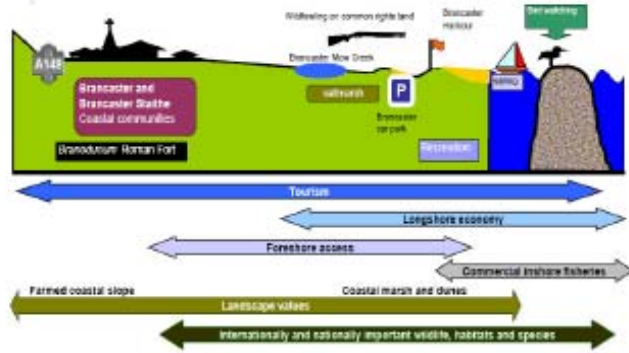
- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
- Allowing adaptation of communities to coastal change
- Value of North Norfolk to wider society
- Allowing planning system to respond to changes in shoreline management
- Maintaining protected sites and species
- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

Result:

- Negative
- Positive
- Positive
- Not Applicable



PDZ 2F Brancaster and Brancaster Staithe

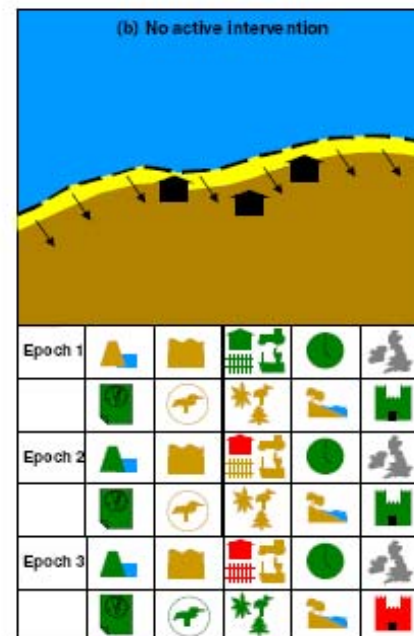
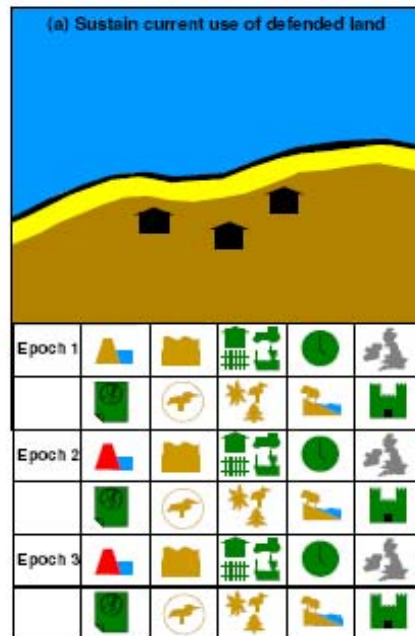


Principle:

- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
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- Value of North Norfolk to wider society
- Allowing planning system to respond to changes in shoreline management
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- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

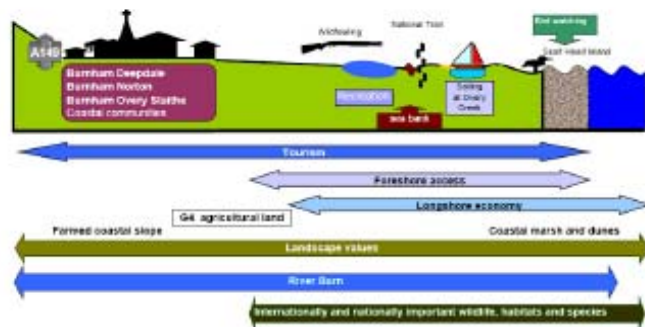
Result:

- Negative
- Positive
- Positive
- Not Applicable





PDZ 2G Reclaimed areas behind Scott Head Island







































Principle:

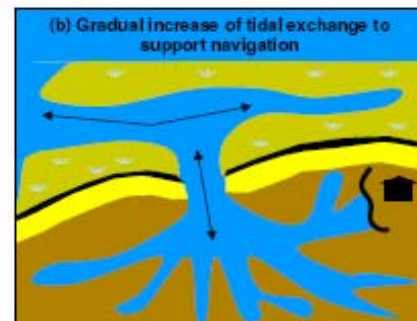
-  Reliance on Defences
-  Ensure local policies do not affect wider coastal processes
-  Impact of coastal change on local industry, infrastructure and property
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









Result:

-  Negative
-  Neutral
-  Positive
-  Not Applicable

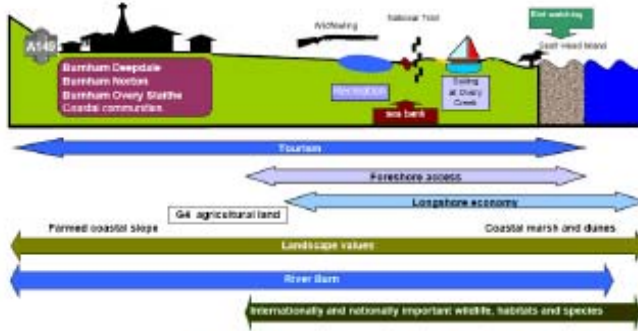


Epoch 1						
						
Epoch 2						
						
Epoch 3						
						



Epoch 1						
						
Epoch 2						
						
Epoch 3						
						

PDZ 2H Burnham Overy  
Staithe

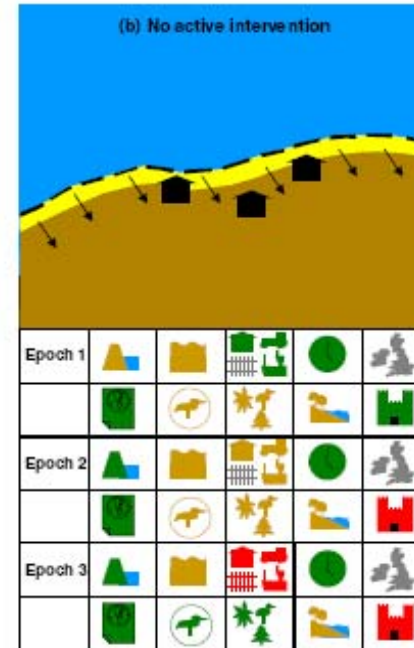
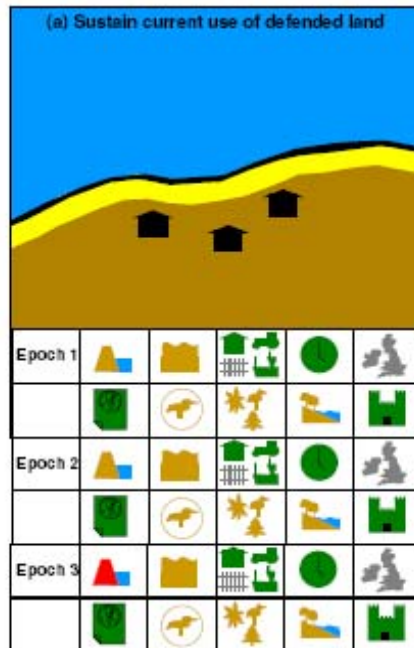


Principle:

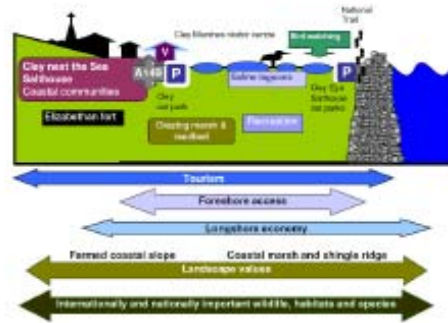
- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
- Allowing adaptation of communities to coastal change
- Value of North Norfolk to wider society
- Allowing planning system to respond to changes in shoreline management
- Maintaining protected sites and species
- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

Result:

- Negative
- Positive
- Positive
- Not Applicable



PDZ 3D Cley and Salthouse shingle ridge

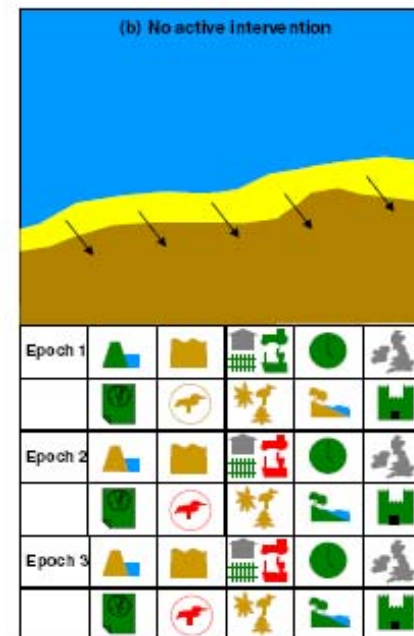
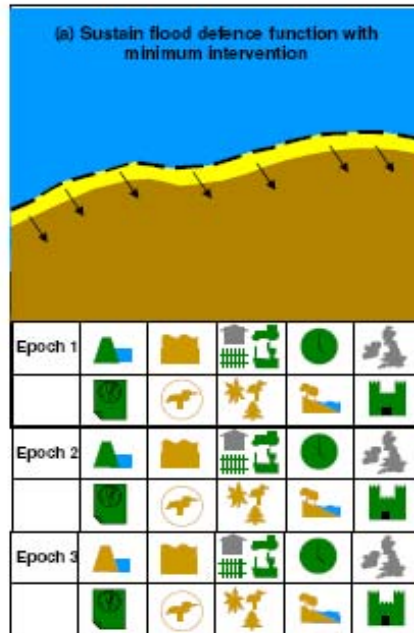


Principle:

- Reliance on Defences
- Ensure local policies do not affect wider coastal processes
- Impact of coastal change on local industry, infrastructure and property
- Allowing adaptation of communities to coastal change
- Value of North Norfolk to wider society
- Allowing planning system to respond to changes in shoreline management
- Maintaining protected sites and species
- Maintaining and enhancing coastal biodiversity
- Maintaining and enhancing the coastal landscape
- Historic environment, heritage and culture

Result:

- Negative
- Neutral
- Positive
- Not Applicable



## **Appendix V**

### **SEA scoping report**

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# 1 Introduction and background

This section includes:

- Why we are using Strategic Environmental Assessment (SEA)
- Development of the study area
- The scope and structure of this document

## 1.1 Why we are using Strategic Environmental Assessment (SEA)

SEA provides a systematic appraisal of the potential environmental consequences of high-level decision-making (that is, plans, policies and programmes). By addressing strategic level issues, SEA helps in selecting the preferred options, directs individual schemes towards the most appropriate solutions and locations and helps to ensure that resulting schemes comply with legislation and other environmental requirements.

The Defra SMP guidance (Defra, 2006) states that the environmental effects of all policies must be considered before deciding which policies will be adopted. Consideration should be given to both the positive and negative effects of options on wildlife and habitats, populations and health, soil, water, air, climate factors, landscape, cultural heritage and the intrinsic relationship between these.

Under Directive 2001/42/EC of the European Parliament and European Council on the assessment of the effects of certain plans and programmes on the environment, a strategic environmental assessment (SEA) must be undertaken for plans and programmes that are required by legislative, regulatory or administrative provisions. SMPs clearly set a framework for future development and have much in common with the kind of plans and programmes for which the Directive is designed. As a result, Defra recommended (2006) that operating authorities assess policies using the approach described in the Directive. The legislative act that transposes the Directive into domestic law is the Environmental Assessment of Plans and Programmes Regulations (SI 1633, 2004). The main aim of the EU Directive is to "*provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development*".

This document represents the first stage in the process of providing a SEA for the North Norfolk SMP.

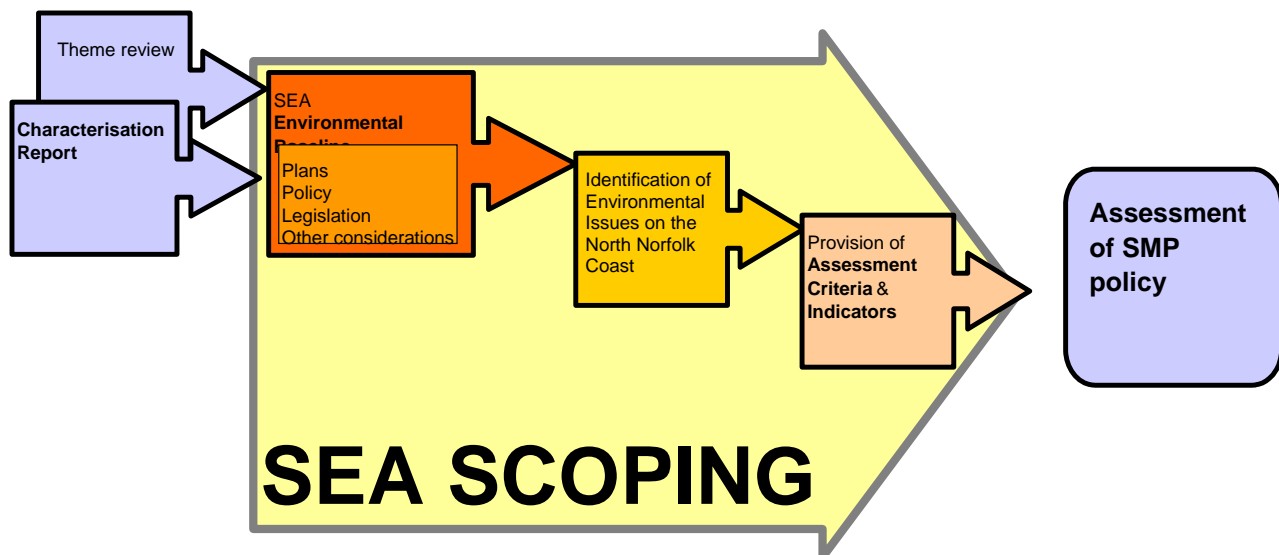
While preparing this document we have used, where applicable, the guidance provided by the following:

- Defra (2004). Guidance on SEA
- Defra (2006). Shoreline Management Plan guidance: Volume 1: Aims and requirements
- Environment Agency (2008). Internal Environment Agency guidance on SEA of internal Plans and Programmes
- Environment Agency (2005). SEA Good Practice Guidelines
- ODPM (2005). A Practical guide to the SEA Directive

Further information on the assessment method used for this SEA is provided in **Section 2**.

## 1.2 The SMP context for the SEA

The review of SMPs is being developed to ensure that sustainable coastal erosion and flood risk management policies are provided to deal with existing and emerging factors and issues in the coastal zone. The SMP provides the opportunity to develop policy for sustainable shoreline management, which is rooted in a consideration of the environmental, social and economic issues that are evident in a given coastal cell.



The SEA process to accompany the SMP is intended to ensure that consideration of the environmental issues relating to the coast is central to developing and evaluating policy. This SMP therefore provides the means to support a structured evaluation of the environmental issues relating to the north Norfolk coast and to develop assessment criteria that focus on these issues. Evaluating policy can therefore be shaped and evaluated in a



targeted and specific way. The following sections summarise the approach taken for this task and how environmental issues have been identified and structured into assessment criteria.

This section explains the SEA process including:

- The process for developing assessment criteria against which the environmental effects of SMP policy will be evaluated.
- The method for collecting baseline data and information and identifying any data gaps and/or uncertainty.
- The prediction and evaluation method used for assessing policy.

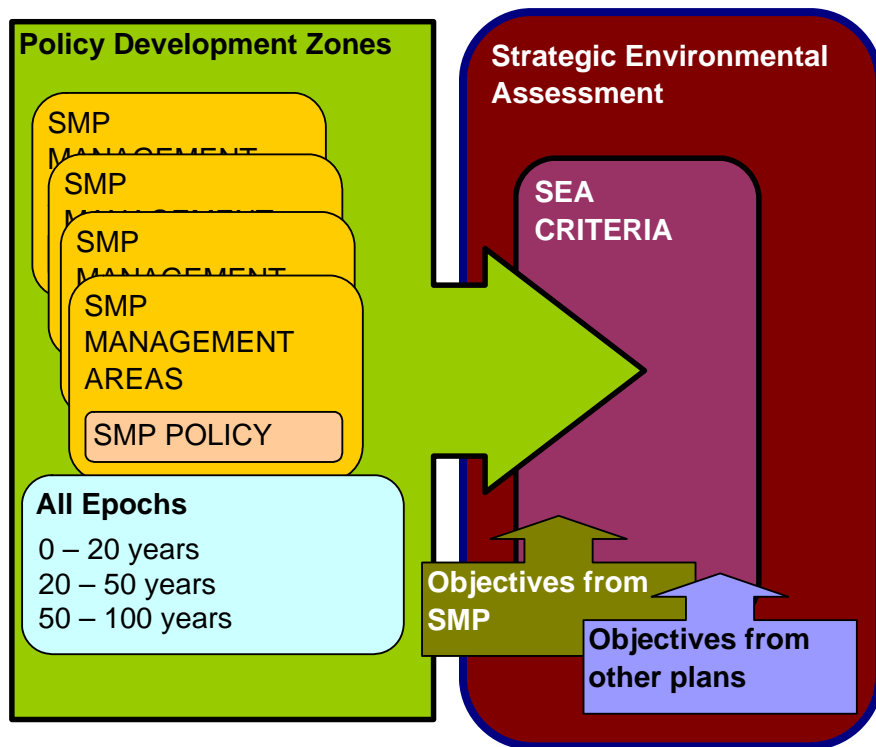
Within this SEA scoping report, and in the same way as that used throughout the SMP process (Defra, 2006) the term 'environment' is used to cover (as defined by SI 1633):

- Biodiversity, fauna and flora
- Population and human health
- Material assets
- Soil
- Water
- Air
- Climatic factors
- Cultural heritage, including architectural and archaeological heritage
- Landscape.

In considering the effects on the environment in the SEA, assessment criteria will reflect the key environmental issues within the SMP area.

The SEA process will follow a simple process that combines the specifics of the SMP process with the stages of a SEA provided in the guidance suite. The SEA will be used to determine the potential effects of policy options on the environment of the north Norfolk coast (with a specific focus on key environmental issues).

The purpose of this scoping stage is to establish the environmental baseline (including key environmental issues) and clarify the **assessment criteria** that will provide the basis for assessing SMP **policy**. These will then be considered during the course of producing the SMP (that is, evaluating SMP policy options).



A suite of **assessment criteria** for the SMP process will be developed in this report, based on a review of relevant plans, policy, legislation and other environmental factors. This review will be provided in the context of the environmental baseline for the assessment. One of the key sources of information in this process will be the theme review and site characterisation reports which were developed as a key part of the SMP process. The theme review and site characterisation reports for the north Norfolk coast provide a detailed account of all the features located in the coastal zone (social, economic and environmental) and provide the basis for considering the key issues facing shoreline management in this area. Also, other plans will be identified and evaluated to establish if additional objectives are needed to meet wider environmental issues.

The actual derivation of assessment criteria is therefore a simple expression of the factors that will need to be addressed in establishing the likely significant effects of the SMP in response to key environmental issues.

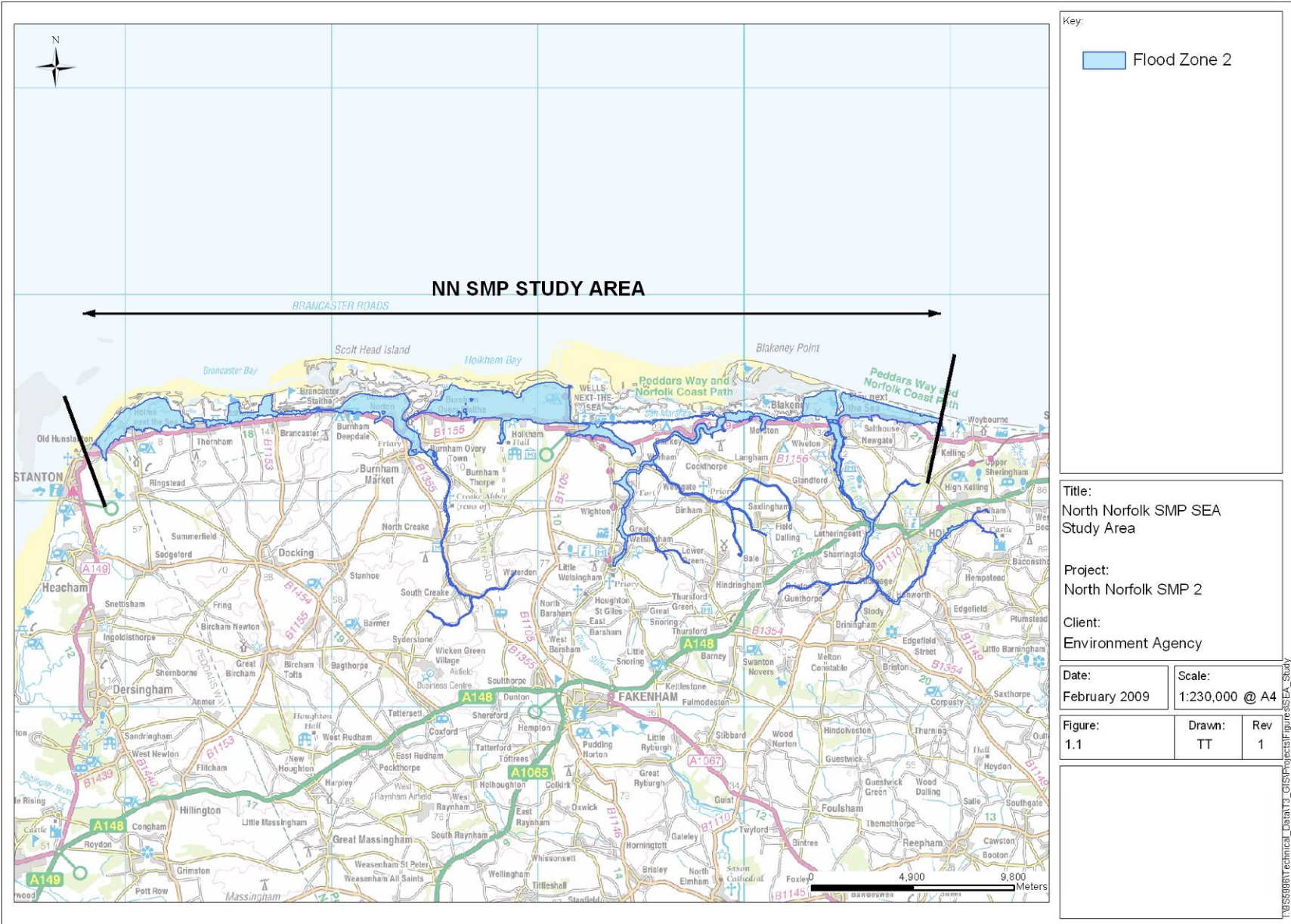
### 1.3 Study area

The study area has been determined as being consistent with the study area developed in the provision of the early stages of the North Norfolk SMP. This area can be defined as that with the potential to be affected within the North Norfolk SMP cell and that may be affected by coastal management over a 100 year timeline (**Figure 1**).

The SMP identifies areas potentially at risk from coastal flooding or erosion or physical coastal change over the next 100 years. The inland boundary is defined mainly in relation to these areas of risk and change, but extends to areas and interests that may be affected both directly and more indirectly by this risk. This is the rationale for selecting the 1 in 1,000<sup>††</sup> year flood zone as the area of study.

---

<sup>††</sup> \* The area defined as having a 0.1 per cent (1 in 1000) chance of inundation each year



## 1.4 Scope and structure of the document

This scoping report is made up of seven sections, of which this introduction forms **section one**. Additional and background information is included in the **appendices**.

The sections in this Strategic Environmental Assessment scoping report are as follows:

**Section one** introduces this document and sets the context for using the SEA within the SMP process. Also, this section explains the reasoning behind the SMP itself and describes the implications of the SMP on the wider environment.

**Section two** describes the context and method for the SEA, including prediction and evaluation methods as well as data gaps and uncertainties.

**Section three** provides the baseline data associated with the north Norfolk coastline, including relevant policies and legislation.

**Section four** describes the relevant environmental issues and presents the derived assessment criteria.

**Section five** presents the approach for consultation and describes how key issues raised through the consultation process will be considered within the SEA process.

**Section six** provides an account of upcoming steps in this SEA process, as it aligns itself with the production of the SMP.

**Section seven** provides references for this document.

**Appendix A** presents plans and policy pertinent to the SEA process.

**Appendix B** presents legislation pertinent to the SEA process.

**Appendix C** presents information about sites of conservation importance within the study area.

**Appendix D** presents further baseline information.

The purpose of this scoping report is to express clearly the key environmental issues to be considered within the SEA. The document therefore provides the opportunity to review and refine the issues that have been initially identified and to provide focus to the assessment stage, relevant to the north Norfolk coast.

## 1.5 Shoreline Management Plans (SMPs)

### 1.5.1 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 that reflect both national and local priorities, to (Defra, 2006):

- reduce the threat of flooding and erosion to people and their property and
- 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. They were based on sediment cell boundaries that 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, due to different requirements, such as the area covered by a coastal authority. However, for the SMP reviews, a behavioural systems<sup>‡‡</sup> approach was recommended, leading to slightly different boundaries 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.
- Discourage inappropriate development in areas where the flood or erosion risks are high.

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<sup>‡‡</sup> 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.

- 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**

<b>SMP option</b>	<b>Description of option</b>
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)	Managed realignment by 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 active intervention, where there is no investment in coastal defences or operations.

In a SMP, an epoch- (time periods) based approach is used for planning purposes. The three epochs are: 2010 to 2025 (short term), 2025 to 2055 (medium term) and 2055 to 2105 (long term).

### 1.5.2 Implications of SMP policy on the wider environment

Each of the SMP policies presented in Table 1.1 has the potential to affect the wider 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**

<b>SMP option</b>	<b>Positive effects</b>	<b>Negative effects</b>
Hold the line (HtL)	<ul style="list-style-type: none"> <li>• Protects communities and infrastructure located in the coastal flood zone.</li> <li>• Protects habitat inland of defences.</li> <li>• Protects freshwater resources (for example, abstractions and boreholes).</li> <li>• Provides stability to areas of coastline within a wider management context.</li> <li>• Protects economic assets located behind defences.</li> </ul> <p>Provides protection to ecological, cultural and historic assets inland of the defences.</p>	<ul style="list-style-type: none"> <li>• Coastal squeeze (loss of habitat).</li> <li>• Interrupts coastal processes.</li> <li>• May increase flood and coastal erosion risk elsewhere.</li> <li>• Promotes unsustainable land use practices within the coastal flood zone.</li> <li>• Diverts limited resources away from an adaptation response to rising sea levels.</li> <li>• Requires ongoing commitment to future investment in maintenance and improvement.</li> </ul>
Advance the line (AtL)	<ul style="list-style-type: none"> <li>• Provides additional space for communities.</li> <li>• Protects communities and infrastructure located in the coastal flood zone.</li> <li>• Protects habitat inland of defences.</li> <li>• Protects freshwater resources (for example, abstractions and boreholes).</li> <li>• Protects economic assets located behind defences.</li> <li>• Provides protection to ecological, cultural and historic assets inland of the defences.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces extent of coastal habitat.</li> <li>• Changes functionality of habitat.</li> <li>• Increased coastal squeeze.</li> <li>• Interrupts coastal processes.</li> <li>• Affects marine habitat.</li> <li>• May increase rate of coastal erosion either side of the advanced line.</li> </ul>



<b>SMP option</b>	<b>Positive effects</b>	<b>Negative effects</b>
Managed realignment (MR)	<ul style="list-style-type: none"> <li>• Coastal habitats allowed to move towards land under rising sea levels.</li> <li>• Creates habitat to aid UKBAP (United Kingdom Biodiversity Action Plan) and local BAP (Biodiversity Action Plan) targets.</li> <li>• Creates habitat for juvenile fish and other aquatic organisms (benefits to environment and fishing communities).</li> <li>• Reduces flood risk.</li> <li>• Promotes natural coastal processes.</li> <li>• Contributes towards a more natural management of the coast.</li> <li>• Creates high tide roosts and feeding areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces extent of habitat inland of defences;</li> <li>• Change in nature of habitat inland of defence.</li> <li>• Effect on aquifers and abstractions.</li> <li>• Loss of communities or community assets.</li> <li>• Loss of historic and cultural features.</li> </ul>
No active intervention (NAI)	<ul style="list-style-type: none"> <li>• Coastal habitats allowed to move towards land under rising sea levels.</li> <li>• Promotes natural coastal processes.</li> <li>• Contributes towards a more natural management of the coast.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of certainty of effects and time for adaptation.</li> <li>• Increased risk of inundation to inland habitats under rising sea levels.</li> <li>• Effect on aquifers and abstractions.</li> <li>• Loss of communities or community assets.</li> <li>• Loss of historic and cultural features.</li> </ul>

## 2 BASELINE DATA

The scale and level of detail in a SEA (particularly with regard to baseline information) is different to that of a project-level Environmental Impact Assessment (EIA), mainly due to its position in the decision-making hierarchy. As a SMP is a high-level plan, this SEA considers the key features and characteristics of the study area that would influence decisions at a strategic level. It is therefore less detailed and quantitative than an EIA and is focused on broad directions of change. We have based this SEA on environmental data collected from our own records and through liaison with other bodies including Natural England, English Heritage, the Environment Agency and others.

The characterisation report (Royal Haskoning, 2008a) and theme review (Royal Haskoning, 2008b), both of which were produced as part of the SMP process, have been used as a key source of baseline information in shaping the consideration of environmental issues. The SMP process requires a detailed assessment of the key features of the coastline and the theme review and characterisation reports provide a tabulated and narrative-based account of this. So the theme review and site characterisation reports should be considered by extension, a critical element of the SEA process.

During the consultation process on this SEA scoping report, any additional information considered relevant to this assessment by the statutory consultees, and not included in this assessment, will be collected and incorporated (that is, information not covered in the work described above). With respect to this, if there is information missing that can be supplied by the statutory consultees, they are requested to provide this information as part of the scoping process. The following section describes the key features and legislation considered in the assessment, with the main subject areas for data collection being presented below:

- Pertinent policy relating to the north Norfolk coast.
- Legislation relating to the management of the north Norfolk coast.
- Designations for environmental reasons relating to the north Norfolk coastal area.
- Wider environmental issues considered central to SMP policies.

Baseline data have been provided in the following sections, based on the themes that have emerged in the course of producing the SMP and the receptors identified in the SEA guidance (ODPM, 2005). The collation of data in this way is representative of the issues identified within the SEA area and aids understanding of the relationship between receptors. For each heading, the relevant receptors have been identified from the list of receptors provided in Defra guidance (Defra, 2005) and specified in **Section 5**.

## 2.1 Air quality

It is considered that, given the nature of SMP policy, air quality is not a receptor of the effects of the plan. Air quality has therefore not been considered further in this assessment. No pathway has been established between SMP policy and air quality. Construction that may be needed to implement policy will be subject to a range of environmental assessment procedures, where direct affects will be addressed. So baseline data have not been provided for air quality.

## 2.2 Water

### 2.2.1 Designated shellfish waters 2004

As described in further detail in **Appendix B**, certain waters are designated under the Shellfish Waters Directive (2006/113/EC). The areas designated as such are intended to support the directive by protecting or improving shellfish waters in order to support shellfish life and growth, so contributing to the high quality of shellfish products directly edible by man. Within the SMP area designated shellfish waters are:

- North East Wash
- Blakeney.

Potential issues relating to shellfisheries on the north Norfolk coast include high levels of turbidity, water quality (including faecal coliform counts), eutrophication and dissolved oxygen levels.

### 2.2.2 Hydrology and water resources

The north Norfolk coast area contains chalk and crag groundwater aquifers. These are overlain by varying thicknesses of Quaternary sands and gravels that act as locally important minor aquifers. The chalk is the most important aquifer in the area and the water resources are exploited for public water supply and irrigation water.

Rivers (and their reaches) are scored depending on their sensitivity to abstraction and current usage. The North Norfolk Catchment Abstraction Management Strategy (CAMS) area designates the rivers within the SMP area as being of the categories presented in **Table 2.1** (Environment Agency, 2009).

**Table 2.1 CAMS status of North Norfolk watercourses**

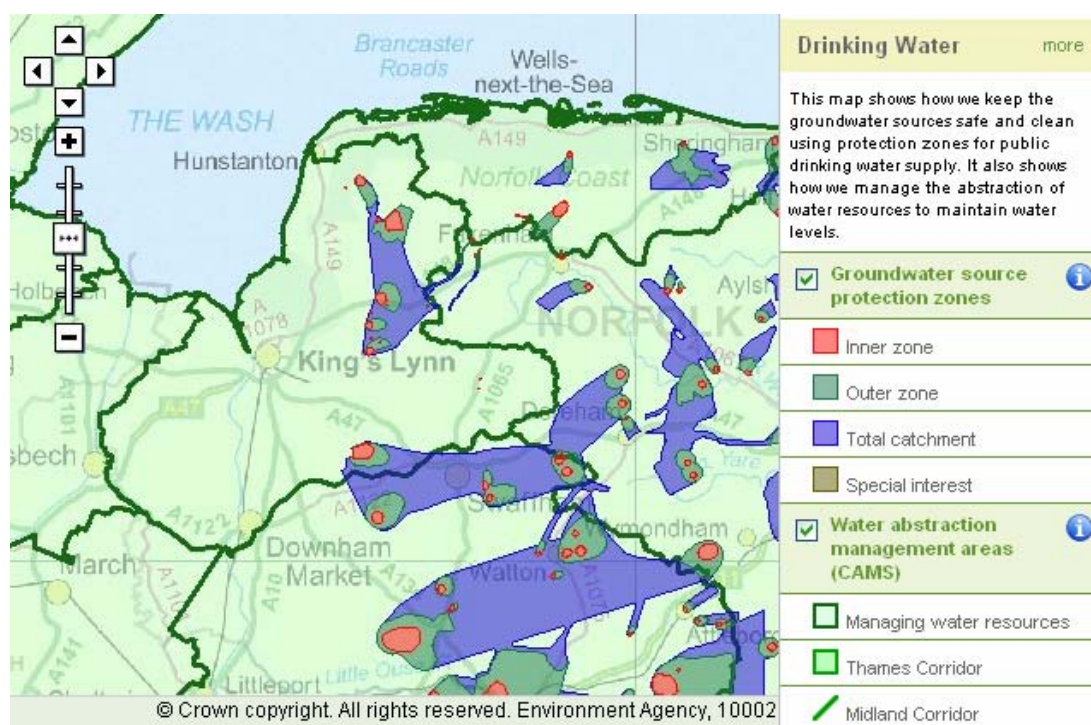
CAMS watercourse	CAM aim
WRMU 1 (River Burn)	No water available
WRMU 2 (River Stiffkey)	Currently over-abstracted, moving to over-licensed
WRMU 3 (River Glaven)	Over-licensed
WRMU 5 (Hun, Brancaster, Wells)	Water available
WRMU 6 (Cley Salthouse)	Water available

### 2.2.3 Borehole and water abstraction

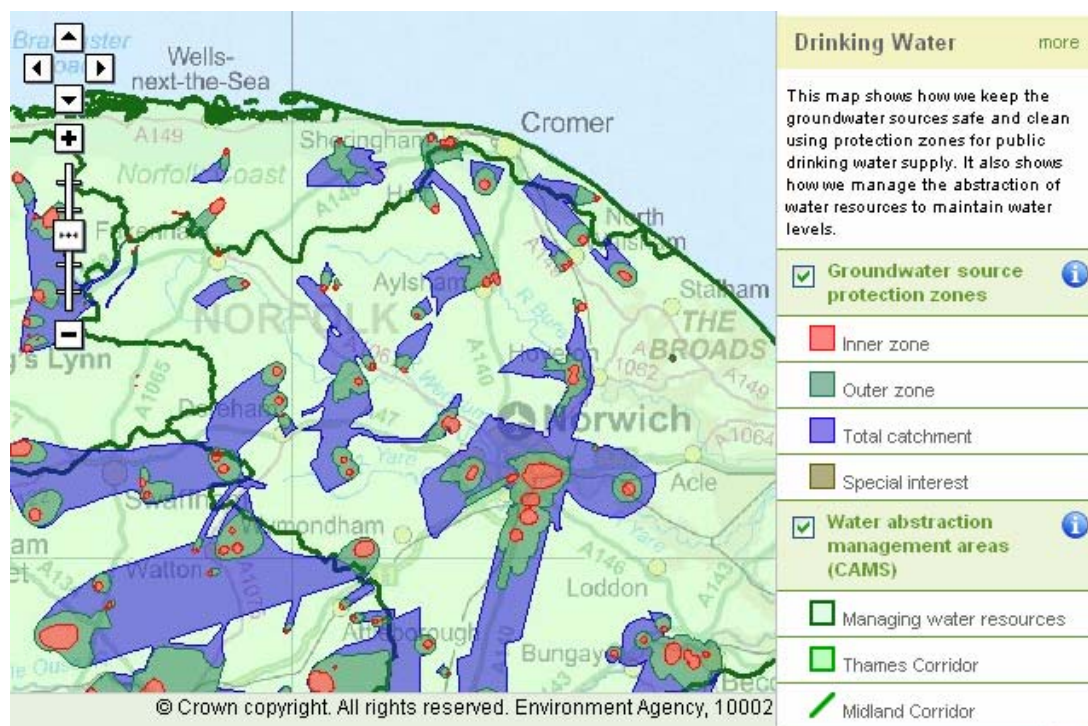
Present groundwater protection areas within the wider north Norfolk area, with borehole and water abstraction locations being shown as **Appendix D, Figures D.1 to D.5**.

As shown in **Figures 2.1 and 2.2**, groundwater protection zones in this area are limited in extent and located some distance from the coast. It is therefore considered unlikely that SMP policy will have a significant effect on these areas.

**Figure 2.1 Groundwater sources protection zones within the wider north Norfolk area taken from EA website (western extent) (for more information please refer to Environment Agency, 2008)**



**Figure 2.2 Groundwater sources protection zones within the wider north Norfolk area taken from EA website (western extent) (for more information please refer to Environment Agency, 2008)**



## 2.3 Landscape

The Norfolk coast today is the result of a complex interaction between people and their environment (North Norfolk Coast AONB, 2007). It is a diverse mosaic of heath, woodland, hedgerows and grazing marsh and is largely undeveloped. Some areas of this coast are dynamic and eroding quickly, while others feature substantial shingle beaches that provide a habitat for a number of rare plants and breeding birds. More specifically, the 'grey dunes' at Blakeney spit, Scolt Head Island and coastal lagoons systems offer sites of high international importance. Nonetheless, around most of north Norfolk there is a strong and dramatic contrast between the coastal strip and the hinterland.

The shoreline is characterised by spits (for example Blakeney Point), dissipative beaches (wide, flat and shallow-shaped with bars and creeks), barrier islands (Scolt Head), salt marshes and dunes. There are channels that provide access to coastal settlements including those at Cley-next-the-Sea, Wells-next-the-Sea, Burnham Overy Staithe, Brancaster and Brancaster Staithe. These channels are particularly important both for their conservation importance and their economic value.

Shingle ridges and dunes have developed into the recognised forms of Stiffkey Meals and Holkham Meals, which provide protection to both

freshwater and coastal marshes. Beyond the marshes, the hinterland consists of a mixture of agricultural land between grades 2 and 4.

### **2.3.1 Area of Outstanding Natural Beauty (AONB)**

The north Norfolk coast was designated as an Area of Outstanding Natural Beauty (AONB) in 1968. The designated area covers a total of 450 km<sup>2</sup> (North Norfolk Coast AONB, 2007) and stretches from Hunstanton to Bacton. It does not include the settlements of Cromer and Sheringham, or the land between them (outside this SMP area). The main part of the AONB includes the remote coastal marshes of the North Norfolk heritage coast that is made up of a varied landscape of mud and sand flats, shingle, dunes, reedbeds, saltmarsh and grazing marshland.

The North Norfolk Coast AONB Management Unit produced a Management Plan in 2004. This seeks to co-ordinate the actions of the organisations that make up the AONB Partnership, while setting a framework for any organisation or individual whose activities will have an effect on the objectives for the area. The Management Plan 2004 to 2009 provides a framework for management of the area for partner organisations, and guidance for other organisations and individuals, to achieve conservation and enhancement of the natural beauty of the area. The plan details the legislative background, summarises the special qualities of the area and how the management of the area will be undertaken. A draft version of the revised AONB management plan is currently out for consultation.

## **2.4 The historic environment**

The north Norfolk coast has been progressively submerged by rising sea levels over the last 10,000 to 12,000 years. Archaeological finds in the area have included pottery, flints and monuments from the bronze age. Most recent has been the find of a bronze age timber structure at Holme-next-the-Sea, enclosing an inverted oak tree from around 2050BC. This site has already been excavated prior to erosion. Also, there is a Roman signal station at Holme-next-the-Sea of national historic value. St Mary's Carmelite friary and holy wells remains at Burnham Market are also of national historic value, although these are outside the SMP study area. There is an iron age fort in the Wells frontage situated near to Dale Hole Cottage with a medieval settlement between Wells harbour and Stiffkey. There is a medieval undercroft at Blakeney (Guildhall).

North Norfolk historically used flint and stone for the building of traditional fishing villages and market towns along and near to the shoreline. The materials for this would have come from the chalk bedrock in the area culminating in a good flint building material. There are several artefacts off the shoreline, with shipwrecks and aeroplanes dating from the Second World War. The wars also resulted in pill boxes being set up on the higher ground.

These are located near to and along the nucleated villages developed through the fishing and agricultural industries.

Of cultural significance to the area is the birth and childhood residence of Lord Nelson at Burnham Thorpe (outside the SMP study area). The Peddars Way footpath runs parallel to the north Norfolk coast, with the origins of the path dating from Roman times. There are 120 scheduled monuments (SMs) in the Kings Lynn and West Norfolk Borough Council administrative area and 84 in the North Norfolk District Council administrative area. 14 SMs in North Norfolk and seven SMs in Kings Lynn and West Norfolk are cited by English Heritage (NDS, 2008) as being at risk. Although protected by law, scheduled monuments are threatened by a wide range of human activities and natural processes. SMs in the SMP study area are presented in **Table 2.2**.

**Table 2.2 Scheduled monuments in the 1 in 1000 year flood zone (MAGIC, 2008)**

<b>Name</b>	<b>Easting</b>	<b>Northing</b>
Blakeney chapel, site of	604388.809917	345247.168206
Medieval undercroft known as the Guildhall, Blakeney	602820.715326	344074.881821
Tumulus on Warborough Hill, Stiffkey	596059.260908	343412.689
Iron age hill fort, 900m North East of Dale Hole Cottage, Holkham	587447.470973	344726.249654
Roman fort (Branodunum), Brancaster	578415.278161	343999.013776
Village cross, 150 metres south of St Mary's Church, Titchwell	576236.842167	343721.291284
St Mary's Carmelite friary and holy well, Burnham Market	583893.252446	342787.065443

#### **2.4.1 Conservation areas**

A conservation area can be described as "an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance". Under Section 69 of the Planning (Listed Buildings and Conservation Areas) Act, 1990, every Local Planning Authority throughout the country has a duty to determine which parts of its area fit this description and then designate these as conservation areas. The aim of a conservation area is mainly to maintain groups of buildings and their settings (that is, the collective character of an area) as opposed to the preservation of individual buildings. The latter comes under the protection of the Listed Building legislation which can be found in Part I of the 1990 Planning Act. Conservation areas within the North Norfolk SMP area are presented in **Table 2.13**.

**Table 2.13 Conservation areas along the north Norfolk coast and lying wholly or partly within the 1 in 1,000 year tidal flood zone.**

<b>District Council</b>	<b>Conservation area</b>
North Norfolk District Council (82 in total)	Blakeney
	Cley
	Holkham
	Salthouse
	River Glaven
	Stiffkey
	Wells
	Wiveton
King's Lynn & West Norfolk Borough Council (42 in total)	Brancaster
	Burnham Norton
	Burnham Overy Staithe
	Titchwell

Further background information on the north Norfolk coastline that has been used in this assessment is provided as **Appendix D**, with more detailed information being available in the North Norfolk RCZAS (Royal Haskoning, 2009).

## **2.5 Habitats and species**

### **2.5.1 Statutory international designations**

Nature conservation designations seek to conserve areas of conservation importance and the habitats and species that are the basis of their statutory designation. However, as the designations are derived from discrete and different pieces of legislation, each varies in the nature and mechanisms of their protection. The inherently dynamic nature of coastal environments and the potential of flood risk management structures and practices both to constrain (for example by holding or advancing the line) and create (for example from no active intervention or managed realignment) habitat ensures that SMP policy has a highly significant bearing on both natural habitats and designated sites. Internationally designated sites within the North Norfolk SMP area are presented in **Table 2.3**.



**Table 2.3 Internationally designated sites within or adjacent to the study area**

International site type	Legislation site designated under	Site name	Area (ha)
Ramsar	Ramsar Convention	North Norfolk Coast	7,862
		The Wash	62,211
Special Area of Conservation (SAC)	Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive)	The Wash and North Norfolk Coast	107,761
		North Norfolk Coast	3,208
Special Protection Area (SPA)	Council Directive 79/409/EEC on the Conservation of Wild Birds (the Birds Directive)	The Wash	62,211
		North Norfolk Coast	7,887

The effect of the above listed designations is that large areas of the Norfolk coastline are subject to statutory nature conservation and landscape designations. **Table 2.4 – 2.10** presents the qualifying features for all statutory internationally designated sites within the North Norfolk SMP SEA area. Further information about these sites and related to the hierarchy of conservation designations is presented in **Appendix C**. **Figure 2.3** presents an overview of the designated conservation areas along the north Norfolk coast

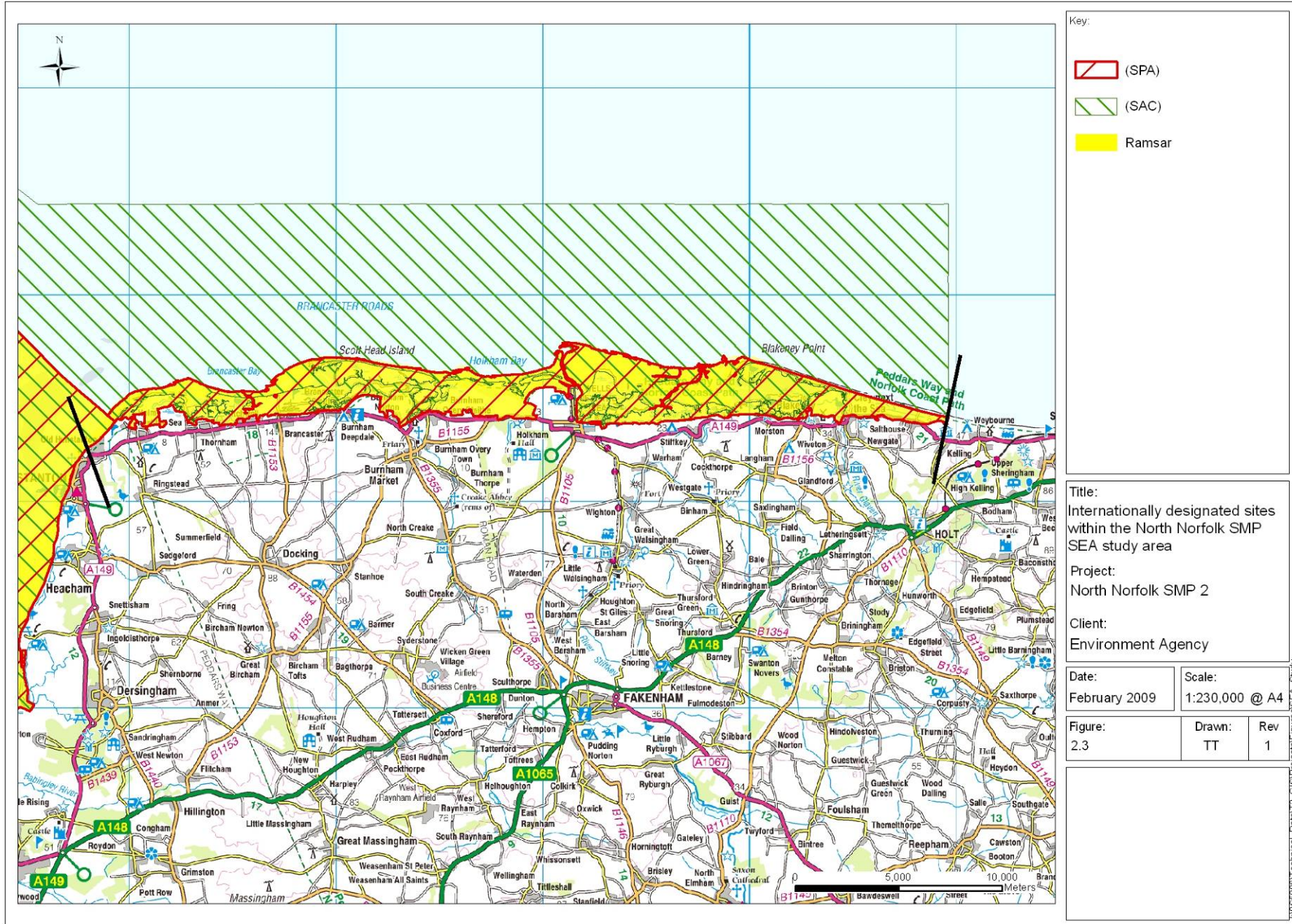
The north Norfolk coast comprises one of the largest expanses of undeveloped coastal habitat of its type in Europe. These habitats are home to a large number of nationally-scarce plant species and British Red Data Book invertebrates, as well as a notable assemblage of breeding and wintering wetland birds. These bird species include breeding marsh harriers and bittern and over-wintering avocet and bar-tailed godwit. Key habitat types include mudflats and sandflats not covered by seawater at low tide, large shallow inlets and bays, reefs, Atlantic saltmeadows and vegetated sea cliffs.

This coast can be defined by its mixture of conservation interests, some of which depend on natural coastal processes while others are critically

dependent on flood defence to maintain their freshwater condition<sup>§§</sup>. A key characteristic and essential trait of this coast is therefore the range and diversity of this habitat within a spectrum ranging from freshwater through brackish to fully marine conditions.

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<sup>§§</sup> Much of this freshwater habitat was derived from reclaimed coastal and intertidal habitat for the purposes of agriculture and defended as such. However, under rising sea levels the integrity and sustainability of this habitat is no longer assured and / or feasible and will require increasing expenditure to maintain this in its current state and location.



## 2.5.2 Ramsar sites

**Table 2.4 Qualifying features of the North Norfolk Coast Ramsar site (JNCC, 2008a)**

<b>Qualifying features for the North Norfolk Coast Ramsar site (JNCC, 2008a)</b>	
Ramsar criterion 1	The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe.
Ramsar criterion 2	The site supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.
Ramsar criterion 5	Assemblages of international importance: 98,462 waterfowl (five-year peak mean 1998/99 to 2002/2003)
Ramsar criterion 6	Qualifying species/populations occurring at levels of international importance (as identified at designation): <b>Species regularly supported during the breeding season:</b> <ul style="list-style-type: none"> <li>• Sandwich tern <i>Sterna sandvicensis sandvicensis</i></li> <li>• Common tern <i>Sterna hirundo hirundo</i></li> <li>• Little tern <i>Sterna albrifrons albrifrons</i></li> </ul> <b>Species with peak counts in spring/autumn:</b> <ul style="list-style-type: none"> <li>• Red knot <i>Calidris canutus islandica</i></li> </ul> <b>Species with peak counts in winter:</b> <ul style="list-style-type: none"> <li>• Pink-footed goose <i>Anser brachyrhynchus</i></li> <li>• Dark-bellied Brent goose <i>Branta bernicla bernicla</i></li> <li>• Eurasian wigeon <i>Anas penelope</i></li> <li>• Northern pintail <i>Anas acuta</i></li> </ul>

**Table 2.5 Qualifying features of The Wash Ramsar site (JNCC, 2008b)**

<b>Qualifying features for The Wash Ramsar site (JNCC, 2008b)</b>	
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 mudflats 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 for the high productivity of the estuary.

<b>Qualifying features for The Wash Ramsar site (JNCC, 2008b)</b>
Ramsar criterion 5
Assemblages of international importance: 292,541 waterfowl (five-year peak mean 1998/99 to 2002/2003)
Ramsar criterion 6
Qualifying species/populations occurring at levels of international importance (as identified at designation): <b>Species with peak counts in spring/autumn:</b> <ul style="list-style-type: none"> <li>• Eurasian oystercatcher <i>Haematopus ostralegus ostralegus</i></li> <li>• Grey plover <i>Pluvialis squatarola</i></li> <li>• Red knot <i>Calidris canutus islandica</i></li> <li>• Sanderling <i>Calidris alba</i></li> <li>• Eurasian curlew <i>Numenius arquata arquata</i></li> <li>• Common redshank <i>Tringa totanus totanus</i></li> <li>• Ruddy turnstone <i>Arenia interpres interpres</i></li> </ul> <b>Species with peak counts in winter:</b> <ul style="list-style-type: none"> <li>• Pink-footed goose <i>Anser brachyrhynchus</i></li> <li>• Dark-bellied Brent goose <i>Branta bernicla bernicla</i></li> </ul>

### 2.5.3 Special Areas of Conservation (SAC)

**Table 2.6 Qualifying features of The Wash and North Norfolk Coast SAC site (JNCC, 2008c)**

<b>Qualifying features for The Wash and North Norfolk Coast SAC site (JNCC, 2008c)</b>	
<b>Qualifying feature</b>	<b>Description</b>
Annex I habitats that are a primary reason for selection of this site	
<ul style="list-style-type: none"> <li>• Sandbanks that are slightly covered by seawater all the time.</li> <li>• Mudflats and sandbanks not covered by seawater at low tide.</li> <li>• Large shallow inlets and bays.</li> <li>• Reefs.</li> <li>• <i>Salicornia</i> and other annuals colonising mud and sand.</li> <li>• Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>).</li> <li>• Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>).</li> </ul>	
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site	
Coastal lagoons	
Annex II species that are a primary reason for the selection of this site	
Common seal <i>Phoca vitulina</i>	
Annex II species that are present as a qualifying feature, but not a primary reason for site selection	
Otter <i>Lutra lutra</i>	

**Table 2.7 Qualifying features of The North Norfolk Coast SAC site (JNCC, 2008d)**

<b>Qualifying features for North Norfolk Coast SAC site (JNCC, 2008d)</b>	
<b>Qualifying feature</b>	<b>Description</b>
Annex I habitats that are a primary reason for selection of this site	
	<ul style="list-style-type: none"> <li>• Coastal lagoons.</li> <li>• Perennial vegetation of stony banks.</li> <li>• Mediterranean and thermo-Atlantic halophilous scrubs.</li> <li>• Embryonic shifting dunes.</li> <li>• Shifting dunes along the shoreline with <i>Ammophila aemaria</i></li> <li>• Fixed dunes with herbaceous vegetation.</li> <li>• Humid dune slacks.</li> </ul>
Annex II species that are present as a qualifying feature, but not a primary reason for site selection	
	<p>Otter <i>Lutra lutra</i>            Petalwort <i>Petalophyllum ralfsii</i></p>

#### 2.5.4 Special Protection Areas (SPA)

**Table 2.8 Qualifying features of The Wash SPA (JNCC, 2008e)**

<b>Qualifying features for The Wash SPA (JNCC, 2008e)</b>	
Article 4.1 Qualification (79/409/EEC)	
<b>During the breeding season the area regularly supports:</b>	
	<ul style="list-style-type: none"> <li>• Little tern <i>Sterna albifrons</i> and</li> <li>• Common tern <i>Sterna hirundo hirundo</i></li> </ul>
<b>Over winter the area regularly supports:</b>	
	<ul style="list-style-type: none"> <li>• Bewick's swan <i>Cygnus columbianus bewickii</i> and</li> <li>• Bar-tailed godwit <i>Limosa lapponica</i>.</li> </ul>
Article 4.2 Qualification (79/409/EEC)	
<b>Over winter the area regularly supports:</b>	
	<ul style="list-style-type: none"> <li>• Pintail <i>Anas acuta</i></li> <li>• Eurasian wigeon <i>Anas penelope</i></li> <li>• Gadwall <i>Anas strepera</i></li> <li>• Pink-footed goose <i>Anser brachyrhynchus</i></li> <li>• Ruddy turnstone <i>Arenaria Interpres</i></li> <li>• Brent goose <i>Branta bernicla bernicla</i></li> <li>• Common golden eye <i>Bucephala clangula</i></li> <li>• Sanderling <i>Calidris alba</i></li> <li>• Dunlin <i>Calidris alpina alpina</i></li> </ul>

Qualifying features for The Wash SPA (JNCC, 2008e)
<ul style="list-style-type: none"> <li>• Common oystercatcher <i>Haematopus ostralegus</i></li> <li>• Black-tailed godwit <i>Limosa limosa islandica</i></li> <li>• Common scoter <i>Melanitta nigra</i></li> <li>• Curlew <i>Numenius arquata</i></li> <li>• Grey plover <i>Pluvialis squatarola</i></li> <li>• Shelduck <i>Tadorna tadorna</i></li> <li>• Redshank <i>Tringa tetanus</i>.</li> </ul>

**Table 2.9 Qualifying features of the North Norfolk Coast SPA (JNCC, 2008f)**

Qualifying features for the North Norfolk Coast SPA (JNCC, 2008f)
Article 4.1 Qualification (79/409/EEC)
<b>During the breeding season the area regularly supports:</b>
<ul style="list-style-type: none"> <li>• Bittern <i>Botaurus stellaris</i></li> <li>• Marsh harrier <i>Circus aeruginosus</i></li> <li>• Avocet <i>Recurvirostra avosetta</i></li> <li>• Little tern <i>Sterna albrifrons</i></li> <li>• Little tern <i>Sterna hirundo</i></li> <li>• Sandwich tern <i>Sterna sandvicensis</i>.</li> </ul>
<b>Over winter the area regularly supports:</b>
<ul style="list-style-type: none"> <li>• Avocet <i>Recurvirostra avosetta</i>.</li> </ul>
Article 4.2 Qualification (79/409/EEC)
<b>Over winter the area regularly supports:</b>
<ul style="list-style-type: none"> <li>• Eurasian wigeon <i>Anas penelope</i></li> <li>• Pink-footed goose <i>Anser brachyrhynchus</i></li> <li>• Brent goose <i>Branta bernicla bernicla</i></li> <li>• Knot <i>Calidris canutus</i>.</li> </ul>

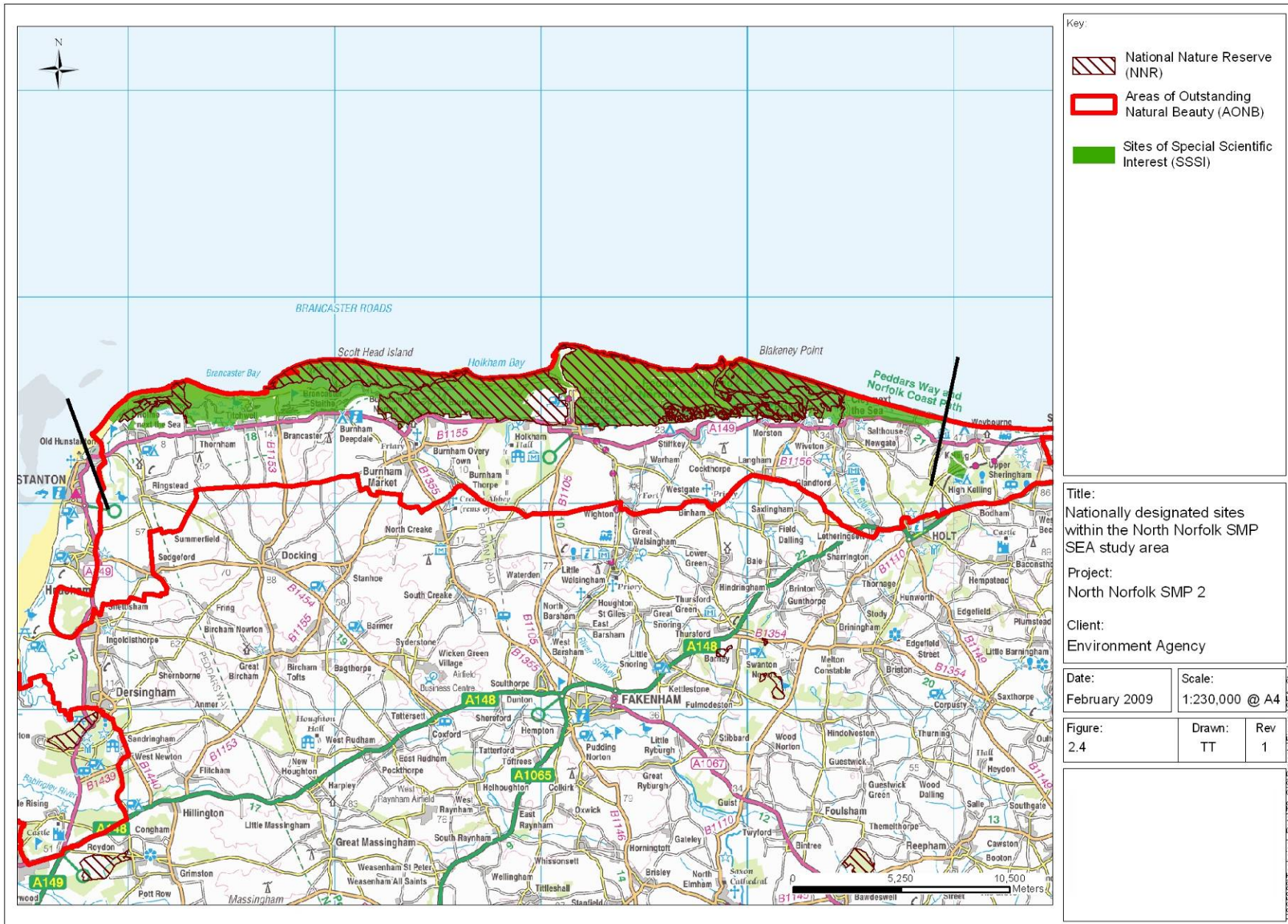
### 2.5.5 Statutory national designations

The North Norfolk coastline also contains several sites designated under national legislation. These are presented in **Figure 2.4** and **Table 2.9**, with qualifying information for these sites presented in **Table 2.10**.

**Table 2.9 Sites designated under national conservation legislation on the North Norfolk coast**

<b>SSSI name</b>	<b>Area (ha)</b>
Morston Cliffs	0.86
Cockthorpe Common, Stiffkey	7
North Norfolk Coast	7,861
Stiffkey Valley	44
The Wash	62,045
Weybourne Cliffs	41
Weybourne Town Pit	0.6
Wiveton Downs	29
Wells chalk pit	4
<b>NNR name</b>	<b>Area (ha)</b>
Blakeney	1,097
Holkham	3,851
Holme Dunes	192
Scolt Head Island	737





**Table 2.10 Qualifying information for sites designated under national conservation legislation on the north Norfolk coast**

SSSI name	Site features
Morston Cliffs	Morston Cliff is a key Pleistocene site providing a view of what is probably the only interglacial raised-beach deposit in East Anglia. This deposit, of presumed Ipswichian interglacial age, is overlain by the glacial deposits of the Hunstanton Till of late Devensian age. An important site with great potential for research into the glacial-interglacial history of eastern Britain.
Cockthorpe Common, Stiffkey	Cockthorpe Common is situated in the valley of the River Stiffkey where a diverse range of grassland flora is supported by the valley's steep slopes. Such unimproved chalk downland is now rare in Norfolk and this site is considered to be one of the best remaining examples. The flora is very rich and includes a number of uncommon species.
Hunstanton Cliffs	A classic locality for the Red Chalk and underlying carstone which contains an exceptionally rich Albian ammonite fauna. This is an important locality for the study of the sedimentology of these normally poorly exposed formations, in the area where the carstone is thickly developed. The site also provides the best exposure of the Ferriby Chalk formation in Norfolk. Additional biological interest is provided by a breeding colony of fulmars on the cliff face, forming the largest colony in the east of England.
North Norfolk Coast	The north Norfolk marshland coast extends for 40 kilometres between Hunstanton and Weybourne. The area consists mainly of intertidal sands and muds, saltmarshes, shingle banks and sand dunes. There are extensive areas of brackish lagoons, reedbeds and grazing marshes. A wide range of coastal plant communities is represented and many rare or local species occur. The whole coast is of great ornithological interest with nationally and internationally important breeding colonies of several species. The geographical position of the North Norfolk Coast and its range of habitats make it especially valuable for migratory birds and wintering waterfowl, particularly Brent and pink-footed geese. The area, much of which remains in its natural state now, constitutes one of the largest expanses of undeveloped coastal habitat of its type in Europe.
Stiffkey Valley	Stiffkey Valley is a wetland habitat supporting nationally important populations of breeding avocet <i>Recurvirostra avosetta</i> , an assemblage of breeding birds associated with lowland damp grasslands and an assemblage of breeding birds associated with lowland open waters and their margins. The site also supports wintering populations of wetland birds.

<b>SSSI name</b>	<b>Site features</b>
The Wash	The intertidal mudflats and saltmarshes represent one of Britain's most important winter feeding areas for waders and wildfowl outside of the breeding season. Enormous numbers of migrant birds, of international significance, depend on the rich supply of invertebrate food. The saltmarsh and shingle communities are of considerable botanical interest and the mature saltmarsh is a valuable bird breeding zone. The Wash is also very important as a breeding ground for common seals.
Wiveton Downs	Wiveton Downs is a classic landform of outstanding importance for teaching, research and demonstration purposes. Exposures of sands and gravels show bedding indicative of tunnel and open flow conditions, as well as facies variations between the high-energy flow of the central area of the ridge and lower energy domains of the marginal zone. Wiveton Downs is part of a suite of landforms comprising, in addition to the till plain, various kaans, kame terraces, outwash plains and a tunnel valley. It is unusual to find such a wide range of features, most of which have exposures, in such close proximity particularly in southern England.
Wells Chalk Pit	This locality shows the Hunstanton Till, a glacial deposit of Devensian age (late Pleistocene) restricted to the coastal fringe of north-west Norfolk, but correlatable with the similar glacial deposits of the Hessle Till of Yorkshire and Lincolnshire. The site gives evidence of a comparatively widespread late Devensian glacial event (ice advance), but one that did not spread further south in East Anglia than this part of Norfolk. The best site for the Hunstanton Till, with much potential for future Pleistocene studies.
<b>NNR name</b>	<b>Site features</b>
Blakeney	Blakeney Point forms part of the North Norfolk Coast SSSI. It consists of a shingle ridge extending westwards from Weybourne, running almost parallel to the coast from which it is separated by tidal water. The shingle banks are colonised by a variety of specialised plant species. The stabilised mature sand dunes hold a rich flora including a number of uncommon halophytic species and are consolidated by the binding rhizomes of marram grass, sea bindweed and grey hairgrass. The shingle banks and foreshore provide suitable habitats for wintering passerines such as twite, snow bunting and shore larks.

SSSI name	Site features
Holkham	<p>Holkham National Nature Reserve stretches from Burnham Norton to Blakeney and covers about 4,000 hectares. The site encompasses significant areas of saltmarsh, mudflats, dune systems, pinewood and scrub. Holkham is a 'Spotlight' NNR. This status, bestowed on it by Natural England, indicates that it is one that is actively promoted for visitors and means that the site receives high numbers of visitors. Although the spotlight status does not have a statutory basis, the high number of visitors to the site means that modification of the site as a result of SMP policies may have significant socio-economic consequences.</p>
Holme Dunes	<p>Holme Dunes NNR is part of the North Norfolk Coast SSSI and covers about 213 hectares. The reserve contains many habitat types including beach, sand dunes, mudflats, saltmarsh, grazing marsh, pine shelter belt and freshwater pools. Natterjack toads breed in the dune slacks and Holme is internationally important for birds.</p> <p>Current management strategies aim to control both the effect of over 100,000 visitors each year and the effects of scrub encroachment on the sensitive dune habitats. The wet grassland is managed by grazing and control of water levels to encourage breeding waders and wintering wildfowl. Management is also subject to a variety of common rights that are registered across the whole area.</p>
Scolt Head Island	<p>Scolt Head Island is an area of about 727 hectares of continually changing sand and dune, beach and saltmarsh. It is part of the North Norfolk Coast SSSI, being managed under lease by Natural England. Four major habitat types (shingle, intertidal mud flat and sand flats, sand dunes and saltmarsh) have been identified on Scolt Head Island, with the vegetation of Scolt Head Island being very similar to that at Blakeney Point.</p> <p>During the summer breeding season, the nests of several shoreline birds, including ringed plover and oystercatcher, occur in shingle scrapes. The reserve is also very popular with terns, on occasion holding up to 25 per cent of the UK total of nesting Sandwich terns. As well as this, Scolt Head Island is internationally important for its over-wintering populations of geese, which may number 50,000 by mid-winter.</p> <p>Scolt is a non-intervention reserve where natural coastal processes are allowed to occur. Control of predator species is required, however, to prevent nesting birds from losing chicks and eggs. Management is also subject to a variety of common rights which are registered across the whole area.</p>

## 2.5.6 Vulnerable freshwater / terrestrial sites

Sections of the north Norfolk coast are low-lying and consist of reclaimed marshland, protected from tidal inundation by a series of coastal defence structures. As a high proportion of this land is at or below mean sea level (MSL), it is likely to be largely unsustainable in the face of rising sea levels. Recent changes towards the management of freshwater sites within the SEA study area have already provided examples of shifts towards management that demonstrate accommodating coastal change (for example, Cley and Salthouse Marshes, Brancaster and Blakeney Freshes). Also, the Royal Society for the Protection of Birds (RSPB) is undertaking a realignment of freshwater habitat at its Titchwell reserve, creating coastal (intertidal) habitat. The Norfolk Wildlife Trust's Cley reserve has information for visitors about the fact that the freshwater nature of the site will become increasingly unsustainable in the future. **Table 2.11** presents those freshwater marshes that are located either wholly or partly within the 1 in 1000 year tidal flood zone.

**Table 2.11 Freshwater marshes located within the 1 in 1,000 year tidal flood zone within the study area (including site condition if within SSSI).**

Name	SSSI name / location
Holme Marshes	North Norfolk Coast SSSI
Titchwell Marshes	North Norfolk Coast SSSI
Brancaster Marshes	North Norfolk Coast SSSI
Deepdale Marshes	Not in SSSI (north east of Burnham Deepdale)
Norton Marshes	North Norfolk Coast SSSI
Overy Marshes	North Norfolk Coast SSSI
Holkham Marshes	North Norfolk Coast SSSI
Stiffkey Valley Marshes	Stiffkey Valley SSSI
Blakeney Marshes	North Norfolk Coast SSSI
Cley Marshes	North Norfolk Coast SSSI
Salthouse Marshes	North Norfolk Coast SSSI

None of these sites contain units that are currently unfavourable due to coastal management practices.

## 2.6 Population and communities

### 2.6.1 Land use planning policy

Environmental considerations on the north Norfolk coast are central to the development of land use planning policy at the regional and local level. With

regard to this, the following planning documents are critical to identifying the environmental issues in this context:

- King's Lynn and West Norfolk Borough Council Local Development Framework.
- King's Lynn and West Norfolk Borough Council Core Strategy submission (work on the Core Strategy is still ongoing).
- North Norfolk District Council Local Development Framework.
- North Norfolk District Council Core Strategy submission.
- East of England Plan 2008.

Plans and pertinent policy is presented in further detail in **Appendix A**.

The main issues for land use plans on the north Norfolk coast are flood risk, sustainable development, designated sites of conservation importance and effects on the AONB. A further key issue for land use plans in the context of a SMP relates to their compatibility with the Habitats Regulations, especially where land is allocated for housing, employment or other uses that 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.

Development is currently planned within the settlements of Blakeney, Wells-next-the-Sea and Weybourne. These developments may or may not be within the flood zone at the time of implementation.

#### Relevant Planning Policy Guidance (PPG) and Statements (PPS)

The most relevant Planning Policy Statement (PPS) in the context of a SMP is Planning Policy Statement 25, which sets out government policy on development in relation to flood risk. Adherence to PPS 25 guidance will ensure that the likelihood of development occurring that will prejudice SMP policies is minimised. However, it does not entirely preclude the possibility that detrimental effects may result so individual local plans need to be examined to identify any constraints that may act "in combination" with SMP policies. This is particularly relevant in the case of the two local authorities concerned, given that large amounts of their coastal fringe is within flood zone 1. Flood zone 1 is defined as an area within which there is a 1 in 200 year (0.5 per cent a year) or greater probability of coastal, or 1 in 100 year (one per cent a year) or greater probability of fluvial flooding (assuming the absence of defences).

Other relevant PPG and PPS include PPG 15, 16 and 20 and PPS 9. PPG 15 (Historic environment) lays out government policies for identifying and protecting historic buildings, conservation areas and other elements of the historic environment. It also explains the role of the planning system in their protection. PPG16 (Archaeology and planning) sets out the government's

policy on archaeological remains on land and how they should be preserved or recorded both in an urban setting and in the countryside.

Coastal planning is determined in PPG20, which covers the character of the coast, designated areas, heritage coasts and the international dimension. It discusses types of coasts, policies for their conservation and development and policies covering risks of flooding, erosion and land instability, as well as coastal protection and defence. PPG20 also outlines policies for developments that may specifically require a coastal location, including tourism, recreation, mineral extraction, energy generation and waste water and sewage treatment plants. PPG20 is currently being revised. Planning Policy Statement 9: Biodiversity and Geological Conservation sets out planning policies on protection of biodiversity and geological conservation through the planning system. These policies complement, but do not replace or override, other national planning policies and are intended to be read in conjunction with other relevant statements of national planning policy.

## 2.6.2 Catchment Flood Management Plans (CFMPs)

The Catchment Flood Management Plans for this area provide a strategic approach to the management of flood risk in fluvial areas adjacent to the coast. The relevant CFMP for the North Norfolk coast is the North Norfolk CFMP (Environment Agency, 2008). The plan provides a suite of common broad objectives that relate to the approach of policy to social, economic and environmental objectives. The objectives offered, that are relevant to the SMP, are as follows:

**Society:** To minimise risk to human life  
To minimise community disruption  
To maintain critical infrastructure and  
To protect and improve cultural heritage.

**Economy:** To minimise economic harm through flooding.

**Environment:** To protect and enhance habitats and species.

Under these objectives the CFMP has identified a series of features that are considered critical to managing the catchments. Each feature is then described in terms of the opportunities for policy. Relevant elements of this process have been fed into the SMP assessment criteria contained within this document. While differences remain in the issues facing fluvial and coastal management, some common features and opportunities exist. The CFMP contains a series of objectives, including:

**Biodiversity:** The need to maintain or enhance biodiversity

**Fisheries:** To improve the size, condition and recreational value of natural fish stocks

- Landscape: To safeguard, enhance and reduce flooding of regionally and nationally important landscape features
- Geomorphology: To restore the natural appearance and processes of rivers
- Cultural, architectural and archaeological: To safeguard, enhance and reduce flooding of important heritage sites
- Damage to agricultural land: To reduce flooding and degradation of important soils and agricultural land and
- Water quality: To help improve chemical and biological water quality in line with regional, national and international targets.

The identification of objectives in this way, coupled with specifying opportunities to address issues, has been used to aid in developing assessment criteria to use in this SEA scoping report.

### **2.6.3 Blue flag and bathing beaches 2008**

The Bathing Water Directive sets mandatory and guideline standards for bathing water quality at designated bathing beaches. Quality is assessed on the level of indicator bacteria in the bathing water. Guideline standards are 20 times stricter than the mandatory standard. Meeting this high standard is one of the main criteria for the award of the European Blue Flag. Two beaches in the area are designated bathing beaches, but do not meet Blue Flag standards (which also relate to facilities etc). The designated bathing beaches are located at Old Hunstanton and Wells.

### **2.6.4 Coastal communities**

There are several communities along the north Norfolk coast, and SMP policies have the potential to affect these areas. Due to the inherent nature of the north Norfolk coast, many of these communities are located within the 1 in 1000 year tidal flood zone and so are at risk of coastal inundation. The communities located along the north Norfolk coast and within the 1 in 1000 year tidal flood zone are listed in **table 2.12**.



**Table 2.12 Coastal communities along the north Norfolk coast and either wholly or partially within the 1 in 1,000 year tidal flood zone (population statistics from UKSA, 2008). Note that the populations displayed are those for the community, not those at risk from flooding.**

<b>Coastal community</b>	<b>District/Borough council</b>	<b>Population counts (2001 census)</b>
Old Hunstanton	King's Lynn & West Norfolk	47
Holme-next-the-Sea	King's Lynn & West Norfolk	322
Thornham	King's Lynn & West Norfolk	478
Titchwell	King's Lynn & West Norfolk	91
Brancaster, Brancaster Staithe and Burnham Deepdale	King's Lynn & West Norfolk	897
Burnham Norton	King's Lynn & West Norfolk	76
Burnham Overy	King's Lynn & West Norfolk	311
Burnham Market	King's Lynn & West Norfolk	948
Burnham Thorpe	King's Lynn & West Norfolk	168
Morston	North Norfolk	86
Blakeney	North Norfolk	789
Wiveton	North Norfolk	158
Cley-next-the-Sea	North Norfolk	376
Salthouse	North Norfolk	196
Holkham	North Norfolk	236
Wells-next-the-Sea	North Norfolk	2,451
Stiffkey	North Norfolk	223

## **2.6.5 Wealth and deprivation**

In 2007, the population of Norfolk was 840,700 (Office of National Statistics, 2009). Overall, Norfolk has above average levels of deprivation – it is ranked between fourth and tenth most deprived of the 34 non-metropolitan counties in England, according to the measure that is taken (Norfolk County Council, 2004). It also has above average deprivation when compared with the 33 other shire counties in England. 92,000 people are estimated to be income-deprived and over 44,000 to be employment-deprived (Norfolk County Council, 2004), although this figure is expected to have risen. This ranking may, however, reflect the polarised nature of the coastal communities in this

area, which have a large number of second home owners. This may result in facilities for permanent residents being diminished and the agricultural nature of the hinterland. There are no wards in the study area that sit within the top 20 per cent of deprived areas nationally and this indicator is therefore scoped out of this assessment.

## 2.6.6 Key tourism and recreation features

Tourism provides the foundation for many of the communities in this area and is concentrated with a heavy bias towards the coast and the immediate hinterland. Key tourism features along the north Norfolk coast and within the 1 in 1000 year tidal flood zone are listed in **table 2.13**.

**Table 2.13 Key tourism features along the north Norfolk coast and within SMP study area**

Location	Attraction
Blakeney Point	Wildlife, particularly birds and seals.
Cley-next-the-Sea	The village attracts a significant number of tourists. The shingle beach is accessible via a number of long footpaths crossing freshwater and saltwater marshes. A NWT visitor centre is located just east of Cley and overlooks Cley marshes.
Hunstanton	Hunstanton is the only coastal resort in the east of England where the sun can be seen to set over the sea. It is a popular summer seaside destination and is close to Sandringham and the RSPB reserves at Titchwell and Snettisham.
Wells-next-the-Sea	Wells is an important tourist destination and centre for local business and commerce. The harbour serves fishing, wildlife watching tours and other small pleasure boats. A narrow gauge railway runs from the beach south to the town, 1.2 miles away. A large caravan park is located behind the beach, adjacent to a landlocked brackish pond that is used for recreation.
Holkham village and bay.	Holkham beach, with its sand dunes, pine woodlands and marshlands is visited by significant numbers of tourists and birdwatchers each year. Eighteenth-century Holkham Hall and the surrounding tourist-based infrastructure attract large numbers of visitors.
Holme	Holme provides a spectrum of small-scale coastal activities that are typical of the north Norfolk coast, typified by smaller more intimate resort villages. The village includes the beach golf course and nearby nature reserve

Titchwell	Titchwell is a small village located inland from the coast. It does, however, lie on the key access route to the RSPB reserve at Titchwell which is one of the most highly visited nature reserves in the country. In response to this, Titchwell provides a range of accommodation and a number of optical shops that supply binoculars to visiting bird watchers.
Brancaster	Brancaster is a popular small coastal village with an attractive small harbour, range of pubs, family beach and golf course.
Brancaster Staithe	This village offers some of the best sailing facilities on the north Norfolk coast with associated pubs and restaurants.
Burnham Overy Staithe	This area provides a range of attractive waterside attractions and the access point for ferries to Scolt Head Island. The area is also a key sailing destination.
Holkham	Holkham provides a focal point for beach visitors on the north Norfolk with huge numbers of visitors to the site in the summer months. The beach also has a large number of beach huts and is popular for walking and swimming. It is also a popular site for use by the film industry.
Wells	Wells is a very popular established resort town with a buzzing harbour side and beach. The town includes a wide range of accommodation including a caravan site and several hotels and pubs. Other attractions are sailing opportunities and the miniature railway.
Morston quay	The quayside is a popular destination for tourists, sailors and for boat trips for coastal viewing and fishing.
Blakeney	Blakeney is a focal point for coastal walkers and visitors and provides a range of boat-based trips to see the seal communities out on the spit.
Cley	The village of Cley is popular for its shopping opportunities and pubs in an attractive setting inland from the coast. The views over the marshes out to the shingle ridge, with walks along the coast, attract visitors to the area throughout the year.

The economy of the north Norfolk coast is critically linked to tourism. The estimation of the degree to which the coastal strip itself generates revenue in the local economy is beyond the scope of this report. In 2004 the RSPB produced a report which looked at the actual value of the coastline in Norfolk in the 'Valuing Norfolk's Coast' (RSPB, 2004). It looked at sites managed by the RSPB, English Nature, Norfolk Wildlife Trust and the National Trust. This examined their expenditure in the local economy, direct employment on reserves and use of volunteers. Nature reserves make a valuable contribution to the local economy, including:

- Direct employment of 35 actual jobs (26.5 FTE jobs)

- Indirectly a further four FTE jobs as a result of spending by reserves and their employees and
- £137,000 spent on local goods and services.

Employment has increased at all sites over the last five years. Volunteers contribute just under 3,000 days of work a year on the sites surveyed. Spending by visitors in the local economy attributable specifically to individual nature reserves includes:

- Titchwell Marsh: £1.81 million spend in the local economy supporting 39 direct and indirect FTE jobs and
- Cley Marshes: £2.45 million spend in the local economy supporting 52 direct and indirect FTE jobs.

Of those visiting the north Norfolk coast, **table 2.14** shows the activities undertaken.

**Figure 2.14 Natural environment-related activities undertaken by tourists to north Norfolk**

Activity	Percentage of parties participating	Percentage of parties identifying as main activity
Walking	77	33
Bird watching	60	33
Beach visit	48	10
Wildlife spotting	33	1
Visiting historic buildings/sites	28	2
Seal watching	19	2
Boat trip	18	2
Cycling	7	2
Fishing	4	1
None of the above	3	14

The coastline, its habitat and wildlife are undoubtedly the fulcrum of economic activity in the study area so the SMP will need to have full regard to its effect on features that support this.

## 2.6.7 Critical infrastructure

Critical infrastructure in the North Norfolk SMP area is shown in **table 2.15**. The A149 is a key element of transport infrastructure that loosely follows the line of the coast and links the main coastal settlements. Settlements off the A149 are served by a network of B-class roads, with much of the remaining road network being single-tracked and unclassified. Other key infrastructure

includes the network of harbours and harbour channels that contribute greatly to both the economic and landscape characteristics of the North Norfolk SMP study area. The North Norfolk SMP study area does not have any motorways or key rail infrastructure.

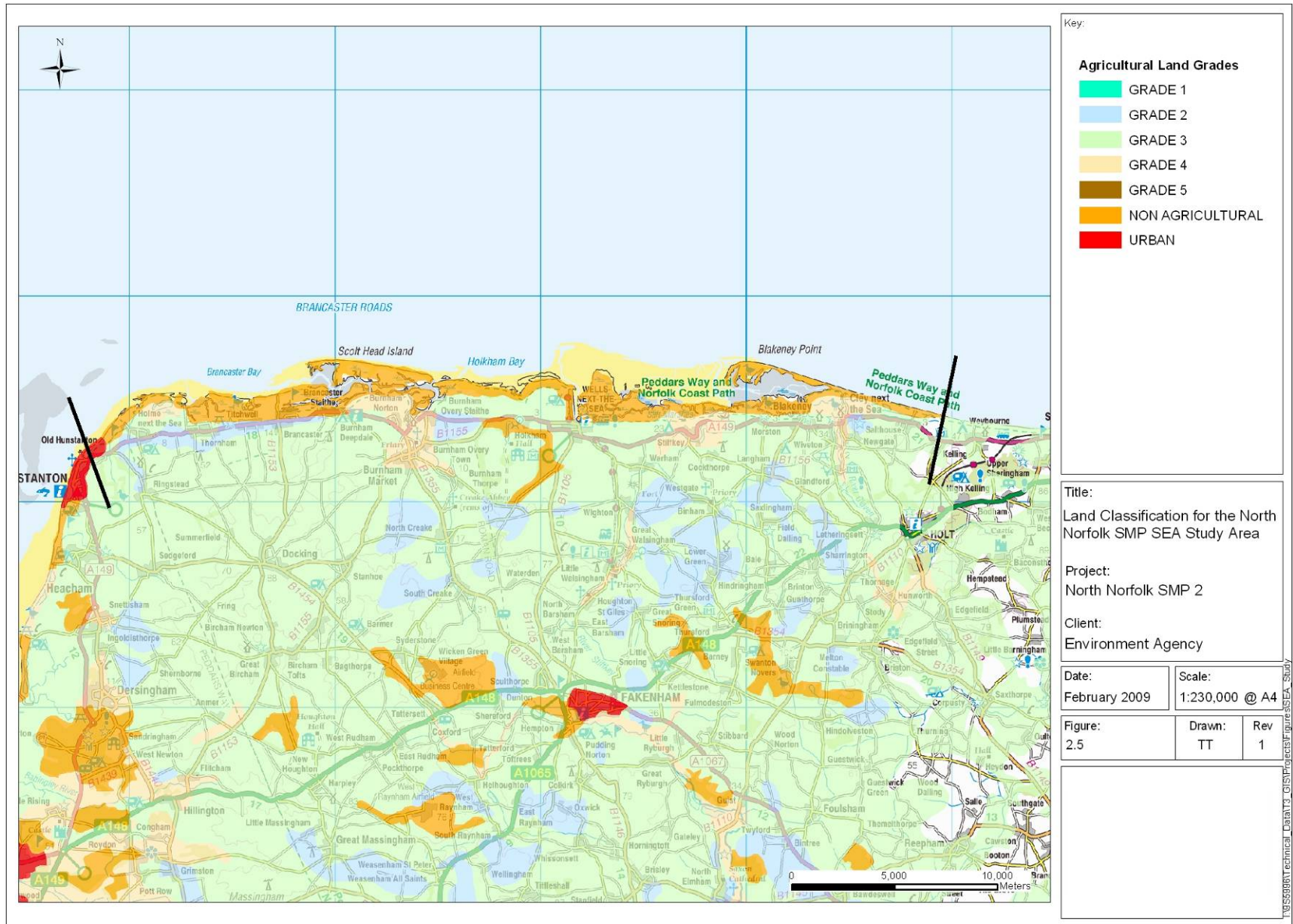
**Table 2.15 Critical infrastructure within the North Norfolk SMP SEA study area**

<b>Critical infrastructure</b>	<b>Description</b>
A149	Provides the primary east-west route between settlements on the north Norfolk coast. The A149 runs from King's Lynn to Cromer and links the settlements of Hunstanton, Brancaster, Wells, Stiffkey, Blakeney, Cley and Salthouse.
Wells-next-the-Sea harbour	Main harbour in North Norfolk SMP study area
Brancaster Staithe harbour	Fishing and recreational harbour
Blakeney harbour	Fishing and recreational harbour (including seal trips)
Burnham Deepdale harbour	Fishing and recreational harbour
Burnham Overy Staithe harbour	Fishing and recreational harbour
Thornham harbour	Fishing and recreational harbour
Morston harbour	Fishing and recreational harbour (including seal trips)

## 2.7 Soil

The soils in this part of Norfolk are largely well draining loamy and sandy. The western part of the study area tends to feature shallow loamy and sandy soils which become more clayey moving eastwards. Mid-catchment, the loamy soils have less permeable sub-soils and are prone to seasonal waterlogging.

There is no grade 1 agricultural land in the North Norfolk SMP area, with all agricultural land within the 1 in 1000 year tidal flood plain being classified as grades 2 to 4.



### 3 ENVIRONMENTAL ISSUES AND ASSESSMENT CRITERIA

In this section the environmental issues for the north Norfolk coast are identified and a series of corresponding assessment criteria provided that will form the basis of the assessment of SMP policy.

#### 3.1 Environmental issues

From a consideration of the policy, legislation and designations relevant to the north Norfolk coast and supported by discussions with key stakeholders as part of the SMP process, a series of **environmental issues** have been identified. These issues are an expression of the problems that the SMP needs to address in providing policies for shoreline management. The issues suite has been developed to avoid relying on generic coastal management issues (although some issues are the same around the coast and are therefore included) and has provided an account of what other plans, management obligations and stakeholders consider to be the most critical environmental issues on the north Norfolk coast.

**The suite of issues provided is as follows:**

- 1. Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities.**
- 2. Threats from inappropriate coastal management to coastal communities, traditional activities and culture.**
- 3. Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce.**
- 4. Threats from inappropriate coastal management on the coastal landscape and AONB with regard to the provision of a mosaic of landscape features that is characteristic of the north Norfolk coast.**
- 5. Potential loss of historic and archaeological features on a dynamic coastline.**
- 6. Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types.**
- 7. Threat to the environmental conditions to support biodiversity and the quality of life.**
- 8. Continuation of coastal processes required to maintain the integrity of critical coastal habitat and species.**

The issues and assessment table (**Table 3.1**) provides a detailed account of how these issues are explicitly evident on the North Norfolk coast. **Table 3.1** clearly illustrates these issues in detail and specifies matters that will be

scoped in, and scoped out of the assessment, subject to the conclusions of this scoping consultation.

In response to each specific issue a series of **assessment criteria** have been developed, which will ensure that the assessment of SMP policies is focussed on the key environmental issues in this area.



Receptor	Shoreline Management Plan (SMP)		Strategic Environmental Assessment (SEA)		
SEA receptor (based on SI 1633)	SMP criterion	SMP indicator (blue shading is where there is a directly equivalent SEA indicator)	Feature identified in the SEA scoping report baseline	SEA assessment criteria	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>					
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>					
Biodiversity, fauna, flora (including geomorphology)	The interaction between the maintenance of designated freshwater or terrestrial habitat (either for its value as habitat or for features to support designated species) protected by hard defences. This criterion also includes designated coastal habitat located seaward of hard defence structures.		Vulnerable freshwater / terrestrial sites	Does SMP policy provide a sustainable approach to habitat management on the North Norfolk coast	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Extent of reliance on hard defences and flexibility of coastal management.	Proportion of hard elements relative to the total defences	Geomorphology	Will the SMP policy result in a change in the operation of natural coastal processes?	Proportion of hard elements relative to the total defences
	Effect on neighbouring frontages	Impact on neighbouring section (judgement)			Impact on neighbouring section (judgement)
	Impact of shoreline management on the achievement of management objectives for international, national and locally important habitats and species, keeping them in favourable condition (including no significant loss of extent or populations) while promoting functional, sustainable and dynamic coastal change	Area of designated land lost/gained for each epoch and scenario.	European sites and SSSI	Will the SMP policy result in a change in the condition of European sites?	Condition of designated features based on Habitats Regulations assessment
		Changes in condition of designated land for each epoch and scenario.		Will the SMP policy result in a change to SSSI condition?	Predicted condition assessment of SSSI units
Impact of shoreline management on achieving national and local Biodiversity Action Plan (BAP) targets within both designated sites	Area of BAP habitats for each epoch and scenario.		Will the SMP policy result in a net change in priority BAP habitat extent?	Area of priority BAP habitats for each epoch and scenario	

Receptor	Shoreline Management Plan (SMP)		Strategic Environmental Assessment (SEA)		
SEA receptor (based on SI 1633)	SMP criterion	SMP indicator (blue shading is where there is a directly equivalent SEA indicator)	Feature identified in the SEA scoping report baseline	SEA assessment criteria	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
	and the wider coastal countryside				
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>					
Population, human health	Level of flood and erosion risk to people and property.	Number of properties in the tidal flood zone compared to the current number.	Coastal communities	Will the SMP policy result in a change in flood risk to coastal communities?	Number of properties in the tidal flood zone compared to the current number
<b>Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce</b>					
Material assets	Impact of shoreline management on the economic viability of communities through its effect on economic activities (tourism, recreation, agriculture, fisheries)	Impact on tourism and recreation features	Tourism and recreation features	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	Number of locations where tourism or recreation activity will be affected
				Will the SMP policy result in a change to identified key economic activities and locations?	Number of locations where economic activity will be affected
Soil		Impact on area and grade of agricultural land	Soil	Will the SMP policy result in a change in the quality of agricultural soils?	Impact on area and grade of agricultural land
Water			Water	Will the SMP policy result in changes to features covered by local WFD objectives?	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>					
Material assets		Impact on fisheries	Shellfish classification	Will the SMP policy result in a change to existing shellfish classifications?	Predicted impact on shellfish classification
	Impact of shoreline management on the social viability of communities through its effect on public services and infrastructure	Type and number of services affected	Infrastructure	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities	Critical infrastructure lost
		Impact on A149 and local roads		Will the SMP policy result in changes affecting the A149?	Extent and frequency of A149 flooding

Receptor	Shoreline Management Plan (SMP)		Strategic Environmental Assessment (SEA)		
SEA receptor (based on SI 1633)	SMP criterion	SMP indicator (blue shading is where there is a directly equivalent SEA indicator)	Feature identified in the SEA scoping report baseline	SEA assessment criteria	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		Type and number of utilities affected	Abstraction	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	Number of abstraction points affected.
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities</b>					
Material assets				Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	Length of navigable channel and number of operable harbours
<b>Protection of historic and archaeological features on a dynamic coastline</b>					
Cultural heritage, including architectural and archaeological heritage	Impact on historic environment and its wider value	Qualitative judgement	Historic environment	Will the SMP policy result in changes to historic features identified through the RCZAS?	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features that is characteristic of the north Norfolk coast</b>					
Landscape	Impact of shoreline management on the dynamic character of the coastal landscape, including consideration of geological, geomorphological, historic environment and cultural features and the role of settlements in the landscape	Qualitative judgement	Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	Extent and overall balance of features identified as fundamental in supporting the AONB designation

## 3.2 Assessment criteria

As stated above, the assessment criteria have been developed in response to the key environmental issues identified for the North Norfolk SMP area. Using assessment criteria is a recognised way of considering the environmental effects of a plan or programme and comparing the effect of alternatives. Assessment criteria are used to:

1. Demonstrate whether the objectives of the SMP are beneficial to both the socio-economic and natural environment within the North Norfolk SMP study area.
2. Compare the environmental effects of the alternative options under consideration.
3. Identify and recommend mitigation and enhancement.

The overarching assessment criteria for this SEA have been derived from the environmental considerations and issues identified within the scope of this SEA and the SMP process itself. The SMP process has a clearly articulated measured approach that provides for the consideration of environmental issues at the core of the process.

**Note** As stated above, in the course of producing the objectives for the SMP, a review of other plans relevant to the study areas was undertaken. From this, the objectives of these supporting plans fed the process of producing objectives for the SMP. It therefore follows that the SMP objectives are inclusive of the environmental objectives of the other plans discussed in **appendix A**.

The scoping report should set out the following and through consultation seek agreement on:

- the baseline environment for the SMP and how it might develop over the study period ('no active intervention' and 'with present management' scenarios)
- the role of relevant plans and projects in this area
- identifying the key issues for this SEA that relate to the SMP objectives (listed in section 1.5.1)
- defining the assessment criteria that relate to the key issues /objectives and allow the policy options to be judged for performance against the SMP objectives.

For all assessment criteria, the relevant receptors are identified (as defined in **section 5**) and specified in **table 3.1** to ensure that the assessment stage has regard to the key issues of the north Norfolk coast in a manner targeted towards the actual receptors of possible effects.

## 4 CONSULTATION

In this section, the consultation planned throughout the SEA is summarised. It outlines:

- the purpose of consultation and the methods used and
- the manner in which feedback will be included in the SEA process.

### 4.1 Approach

The consultation for this SEA will be based on an initial consultation period for the scoping report (this document) followed by a period of consultation for the draft SMP which will be supported by the information in the environmental report (and other documents).

This report represents **step 1** of the consultation process and is intended to ensure that the method, baseline and draft assessment criteria are appropriate for the strategic assessment of the SMP. This report will be provided for five weeks of consultation to:

- The Environment Agency
- English Heritage
- Natural England
- North Norfolk District Council
- King's Lynn and West Norfolk Borough Council
- Norfolk County Council

Following the consultation on **step 1**, the draft SEA key issues list and assessment criteria will be refined and will be used in evaluating SMP policy.

The key purpose of this report is to gain feedback from the agencies listed above to address the following questions:

1. **Has the scoping report correctly identified the environmental issues on the north Norfolk coast? (that is, are there additional issues which need to be addressed?)**
2. **Has the baseline (in combination with the theme review and characterisation report) provided an appropriate level of detail to support the assessment?**
3. **Do the assessment criteria provide an appropriate mechanism for the assessment of the environmental effects of the SMP?**
4. **Is the suggested method considered robust and appropriate to the assessment of the environmental effect of the SMP?**

Once the SMP desired policies have been selected and offered in draft form for consultation, an **environmental report** will be provided. This will show a detailed assessment of the selected scenarios and feasible alternatives. Consultation on the SMP process will therefore support **step 2** of the SEA consultation process and is expected to be provided for consultation in March 2009.

Following approval of the SMP a post-adoption statement will be produced that will identify how public response to the environmental report has been taken into account. If changes are required to the draft SMP following consultation, a revised **environmental report** will be provided for consultation which will also include details of monitoring the effects of SMP policies on the SEA objectives. This will be **step 3** of the consultation process.

#### **4.2 Key issues raised through consultation**

Key issues raised through the consultation process on this scoping report will feed back into the SEA (as an iterative process).

Key issues from this consultation exercise will be detailed in the **environmental report**.

## 5 NEXT STEPS

In this section the process of providing the SEA alongside the SMP process will be described through to the production of the **environmental report**.

### 5.1 Active use of the SEA in the SMP process

Following consultation on this **scoping report**, the assessment criteria will be used to evaluate policy scenarios for the SMP. The SEA will therefore provide a key instrument in assessing and refining SMP policy. This active use of the SEA will happen alongside the use of:

- the Appropriate Assessment (AA) under the Habitats Directive for the SMP
- the Sustainability Appraisal (SA)
- consideration of the requirements of the Water Framework Directive.

Suggested policies will be developed as a preferred option. At this stage the SEA will be used to demonstrate clearly how environmental considerations have been addressed within the SMP process. To this end, the SEA will provide a transparent account of how environmental matters have been addressed and how this has shaped policy selection. This will culminate in the provision of the **environmental report**.

As a component of the environmental report, the SEA monitoring plan will provide a series of actions, based on the indicators provided, which will ensure that unexpected consequences of the plan will be identified.

### 5.2 Context and method

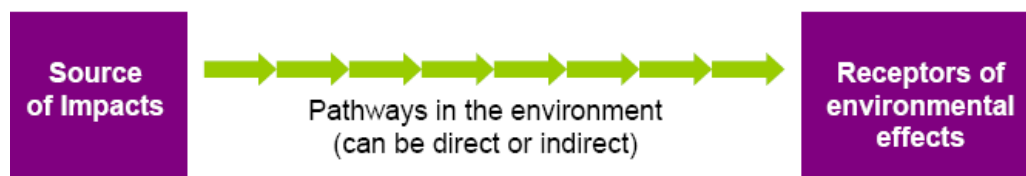
The SEA process is clearly defined in the SEA regulations and guidance suite. The basic process follows the provision of a scoping report (this document) which provides the baseline, identifies key environmental issues, outlines the method and offers a series of assessment criteria. Following consultation on this document and the development and assessment of SMP policy, an environmental report will be produced which details and records the actual assessment. Subsequent to this, a post-adoption statement will be provided which details the manner in which the assessment will be used to ensure that the actual affects of the SMP are accounted for through monitoring and response.

### 5.3 Prediction and evaluation methods

The methods we will use to identify and predict the likely significant environmental effects of implementing the plan are described below. To assess the environmental effects of implementing the SMP, we will adopt an

evidence-based expert judgement system. This approach is based on the widely accepted source-pathway-receptor model (SPR) (Figure 5.1).

**Figure 5.1 The source-pathway-receptor model as applied to SEA**



The appraisal will be a qualitative exercise based on professional judgment and supported by peer-reviewed literature where possible. It is important to stress that, given the nature of SMP policy, which is high level and so lacks the detail of an actual scheme, the assessment will be based on established effects wherever possible, but will rely heavily on expert judgement of anticipated effects. The performance of each SMP policy against each assessment criterion will be given a significance classification as well as a short descriptive summary (for example, widespread negative effects with no uncertainty). For each SMP policy, the assessment table will also include a more comprehensive reasoning of the judgment process used for determining the environmental effects and likely significance of each SMP policy. In particular, the following considerations will be paramount in determining environmental effect and likely significance:

**Table 5.1 Environmental impact significance categorisation**

Significance of SMP policy	
	SMP policy is likely to result in a significant positive effect on the environment.
	SMP policy is likely to have a positive or minor positive effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a neutral or negligible effect on the environment.
	SMP policy is likely to have a negative or minor negative effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a significant negative effect on the environment.
	The relationship between the SMP policy and the environment is unknown or unquantifiable.

- Value and sensitivity of the receptors
- Is the effect permanent / temporary?
- Is the effect positive / negative?
- Is the effect probable / improbable?
- Is the effect frequent / rare?



- Is the effect direct / indirect?
- Will there be secondary, cumulative and / or synergistic effects?

The assessment will be recorded on a series of assessment tables (**Table 5.2**), with each SMP policy benefiting from a clear and transparent account of its likely effects on the environment and the significance of such effects.

**Table 5.2 Method of impact derivation for environmental effect and likely significance**

Rationale/ background	Predicted outcomes	Likely effect	Assessment/ recommendation
		Specify effects: <ul style="list-style-type: none"> <li>• Permanence</li> <li>• Magnitude</li> <li>• Direction</li> <li>• Frequency</li> <li>• Scale</li> <li>• Duration</li> <li>• Secondary, cumulative or synergistic impacts.</li> </ul> Sensitivity (importance) of the resource.  Probability of effect.	

Data will be required to support the assessment of likely effects on a range of environmental receptors. This assessment will be based on available information and will have regard to the relatively abstract nature of SMP policy (in comparison to scheme level data). The receptors specified in the SEA practical guidance (ODPM, 2005) include:

- air
- water
- soil
- landscape
- historic environment
- habitats
- species
- population and communities (including human health, material assets, critical infrastructure etc).

The use of appropriate receptors has been considered in developing the assessment criteria, whereby how each receptor (in response to the environmental issues of the north Norfolk coast) is affected by the SMP will be clearly described. Where gaps in knowledge exist (relating to the information required to support an assessment of the link between policy and receptor), expert judgement will be used or a decision of unquantifiable effect recorded.

#### **5.4 Mitigation and monitoring**

Where potential adverse effects on the environment are identified at the assessment stage, clear measures for mitigation will be specified. Such measures will be included in the final SMP.

In the interests of clarity, the final environmental report will provide a clear account of mitigation measures required and monitoring to support the on-going consideration of SMP policies as they are implemented. The combined use of mitigation and monitoring will ensure that anticipated environmental effects are prevented and unexpected effects accounted for.

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## **Appendix A**

### **Plans and pertinent policy**



Source	Objective
<p><b>East of England Regional Spatial Strategy (RSS): Objectives of the sub-regional strategy</b></p>	<p>To ensure that development contributes to an improved environment, by protecting and enhancing the built and historic environment, the natural environment including biodiversity and landscape character, minimise the use of resources, minimise the environmental impact of travel and minimise the risk of flooding.</p>
<p><b>North Norfolk Coastal Habitat Management Plan (CHaMP)</b></p>	<p><b>North Norfolk Coast SAC</b>  To maintain in favourable condition:</p> <ul style="list-style-type: none"> <li>• Coastal lagoons</li> <li>• Fixed dunes with herbaceous vegetation ('grey dunes')</li> <li>• Embryonic shifting dunes</li> <li>• Humid dune slacks Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sacrocornetea fruticosi</i>)</li> <li>• Perennial vegetation of stony banks</li> <li>• Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes').</li> </ul> <p><b>The Wash and North Norfolk SAC</b>  Subject to natural change, maintain the large shallow inlet and bay in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Subtidal sandbanks</li> <li>• Intertidal mudflats and sandflats</li> <li>• Subtidal boulder and cobble communities</li> <li>• Subtidal mixed sediment communities (for example <i>Sabellaria spinulosa</i> reefs)</li> <li>• Glasswort and other annuals colonising mud and sand</li> <li>• Atlantic salt meadows</li> <li>• Mediterranean saltmarsh scrubs.</li> </ul> <p>Subject to natural change, maintain the sandbanks which are slightly covered by seawater all the time in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Gravel and sand communities</li> <li>• Muddy sand communities.</li> </ul> <p>Subject to natural change, maintain the mudflats and sandflats not covered by seawater at low tide in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Sand and gravel communities</li> <li>• Muddy sand communities</li> <li>• Mud communities.</li> </ul> <p>Subject to natural change, maintain glasswort and other annuals colonising mud and sand in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Annual <i>Salicornia</i> saltmarsh community</li> <li>• Annual sea-blite (<i>Sueda maritima</i>) saltmarsh community</li> </ul>



Source	Objective
	<ul style="list-style-type: none"> <li>• Ephemeral saltmarsh vegetation with <i>Sagina maritima</i> saltmarsh community.</li> </ul> <p>Subject to natural change, maintain Atlantic salt meadows in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Low marsh and low-mid marsh communities</li> <li>• Mid and mid-upper marsh communities.</li> </ul> <p>Subject to natural change, maintain Mediterranean saltmarsh shrubs in favourable condition, in particular:</p> <ul style="list-style-type: none"> <li>• Shrubby seablite (<i>Suaeda vera</i>) saltmarsh community</li> <li>• Shrubby seablite (<i>Suaeda vera</i>) and <i>Limonium binervosum</i> saltmarsh community</li> <li>• Transitional communities.</li> </ul> <p>Subject to natural change, maintain in favourable conditions the habitats of common seals, in particular:</p> <ul style="list-style-type: none"> <li>• Intertidal mudflats and sandflats.</li> </ul> <p><b>North Norfolk Coast SPA and Ramsar site</b></p> <p>The objectives for the Ramsar site have not yet been developed but the designated features are considered throughout the CHaMP process.</p> <p>For all SPAs, the conservation objectives apply to the habitats present within the site that are used by the bird population for which the site has been designated.</p>
<p><b>King's Lynn and West Norfolk Borough Council LDF</b></p>	<p>The environment:</p> <ul style="list-style-type: none"> <li>• Ensure a controlled and clear approach to development in the town</li> <li>• Reinforce and improve the Victorian heritage of Hunstanton through conservation and innovative design</li> <li>• Retain and enhance open spaces</li> <li>• Protect and maintain the unique natural environment</li> <li>• Reintroduce the rail link from King's Lynn to Hunstanton</li> <li>• Support improved access to the town by encouraging improvements to the A149, south of Hunstanton.</li> </ul> <p>Rural areas:</p> <ul style="list-style-type: none"> <li>• Environmental enhancement</li> <li>• Protection of the best and most versatile agricultural land</li> <li>• Protection and enhancement of the natural, historic and built environment</li> <li>• Protect the diversity of wildlife and distinctive landscape character including the coast from conflicting development proposals</li> </ul>

Source	Objective
	<ul style="list-style-type: none"> <li>• Respect the zonal approach of the AONB Management Plan</li> <li>• Protect the rural and coastal environment as a visitor destination and support green tourism initiatives, which can be shown to be sustainable with a low environmental impact</li> <li>• Recognise the unique characteristics of individual villages and the needs of different rural areas.</li> </ul>
<p><b>North Norfolk District Council LDF</b></p>	<p><b>Strategic aims</b>  Secure the conservation of the historic character of the Borough's built and archaeological environment and seek improvements to the natural environment. Retain and enhance the rural character of the countryside while encouraging sustainable development needed to support the rural economy. Ensure that the development needs of the Borough are met without exacerbating the risk to life and property from flooding.</p> <p>Plan policies:</p> <ul style="list-style-type: none"> <li>• E14: New habitats, biodiversity and wildlife resource management – planning permission will be granted for proposals to extend (or create new) wildlife habitats appropriate to the area, the protection and satisfactory management of existing sites, habitats and other features of wildlife value affected by approved planning proposals will be ensured.</li> </ul> <p><i>Justification: with the exception of the coastal margin, the Borough is an area of comparatively limited ecological and habitat diversity. Consequently, The Council supports the provisions of the Lincolnshire Biodiversity Action Plan (LBAP). In many cases, the creation of a wildlife habitat will not require planning permission, but where consent is needed, it will be forthcoming provided the proposal relates to a habitat which is appropriate to the area. The Council will also encourage the provision of new wildlife habitats to be incorporated within wider major development schemes, particularly those specified by the Lincolnshire Biodiversity Action Plan via the attachment of conditions to planning permissions or through planning obligations.</i></p> <p><i>In order to protect existing biodiversity, where this is to be affected by development proposals, landscape features important to wild flora and fauna must be</i></p>

Source	Objective
	<p><i>effectively managed. Such features include those which, by virtue of their linear and continuous structure (watercourses and their banks, traditional field boundaries) or through their function as stepping stones (ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species. Therefore, when considering planning applications affecting such features, the Council will seek to assure their proper future management either through planning conditions or obligations. Alternatively, where it is appropriate the Council may wish to enter into management agreements with developers or land owners under Section 39 of the Wildlife and Countryside Act 1981.</i></p> <ul style="list-style-type: none"> <li>• E15: Coastal zone – planning permission will be granted for minor developments in the coastal zone related to the enjoyment of the countryside, the foreshore and for small scale agricultural developments. Small extensions to existing buildings and uses will be allowed where the character of the countryside remains unaffected.</li> </ul> <p><i>Justification: the Borough’s coastal strip comprises saltmarsh and agricultural land reclaimed from the Wash and is important for ecology, landscape, nature conservation and its historic interest. Public access is very limited and non-farming activities are restricted to informal leisure pursuits, such as walking along sea banks and bird watching. Planning applications for development are very few in number, and it is intended that development should in future continue to be restricted to proposals essential for existing pursuits in order to protect the open and undeveloped character of the locality. In particular, planning permission for development needed to support existing agricultural operations in the vicinity, or habitat creation schemes, will normally be granted. There have been a number of planning applications for onshore wind turbines in the county and there are also proposals for off shore wind turbines in the ‘Greater Wash’. This is the area between the Wash and the Humber Estuary. Owing to the undeveloped character of the coastal zone and its importance for wildlife it is not considered that proposals for on shore wind farms are appropriate. Such development will be considered against policy G10. Development for off shore wind turbines will require onshore development</i></p>

Source	Objective
	<i>of infrastructure such as sub stations and cable routes but these should avoid the coastal zone.</i>
<b>Water Framework Directive</b>	<p>Environmental objectives: Article 4.1:</p> <p>1(a)(i) member states shall implement the necessary measures to avoid deterioration of the status of all bodies of surface water.</p> <p>1(c) member states shall achieve compliance with any standards and objectives at the latest 15 years after the date of entry into force of this Directive, unless otherwise specified in the Community legislation under which the individual protected areas have been established.</p> <p>The <b>main environmental objectives</b> in the Directive are manifold and include the following elements (for details see Article 4 §1, (a) surface waters, (b) groundwaters and (c) protected areas):</p> <ul style="list-style-type: none"> <li>• <b>No deterioration</b> of status for surface and groundwaters and the protection, enhancement and restoration of all water bodies</li> <li>• Achievement of <b>good status</b> by 2015, i.e. good ecological status (or potential) and good chemical status for surface waters and good chemical and good quantitative status for groundwaters</li> <li>• <b>Progressive reduction of pollution</b> of priority substances and <b>phase-out</b> of priority hazardous substances in surface waters and prevention and limitation of input of pollutants in groundwaters</li> <li>• <b>Reversal</b> of any significant, upward <b>trend</b> of pollutants in groundwaters</li> <li>• Achievement of standards and objectives set for <b>protected areas</b> in Community legislation.</li> </ul>
<b>Habitats Directive</b>	<p>The main provisions of the Habitats Directive include:</p> <ul style="list-style-type: none"> <li>• Whereas the preservation, protection and improvement of the quality of the environment, including the conservation of natural habitats and of wild fauna and flora, are an essential objective of general interest pursued by the Community, as stated in Article 130r of the Treaty.</li> <li>• Whereas the European Community policy and action programme on the environment (1987 to 1992)(4) makes provision for measures regarding</li> </ul>

Source	Objective
	<p>the conservation of nature and natural resources.</p> <ul style="list-style-type: none"> <li>• Whereas, the main aim of this Directive being to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements, this Directive makes a contribution to the general objective of sustainable development; whereas the maintenance of such biodiversity may in certain cases require the maintenance, or indeed the encouragement, of human activities.</li> <li>• Whereas, in the European territory of the Member States, natural habitats are continuing to deteriorate and an increasing number of wild species are seriously threatened; whereas given that the threatened habitats and species form part of the Community's natural heritage and the threats to them are often of a transboundary nature, it is necessary to take measures at Community level in order to conserve them.</li> <li>• Whereas, in view of the threats to certain types of natural habitat and certain species, it is necessary to define them as having priority in order to favour the early implementation of measures to conserve them.</li> <li>• Whereas, in order to ensure the restoration or maintenance of natural habitats and species of Community interest at a favourable conservation status, it is necessary to designate special areas of conservation in order to create a coherent European ecological network according to a specified timetable.</li> <li>• Whereas all the areas designated, including those classified now or in the future as special protection areas pursuant to Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds(5), will have to be incorporated into the coherent European ecological network.</li> <li>• Whereas it is appropriate, in each area designated, to implement the necessary measures having regard to the conservation objectives pursued.</li> <li>• Whereas sites eligible for designation as special areas of conservation are proposed by the member states but whereas a procedure must nevertheless be laid down to allow the designation in exceptional cases of a site which has not been proposed by a member state but which the Community considers essential for either the maintenance or the survival of a priority natural</li> </ul>

Source	Objective
	<p>habitat type or a priority species.</p> <ul style="list-style-type: none"> <li>• Whereas an appropriate assessment must be made of any plan or programme likely to have a significant effect on the conservation objectives of a site which has been designated or is designated in future.</li> <li>• Whereas it is recognised that the adoption of measures intended to promote the conservation of priority natural habitats and priority species of Community interest is a common responsibility of all member states; whereas this may, however, impose an excessive financial burden on certain member states given, on the one hand, the uneven distribution of such habitats and species throughout the Community and, on the other hand, the fact that the "polluter pays" principle can have only limited application in the special case of nature conservation.</li> <li>• Whereas it is therefore agreed that, in this exceptional case, a contribution by means of Community co-financing should be provided for within the limits of the resources made available under the Community's decisions.</li> <li>• Whereas land-use planning and development policies should encourage the management of features of the landscape which are of major importance for wild fauna and flora.</li> <li>• Whereas a system should be set up for surveillance of the conservation status of the natural habitats and species covered by this Directive and</li> <li>• Whereas a general system of protection is required for certain species of flora and fauna to complement Directive 79/409/EEC; whereas provision should be made for management measures for certain species, if their conservation status so warrants, including the prohibition of certain means of capture or killing, whilst providing for the possibility of derogations on certain conditions.</li> </ul>
<b>Birds Directive</b>	<p>The main provisions of the Directive include:</p> <ul style="list-style-type: none"> <li>• The maintenance of the favourable conservation status of all wild bird species across their distributional range (Article 2) with the encouragement of various activities to that end (Article 3).</li> <li>• The identification and classification of Special Protection Areas for rare or vulnerable species listed in Annex I of the Directive, as well as for</li> </ul>

Source	Objective
	<p>all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4). (Together with Special Areas of Conservation (SACs) designated under the Habitats Directive, SPAs form a network of pan-European protected areas known as Natura 2000).</p> <ul style="list-style-type: none"> <li>• The establishment of a general scheme of protection for all wild birds (Article 5).</li> <li>• Restrictions on the sale and keeping of wild birds (Article 6).</li> <li>• Specification of the conditions under which hunting and falconry can be undertaken (Article 7). (Huntable species are listed on Annex II.1 and Annex II.2 of the Directive).</li> <li>• Prohibition of large-scale non-selective means of bird killing (Article 8).</li> <li>• Procedures under which member states may derogate from the provisions of Articles 5-8 (Article 9) — that is, the conditions under which permission may be given for otherwise prohibited activities.</li> <li>• Encouragement of certain forms of relevant research (Article 10).</li> <li>• Requirements to ensure that introduction of non-native birds do not threaten other biodiversity (Article 11).</li> </ul>

## **Appendix B**

### **Pertinent legislation**



## **A. The Convention on the Conservation of European Wildlife and Natural Habitats**

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in Bern, Switzerland in 1979, and came into force in 1982. The principal aims of the Convention are to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix 3. To this end the Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species (JNCC, 2008g).

To implement the Bern Convention in Europe, the European Community adopted Council Directive 79/409/EEC on the Conservation of Wild Birds (the EC Birds Directive) in 1979, and Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the EC Habitats Directive) in 1992 (JNCC, 2008a). Among other things the Directives provide for the establishment of a European network of protected areas (Natura 2000) to tackle the continuing losses of European biodiversity on land, at the coast and in the sea to human activities (JNCC, 2008g).

The UK ratified the Bern Convention in 1982. The Convention was implemented in UK law by the Wildlife and Countryside Act (1981 and as amended) (JNCC, 2008a). As the inspiration for the EC Birds and Habitats Directives, the Convention had an influence on the Conservation (Natural Habitats &c.) Regulations (1994) and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, which were introduced to implement those parts of the Habitats Directive not already covered in national legislation (JNCC, 2008g).

## **B. The Convention on Biological Diversity**

Biological diversity - or biodiversity - is the term given to the variety of life on Earth and the natural patterns it forms (JNCC, 2008h). The biodiversity we see today is the fruit of billions of years of evolution, shaped by natural processes and, increasingly, by the influence of humans. It forms the web of life of which we are an integral part and upon which we so fully depend, providing a large number of goods and services that sustain our lives. Biodiversity consists of hierarchical levels, encompassing the range of landscapes and ecosystems found on the planet, the communities of organisms found within them, the variety of animal, plant and micro-organism species of which these communities consist, and the genetic differences within each species. All of these levels are linked by natural (or semi-natural or human-induced) processes, from gene-flow at the genetic level through to successional habitat change at the landscape level. It is the combination of life forms and their interactions with each other and with the rest of the

environment that has made Earth a uniquely habitable place for humans. However, biodiversity is threatened by many factors, including habitat destruction and degradation, pollution, climate change and introduced species. The loss of biodiversity affects food supplies, opportunities for tourism and recreation, sources of medicines, and energy. It also interferes with essential ecological functions.

The Convention on Biological Diversity (Biodiversity Convention or CBD) was adopted at the Earth Summit in Rio de Janeiro, Brazil in June 1992 and entered into force in December 1993 (JNCC, 2008b). As the first treaty to provide a legal framework for biodiversity conservation, the Convention established three main goals: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources (JNCC, 2008b). Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity. They are also required to undertake action to implement the thematic work programmes on ecosystems and a range of cross-cutting issues which have been established to take forward the provisions of the Convention (JNCC, 2008h).

Within Europe, the Pan-European Biological and Landscape Diversity Strategy was developed in 1994 to introduce a coordinating and unifying framework for strengthening and building on existing initiatives which support the implementation of the CBD (JNCC, 2008h). In 1998, the European Community Biodiversity Strategy was adopted, defining a precise framework for action, by setting out four major themes and specifying sectoral and horizontal objectives to be achieved. In 2001, this was followed by the production of Biodiversity Action Plans (BAPs) for fisheries, agriculture, economic cooperation and development, and conservation of natural resources. These sectoral Action Plans define concrete actions and measures to meet the objectives defined in the strategy, and specify measurable targets.

The UK ratified the Convention in June 1994 (JNCC, 2008h). Responsibility for the UK contribution to the Convention in the UK lies with the Department for Environment, Food and Rural Affairs (Defra), who promote the integration of biodiversity into policies, projects and programmes within Government and beyond. Further to this, in 1994 the Government launched the UK Biodiversity Action Plan (UK BAP), a national strategy which identified broad activities for conservation work over the next 20 years, and established fundamental principles for future biodiversity conservation (JNCC, 2008h). Subsequently, costed Biodiversity Action Plans (BAPs) to conserve 391 species and 45 habitats were published. Local Biodiversity Action Plans (LBAPs) have also been identified as important in the implementation of the strategy, and 163 have so far been developed (JNCC, 2008h).

### **C. The Convention on the Conservation of Migratory Species of Wild Animals**

Migration is a natural phenomenon, by which individuals of a given species move between areas which they inhabit at different times of the year (JNCC, 2008i). Migratory species of animals are, on average, more at risk of becoming endangered than non-migratory species, because their requirements are greater - not only do they need good habitat for reproduction but also during their non-breeding and all along their migratory routes (JNCC, 2008i). In an ever-changing world, human pressure is high on some of those habitats, and also often on the animals themselves (hunting, incidental catch etc). To conserve species whose movements regularly cross national borders, international cooperation is of vital importance (JNCC, 2008i).

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS) was adopted in Bonn, Germany in 1979 and came into force in 1985 (JNCC, 2008i). Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix 1 of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix 2), and by undertaking co-operative research activities (JNCC, 2008i). The UK ratified the Convention in 1985 (JNCC, 2008i). The legal requirement for the strict protection of Appendix I species is provided by the Wildlife & Countryside Act (1981 and as amended).

### **D. United Nations Framework Convention on Climate Change**

While the world's climate has always varied naturally, the vast majority of scientists now believe that rising concentrations of 'greenhouse gases' in the earth's atmosphere, resulting from economic and demographic growth over the last two centuries since the industrial revolution, are overriding this natural variability and leading to potentially irreversible climate change (JNCC, 2008k). The implications of climate change are far reaching and include rises in sea levels, changes in rainfall patterns (increasing the threat of drought or floods in many regions) and a greater threat of extreme weather events, such as intense storms and heat waves (JNCC, 2008k). Climate change could, therefore, have potentially dramatic negative impacts on human health, food security, economic activity, water resources, physical infrastructure and global biodiversity.

The United Nations Framework Convention on Climate Change was adopted at the Earth Summit in Rio de Janeiro, Brazil in 1992 and came into force on 1994 (JNCC, 2008k). The Convention set a non-binding goal for contracting parties to stabilise their greenhouse emissions to 1990 levels by the year 2000. To this end, parties were required to undertake necessary measures, including the submission of national inventories of greenhouse-gas emissions

and removals, adoption of national programmes for mitigating climate change and developing strategies for adapting to its impacts, and promotion of technology transfer and the sustainable management, conservation, and enhancement of greenhouse gas sinks and 'reservoirs' (such as forests and oceans). In addition, parties were required to take climate change into account in their relevant social, economic, and environmental policies; cooperate in scientific, technical, and educational matters; and promote education, public awareness, and the exchange of information related to climate change (JNCC, 2008k). However, in 1995 it was acknowledged that the commitment of parties to take these measures was not adequate to achieve the aims of the Convention. As a result, the Kyoto Protocol was adopted in 1997 to strengthen the obligations of the Convention. Under the protocol, industrialised countries have a legally binding commitment to reduce their collective greenhouse gas emissions by at least five per cent compared to 1990 levels by the period 2008 – 2012.

The UK ratified the Climate Change Convention in 1993 and the Kyoto Protocol in 2002. In November 2000, the UK government published a national strategy for addressing climate change issues, providing details of how the UK plans to deliver its targets under the Kyoto Protocol (JNCC, 2008k).

#### **E. The Convention for the Protection of the Marine Environment of the North-East Atlantic**

During the latter half of the last century deliberate dumping of substances and spillage disasters in the North-East Atlantic highlighted the need for international cooperation to combat marine pollution in this region (JNCC, 2008l). Accordingly, the Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (the Oslo Convention) was adopted in 1972 to address pollution at sea, while the Convention for the Prevention of Marine Pollution from Land-Based Sources (the Paris Convention) was adopted in 1974 to address marine pollution by discharges of dangerous substances from land-based sources, watercourses or pipelines (JNCC, 2008l).

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) was adopted in Paris, France in September 1992 and entered into force in March 1998 (JNCC, 2008l). OSPAR replaced both the Oslo and Paris Conventions, with the intention of providing a comprehensive and simplified approach to addressing all sources of pollution which might affect the maritime area, as well as matters relating to the protection of the marine environment other than those relating to the prevention and elimination of pollution. It retained all decisions, recommendations and agreements adopted under the previous Conventions, subject to termination through the adoption of new measures under OSPAR. An OSPAR Commission was established to administer the Convention and to develop policy and international agreements. In July 1998 parties agreed on a new Annex V on the protection and conservation of the ecosystems and biological

diversity of the maritime area and a new appendix 3 with criteria for identifying human activities for the purpose of Annex V (JNCC, 2008f). The Commission has adopted five strategies for directing its work. Measures and programmes within the Biodiversity Strategy include the identification of ecological quality objectives of the North Sea, development of lists of species and habitats in need of protection, identification and selection of marine protected areas, and the prevention and control of adverse impacts from human activities. The UK ratified OSPAR in 1998, and Annex V and Appendix 3 in June 2000 (JNCC, 2008l).

#### **F. The Convention on Wetlands of International Importance especially as Waterfowl Habitat**

Wetlands are among the world's most productive environments (JNCC, 2008m). They are cradles of biological diversity, providing the water and primary productivity upon which large numbers of plant and animal species depend for survival. They are also important locations of plant genetic diversity and support large numbers of bird, mammal, reptile, amphibian, fish and invertebrate species (JNCC, 2008m). Wetlands provide tremendous economic benefits through their role in supporting fisheries, agriculture and tourism and through much of the world they have a crucial role as a source of clean water for dependant human populations (JNCC, 2008m). Unfortunately they are also among the world's most threatened ecosystems, owing mainly to continued drainage, pollution, over-exploitation or other unsustainable uses of their resources (JNCC, 2008m).

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention or Wetlands Convention) was adopted in Ramsar, Iran in February 1971 and entered into force in December 1975 (JNCC, 2008m). The Convention covers all aspects of wetland conservation and wise use. The Convention has three main 'pillars' of activity: the designation of wetlands of international importance as Ramsar sites; the promotion of the wise-use of all wetlands in the territory of each country; and international co-operation with other countries to further the wise-use of wetlands and their resources.

The UK ratified the Convention in 1976. The UK has generally chosen to underpin the designation of its Ramsar sites through prior notification of these areas as Sites of Special Scientific Interest (SSSIs) (or Areas of Special Scientific Interest (ASSIs) in Northern Ireland) (JNCC, 2008m). Accordingly, these receive statutory protection under the Wildlife & Countryside Act (WCA) 1981, and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (JNCC, 2008m). In England and Wales, further protection is provided by the Countryside and Rights of Way (CRoW) Act 2000. Government in England and Wales has issued policy statements relating to the special status of Ramsar sites. This extends the same protection at a policy level to listed Ramsar sites in respect of new development as that afforded to sites which have been designated under the

EC Birds and Habitats Directives as part of the EU Natura 2000 network (JNCC, 2008m).

### **G. Council Directive 79/409/EEC on the conservation of wild birds**

In 1979, the European Community adopted Council Directive 79/409/EEC on the conservation of wild birds (the 'Birds Directive'), in response to the 1979 Bern Convention on the conservation of European habitats and species (the 'Bern Convention') (JNCC, 2008o). The annexes were amended by the Environment Chapter of the Treaty of Accession 2003. The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes). The Directive applies to the UK and to its overseas territory of Gibraltar (JNCC, 2008o).

The main provisions of the Directive include:

- The maintenance of the favourable conservation status of all wild bird species across their distributional range (Article 2) with the encouragement of various activities to that end (Article 3);
- The identification and classification of Special Protection Areas for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4) (Together with Special Areas of Conservation (SACs) designated under the Habitats Directive, SPAs form a network of pan-European protected areas known as Natura 2000);
- The establishment of a general scheme of protection for all wild birds (Article 5);
- Restrictions on the sale and keeping of wild birds (Article 6);
- Specification of the conditions under which hunting and falconry can be undertaken (Article 7). (Huntable species are listed on Annex II.1 and Annex II.2 of the Directive);
- Prohibition of large-scale non-selective means of bird killing (Article 8);
- Procedures under which Member States may derogate from the provisions of Articles 5-8 (Article 9) — that is, the conditions under which permission may be given for otherwise prohibited activities;
- Encouragement of certain forms of relevant research (Article 10); and
- Requirements to ensure that introduction of non-native birds do not threaten other biodiversity (Article 11).

A very wide range of other statutory and non-statutory activities also support the Bird Directive's implementation in the UK (JNCC, 2008o), including national bird monitoring schemes, bird conservation research and the UK

Biodiversity Action Plan (UKBAP) which involves action for a number of bird species and the habitats which support them.

In the UK, the provisions of the Birds Directive are implemented through the Wildlife & Countryside Act 1981 (as amended) The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), the Wildlife (Northern Ireland) Order 1985, the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and The Conservation (Natural Habitats, &c.) (Northern Ireland) Regulations 1995 (as amended). The 'Habitats Regulations' apply to the UK land area and its territorial sea (to 12 nautical miles from the coast), and are supported by government policy guidance (JNCC, 2008o).

#### **H. Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora**

Within Europe natural habitats are continuing to deteriorate and an increasing number of wild species are seriously threatened, with much of this being as a result of development and agricultural intensification (JNCC, 2008p). The main aim of the EC Habitats Directive is to promote the maintenance of biodiversity by requiring member states to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance. In applying these measures member states are required to take account of economic, social and cultural requirements and regional and local characteristics (JNCC, 2008p).

In 1992 the European Community adopted Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (EC Habitats Directive). This is the means by which the Community meets its obligations as a signatory of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) (JNCC, 2008p). The provisions of the Directive require member states to introduce a range of measures including the protection of species listed in the annexes, to undertake surveillance of habitats and species and produce a report every six years on the implementation of the Directive. The 189 habitats listed in Annex I of the Directive and the 788 species listed in Annex II, are to be protected by means of a network of sites. Each member state is required to prepare and propose a national list of sites for evaluation in order to form a European network of Sites of Community Importance (SCIs). Once adopted, these are designated by member states as Special Areas of Conservation (SACs), and along with Special Protection Areas (SPAs) classified under the EC Birds Directive, form a network of protected areas known as Natura 2000 (JNCC, 2008p). The Directive was amended in 1997 by a technical adaptation Directive, with the annexes being further amended by the Environment Chapter of the Treaty of Accession 2003.

The Habitats Directive introduces the precautionary principle for the first time to protected areas; that is that projects can only be permitted having

ascertained no adverse effect on the integrity of the site for the first time for protected areas. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest. In such cases, compensation measures will be necessary to ensure the overall integrity of network of sites. As a consequence of amendments to the Birds Directive these measures are to be applied to SPAs also. Member states shall also endeavour to encourage the management of features of the landscape to support the Natura 2000 network (JNCC, 2008p).

In the UK the Directive has been transposed into national laws by means of the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended), and the Conservation (Natural Habitats, & c.) Regulations (Northern Ireland) 1995 (as amended), which are known as 'the Habitats Regulations'. Most SACs on land or freshwater areas are underpinned by notification as Sites of Special Scientific Interest (SSSIs) (or as Areas of Special Scientific Interest (ASSIs) in Northern Ireland) (JNCC, 2008p).

#### **I. The Convention Concerning the Protection of the World Cultural and Natural Heritage**

The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) was adopted in Paris, France in November 1972 and came into force in December 1975, being ratified in the UK in 1984 (JNCC, 2008q). The Convention is a unique international instrument in that it seeks to protect both cultural and natural heritage and defines the kind of sites which can be considered for inscription of the World Heritage List (ancient monuments, museums, biodiversity and geological heritage all come within the scope of the Convention), setting out the duties of states parties in identifying potential sites and their role in protecting them (JNCC, 2008q). Although many World Heritage sites fall into either the 'cultural' or 'natural' categories, a particularly important aspect of the Convention is its ability to recognise landscapes that combine these values, and where the biological and physical aspects of landscape have evolved alongside human activity (JNCC, 2008q).

#### **J. Council Directive 76/160/EEC on the Quality of Bathing Water**

The main objective of the 1976 EC Bathing Waters Directive (76/160/EEC) is to protect public health and the environment from faecal pollution at bathing waters (Defra, 2008a). The Directive requires member states to identify popular bathing areas and to monitor water quality at these bathing waters throughout the bathing season, which runs from mid-May to September in England (Defra, 2008a). The Directive sets a number of microbiological and physico-chemical standards that bathing waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards) (Defra, 2008a).



The mandatory standards used by the European Commission to determine compliance of bathing waters with the Directive are the microbiological parameters - total and faecal coliforms and three physio-chemical parameters - surface active substances, mineral oils and phenols. Cases of non-compliance with the physico-chemical parameters are extremely rare so compliance in the UK each year is normally determined by the extent of pollution by total and faecal coliform bacteria (Defra, 2008a). Meeting the mandatory water quality standards of the Bathing Water Directive is the minimum legal requirement. Mandatory standards are given for 10 parameters: total coliforms, faecal coliforms, salmonella, enteroviruses, pH, colour, mineral oils, surface active substances (detergents), phenols and transparency. The Directive also sets the minimum frequency at which bathing waters should be sampled.

The Bathing Water Directive was initially transposed into national legislation through the Bathing Waters (Classifications) Regulations (SI 1991 No. 1597) and the Bathing Waters (Classifications) (England) Regulations 2003 (SI 2003 No. 1238). A revised Bathing Water Directive (2006/7/EC) came into force in March 2006, with key changes including a tightening of water quality standards and a requirement to provide information about bathing waters to the public on signage on beaches and online. The revised Directive sets four new standards of water quality (excellent, good, sufficient and poor) and all bathing waters will be expected to achieve at least the "sufficient" classification by 2015, with limited exceptions (Defra, 2008a). In 2008, there are 414 identified and monitored bathing waters in England, 81 in Wales, 80 in Scotland and 24 in Northern Ireland, making a total of 599 bathing waters across the UK. Of these sites, 587 are coastal waters and 12 are inland freshwater sites (Defra, 2008a).

## **K. Shellfish Waters Directive (79/923/EC)**

The aim of the EC Shellfish Waters Directive is to protect or improve shellfish waters in order to support shellfish life and growth, therefore contributing to the high quality of shellfish products directly edible by man (Defra, 2008b). It sets physical, chemical and microbiological water quality requirements that designated shellfish waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards) (Defra, 2008b). The Directive is designed to protect the aquatic habitat of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. It does not cover shellfish crustaceans such as crabs, crayfish and lobsters (Defra, 2008b).

The original Shellfish Waters Directive (79/923/EC), adopted on 30 October 1979, was repealed by the codified Shellfish Waters Directive (2006/113/EC), adopted on 12 December 2006. Codification is a routine procedure that consolidates an existing Directive, with any amendments made since its introduction, into a single, more accessible document (Defra, 2008b). The codified Directive maintains all existing measures which provide for the monitoring and assessment of shellfish waters and the setting of the water

quality standards they are required to achieve (Defra, 2008b). The original Shellfish Waters Directive (79/923/EEC) was transposed into UK legislation through the Surface Waters (Shellfish) Classifications Regulations 1997 and the Surface Waters (Shellfish) Directions 1997 (Defra, 2008b).

Defra is committed to improving water quality to a level where all designated shellfish waters can support at least 'class B' production areas (Defra, 2008b). This is regarded as an achievable interim target towards meeting the guideline faecal coliform standard for shellfish flesh quality under the Shellfish Waters Directive, providing significant environmental benefits as well as benefits to the shellfish industry (Defra, 2008b).

The Directive will be repealed in 2013 by the EC Water Framework Directive. When this occurs, the Water Framework Directive must provide at least the same level of protection to shellfish waters (which the WFD classifies as protected areas) as the Shellfish Waters Directive does (Defra, 2008b).

There are currently 98 designated shellfish waters in England, 108 in Scotland, 26 in Wales and 9 in Northern Ireland, a total of 241 shellfish waters in the UK. Shellfish waters are formally designated under the Shellfish Waters Directive through the issue of a Notice and Schedule (Defra, 2008b).

#### **L. Water Framework Directive (2000/60/EC)**

Rivers, lakes and coastal waters are vital natural resources, they provide drinking water, crucial habitats for many different types of wildlife and are an important resource for industry and recreation. A significant proportion of them are environmentally damaged or under threat. Protecting and improving the environment is an important part of achieving sustainable development and is vital for the long term health, well being and prosperity of everyone. The new EU Water Framework Directive is a welcome and radical improvement on earlier, piecemeal EU water legislation. It expands the scope of water protection to all waters and sets out clear objectives that must be achieved by specified dates (JNCC, 2008k).

In October 2000 the 'Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy' (EU Water Framework Directive or WFD) was adopted (JNCC, 2008k). The purpose of the Directive is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. It will ensure all aquatic ecosystems and with regard to their water needs, terrestrial ecosystems and wetlands meet 'good status' by 2015. The Directive requires member states to establish river basin districts and for each of these a river basin management plan and envisages a cyclical process where river basin management plans are prepared, implemented and reviewed every six years. A key part of the Water Framework Directive, that is central to its successful

implementation, is the requirement to achieve 'good' status for most European surface water bodies by 2015. The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 were laid before Parliament at the end of 2003. The regulations include (JNCC, 2008k):

- the framework for delivering the Directive's environmental objectives. The quality of rivers, lakes, estuaries, coastal waters and groundwaters must be protected and enhanced by 2015
- wetlands depending on groundwater must be safeguarded and water related requirements of other European Community legislation taken into account
- integration into packages of measures and plans based on river basins, which must be drawn up with full public participation
- the Environment Agency as competent authority for these Regulations has responsibility to:
  - characterise river basin districts
  - identify bodies of water used for the abstraction of drinking water
  - prepare, review and keep up to date a register of protected areas for each river basin district
  - establish programmes to monitor water status, so as to establish an overview within each river basin district
  - prepare and submit to the 'appropriate authority' (Secretary of State and/or National Assembly for Wales) environmental objectives for each body of water and programmes of measures and
  - prepare and submit to the appropriate authority a river basin management plan for each district (including consultation, publicity and taking account of views) and supplementary plans.

## **M. Council Directive on Environmental Liability (2004/35/EC)**

The Directive is likely to be transposed by December 2008 and seeks to achieve the prevention and remedying of environmental damage - specifically, damage to habitats and species protected by EC law and to species or habitat on a site of special scientific interest for which the site has been notified, damage to water resources and land contamination which presents a threat to human health. It reinforces the "polluter pays" principle - making operators financially liable for threats of or actual damage (Defra, 2008c).

The Directive introduces a number of key features (Defra, 2008c):

- Scope - the Directive does not cover all types of damage to the environment. It only covers 'environmental damage' which is one or more of: 'damage to protected species and natural habitats or in a site of special scientific interest', 'damage to water' and 'land damage'.

- The Directive introduces two types of liability: fault-based liability in respect of environmental damage to protected species and natural habitats from all other occupational activities and strict liability in respect of environmental damage, caused by a specified range of 'occupational activities' (described in Annex III of the ELD).
- Reporting environmental damage - operators are required to take immediate steps to prevent damage or further damage and to notify the enforcing authority.
- Role of enforcing authority - the authority must establish if it is 'environmental damage' and identify a responsible operator.

A number of legal systems already exist in the United Kingdom which provide for the remediation of environmental damage. Under these regimes, action is taken in the public interest by public authorities such as local authorities or the Environment Agency. They can require damage to be put right by those responsible for it, or put the damage right themselves and then recover the costs afterwards from those responsible (Defra, 2008c).

The Regulations will supplement existing environmental protection legislation such as the Environmental Protection Act 1990, the Water Resources Act 1991 or the Wildlife and Countryside Act 1981 and the Control of Major Accident Hazards Regulations 1999. Those pieces of legislation will still apply, and to the extent that they impose additional obligations to those in these Regulations, will still need to be complied with (Defra, 2008c).

## **N. Council Directive on the assessment and management of flood risks (2007/60/EC)**

Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007 and now requires member states to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. With this Directive also reinforces the rights of the public to access this information and to have a say in the planning process.

The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires member states to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.

The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public

participation procedures in the preparation of these plans. All assessments, maps and plans prepared shall be made available to the public.

Member states shall furthermore coordinate their flood risk management practices in shared river basins, including with third countries and shall in solidarity not undertake measures that would increase the flood risk in neighbouring countries. Member states shall in take into consideration long term developments, including climate change, as well as sustainable land use practices in the flood risk management cycle addressed in this Directive.

## **O. The Wildlife and Countryside Act 1981**

The Wildlife and Countryside Act 1981 (WCA 1981) consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain. It is complimented by the Wildlife and Countryside (Service of Notices) Act 1985, which relates to notices served under the 1981 Act, and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), which implement Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive). The Act received royal assent on 30 October 1981 and was brought into force in incremental steps. Amendments to the Act have occurred, the most recent being the Countryside and Rights of Way (CROW) Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004 (in Scotland). There is also a statutory five-yearly review of Schedules 5 and 8 (protected wild animals and plant respectively), undertaken by the country agencies and co-ordinated by the Joint Nature Conservation Committee. Containing four parts and 17 schedules, the Act covers protection of wildlife (birds, and some animals and plants), the countryside, national parks and the designation of protected areas and public rights of way.

### **Wildlife**

The Act makes it an offence (with exception to species listed in schedule 2) to intentionally kill, injure, or take any wild bird or their eggs or nests. Special penalties are available for offences related to birds listed on schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

The Act makes it an offence (subject to exceptions) to pick, uproot, trade in, or possess (for the purposes of trade) any wild plant listed in schedule 8, and prohibits the unauthorised intentional uprooting of such plants. Animals and plants found on schedules 5 and 8 are listed on a spreadsheet of conservation designations for UK taxa.

The Act contains measures for preventing the establishment of non-native species which may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in schedule 9. It also provides a mechanism making any of the above offences legal through the granting of licences by the appropriate authorities.

#### Nature conservation, countryside and national parks

The Act provides for the notification of Sites of Special Scientific Interest (SSSI) – areas of special scientific interest by reason of their flora, fauna, or geological or physiographical features – by the country agencies. A notification must be served to the relevant local planning authority, all land owners and occupiers, and the Secretary of State, specifying the time period within which representations and objections may be made. The country agencies must consider these responses and may withdraw or confirm the notification, with or without amendment. The Act also contains measures for the protection and management of SSSIs. The Act provides for the making of Limestone Pavement Orders, which prohibit the disturbance and removal of limestone from such designated areas, and the designation of Marine Nature Reserves, for which byelaws must be made to protect them.

The Act prohibits the undertaking of agricultural or forestry operations on land within national parks which has been either moor or heath for 20 years, without consent from the relevant planning authority. Planning authorities are also required to make available to the public up to date maps of moor and heath land within national parks, which are important for the conservation of natural beauty.

#### Public rights of way

The Act requires surveying authorities to maintain up to date definitive maps and statements, for the purpose of clarifying public rights of way. The Act also includes provisions for traffic regulation, ploughing, appointing wardens, signposting, and prohibiting the keeping of bulls on land crossed by public rights of way.

## **P. The Countryside and Rights of Way Act 2000**

The Countryside and Rights of Way Act 2000 (CRoW Act 2000), which applies to England and Wales only, received royal assent on 30 November 2000, with the provisions it contains being brought into force in incremental steps over subsequent years. Containing five parts and 16 schedules, the Act provides for public access on foot to certain types of land, amends the law relating to public rights of way, increases protection for Sites of Special

Scientific Interest (SSSI) and strengthens wildlife enforcement legislation, and provides for better management of Areas of Outstanding Natural Beauty (AONB). The Act complies with the provisions of the European Convention on Human Rights, requiring consultation where the rights of the individual may be affected by these measures.

#### Access to the countryside

The Act provides a new right of public access on foot to areas of open land comprising mountain, moor, heath, down, and registered common land, and contains provisions for extending the right to coastal land. The Act also provides safeguards which take into account the needs of landowners and occupiers, and of other interests, including wildlife.

#### Public rights of way and road traffic

The Act improves the rights of way legislation by encouraging the creation of new routes and clarifying uncertainties about existing rights. Of particular relevance to nature conservation, the Act introduces powers enabling the diversion of rights of way to protect SSSIs.

#### Nature conservation and wildlife protection

The Act places a duty on Government departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act changes the Wildlife and Countryside Act 1981, amending SSSI notification procedures and providing increased powers for the protection and management of SSSIs. The provisions extend powers for entering into management agreements, place a duty on public bodies to further the conservation and enhancement of SSSIs, and increase penalties on conviction where the provision are breached, with a new offence whereby third parties can be convicted for damaging SSSIs. To ensure compliance with the Human Rights Act 1998, appeal processes are introduced with regards to the notification, management and protection of SSSIs.

Schedule 12 of the Act amends the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species. The provisions make certain offences 'arrestable', create a new offence of reckless disturbance, confer greater powers to police and wildlife inspectors for entering premises and obtaining wildlife tissue samples for DNA analysis, and enable heavier penalties on conviction of wildlife offences.

#### Areas of Outstanding Natural Beauty

The Act clarifies the procedure and purpose of designating AONBs, and consolidates the provisions of previous legislation. It requires local authorities to produce management plans for each AONB, and enables the creation of

Conservation Boards in order to assume responsibility for AONBs, particularly where the land designated crosses several local authority jurisdictions. The Act also requires all relevant authorities to have regard to the purpose of conserving and enhancing the natural beauty of AONBs when performing their functions.

**Q. Town and Country Planning Act 1990**

The purpose of the Town and Country Planning Act 1990 is to better regulate the way in which large and small scale developments were approved by local authorities in England and Wales. For more details regarding the Act, please refer to:

[http://www.opsi.gov.uk/acts/acts1990/UKpga\\_19900008\\_en\\_1.htm](http://www.opsi.gov.uk/acts/acts1990/UKpga_19900008_en_1.htm)

**R. The Ancient Monuments and Archaeological Areas Act 1979**

The Ancient Monuments and Archaeological Areas Act 1979 is the latest in a series of Ancient Monument Acts legislating to protect the archaeological heritage of Great Britain.

Section 61(12) defines sites that warrant protection due to their being of national importance as 'ancient monuments'. These can be either Scheduled Ancient Monuments or "*any other monument which in the opinion of the Secretary of State is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it*".

A monument is defined as:

*"any building, structure or work above or below the surface of the land, any cave or excavation; any site comprising the remains of any such building, structure or work or any cave or excavation; and any site comprising or comprising the remains of any vehicle, vessel or aircraft or other movable structure or part thereof (Section 61 (7))"*.

Damage to an ancient monument is a criminal offence and any works taking place within one require Scheduled Monument Consent from the Secretary of State.

The Act also provides for taking monuments into the care of the Secretary of State - the concept of 'guardianship' where a monument remains in private ownership but the monument is cared for and (usually) opened to the public by the relevant national heritage body.

The Act (in Part II) also introduced the concept of Areas of Archaeological Importance, city centres of historic significance which receive limited further protection by forcing developers to permit archaeological access prior to building work starting. The law is administered in England by English Heritage.



**Appendix C**  
**Information pertaining to areas of conservation  
importance on the north Norfolk coast**



**A. Qualifying features of Ramsar sites within or adjacent to the study area**

<b>Qualifying features for North Norfolk Coast Ramsar (JNCC, 2008a)</b>
<b>Ramsar criterion 1</b>
The site is one of the largest expanses of undeveloped coastal habitat of its type in Europe. It is a particularly good example of a marshland coast with intertidal sand and mud, saltmarshes, shingle banks and sand dunes. There are a series of brackish-water lagoons and extensive areas of freshwater grazing marsh and reed beds.
<b>Ramsar criterion 2</b>
Supports at least three British Red Data Book and nine nationally scarce vascular plants, one British Red Data Book lichen and 38 British Red Data Book invertebrates.
<b>Ramsar criterion 5</b>
Assemblages of international importance: Species with peak counts in winter: 98,462 waterfowl (five-year peak mean 1998/99 to 2002/2003)
<b>Ramsar criterion 6</b>
Qualifying species/populations (as identified at designation): <b>Species regularly supported during the breeding season:</b> Sandwich tern, <i>Sterna (Thalasseus) sandvicensis sandvicensis</i> , western Europe 4,275 apparently occupied nests, representing an average of 7.7 per cent of the breeding population. Common tern, <i>Sterna hirundo hirundo</i> , north and east Europe 408 apparently occupied nests, representing an average of four per cent of the GB population. Little tern, <i>Sterna albifrons albifrons</i> , western Europe 291 apparently occupied nests, representing an average of 2.5 per cent of the breeding population. <b>Species with peak counts in spring/autumn:</b> Red knot, <i>Calidris canutus islandica</i> , west and southern Africa (wintering) 30,781 individuals, representing an average of 6.8 per cent of the population (five-year peak mean 1998/99 to 2002/03) <b>Species with peak counts in winter:</b> Pink-footed goose, <i>Anser brachyrhynchus</i> , Greenland, Iceland/UK 16,787 individuals, representing an average of 6.9 per cent of the population (five-year peak mean 1998/99 to 2002/03). Dark-bellied Brent goose, <i>Branta bernicla bernicla</i> , 8,690 individuals, representing an average of four per cent of the population (five-year peak mean 1998/99 to 2002/03). Eurasian wigeon, <i>Anas penelope</i> , north west Europe 17,940 individuals, representing an average of 1.1 per cent of the population (five-year peak mean 1998/99 to 2002/03). Northern pintail, <i>Anas acuta</i> , north west Europe 1,148 individuals, representing an average of 1.9 per cent of the population (five-year peak mean 1998/99 to 2002/03).

<b>Qualifying features for the Wash Ramsar (JNCC, 2008b)</b>
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 for the high productivity of the estuary.
Ramsar criterion 5
Assemblages of international importance: Species with peak counts in winter: 292,541 waterfowl (five-year peak mean 1998/99 to 2002/2003).
Ramsar criterion 6
Qualifying species/populations (as identified at designation): <b>Species with peak counts in spring/autumn:</b> Eurasian oystercatcher, <i>Haematopus ostralegus ostralegus</i> , Europe and north-west Africa – wintering 15,616 individuals, representing an average of 1.5 per cent of the population (five-year peak mean 1998/99 to 2002/03). Grey plover, <i>Pluvialis squatarola</i> , eastern Atlantic/west Africa – wintering 13,129 individuals, representing an average of 5.3 per cent of the population (five-year peak mean 1998/99 to 2002/03 - spring peak). Red knot, <i>Calidris canutus islandica</i> , western and southern Africa (wintering) 68,987 individuals, representing an average of 15.3 per cent of the population (five-year peak mean 1998/99 to 2002/03). Sanderling, <i>Calidris alba</i> , eastern Atlantic 3,505 individuals, representing an average of 2.8 per cent of the population (five-year peak mean 1998/99 to 2002/03). Eurasian curlew, <i>Numenius arquata arquata</i> , N. a. <i>arquata</i> Europe (breeding) 9,438 individuals, representing an average of 2.2 per cent of the population (five-year peak mean 1998/99 to 2002/03). Common redshank, <i>Tringa totanus totanus</i> , 6,373 individuals, representing an average of 2.5 per cent of the population (five-year peak mean 1998/99 to 2002/03). Ruddy turnstone, <i>Arenaria interpres interpres</i> , north eastern Canada, Greenland/western Europe and north west Africa, 888 individuals representing an average of 1.7 per cent of the GB population (five-year peak mean 1998/99 to 2002/03). <b>Species with peak counts in winter:</b> Pink-footed goose, <i>Anser brachyrhynchus</i> , Greenland, Iceland/UK 29,099 individuals, representing an average of 12.1 per cent of the population (five-year peak mean 1998/99 to 2002/03). Dark-bellied Brent goose, <i>Branta bernicla bernicla</i> , 20,861 individuals representing an average of 9.7 per cent of the population (five-year peak mean 1998/99 to 2002/03). Common shelduck, <i>Tadorna tadorna</i> , north-west Europe 9,746 individuals representing an average of 3.2 per cent of the population (five-year peak

<b>Qualifying features for the Wash Ramsar (JNCC, 2008b)</b>
<p>mean 1998/99 to 2002/03).</p> <p>Northern pintail, <i>Anas acuta</i>, north-west Europe 431 individuals, representing an average of 1.5 per cent of the GB population (five-year peak mean 1998/99 to 2002/03).</p> <p>Dunlin, <i>Calidris alpina alpina</i>, western Siberia/western Europe 36,600 individuals representing an average of 2.7 per cent of the population (five-year peak mean 1998/99 to 2002/03).</p> <p>Bar-tailed godwit, <i>Limosa lapponica lapponica</i>, western Palearctic 16,546 individuals representing an average of 13.7 per cent of the population (five-year peak mean 1998/99 to 2002/03).</p>

**B. Qualifying features of Special Areas of Conservation within or adjacent to the study area**

<b>Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
Coastal lagoons	This site encompasses a number of small percolation lagoons on the east coast of England. Together with Orfordness - Shingle Street and Benacre to Easton Bavenets, it forms a significant part of the percolation lagoon resource concentrated in this part of the UK. The most notable of the lagoons at this site are Blakeney Spit Pools, a lagoon system of six small pools between a shingle ridge and saltmarsh. The bottom of each pool is shingle overlain by soft mud. The fauna of the lagoons includes a nationally rare species, the lagoonal mysid shrimp <i>Paramysis nouveli</i> .
Perennial vegetation of stony banks	Perennial vegetation of stony banks occurs at Blakeney Point, a shingle spit on the east coast of England with a series of recurves partly covered by sand dunes. This extensive site has a typical sequence of shingle vegetation, which includes open communities of pioneer species on the exposed ridge and more continuous grassland communities on the more sheltered shingle recurves. It also includes some of the best examples of transitions between shingle and saltmarsh, with characteristic but rare species more typical of the Mediterranean. These include one of the best examples of the transition from sand and shingle to vegetation dominated by shrubby sea-blite <i>Suaeda vera</i> . Blakeney Point is part of a multiple-interest site. The shingle structure forms a highly significant component of the geomorphological structure of the North Norfolk coast and helps to maintain a series of interrelated habitats.

<b>Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> )	The North Norfolk Coast, together with the Wash and 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 together. The vegetation is dominated by a shrubby cover up to 40 centimetres high of scattered bushes of shrubby sea-blite <i>Suaeda vera</i> and sea-purslane <i>Atriplex portulacoides</i> , 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 <i>Sarcocornia perennis</i> forms an open mosaic with other species at the lower limit of the sea-purslane community.
Embryonic shifting dunes	The North Norfolk Coast in East Anglia is one of two sites representing embryonic shifting dunes in the east of England (the other being Winterton – Horsey dunes). It is a long, thin dune system, displaying both progradation and erosion. The exceptional length and variety of the dune/beach interface is reflected in the high total area of embryonic dune (over 40 hectares or at least 14 per cent of the national total). The process of continued progradation is central to the conservation of this habitat type at this site. Sand couch <i>Elytrigia juncea</i> is the most prominent sand-binding grass.
Shifting dunes along the shoreline	Shifting dunes form a major component of the complex of often linear dune systems that make up the North Norfolk coast, which is representative of shifting dunes along the shoreline with <i>Ammophila arenaria</i> in East Anglia. The site supports over 100 hectares of shifting dune vegetation, eight per cent of the estimated total area of this habitat type in Britain. The shifting dune vegetation is also varied, containing examples of all the main variants found in the southern part of the geographical range.
Fixed dunes with herbaceous vegetation	The North Norfolk Coast on the east coast of England contains a large, active series of dunes on shingle barrier islands and spits and is little affected by development. The fixed dunes with herbaceous vegetation represents one of the principal variants of this vegetation type in the UK, as many of the swards are rich in lichens and drought-avoiding winter annuals

<b>Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
	such as common whitlowgrass <i>Erophila verna</i> , early forget-me-not <i>Myosotis ramosissima</i> and common cornsalad <i>Valerianella locusta</i> . The main communities represented are marram <i>Ammophila arenaria</i> with red fescue <i>Festuca rubra</i> and sand sedge <i>Carex arenaria</i> , with lichens such as <i>Cornicularia aculeata</i> .
Humid dune slacks	The slacks within this site are comparatively small and the Yorkshire-fog <i>Holcus lanatus</i> community predominates. The site represents humid dune slacks on the dry east coast of England and present an extreme of the geographical range and ecological variation of the habitat within the UK. They are calcareous and complement the acidic dune slacks at Winterton – Horsey dunes, also in eastern England. The dune slack communities occur in association with swamp communities.
Annex I species present as a qualifying feature, but not a primary reason for site selection	
Coastal lagoons	
Annex II species that are a primary reason for selection of this site	
Common seal <i>Phoca vitulina</i>	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 <i>Phoca vitulina</i> breeding and hauling-out. This site is the largest colony of common seals in the UK, with some seven per cent of the total UK population.
Annex II species that are present as a qualifying feature but not a primary reason for selection of this site	
Otter <i>Lutra lutra</i>	
<b>Qualifying features for Wash and North Norfolk Coast SAC site (JNCC, 2008d)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
Sandbanks which are slightly covered by sea water 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 <i>Ophiothrix fragilis</i> . Species include the sand-mason worm <i>Lanice</i>

Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
	<i>conchilega</i> and the tellin <i>Angulus tenuis</i> . 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 <i>Pleuronectes platessa</i> , cod <i>Gadus morhua</i> and sole <i>Solea solea</i> .
Mudflats and sandflats not covered by the sea 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 there is a high diversity relative to other east coast sites. Sandy 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 <i>Zostera</i> spp. beds and large shallow pools, are protected by the north Norfolk barrier islands and sand spits.
Reefs	The Wash is the largest embayment in the UK with extensive areas of sub-tidal mixed sediment. In the tide-swept approaches to the Wash, with a high loading of suspended sand, the relatively common tube-dwelling polychaete worm <i>Sabellaria spinulosa</i> 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 (Foster-Smith & Sotheran 1999). The reefs are thought to extend into the Wash where super-abundant <i>S. spinulosa</i> occurs and where reef-like structures such as concretions and crusts have been recorded. The site and its surrounding waters is considered particularly important as it is the only currently known location of well-developed stable <i>Sabellaria</i> reef in the UK. The reefs are particularly important components of the sub-littoral 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



<b>Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
	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 <i>Pandalus montagui</i> , and crabs. <i>S. spinulosa</i> is considered to be an important food source for the commercially important pink shrimp <i>P. montagui</i> (see overview in Holt et al. 1998).
<i>Salicornia</i> 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 <i>Salicornia</i> 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 <i>Spartina anglica</i> in which it is an equal component. The inter-relationship with other habitats is significant, forming a transition to important dune, saltmeadow and halophytic scrub communities.
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 <i>Limonium</i> 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.
Mediterranean and thermo-Atlantic halophilus 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 together. The vegetation is dominated by a shrubby cover up to 40 cm high of scattered bushes of shrubby sea-blite <i>Suaeda vera</i> and sea-purslane <i>Atriplex portulacoides</i> , with a patchy cover of herbaceous plants and bryophytes. This scrub

<b>Qualifying features for the North Norfolk Coast SAC site (JNCC, 2008c)</b>	
Qualifying feature	Description
Annex I habitats that are a primary reason for selection of this site	
	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 <i>Sarcocornia perennis</i> forms an open mosaic with other species at the lower limit of the sea purslane community.

**C. Qualifying features of Special Protection Areas in or adjacent to the study area**

<b>Qualifying features for The Wash SPA (JNCC, 2008f)</b>	
Article 4.1 qualification (79/409/EEC)	
Article 4.1 qualification (79/409/EEC) During the breeding season the area regularly supports: <i>Sterna albifrons</i> (eastern Atlantic - breeding) at least 1.4 per cent of the GB breeding population five-year mean 1992 to 1996. <i>Sterna hirundo</i> (northern/eastern Europe - breeding) 1.2 per cent of the GB breeding population count as at 1993. Over winter the area regularly supports: <i>Cygnus columbianus bewickii</i> (western Siberia/north eastern and north western Europe) 0.9 per cent of the GB population five-year peak mean 1991/92 to 1995/96. <i>Limosa lapponica</i> (western Palearctic - wintering) 21.4 per cent of the GB population five-year peak mean 1991/92 to 1995/96.	
Article 4.2 qualification (79/409/EEC)	
Article 4.2 qualification (79/409/EEC) Over winter the area regularly supports: <i>Anas acuta</i> (north western Europe) 1.5 per cent of the population five-year peak mean 1991/92 to 1995/96. <i>Anas penelope</i> (western Siberia/north western/north eastern Europe) 1.2 per cent of the population in Great Britain five-year peak mean 1991/92 to 1995/96. <i>Anas strepera</i> (north-western Europe) 0.9 per cent of the population in Great Britain five-year peak mean 1991/92 to 1995/96. <i>Anser brachyrhynchus</i> (eastern Greenland/Iceland/UK) 14.8 per cent of the population five-year peak mean 1991/92 to 1995/96. <i>Arenaria interpres</i> (western Palearctic - wintering) 1.1 per cent of the population five-year peak mean 1991/92 to 1995/96. <i>Branta bernicla bernicla</i> (western Siberia/western Europe) 7.4 per cent of the population five-year peak mean 1991/92 to 1995/96. <i>Bucephala clangula</i> (north-western/central Europe) 0.7 per cent of the population in Great Britain five-year peak mean 1991/92 to 1995/96.	

<b>Qualifying features for The Wash SPA (JNCC, 2008f)</b>
<p><i>Calidris alba</i> (eastern Atlantic/western and southern Africa - wintering) 0.3 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Calidris alpina alpina</i> (northern Siberia/Europe/western Africa) 2.6 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Calidris canutus</i> (north eastern Canada/Greenland/Iceland/north western Europe) 54.2 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Haematopus ostralegus</i> (Europe and northern/western Africa) 2.9 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Limosa limosa islandica</i> (Iceland - breeding) 11.6 per cent of the population in Great Britain five-year peak mean 1991/92 to 1995/96.</p> <p><i>Melanitta nigra</i> (western Siberia/western and northern Europe/north western Africa) 0.2 per cent of the population in Great Britain five-year peak mean 1991/92 to 1995/96.</p> <p><i>Numenius arquata</i> (Europe - breeding) 1.1 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Pluvialis squatarola</i> (eastern Atlantic - wintering) 5.8 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Tadorna tadorna</i> (north western Europe) 5.3 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Tringa tetanus</i> (eastern Atlantic - wintering) 1.7 per cent of the population five-year peak mean 1991/92 to 1995/96.</p>
<b>Qualifying features for the North Norfolk Coast SPA (JNCC, 2008e)</b>
<b>Article 4.1 qualification (79/409/EEC)</b>
<p><b>During the breeding season the area regularly supports:</b></p> <p><i>Botaurus stellaris</i> (Europe - breeding) at least five per cent of the GB breeding population six-year mean 1992 to 1997.</p> <p><i>Circus aeruginosus</i> 6.4 per cent of the GB breeding population six-year mean 1992 to 1997.</p> <p><i>Recurvirostra avosetta</i> (western Europe/western Mediterranean - breeding) 30 per cent of the GB breeding population count, as at late 1980s.</p> <p><i>Sterna albifrons</i> (eastern Atlantic - breeding) at least 13.8 per cent of the GB breeding population five-year mean 1992 to 1996.</p> <p><i>Sterna hirundo</i> (northern/eastern Europe - breeding) at least 3.7 per cent of the GB breeding population count as at 1996.</p> <p><i>Sterna sandvicensis</i> (western Europe/western Africa) 26.4 per cent of the GB breeding population five-year mean 1992 to 1996.</p> <p><b>Over winter the area regularly supports:</b></p> <p><i>Recurvirostra avosetta</i> (western Europe/western Mediterranean - breeding) 9.9 per cent of the GB population five-year peak mean 1991/92 to 1995/96.</p>
<b>Article 4.2 qualification (79/409/EEC)</b>
<p>Over winter the area regularly supports:</p> <p><i>Anas penelope</i> (western Siberia/north western/north eastern Europe) 1.1 per cent of the population five-year peak mean 1991/92 to 1995/96.</p> <p><i>Anser brachyrhynchus</i> (eastern Greenland/Iceland/UK) 10.6 per cent of the population five-year peak mean 1991/92 to 1995/96.</p>

<b>Qualifying features for The Wash SPA (JNCC, 2008f)</b>
<i>Branta bernicla bernicla</i> (western Siberia/western Europe) 3.8 per cent of the population five-year peak mean 1991/92 to 1995/96.
<i>Calidris canutus</i> (north-eastern Canada/Greenland/Iceland/north western Europe) 3.1 per cent of the population five-year peak mean 1991/92 to 1995/96.

**D. Sites designated under national conservation legislation within the study area**

<b>SSSI name</b>	<b>Site features</b>
Morston Cliffs	Morston Cliffs is a key Pleistocene site providing a view of what is probably the only interglacial raised-beach deposit in East Anglia. This deposit, of presumed Ipswichian interglacial age, is overlain by the glacial deposits of the Hunstanton till of late Devensian age. An important site with great potential for research into the glacial-interglacial history of eastern Britain.
Cockthorpe Common, Stiffkey	Cockthorpe Common is situated in the valley of the River Stiffkey where a diverse range of grassland flora is supported by the valley's steep slopes. Such unimproved chalk downland is now rare in Norfolk and this site is considered to be one of the best remaining examples. The flora is very rich and includes a number of uncommon species.
Hunstanton Cliffs	A classic locality for the red chalk and underlying carstone which contains an exceptionally rich Albian ammonite fauna. This is an important locality for the study of the sedimentology of these normally poorly exposed formations, in the area where the Carstone is thickly developed. The site also provides the best exposure of the Ferriby chalk formation in Norfolk. Additional biological interest is provided by a breeding colony of fulmars on the cliff face, forming the largest colony in the east of England.
North Norfolk Coast	The North Norfolk marshland coast extends for 40 kilometres between Hunstanton and Weybourne. The area consists primarily of intertidal sands and muds, saltmarshes, shingle banks and sand dunes. There are extensive areas of brackish lagoons, reedbeds and grazing marshes. A wide range of coastal plant communities is represented and many rare or local species occur. The whole coast is of great ornithological interest with nationally and internationally important breeding colonies of several species. The geographical position of the North Norfolk Coast and its range of habitats make it especially valuable for migratory birds and wintering waterfowl, particularly brent and pink-footed geese. The area, much of which remains in its natural state now, constitutes one of the largest expanses of

SSSI name	Site features
	undeveloped coastal habitat of its type in Europe.
Stiffkey Valley	Stiffkey Valley is a wetland habitat supporting nationally important populations of breeding avocet <i>Recurvirostra avosetta</i> , an assemblage of breeding birds associated with lowland damp grasslands and an assemblage of breeding birds associated with lowland open waters and their margins. The site also supports wintering populations of wetland birds.
The Wash	The intertidal mudflats and saltmarshes represent one of Britain's most important winter feeding areas for waders and wildfowl outside of the breeding season. Enormous numbers of migrant birds, of international significance, are dependent on the rich supply of invertebrate food. The saltmarsh and shingle communities are of considerable botanical interest and the mature saltmarsh is a valuable bird breeding zone. The Wash is also very important as a breeding ground for common seals.
Wiveton Downs	Wiveton Downs is a classic landform of outstanding importance for teaching, research and demonstration purposes. Exposures of sands and gravels show bedding indicative of both tunnel and open flow conditions, as well as facies variations between the high-energy flow of the central area of the ridge and lower energy domains of the marginal zone. Wiveton Downs is part of a suite of landforms comprising, in addition to the till plain, various kaans, kame terraces, outwash plains and a tunnel valley. It is unusual to find such a wide range of features, most of which have exposures, in such close proximity particularly in southern England.
Wells Chalk Pit	This locality shows the Hunstanton till, a glacial deposit of Devensian age (late Pleistocene) restricted to the coastal fringe of north-west Norfolk, but correlatable with the similar glacial deposits of the Hessle till of Yorkshire and Lincolnshire. The site gives evidence of a comparatively widespread late Devensian glacial event (ice advance), but one which did not spread further south in East Anglia than this portion of Norfolk. The best site for the Hunstanton till, with much potential for future Pleistocene studies.

NNR name	Site features
Blakeney	Blakeney Point forms part of the North Norfolk Coast SSSI and consists of a shingle ridge extending westwards from Weybourne, running almost parallel to the coast from which it is separated by tidal water (Natural England, 2007). The shingle banks are colonised by a variety of specialised plant species. The stabilised mature sand dunes hold a rich flora

	including a number of uncommon halophytic species and are consolidated by the binding rhizomes of marram grass, sea bindweed and grey hairgrass. The shingle banks and foreshore provide suitable habitats for wintering passerines such as twite, snow bunting and shore larks (Natural England, 2007).
Holkham	Holkham National Nature Reserve stretches from Burnham Norton to Blakeney and covers about 4,000 hectares. The site encompasses significant areas of saltmarsh, mudflats, dune systems, pinewood and scrub (Natural England, 2007). Holkham is a 'Spotlight' NNR. This status, bestowed on it by Natural England, indicates that it is one which is actively promoted for visitors and means that the site receives high numbers of visitors. Although the spotlight status does not have a statutory basis, the high number of visitors to the site means that modification of the site as a result of SMP policies may have significant socio-economic consequences (Natural England, 2007).
Holme Dunes	Holme Dunes NNR is part of the North Norfolk Coast SSSI and covers approximately 213 hectares. The reserve contains many habitat types including beach, sand dunes, mudflats, saltmarsh, grazing marsh, pine shelter belt and freshwater pools. Natterjack toads breed in the dune slacks and Holme is internationally important for birds (Natural England, 2007). Current management strategies aim to control both the impact of over 100,000 visitors per annum, and the impacts of scrub encroachment on the sensitive dune habitats. The wet grassland is managed by grazing and control of water levels to encourage breeding waders and wintering wildfowl (Natural England, 2007).
Scolt Head Island	Scolt Head Island is an area some 727 hectares in size of continually changing sand and dune, beach and saltmarsh, and is part of the North Norfolk Coast SSSI, being managed under lease by Natural England. Four major habitat types (shingle, intertidal mud flat and sand flats, sand dunes and saltmarsh) have been identified on Scolt Head Island, with the vegetation of Scolt Head Island being very similar to that at Blakeney Point (Natural England, 2007). During the summer breeding season, the nests of several shoreline birds, including ringed plover and oystercatcher occur in shingle scrapes. The reserve is also very popular with terns, on occasion holding up to 25 per cent of the UK total of nesting sandwich terns (Natural England, 2007). In addition to this, Scolt Head Island is internationally important for its over-wintering populations of geese, which may number 50,000 by mid-winter (Natural England, 2007). Scolt is a non-intervention reserve where natural coastal processes are allowed to occur (Natural England, 2007).

	Control of predator species is required, however, to prevent nesting birds from losing chicks and eggs. Management is also subject to a variety of common rights which are registered across the whole area (Natural England, 2007).
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**Appendix D**  
**Further information (taken from theme review)**

F. Unit 1 – Hunstanton cliffs to the golf course

Primary area of search

The area between Hunstanton cliffs and the golf course is typically low-lying and fronted by dunes. The golf course lies within the 1 in 100 year tidal flood zone and currently has natural sand dune with gabion basket protection at the toe of the dune as flood defence. Old Hunstanton is also defended with a number of gabion groynes, typically constructed with 1m x 1m gabion baskets. Overall there are around 40 defences in this unit.

Properties in Old Hunstanton are sandwiched between the A149 to the south and the golf course to the north east and some are in the 1 in 100 year tidal flood zone. Also included are the golf course and some arable land. A network of minor roads runs through Old Hunstanton but the A149 is the only major road and runs through the tidal flood zone in one area just outside Old Hunstanton.

As well as the conservation designations along the entire north Norfolk coastline, this unit also forms part of the Wash Ramsar site, SPA and SSSI and is therefore important in terms of conservation value. The beach at Old Hunstanton is designated under the EU Bathing Waters directive.

The Wash designated areas in this management unit consist of sandflats and sand dunes.

Secondary area of search

Outside the 1 in 100 year tidal flood zone there are parts of Old Hunstanton and Hunstanton Park. Further inland, Ringstead is the only aggregation of properties in this unit. Infrastructure in the secondary area consists of a couple of minor roads leading to Ringstead. The flood zone crosses the A149 towards Hunstanton Park, but most of Old Hunstanton is outside the tidal flood zone.

The landscape of the area is characterised by arable agriculture, parkland and areas of woodland. Within the parkland is Hunstanton Park Esker (geological) SSSI (in the Wash SMP area). Hunstanton Park provides a good example of a glacio-fluvial landform which is relatively uncommon in central and southern England and is the only one of Devensian age in the area.

## Unit 2 – Golf course to Thornham

### Primary area of search

The land seaward of Holme and towards Thornham lies within the 1 in 100 year tidal flood zone and there are currently around 12 flood defences throughout the unit. Many of the defences around Holme are natural, including vegetated sand dunes and dunes separated by marshland. Around the sluice outfalls the defences tend to be man-made vegetated earth flood banks.

The tidal flood zone typically avoids the settlements within this unit, skimming around Holme-next-the-Sea and Thornham. This unit is a rural area and fairly devoid of development. The only infrastructure in the area is a handful of minor roads around Holme.

Land in this area is of high agricultural value, with a small area dedicated to orchards. There is saltmarsh and sand dunes along the shoreline forming part of Holme Dunes NNR, a useful amenity and well preserved area with a small amount of shingle and backed by marram grass-covered dunes.

In terms of the designated sites in this management area, there are sandflats, sand dunes, dune grassland, saltmarsh, reedbed and grazing marsh. There is also a saline lagoon, but this is less saline than others in the area.

### Secondary area of search

The area inland just outside the 1 in 100 year tidal flood zone contains the settlements of Holme and Thornham. Otherwise property is almost completely absent, with infrastructure consisting only of the A149 and a couple of minor roads. An area of the A149 just outside Holme is at risk of flooding. However the campsite and main amenities are outside the tidal flood zone.

The land use is almost entirely arable with small areas of woodland and a Roman signal station, a heritage feature. The land is typically flat with a peak of 50 metres around Beacon Hill.

## G. Unit 3 – Thornham to Brancaster Staithe

### Primary area of search

The land in this reach is low-lying and areas around Titchwell are in the 1 in 100 year tidal flood zone. There are around 13 man-made vegetated earth flood banks acting as flood defences within this unit, focused around the settlements. A couple of natural vegetated earth flood banks also provide protection.

This unit is one of the more populated areas in the study area with a number of small settlements, including Titchwell, parts of Brancaster and the outskirts of Brancaster Staithe in the 1 in 100 year tidal flood zone. Also at risk of flooding are the network of minor roads that serve these settlements, along with sections of the A149.

Brancaster harbour provides recreational and amenity value whilst boosting the local and regional economy.

Seaward of the A149 there is a small amount of arable land but most of the land is saltmarsh and dunes, with amenity benefits in the RSPB reserve. The conservation value of the land is high with a network of creeks and drains running through the saltmarsh. North of Brancaster there is a golf course adjacent to the beach providing further amenity value.

In terms of the designated sites in this management area the unit consists of sand dunes, shingle, sandflats/mudflats, saltmarsh, grassland and freshwater transition reed beds.

Mow Creek, north of Brancaster, is an important route for recreational boating traffic as it provides access to waterside properties.

#### Secondary area of search

Other than Thornham, Titchwell, Brancaster and Brancaster Staithe there are no other settlements in the area. A couple of isolated properties are dotted around the hinterland, including Brancaster Hall, which are all connected up with a network of minor roads. The B1153 runs from Brancaster down to Docking, passing through this area. The car park at the beach at Brancaster is outside the tidal flood zone. However, the road connecting it to the A149 is in the flood zone, potentially restricting access to the amenity.

Land use is predominantly arable agriculture with little of conservation value and there are several scattered areas of woodland but no historic environment features.

### H. Unit 4 – Brancaster Staithe to Gun Hill

#### Primary area of search

The land in this reach is low-lying and large areas are within the 1 in 100 year tidal flood zone with flood defences along the whole reach. Within this unit the flood defences are typically man-made vegetated earth flood banks, with the exception of a couple of man-made seawalls in Burnham Overy Staithe.

Up to the outfall of the River Burn at Burnham Norton, the 1 in 100 year tidal flood zone includes settlements at Burnham Deepdale, parts of Burnham

Norton and Burnham Overy Staithe. Sections of the A149 around Brancaster Staithe and minor roads are also in the flood zone.

There is some arable land in the primary area of this unit. However, most of the land is incorporated into the Scolt Head Island National Nature Reserve, which provides a large area of land useful for its conservation, recreation and amenity value. The NNR land is comprised of a large area of saltmarsh, sand dunes and mud flats with a number of creeks and drains feeding through. The larger creeks are also used by recreational boating traffic and fishermen for access to Brancaster harbour. The Peddars Way and Norfolk coast path also provides access through the saltmarsh area.

In terms of the designated sites in this area, the management unit consists of saltmarsh, sand dunes, grazing marsh and grassland. The harbour at Brancaster, with its mudflats, is also included as part of the SSSI units.

The River Burn feeds into the creek system around Overy marsh flowing in from the south-east. The Roman fort at Brancaster Staithe is a scheduled monument.

#### Secondary area of search

Burnham Market is the only major settlement, with smaller settlements including Burnham Overy, Burnham Thorpe and isolated farm properties. There are a number of roads across the area leading towards Burnham Market, including the B1155 and B1355, and minor roads connecting the outlying properties and coastal villages.

Land use in this area is predominantly arable agriculture, with some historic environment features present, including church remains at Burnham Market, remains of a friary and a non-Roman mound.

The River Burn also runs through this area, east of Burnham Market.

### I. Unit 5 – Gun Hill to Wells harbour

#### Primary area of search

The land in this reach is low-lying and within the 1 in 100 year tidal flood zone. There are currently several natural sand dunes acting as flood defences, along with a number of man-made defences in the form of raised tracks, embankments and walls.

This unit includes Burnham Overy Staithe, Holkham and Wells-next-the-Sea. Parts of the A149 run through the tidal flood zone around Holkham, as do a few minor roads towards Wells. Outside Wells, in the north-east of the unit, there is a campsite near the shore alongside the seawall that provides

amenity value. From Holkham to Wells there is a dismantled railway line which runs all the way to Fakenham to the south.

Land in this area is of high arable agricultural value, this being the main land use in the area. There is an area of pinewoods and scrub named Holkham Meals, part of Holkham NNR, which also comprises saltmarsh and sand dunes.

In terms of designated sites, this management unit consists of sand dunes, saltmarsh, saline lagoons, regenerating arable land, grazing marsh, dune slack and outer beach. Parts of Burnham harbour with its mudflats are included in the SSSI units.

Burnham harbour, as described in unit 4, is popular with recreational boaters and local fishermen and is beneficial both for amenity and economic value. There is also an iron age fort within the unit, a valuable tourist attraction and the Wells and Walsingham light railway. Footpaths and car parks are situated throughout the unit, allowing public access to the NNR.

#### Secondary area of search

Generally the area inland of the A149 is not within the 1 in 100 year flood zone. However, areas close to the River Burn and the lake at Holkham Hall are within the fluvial flood zone.

In the secondary area of search the settlements include Burnham Thorpe, Holkham Hall, New Holkham and parts of Wells-next-the-Sea. Holkham Hall, including the deer park, covers a large area of land with woodland, a lake and grassland.

Infrastructure includes roads connecting the villages and leading towards Fakenham. The more significant roads include the B1155, B1105 and the B1355.

Land use in the area is predominantly arable agriculture with areas of woodland. There are also several orchards. The area has several heritage features including abbey remains, Roman barrows, a temple and the site of Nelson's birthplace.

#### J. Unit 6 – Wells harbour to Stiffkey marshes

##### Primary area of search

Within this unit the land within the 1 in 100 year tidal flood zone is fairly sheltered, resulting in few man-made flood defences. In Wells there are two defences made of a clay embankment, partially enforced with concrete revetment blocks.

The 1 in 100 year tidal flood zone includes areas of Wells and Stiffkey and sections of the A149. There is a built wall along the harbour leading from Wells out to the coastline. However, the south west of Wells is in the flood zone. The River Stiffkey fluvial flood zone extends out towards Morston, but this is outside the SMP study area.

Land in this coastal reach is split between arable agricultural land close to the A149, moving into saltmarsh and sand dunes towards the coast. The coastal land is of high conservation value. The Peddars Way and Norfolk coast path appears to be the dividing line between arable and marsh land. The beach at Wells-next-the-Sea is designated under the EU bathing waters directive which is important for the local and regional economy.

In terms of designated sites, the management units consist of tidal sandflats/mudflats, woodland, saltmarsh, low dunes and gravel ridges.

#### Secondary area of search

Some of the secondary area of search is included within the River Stiffkey fluvial flood zone. This is, however, outside the SMP primary area, particularly around the River Stiffkey and Wells waterfront.

There are a number of smaller settlements further inland, including Warham, Wighton, Great Walsingham, Little Walsingham, Hindringham, Binham and Cockthorpe. A network of minor roads connects all these settlements. Additional infrastructure includes Wells and Walsingham light railway which runs from Wells down to Fakenham. The works at Wells would depend on this transportation route, as well as the A149 to some extent. The shrine of Our Lady of Walsingham is also an important national shrine for both Anglicans and Roman Catholics.

Land use in this area is dominated by arable agriculture with some areas of woodland and two orchards around Warham. There are small areas of conservation value within SSSIs, namely Cockthorpe Common and Stiffkey Valley around Stiffkey, and Wells Chalk Pit at the works in Wells. The River Stiffkey also runs through this area discharging through Stiffkey saltmarshes. There are a couple sites of historical interest including a fort at Warham, a medieval settlement and a bowl barrow.

Unlike most other units, this area contains three additional SSSIs. The Stiffkey Valley SSSI has reed swamps, neutral grassland, fen and marsh. Cockthorpe Common SSSI consists of calcareous lowland grassland and Wells Chalk Pit SSSI is calcareous lowland grassland and chalky marl.



## K. Unit 7 – Stiffkey marshes to Cley coastguards

### Primary area of search

In this unit, most of the land within the 1 in 100 year flood zone is around Blakeney Eye, part of the fluvial flood zone from the River Glaven. The existing flood defences are all man-made vegetated earth flood banks (around Blakeney and Morston). There is also the natural high ground at the Chapel remains at Blakeney Eye.

The only settlements within the flood zone are Morston and a small area of Blakeney. Blakeney is the larger of the two settlements and extends back beyond the A149. The SMP study area stops at the River Stiffkey outfall at the footpath and the River Glaven outfall at Cley, resulting in most of the unit not being within the primary area. Infrastructure within the flood zone includes a section of the A149 and minor roads at Morston.

Blakeney harbour provides recreational value as well as economical value, as does the visitor centre at Morston Marshes.

The land is primarily arable agricultural land, but towards the coast there are areas of conservation interest in the saltmarshes and sand dunes. Blakeney NNR and Morston Cliff SSSI are located in this unit, both of which are owned by the National Trust and are of high conservation, educational and amenity value.

The management units of the North Norfolk coast designated sites consist of saltmarsh, mudflats, grazing marsh, shingle ridge, grassland, low dunes and gravel ridges. Morston Cliff SSSI and Wiveton Downs SSSI are sites of geological interest consisting of ice age heritage and esker material respectively.

Agar, Blakeney, Cley and Patch Pit Channels, Great Barnett Lake and Blakeney spit also provide conservation value along with recreational value for small boating traffic. The Peddars Way and Norfolk coast path runs the length of the unit providing amenity value.

### Secondary area of search

The land outside the 1 in 100 year flood zone, or the SMP fluvial flooding boundary, includes settlements such as Langham, Field Dalling, Saxlingham, Glandford and Wiveton. There is a network of roads around the area with the B1156 leading from Blakeney to Langham and then out towards Sharrington. All other roads are minor. Other built features include the Farmland Bird Centre at Glandford and Langham Glass which provide recreational and economic value.

The land use in the area is, as with most other units, arable agricultural land interspersed with woodland. Areas of conservation value are Wiveton Downs SSSI and LNR, extending from Morston to Glandford. Wiveton Downs consists mainly of grazing land designated for the geological value of the esker.

The rivers Stiffkey and Glaven run through the area providing conservation value and some recreational value (including angling).

There is a disused airfield near Morston which is of limited conservation and recreational value. Areas of historic value include the Guildhall at Blakeney.

#### L. Unit 8 – Cley coastguards to Kelling Hard

##### Primary area of search

The land in the 1 in 100 year flood zone in this area is fairly unique compared to the other units in that it is all low-lying and contains hardly any agricultural land. The shingle bank acts as a natural flood defence in this unit, left to natural processes. However, there are additional man-made defence structures in the area, particularly around Cley, including concrete floodwalls around the promenade and vegetated flood banks along the roads.

There are no built properties within the 1 in 100 year tidal flood zone. The A149 is the only major infrastructure with a couple of minor roads leading to the coast and around the settlements. Large sections of the A149 are, however, within the flood zone.

Agricultural activity is limited to a small area around Kelling, leaving the rest of the land as designated areas. The management units of the North Norfolk coast designated sites in this area consist of reedbeds and marshes, grazing marsh and shingle. Shingle banks run the entire length of the unit and this land is of high conservation and recreational value. The Peddars Way and Norfolk coast path also provides recreational and amenity value, running along the front of the beach. Weybourne Cliffs SSSI lies to the east of the unit, outside the SMP area.

##### Secondary area of search

Areas outside the 1 in 100 year flood zone include built properties at Cley-next-the-Sea, Newgate, Salthouse, Glandford, Letheringsett and Kelling, with Holt being the major development in the adjacent SMP area. Infrastructure includes the A149 and the A148 and some minor roads running through the settlements leading towards Holt.

The predominant land use is arable agriculture with several areas of woodland. Wiveton Downs SSSI and LNR stretch into this unit from unit 7. Other than this designation the conservation value of this area is limited, so

sustained access to the coastline is important. Heritage value comes from church remains, a handful of tumuli and a bridge in Wiveton. Lots of footpaths run through the area providing amenity value.

M. Borehole and abstraction locations

Figure D.1 Borehole and abstraction records for West Runton to Cley

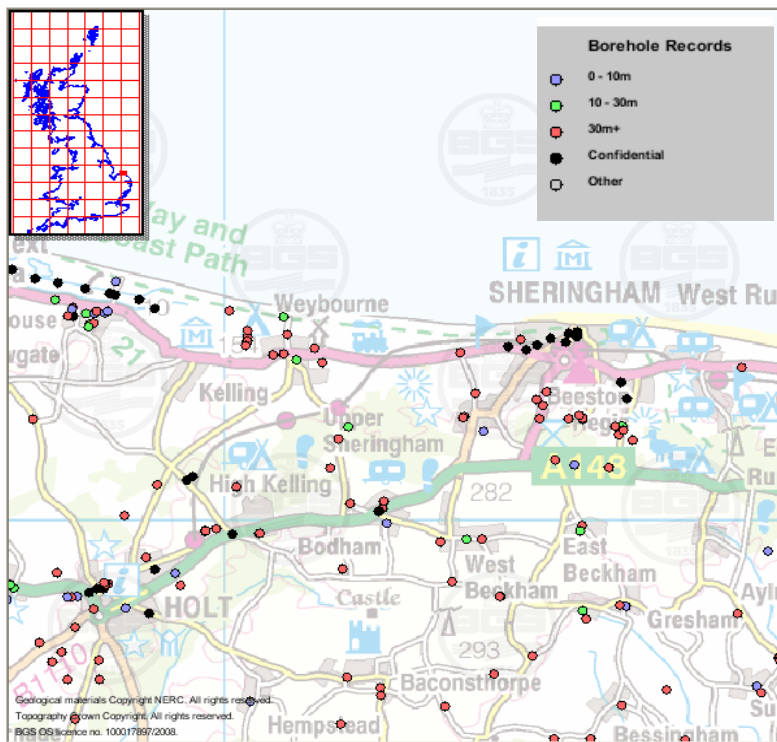
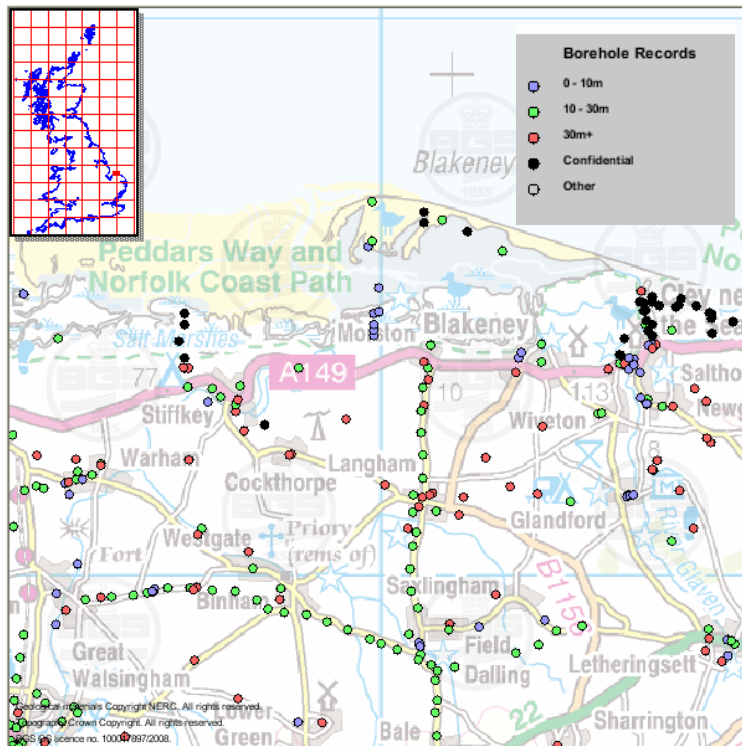
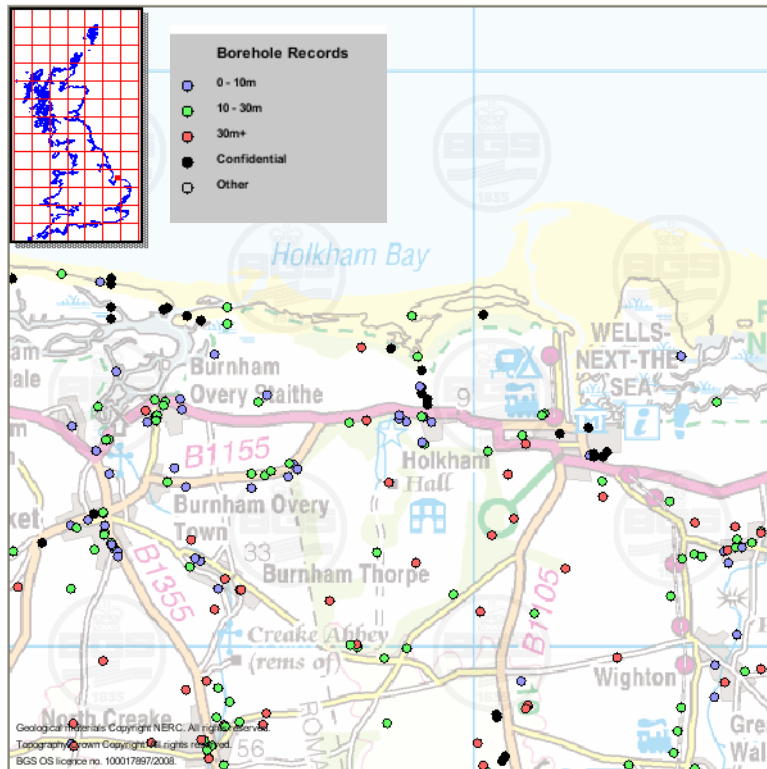


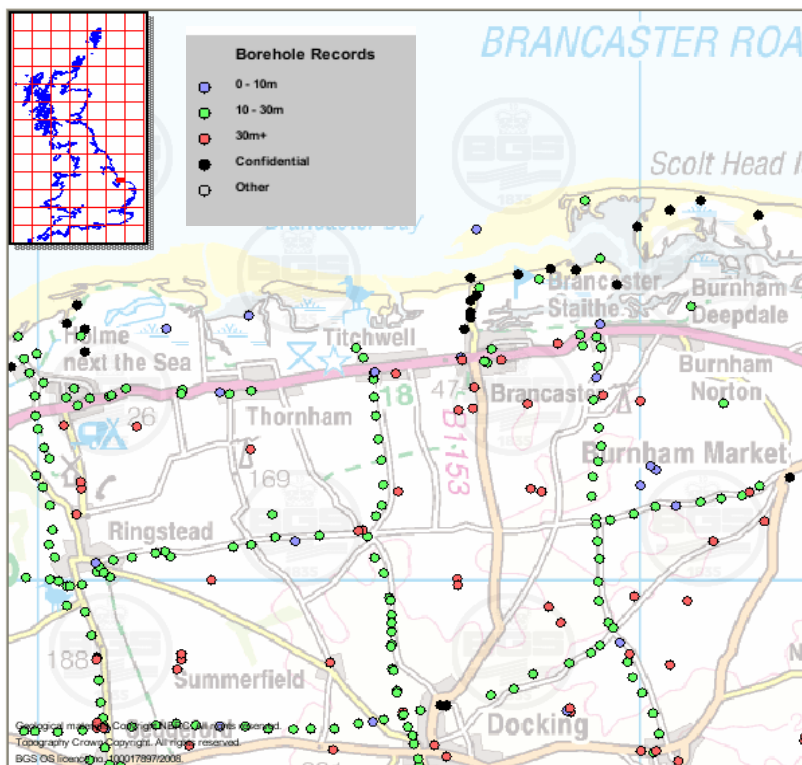
Figure D.2 Borehole and abstraction records for Cley-next-the-Sea to Wells-next-the-Sea



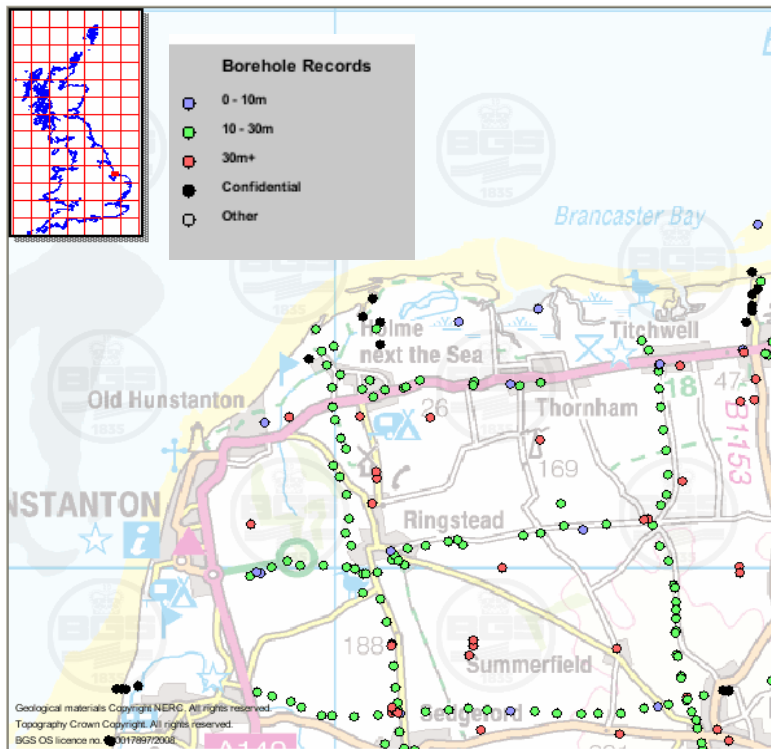
**Figure D.3 Borehole and abstraction records for Wells-next-the-Sea to Burnham Deepdale**



**Figure D.4 Borehole and abstraction records for Burnham Deepdale to Holme-next-the-Sea**



**Figure D.5 Borehole and abstraction records for Holme-next-the-Sea to Hunstanton**



**Appendix VI**  
**Addendum to SEA environmental report**





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# 1. Introduction and background

## 1.1 The Norfolk Shoreline Management Plan (SMP)

This document is an addendum to the Strategic Environmental Assessment (SEA) environmental report for the second North Norfolk Shoreline Management Plan (SMP). The North Norfolk SMP2 runs from Old Hunstanton to Kelling Hard and covers about 44 kilometres of coastline.

## 1.2 The SMP context for the SEA

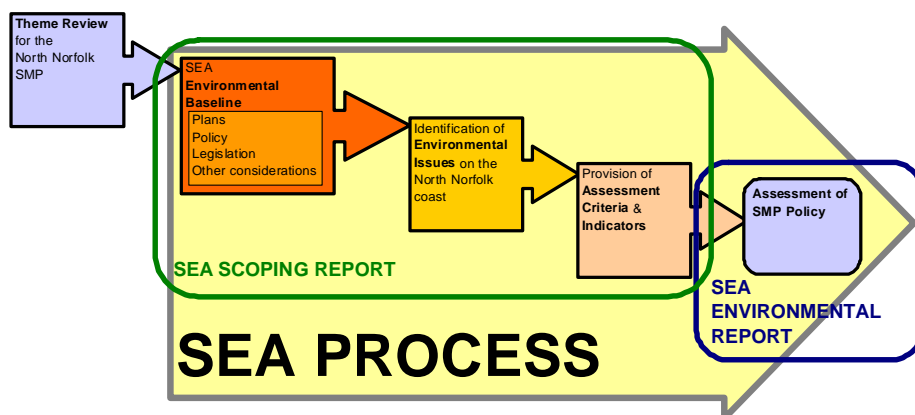
The SEA process to accompany the SMP is intended to ensure that considering the environmental issues relating to the coast is central to developing and evaluating policy. The **environmental report** provides the means to support a structured evaluation of the environmental issues relating to the north Norfolk coast based on using the assessment criteria developed in the **scoping report** (see appendix L of the SMP – Environment Agency, 2009). Within this SEA environmental report, the preceding scoping report and in the same way as that used throughout the SMP process (Defra, 2006), the term ‘environment’ is used to cover the following **receptors** (as defined by SI 1633):

### Receptors

- Biodiversity, fauna and flora
- Population and communities (including human health, critical infrastructure etc)
- Material assets
- Soil
- Water
- Air
- Climatic factors
- Cultural heritage, including architectural and archaeological heritage and
- Landscape

This document provides additional information required in the environmental report. The role of the environmental report within the SMP SEA process is presented in **Figure 1.1**.

**Figure 1.1 SEA process within the development of a SMP**



### 1.3 Why we are producing an addendum to the Strategic Environmental Assessment (SEA)?

This report is provided as an addendum to the environmental report (appendix L of the SMP, Environment Agency, 2009) for the North Norfolk SMP.

After the environmental report was published, ongoing discussions with Natural England and the Environment Agency sought to ensure that the assessment of the SMP under the Habitats Regulations accounted for the uncertainties within a long term strategic plan. This meant that the Habitats Regulations Assessment (HRA) (also known as the Appropriate Assessment) was finalised after the SEA environmental report was published. This addendum seeks to update the environmental report following these discussions and the output of the HRA. This addendum therefore provides an up-to-date and complete account of the assessment tables where they relate to matters influenced by the HRA (assessing the effects on coastal processes, determining effects on the integrity of international sites (sites designated under the Habitats and the Birds Directive and also the Ramsar Convention) and the effects on SSSIs.

This addendum should therefore be read in conjunction with the previous environmental report (Environment Agency, 2009).

This addendum provides an update of the following elements of the assessment:

#### Assessment unit F1

A revision of the assessment of the effects of the plan on coastal processes, international sites and sites of special scientific interest. Changes to the assessment tables of the environmental report.

### Assessment unit F2a

A revision of the assessment of the effects of the plan on coastal processes, international sites and sites of special scientific interest. Changes to the assessment tables of the environmental report.

### Assessment unit F2b

A revision of the assessment of the effects of the plan on international sites and sites of special scientific interest. Changes to the assessment tables of the environmental report.

### Assessment unit F3b

A revision of the assessment of the effects of the plan on international sites. Changes to the assessment tables of the environmental report.

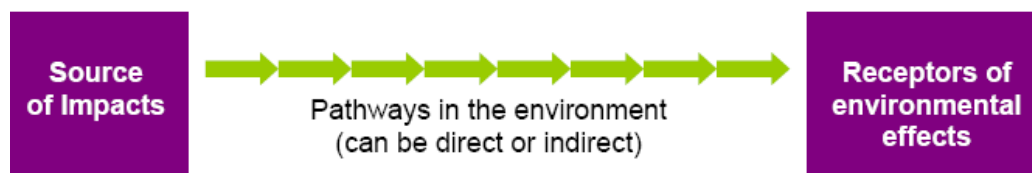
Where the assessment has been updated, the assessment tables provided in appendix 1a include text in italics to show where changes have been made. This addendum also provides additional text to explain more fully how effects of the SMP were considered and their significance determined (see section 1.4 below).

## **1.4 Prediction and evaluation method**

The updated assessment in this addendum has been provided using the same method as in the environmental report. This is provided below, with some additional text intended to make it clearer how the significance of effects has been established.

The method is provided below for context. Some additional text has also been provided to assess the environmental effects of implementing the SMP. This approach is based on the widely-accepted source-pathway-receptor model (SPR) (**figure 1.2**).

**Figure 1.2 The source-pathway-receptor model as applied to SEA**



The appraisal provided was a qualitative exercise based on professional judgement and supported by peer-reviewed literature where possible. It is important to stress that, given the nature of SMP policy (which is high-level and therefore lacks the detail of an actual scheme), the assessment was based on established effects wherever possible, but also relied heavily on expert judgement of anticipated effects. The performance of each SMP policy grouping against each assessment criterion was given a significance classification as well as a short descriptive summary (for example,

widespread negative effects with no uncertainty). For each SMP policy grouping, the assessment table also included a fuller reasoning of the judgement process used to determine the environmental effects and likely significance of each area. In particular, the following considerations were most important in determining environmental effects and likely significance:

#### **Assessing the significance of effects**

- Value and sensitivity of the receptors
- Is the effect permanent / temporary?
- Is the effect positive / negative?
- Is the effect probable / improbable?
- Is the effect frequent / rare?
- Is the effect direct / indirect?
- Will there be secondary, cumulative and / or synergistic effects?

As well as the criteria listed above, the intent of policy was actively considered in actually assessing the policy units. SMP policy, as has been stated, is strategic-level directional policy intended to support the provision of management actions over the next 100 years. The SMP itself does not provide any specific actions. In this context, the intent of policy must form a central consideration in assessing its environmental effects. In simple terms, the questions that were asked in addition to the criteria above were:

- 1) Will SMP policy have any effect on environmental receptors?
- 2) Will the SMP policy simply lead to existing impacts continuing?
- 3) Will SMP policy lead to a significant worsening or improvement of existing environmental impacts? Will the intent of the policy lead to a shift in management where the significance of the effect will change?

As well as the actual level or significance of the effect, the intent of policy (due to its strategic nature) needs to be considered, as the actual level of effect and the nature of impacts will, to a large degree, rely on the schemes that respond to SMP policy. These schemes will be subject to environmental assessment (under national and international legislation). This combined approach of assessing the significance of effects manifests itself as follows in relation to the environmental criteria identified in the SEA:

#### **1.4.1 Threats to biodiversity**

As well as the issues relating specifically to significance (effects in space and time etc), the assessment was based on a consideration of whether the policy area would either continue to have positive or negative effects on habitat or species or would lead to an improvement or worsening of such effects.

If the effects of policy were assessed as being significant and that the policy would continue the trend of existing management (for example to hold the

line) then a score of either minor positive or negative would be likely. If the effects were considered extremely significant and/or if the policy would lead to an active shift in management direction (for example from hold the line to managed realignment), a major positive or negative score would be likely. The actual assessment is therefore a composite of significance as defined by the nature of the effects and the direction of management.

**Assessment of international sites.** With regard to the assessment of effects on international sites (under the Habitats Regulations), the assessment needs to be informed by the separate Habitats Regulations Assessment (HRA).

International sites in the context of this assessment are determined as:

- Special Areas of Conservation (SACs) under the Habitats Directive.
- Special Protection Areas (SPAs) under the Birds Directive.
- Sites designated under the terms of the Ramsar Convention.

This part of the SEA is unique, as the assessment needs to be based on a firm requirement in law to comply with the Habitats Regulations in determining the effect of policy on the integrity of international sites. Policy areas that would have an adverse effect on the integrity of a site are therefore considered to have a major negative effect, as the unique driver under the regulations is clearly defined as the decision-making mechanism (either we are having an adverse effect on integrity, or we are not). If the policy is to continue existing management which is expected to have no effect on the integrity of sites (but is maintaining such integrity – for example by a hold the line policy that protects a freshwater feature), then a minor positive score would be provided. If the policy provides for a shift in management to avoid adverse effects on integrity (for example from hold the line to managed realignment to offset adverse effects) then a major positive effect would be provided. A further factor in this particular assessment is the fact that the assessment under the Habitats Regulations must be on the plan as a whole, alone or in combination with other plans and projects. This factor is reflected in the assessment tables provided, which link directly to the HRA.

This additional element of the assessment (missing from the previous environmental report) is provided in this addendum.

**UK Biodiversity Action Plan (BAP) habitat.** With regard to effects on BAP habitat, similar provisions applied (the basis of continuation or shifts in management coupled with the actual effects). A key factor in assessing BAP habitat was, however, the nature of BAP habitat on this coast. The range of habitats along the coastal zone of this SMP are all priority BAP habitat and include:

- Coastal flood plain and grazing marsh
- Coastal saltmarsh

- Coastal sand dunes
- Coastal vegetated shingle
- Intertidal mudflats
- Reedbeds
- Saline lagoons
- Seagrass beds
- Sub-tidal sands and gravels
- Tide swept channels.

Within the context of a dynamic coast and the intent to ensure that there is a natural development of coastal habitat, the principle applied to the coast is therefore one of no net loss of BAP habitat in the plan area. The habitat types are all priority habitat and it would not be appropriate at the BAP level to provide any further assessment of the relative importance of habitats within this list. The assessment was therefore based on an assessment at the policy unit level of whether there would be a net loss of BAP habitat. Again, this decision was supported by the significance of continued management or active shifts in management (and effects) within the SMP.

**Sites of Special Scientific Interest (SSSI).** The key factor in the assessment of the SMP was whether the SMP would lead to SSSIs falling into or moving towards unfavourable condition. This assessment (through discussion with Natural England) was then evaluated with regard to the direction of management outlined above. Minor scores were provided where the plan provided a continuation of existing conditions and major scores were reserved for where shifts in management would lead to a significant change in the scale of effects.

The principles described above also shaped the assessment of other biodiversity criteria through a combination of the nature of the effect and the direction of management (and the scale of its effects).

#### **The Water Framework Directive**

The assessment provided in the environmental report was guided by the assessment provided for the SMP (appendix K of the SMP). The overall WFD assessment undertaken for the SMP was based on a summary of the effects established within the WFD assessment rather than individual parts of that assessment.

### **1.4.2 Protection of coastal settlements**

The assessment of coastal settlements is provided on the basis described above with regard to the direction and scale of effects of policy. The additional considerations related to the loss or retention of features that are considered important to coastal communities, their sustainable existence and the quality of life provided. The assessment not only considered how significant a given feature or range/collection of features were (based on their

local, national or international significance) but also considered the extent of the feature and the degree to which communities depend on it. The assessment also included a consideration of the overall effects within the policy unit. If, for example, a given policy unit (through a hold the line policy) protected a community and the features it contained, but also led to the loss of an identified feature (such as a footbridge through a managed realignment policy) – the assessment would include an appraisal of the overwhelming positive effects in the unit with the one loss. Equally, the loss would be considered in this context in terms of its function, how important the bridge was, what access it provided, what activities it supported and whether a new bridge could be built to provide the same function. It did not follow therefore, that the loss of a feature would automatically lead to a negative assessment as the other positive effects within the unit would be considered.

### **1.4.3 Protection of historic assets**

The assessment of historic assets followed the same logic as that of the assessment of coastal settlements outlined above. The additional factor here, however, relates to the need to have regard to both known, designated features (listed buildings, scheduled monuments etc) and unknown archaeological assets. The approach taken was to offer a precautionary assessment (based on the likely presence of unknown assets) and to offer a minor negative score if a designated asset was lost. The outstanding matter of unknown assets will be addressed in the action plan for the SMP, where any managed realignment site will be undertaken in consultation with English Heritage to ensure that time and resources are provided for site investigation. The driver within the SMP to protect designated heritage assets did, however, restrict the loss (with one exception of an excavated site) within the plan.

### **1.4.4 Impacts on the coastal landscape.**

The assessment of effects on the coastal landscape was provided by a qualitative consideration of the features and factors (such as dynamic coastal change) that were considered important to the local coastal landscape (based on a management review for the AONB and supporting planning documents). The intent was to determine whether the loss of a feature was important in the context of the landscape and how important the requirement to include a dynamic coast was to the landscape of north Norfolk. Within this, natural and man-made features were considered with regard to their contribution to the landscape – a landscape typified by historic settlements, modified creeks and dynamic natural features such as dunes or shingle habitat. The appraisal provided minor scores based on the direction of management and the actual effect, with major scores being reserved for where the SMP took the form of the landscape in a different direction (either through the loss of features or changes to the degree of dynamism on the coast).



On the basis of this approach to the assessment, the scoring was provided in the assessment tables as follows:

**Table 1.1 Environmental impact significance categorisation**

<b>Significance of SMP policy</b>	
	SMP policy is likely to result in a significant positive effect on the environment.
	SMP policy is likely to have a positive or minor positive effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a neutral or negligible effect on the environment.
	SMP policy is likely to have a negative or minor negative effect on the environment (depending on scheme specifics at implementation).
	SMP policy is likely to have a significant negative effect on the environment.
	The relationship between the SMP policy and the environment is unknown or unquantifiable.
	The assessment criterion does not apply to the SMP policy.

This addendum concerns itself with the additional assessment of the effects of the plan on international sites (under the Habitats Regulations) and some finalised issues relating to the effects on SSSIs. This information is available following the completion of the HRA and is provided in the following section. As outlined in section 1.3, where the assessment tables have been updated, entries are provided in italics.

## 1.5 Primary analysis – a detailed assessment of SMP policy in each SMP assessment unit for the effects on international sites

The detailed assessment of SMP policy in each SEA assessment unit is provided in **appendix 1** of the environmental report (Appendix L of the SMP - Environment Agency, 2009). This section provides an account of the effects of the SMP on international sites, as defined under the Habitats Regulations. An additional appendix is provided here as **appendix 1A** to include the updated elements of the assessment.

As mentioned previously, the Habitats Regulations require that the assessment is provided at the plan level. It is not the intent of the SEA to reproduce the assessment under the Habitats Regulations. For the purposes of this addendum, a summary is provided of the findings of the Habitats Regulations assessment insofar that this relates to the assessment criteria in the SEA. The following is provided in this assessment:

- An updated assessment table for the SEA to include the findings of the Habitats Regulations assessment.
- A summary of the effects in each assessment unit.
- An overall assessment of the effects of the SMP on international sites and an indication of measures to address this.

Taking each area in turn, the effects on the integrity of international sites are as follows:

### 1.5.1 Assessment unit F1

The proposed policy within this unit will lead to the loss of freshwater marshes and reedbeds through managed realignment (MR) policies. This habitat is essential for bittern and marsh harrier (reedbed) and geese species (grazing marsh). This is considered to have an adverse effect on the integrity of the North Norfolk Coast and the Wash SPA and Ramsar sites.

Although the intent of the policy is to provide a balanced approach to allow the coast to develop naturally, no options were identified during policy appraisal that would give no adverse effect on the integrity of international sites. It is the nature of management of the coast in dynamic areas with established man-made freshwater habitat protected by defences, that adverse effects are often unavoidable. The most appropriate action is to develop a policy suite that allows the natural development of the coast, protects public interests and offers a long-term dynamic environment for coastal habitat. Although assessed as a minor negative effect, the habitats were a central driver in policy development and the preferred policy suite provides for the 'least worst' case.

### **1.5.2 Assessment unit F2a**

In seeking to protect established coastal communities, policies in this frontage have been developed to offer a hold the line approach and secure the long-term viability of these communities. In holding this line however, coastal squeeze will be an issue for intertidal habitats as sea level rise squeezes out intertidal habitat (mudflat and saltmarsh) seaward of existing defences. This would have an adverse effect on the integrity of the North Norfolk Coast SPA and Ramsar site (where this habitat is important for designated bird species) and the North Norfolk Coast SAC (where intertidal habitat is a designated feature). Accordingly, this unit has been assessed as having a major negative effect.

The alternative option would involve losing established coastal communities and existing freshwater designated (or important off-site) habitat.

The hold the line policies in this unit are, however, offset to some degree by proposed managed realignments elsewhere in the SMP area. Due to the uncertainty relating to whether the realignments elsewhere in the plan will offset the adverse effect through squeeze in this unit, a major negative assessment remains appropriate.

The loss through squeeze in this area is also likely to have a minor negative effect on SSSI units in this frontage. A major negative score is not, however, considered appropriate for the anticipated loss, due to the managed realignments proposed elsewhere.

### **1.5.3 Assessment unit F2b**

This unit provides for managed realignment to help offset coastal squeeze elsewhere in the plan area and to increase the tidal prism to ensure that existing tidal creeks are maintained in the long-term (avoiding siltation). Tidal creeks are also important in maintaining stability for nearshore barrier dunes and spits. This realignment is, however, considered to have an adverse effect on the integrity of the North Norfolk Coast SPA and Ramsar site due to the loss of farmland and reedbed. These are important for geese (which use farmland as offsite foraging habitat) and bittern (which use reedbed for feeding). This unit has therefore scored major negative due to this adverse effect.

Alternative options considered were based on avoiding realignment. However, this would lead to the loss of coastal creeks through siltation which are important for the livelihood of coastal communities. It is also expected that the loss of the creeks would lead to the loss of areas of dune habitat they would be expected to roll back (in the absence of the creeks) and be squeezed against higher ground or defences. The option remains the most

beneficial to local communities and the wider features of international sites in this area.

The effect on SSSIs is expected to be neutral under this option as the realignment provides for stability of overall features within the SSSI units in a dynamic context.

#### **1.5.4 Assessment unit F3a**

The proposed policies in this unit are not considered to have an adverse effect on the integrity of any international site. The score is therefore neutral.

#### **1.5.5 Assessment unit F3b**

This unit contains a complex pattern of freshwater and intertidal habitat containing a dynamic mix of features. The intent of the proposed policy suite is to allow the natural development of this area of coast within this context. This issue is complicated by the location of freshwater reedbed and farmland landward of defences or natural features (such as shingle ridges – themselves a designated (North Norfolk Coast) SAC feature and a feature important for (North Norfolk Coast) SPA bird species). In the context of providing a system that can develop naturally, freshwater reedbed would be lost including an element of farmland. As stated previously, this habitat is important for bittern and geese species and an adverse effect on the integrity of the site has been concluded.

The requirements of the Habitats Directive were a key driver in developing policy on this frontage and no alternative was identified that would avoid any adverse effects on the integrity of international sites. Any attempts to intervene to protect freshwater habitat would lead to extensive effects on shingle habitat and intertidal area.

### **1.6 Secondary analysis – the overall effects of the plan on the integrity of international sites.**

If it is concluded that one policy will have an adverse effect on an international site, the plan as a whole must be concluded as having an adverse effect on site integrity.

Only one of the assessment units in this draft SMP has been assessed as having no adverse effect on the integrity of international sites, the remaining units have identified adverse effects. The draft SMP has therefore been considered as having an adverse effect on the integrity of international sites and the process will now begin to demonstrate the lack of viable alternatives (that would not have an adverse effect) and then the need to consider imperative reasons of overriding public interest.

This process (and a more detailed account of the above summary of the assessment) is provided in the Habitat Regulation assessment for the draft SMP.

## **1.7 Next steps**

This addendum seeks to provide an update to the environmental report published as appendix L to the draft North Norfolk SMP. In providing both the environmental report and this addendum for consultation, the intent is to establish whether the assessment has provided an accurate account of the environmental impacts of the draft SMP on the environment of north Norfolk.

Any comments on this update or the environmental report should be provided to:

Sue Brown  
Environment Agency  
Iceni House  
Cobham Road  
Ipswich  
Suffolk  
IP3 9JD

The consultation period runs from 4<sup>th</sup> January to 19<sup>th</sup> February 2010. All comments about this addendum should be received by 5pm on Friday 19<sup>th</sup> February 2010.

This addendum does not take account of any comments received during the four month consultation period for the draft North Norfolk SMP. It is only updating the information that appeared in that document.

## **2 REFERENCES**

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

Environment Agency (2009). North Norfolk Shoreline Management Plan – Draft.

## **Appendix VIA**

### **Environmental assessment**

**(Updated to include the effects on international sites  
as informed by the Habitats Regulations assessment for the SMP)**

**Text in *italics* indicates the assessment that has been updated since the  
issue of the original North Norfolk SMP2 Strategic Environmental  
Assessment environmental report, following the production of the  
North Norfolk SMP2 Habitats Regulations Assessment (Appropriate  
Assessment) report**

Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	PDZ1A provides a sustainable approach to habitat management by minimising the need for intervention in the dune system (while retaining the option for management if needed). PDZ1B provides for the continued management of the dune system/frontage to provide sustainable management based on monitoring. PDZ1C provides for realignment in epoch 2 to offer a more sustainable line of defence (based on topography). PDZ1D takes an approach of NAI which offers totally sustainable defence for this frontage.  Overall, the management in this super-frontage provides for a more sustainable approach to management based on moving the coastline towards a less managed, more natural system.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	As described above the overall intent of the frontage is to move towards natural development of the frontage, allowing the development of natural processes especially during epoch 2.	Geomorphology	Proportion of hard elements relative to the total defences Effect on neighbouring sections (judgement)
	Will the SMP policy result in a change in the condition of international sites?	<i>The SMP policy in this super-frontage allows for the natural development of the frontage (dune habitat) while allowing the landward migration of intertidal habitat (through realignment in 1C). Also, the realignment at Holme will increase the tidal prism in Thornham harbour channel and help to maintain a mosaic of sublittoral and intertidal habitats. The managed realignment units within this unit would, however, lead to the loss of reedbed and grazing marsh habitat that is essential habitat for geese species. This unit would have an adverse effect on the North Norfolk Coast SPA and the Wash SPA and Ramsar sites and the effect is considered major negative.</i>	International sites and SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	<i>The effects of the SMP overall in this unit promotes the natural development of the coastline - enabling natural change. The effect is considered minor positive.</i>		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat area?	The overall effect of SMP policy across this frontage will be to provide no net loss of BAP habitat. However, realignment at Holme will provide the creation of BAP habitat over existing non-BAP habitat – leading to a gain of BAP habitat. The overall effect is therefore considered to be major positive.		Area of priority BAP habitats for each epoch and scenario.



Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	Across the super-frontage there will be no increased flood risk as a result of this suite of policies. The realignment in 1C at Holme will bring defences closer to communities but at no increased level of flood risk. The overall effect is therefore neutral.	Coastal communities	Number of properties within the tidal flood zone compared to the current number.
<b>Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	In PDZ 1A the policy, coupled with rising sea level, may lead to the encroachment of the beach into Holme dunes which currently contains a golf course. However, time is provided for adaptation and response to this scenario. Other activities are considered to be unaffected. The overall effect is therefore neutral.	Tourism and recreation features	Number of locations where tourism or recreation activity will be affected.
	Will the SMP policy result in a change to identified key economic activities and locations?	The loss of part of the golf course may lead to the loss of some economic activity from tourism etc. The realignment would also lead to the loss of grade 4 agricultural land which in itself is not considered a significant effect on the local economy. The overall effect is therefore negligible and considered a neutral effect.		Number of locations where economic activity will be affected.
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	As above, some grade 4 agricultural land will be lost by the realignment at Holme. This is considered to be a minor negative effect.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No adverse effect is anticipated and the effect is therefore neutral.	Shellfish classification	Predicted impact on shellfish classification.
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities?	No anticipated loss of any critical infrastructure and a neutral overall effect.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	No effect and therefore neutral overall effect.		Extent and frequency of A149 flooding.
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction point within PDZ 1C is to support the current agricultural use of the land. In light of the planned realignment, the land use would change and this abstraction point would therefore no longer be required. The overall effect is therefore neutral.	Abstraction	Number of abstraction points affected.

Assessment unit F1 (PDZ 1A to 1D)				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands while recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	The managed realignment at PDZ 1C is predicted to increase the tidal prism through the Thornham harbour channel which will reverse the existing regime of accretion in this channel and aid navigation. The overall effect is therefore major positive.		Length of navigable channel and number of operable harbours.
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The super-frontage does not lead to any increased risk to known heritage features. The overall effect is therefore neutral.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The overall effect of this super-frontage is to allow for a more natural development of the frontage while not losing any features that contribute significantly to the coastal landscape. The overall effect is therefore minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	This suite of policies provides a strategic approach to allowing the natural development of the coast on open coastal areas whilst holding the line on defended frontages or frontages that protect key assets (communities, tourism features, freshwater habitats etc). The intent is to provide a balanced approach of allowing the natural evolution of the coast while ensuring that coastal communities are maintained in a sustainable manner. The policies therefore actively seek to provide a sustainable approach to habitat management and the effect is minor positive.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	<i>These policies continue to hold the line at existing communities or defended assets. The approach in open coastal areas is to allow the natural coastal processes to drive the development of the coast. These hold the line policies would, however, lead to the loss of intertidal habitat which is essential for bird species in the North Norfolk Coast SPA and Ramsar site and is a designated feature of the North Norfolk Coast SAC. Overall the effect is considered minor negative.</i>	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of international sites?	<i>The effects of the SMP in this unit have the potential to lead to loss of intertidal habitat through coastal squeeze. Squeeze against the defences under the hold the line policy is not natural change and the effect of policy would be to move SSSI units into unfavourable condition. The effect of the loss through squeeze may be offset based on the managed realignments provided elsewhere in the plan. Due to the lack of certainty relating to the degree to which the realignments will offset loss through squeeze, a major negative score remains appropriate.</i>	International sites & SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	<i>The effects of the SMP overall in this unit promotes the natural development of the coastline - enabling natural change. The effect is considered minor positive.</i>		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat area?	The policies provide a balance of holding the line and allowing natural coastal evolution (as stated above). The overall effect on BAP habitat is expected to provide a shift in habitat but no overall loss, with an overall neutral assessment.		Area of priority BAP habitats per epoch and scenario.

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	The policies will hold the line adjacent to existing communities or their assets through hold the line policies. The effect is therefore minor positive.	Coastal communities	Number of properties within the tidal flood zone compared to the current number.
<b>Protection of coastal towns and settlements and the maintenance of features that support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	The hold the line policies provide protection for both communities and the assets that are important to the local tourism industry (the Titchwell reserve, North Norfolk golf club and the tourist centres at Brancaster, Wells etc). The NAI polices also support the maintenance of sediment to the area's beaches. The overall effect is therefore a significant contribution towards maintaining key tourism assets and the effect is considered major positive.	Tourism and recreation features	Number of locations where tourism or recreation activity will be affected.
	Will the SMP policy result in a change to identified key economic activities and locations?	As outlined above, key economic assets in this area are mainly tourism or agriculture-related. This suite of policies seeks to maintain the sustainable location of features to support this. The overall effect is therefore major positive.		Number of locations where economic activity will be affected.
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	This suite of policies will maintain existing agricultural land landward of defences. It will not lead to any loss of agricultural land as the NAI frontages are not considered likely to lead to the loss of significant areas of agricultural land. The effect is therefore neutral.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. Nor are any changes anticipated that will permanently prevent or compromise the environmental objectives being met in other water bodies or that will cause failure to meet good groundwater status or result in deterioration in groundwater status. Policies in 2K and 2M have, however, been identified as having the potential to affect ecological status or potential, to compromise the environmental objectives being met in other water bodies and to potentially affect groundwater. The effect is therefore minor negative.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No anticipated effects on shellfisheries and the effect is therefore neutral.	Shellfish classification	Predicted impact on shellfish classification.
	Will SMP policy result in a loss of critical infrastructure required for the viability of	The policies provide for the protection of key coastal assets that have been previously defended and the effect is therefore minor positive.	Infrastructure	Critical infrastructure lost

Assessment unit F2a – PDZ 2A, B, C, E, F, H, J, K and M				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
	coastal communities			
	Will the SMP policy result in changes affecting the A149?	The A149 will be maintained in this section of the coast by this suite of policies and the effect is therefore minor positive.		Extent and frequency of A149 flooding.
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	No licensed abstraction locations within any of the PDZs in this assessment area. The effect is therefore neutral.	Abstraction	Number of abstraction points affected.
Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities				
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	The policies will have a negligible effect on the evolution of channels and the effect is considered neutral.		Length of navigable channel and number of operable harbours.
Protection of historic and archaeological features on a dynamic coastline				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The existing coastal settlements (which include various listed buildings, a large registered park and garden and numerous scheduled monuments) will be maintained under this suite of policies. The overall effect is therefore minor positive.	Historic environment	Qualitative judgement
Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies seek to maintain the sustainable location of historic coastal communities that are a key feature of the coastal landscape. The NAI policies also provide for the natural development of the coast. The combined effect is considered minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	This suite of PDZs seeks to provide managed realignment to increase the tidal prism behind dunal systems in order to provide stability to both dunes and the actual channels. Policy 2I does not actually provide a MR relating to a creek system but does provide for the sustainable management of the dunal system. It is considered that the approach of using MR policies as a tool in coastal and habitat management represents a sustainable approach – using natural processes to maintain a diverse range of coastal habitats. The approach therefore is considered to be major positive.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change how natural coastal processes operate?	The policies will provide a balance of allowing natural processes to drive areas of MR that would, without defence, have evolved into intertidal areas. The effects of the MR (increased tidal prism) will allow a more natural evolution of the coastline, where existing defences are believed to have reduced the tidal prism and may be leading to a weakening of tidal flow and a destabilisation of the fronting dunes. The overall approach is therefore major positive.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of international sites?	<i>The policies in this unit seek to provide a balance of hold the line and managed realignment to protect key assets while allowing the coast to develop in a dynamic manner. Within this policy suite, however, HTL policy is expected to lead to the loss of intertidal habitat required for bird species in the North Norfolk SPA. The MR, however, will also lead to the loss of reedbed and offsite agricultural land that is essential for marsh harrier and bittern and geese species respectively. The loss of intertidal habitat has the potential to have an adverse effect on the Wash and North Norfolk Coast SAC. However, it has been agreed that this loss will be offset by mitigation through the MR at Wells east bank in PDZ2L. Overall, the effect of this unit would have an adverse effect on the integrity of international sites and the effect is considered major negative.</i>	International sites & SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	<i>The approach within this unit provides for some stabilisation of fixed features and the natural development of others through MR policy. Across the unit, the effect of the policy is considered to allow a natural development of the system and the units of the SSSI. The effect is therefore considered minor positive.</i>		Predicted condition assessment of SSSI units

Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
	Will the SMP policy result in a net change in priority BAP habitat area?	The policies provide MR over either freshwater habitat or agricultural land. Although freshwater BAP habitat is being lost by these realignments, the overall area of BAP habitat is increasing due to realignment into undesignated habitat/agricultural land. The overall effect is considered to lead to an overall net increase in BAP habitat and the effect is therefore considered minor positive.		Area of priority BAP habitats per epoch and scenario.
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	The MR policies adjacent to existing communities will lead to the high water mark being nearer to properties than it is at present. The nature and wording of the policies will, however, ensure that the actual level of risk is not increased. The policies are intended to stabilise the fronting dunes (Scolt Head etc) and this habitat provides a significant defence for communities such as Brancaster, Wells etc. The increased stability of the natural defences is significant and the overall effect is considered to be minor positive.	Coastal communities	Number of properties within the tidal flood zone compared to the current number.
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	Increasing the tidal prism to existing channels is conducive to maintaining tourism activities (such as fishing, seal watching, sailing etc) that rely on navigable access to the sea. Also, the stabilisation offered by this approach is intended to bring stability to systems at Brancaster bay and Holkham (two major tourist destinations). This suite of policies is therefore actively seeking to assist in offering a long-term sustainable future for tourism in this area.	Tourism and recreation features	Number of locations where tourism or recreation activity will be affected.
	Will the SMP policy result in a change to identified key economic activities and locations?	As stated above, the policies will maintain assets relating to tourism along tidal creeks. This will also support commercial activities such as fishing etc. Also, as outlined above, the stability of the dune systems in this area provides defence for coastal communities.  The overall effect of policies is therefore considered to be major positive.		Number of locations where economic activity will be affected.
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	The MR policies in this suite (apart from 2I) provide for a loss of agricultural land to intertidal. This loss, although only leading to the loss of grade 3 or 4 agricultural land, would reduce the amount of agricultural land along this frontage. The effect is therefore considered minor negative.	Soil	Impact on area and grade of agricultural land

Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. Nor are any changes anticipated that will permanently prevent or compromise the environmental objectives being met in other water bodies. Policies in 2D 2G and 2I have a relatively greater potential to affect groundwater status here (or result in a deterioration in groundwater status). The overall effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	No expected effect on shellfisheries is anticipated as a result of this suite of policies and the effect is therefore neutral.	Shellfish classification	Predicted impact on shellfish classification.
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities	The MR policies have been designed and located so as not to lead to any loss of critical coastal infrastructure. Indeed, the policies support navigation of coastal channels which requires a range of harbourside infrastructure, moorings, port facilities etc. The effect is therefore major positive.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	The A149 is not threatened by any of the MR policies in this area and the effect is therefore neutral.		Extent and frequency of A149 flooding.
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction point in PDZs 2D, 2G and 2L is to support the current agricultural use of the land. In light of the planned realignments, the land use would change and this abstraction point would therefore no longer be required. The licensed abstraction point at Holkham will not be affected and can continue to be used as present. In light of this, the overall effect is neutral.	Abstraction	Number of abstraction points affected.
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	As stated above, the MR policies have a primary driver of maintaining the access and navigation of the coastal channels. The effect is therefore major positive.		Length of navigable channel and number of operable harbours.
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The MR policies would not lead to the loss of any scheduled monuments or listed buildings. Most of these features (including conservation areas and registered parks and gardens) are located on this coast in or near to established communities such as Brancaster. These communities are afforded higher levels of protection through these policies by stabilising the coastal dunal system. The overall effect should therefore be considered minor positive.	Historic environment	Qualitative judgement



Assessment unit F2b – PDZ 2D, G, I and L				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies will maintain the key structural elements of this coast (sand bars such as Scolt Head, sandy beaches such as Holkham and a network of tidal channels with associated settlements). There will be some transitional loss of foreshore habitat, but this is considered to offer a dynamic coastal landscape. It is not considered sufficient to offset the benefits of maintaining large-scale coastal structures. The effect is therefore considered minor positive	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	The PDZs in this policy suite provide for either a NAI approach (at 3B) or a HTL approach at 3Ai, Aiv and D adjacent to outfalls or defended communities (Blakeney). The MR policy at 3D is simply intended to monitor and realign the frontage only if required to protect communities at Cley and Salthouse. Overall, these policies seek to allow for the natural development of the coast while maintaining areas important for coastal communities. The overall effect in respect to habitat is therefore to allow the development of open coast (which is sustainable and beneficial to habitat), but holding areas that may lead to squeeze of habitat. The overall effect is therefore neutral.	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in how natural coastal processes operate?	The overall effect of this suite of policies provides for management on previously-defended frontages and does not increase levels of defence. The effect is therefore considered to be neutral.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of international sites?	The HTL policies may lead to the loss of intertidal designated habitat (which would be considered an adverse effect). However, policies of NAI and also the MR lead more towards the more natural evolution of the shingle ridge at Cley and have the potential to lead to an increase in habitat, which may partly offset this. In the context of levels of loss and gain and natural change across this unit, no adverse effect on integrity is evident. The overall effect is therefore considered to be neutral.	International sites & SSSI	Condition of designated features based on Habitats Regulations assessment
	Will the SMP policy result in a change to SSSI condition?	As above, the anticipated effect is considered neutral.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat extent?	The policies of HTL may lead to loss through squeeze (as stated above). However, the policies of NAI and MR may lead to increased provision of habitat. The overall effect will depend on how the coast responds over the course of the plan, but an overall net increase in BAP habitat is anticipated. The overall effect is therefore considered to be neutral.		Area of priority BAP habitats per epoch and scenario.
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	There is considered to be no increase in flood risk as a result of this suite of policies. The overall effect therefore is considered to be neutral.	Coastal communities	Number of properties within the tidal flood zone compared to the current number.

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	No change in any tourism facilities is anticipated. The HTL policy at 3C provides for the defence of a key tourism-based area at Blakeney, so the effect is considered minor positive.	Tourism and recreation features	Number of locations where tourism or recreation activity will be affected.
	Will the SMP policy result in a change to identified key economic activities and locations?	No change in any economic assets is anticipated. However as stated above, HTL policy at 3C provides ongoing defence of key economic assets and the effect is considered minor positive.		Number of locations where economic activity will be affected.
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	No loss of any agricultural land is anticipated and the effect is therefore neutral.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	Blakeney is a designated shellfish water. However, as the WFD assessment for this SMP determined, there will be no adverse effect on this fishery. The overall effect is therefore minor positive.	Shellfish classification	Predicted impact on shellfish classification.
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities	No loss of infrastructure is anticipated and the effect is therefore neutral.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	No increased threat to the A149 and the effect is therefore neutral.		Extent and frequency of A149 flooding.
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	No licensed abstraction locations within any of the PDZs within this assessment area. The effect is therefore neutral.	Abstraction	Number of abstraction points affected.
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	The PDZs in this suite will not in themselves have any effect on channels and the effect is therefore neutral.		Length of navigable channel and number of operable harbours.

Assessment unit F3a – PDZ 3Ai, Aiv, B, C and D				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The hold the line policies defend areas that contain listed buildings at Blakeney and Morston. No features are known adjacent to the Cley ridge or the NAI frontage, 3B. The overall effect is therefore minor positive.	Historic environment	Qualitative judgement
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	This suite of policies will provide a mixture of holding key elements of the coast that have been historically defended and allowing the provision of a natural coast through NAI or MR. The effect is therefore minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threat to biodiversity on a dynamic coast and the interactions between various coastal habitat types</b>				
<b>Maintenance of coastal processes required to maintain the integrity of critical coastal habitat and species</b>				
Biodiversity, fauna, flora (including geomorphology)	Does SMP policy provide a sustainable approach to habitat management on the north Norfolk coast?	<p>PDZ3Aii. The realignment at Morston in epoch 1 promotes a sustainable approach to habitat management by allowing landward migration of intertidal habitats under rising relative sea levels. The habitat over which this realignment will occur is not currently designated under national or international legislation.</p> <p>PDZ3Aiii. Despite the proposed loss of Blakeney Freshes as a result of realignment in epoch 2 (and the freshwater habitats that it supports), the conversion of this freshwater habitat to intertidal will ensure that less future management is required. This will ensure that the management of this area is more sustainable than at present. However, this realignment depends on monitoring and study in epoch 1.</p> <p>PDZ3Av. The loss of Cley marshes as a result of realignment in epoch 3 depends on a programme of monitoring and study in epochs 1 and 2. However, should the realignment proceed, it would offer a more sustainable approach to habitat management than the current regime.</p> <p>Overall, SMP policy across these three PDZs (if all realignments are to proceed) would be assessed as major positive.</p>	Vulnerable freshwater / terrestrial sites	Area of habitat determined as being either sustainable or unsustainable in the face of rising sea levels
	Will the SMP policy result in a change in the operation of natural coastal processes?	The three proposed realignments are predicted to increase the tidal prism in the area behind Blakeney Spit, so ensuring that the harbour channels are maintained. As a result, should these realignments proceed, SMP policy will result in a change in how the natural coastal processes operate. The length of hard defences in these three units will decrease in proportion. The effect is therefore minor positive.	Geomorphology	Proportion of hard elements relative to the total defences Impact on neighbouring section (judgement)
	Will the SMP policy result in a change in the condition of international sites?	<i>The overall approaches to coastal defence and habitat management across this unit provide many benefits to features of international sites (the development of shingle banks etc). However, against the wider attempts to provide appropriate management across the range of international sites in this area, the loss of reedbed has the potential to lead to the loss of bittern (a feature of the North Norfolk Coast SPA) and farmland used for foraging of geese species (a feature of the North Norfolk Coast Ramsar site). Despite the benefits to the management of SAC features, the proposed policies</i>	International sites & SSSI	Condition of designated features based on Habitats Regulations assessment

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
		would have an adverse effect on bittern and geese species and the impact is therefore major negative.		
	Will the SMP policy result in a change to SSSI condition?	The proposed realignments in PDZs 3Aiii and 3Av would lead to a shift in habitat type from mainly freshwater (grazing marsh, reedbed and eutrophic standing water) to coastal habitat (saltmarsh, mudflat and sublittoral sediment). This shift would lead to the SSSI units being assessed as being in failing condition until re-notification occurs. However, these realignments will prevent the squeeze of coastal habitats against hard defences, which itself will lead to an adverse condition being recorded in the SSSI units as sea levels rise. When coupled with the realignment at Morston (3Aiii), which involves realignment into an undesignated area and will therefore prevent squeeze against existing defences, SMP policy in these PDZs is therefore assessed as being minor positive.		Predicted condition assessment of SSSI units
	Will the SMP policy result in a net change in priority BAP habitat area?	Overall, most of the proposed realignments will involve a conversion from mainly freshwater UKBAP habitats (grazing marsh, reedbed and eutrophic standing water) to coastal UKBAP habitat (saltmarsh, mudflat and sublittoral sediment). There will therefore be no net loss of UKBAP habitat, but conversion from one habitat type to another. However, the land over which the realignment at 3Aii is planned is not currently designated as UKBAP habitat so this realignment will create UKBAP habitat. Overall, therefore, there will be a gain in UKBAP habitat as a result of these realignments and SMP policy is therefore assessed as being minor positive.		Area of priority BAP habitats per epoch and scenario.
<b>Maintenance of environmental conditions to support biodiversity and the quality of life</b>				
Population, human health	Will the SMP policy result in a change in flood risk to coastal communities?	No more properties will be within the tidal flood zone as a result of SMP policy, nor will flood risk to coastal communities increase or decrease. The effect of SMP policy is therefore assessed as neutral.	Coastal communities	Number of properties within the tidal flood zone compared to the current number.
<b>Protection of coastal towns and settlements and the maintenance of features which support tourism and local commerce</b>				
Material assets	Will the SMP policy result in a change to identified key tourism or recreation activities and locations?	The policies will support activities that depend on the stability of the channel and spit (fishing, bird watching, sailing etc). The realignments are central to this, as is policy to defend existing tourism locations such as Blakeney and Cley. The effect of this policy is therefore considered major positive.	Tourism and recreation features	Number of locations where tourism or recreation activity will be affected.
	Will the SMP policy result in a change to identified key economic activities and locations?	The key economic activities in this area relate to tourism and the factors outlined above therefore apply. The effect is major positive.		Number of locations where economic activity will be affected.

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
Soil	Will the SMP policy result in a change in the quality of agricultural soils?	This loss, although only leading to the loss of grade 4 agricultural land, would reduce the amount of agricultural land on this frontage. The effect is therefore considered minor negative.	Soil	Impact on area and grade of agricultural land
Water	Will the SMP policy result in changes to features covered by local WFD objectives?	No changes are anticipated that will cause failure to meet surface water good ecological status or potential, or result in a deterioration of surface water ecological status or potential. The effect is therefore neutral.	Water	To be determined
<b>Threats to coastal communities, traditional activities and culture from inappropriate coastal management</b>				
Material assets	Will the SMP policy result in a change to existing shellfish classifications?	Blakeney is a designated shellfish water. However, as the WFD assessment for this SMP determined, there will be no effect on this fishery. The overall effect is therefore neutral.	Shellfish classification	Predicted impact on shellfish classification.
	Will SMP policy result in a loss of critical infrastructure required for the viability of coastal communities	The policies in this area seek to maintain the access and navigation along the channels behind Blakeney Spit. The policies therefore have a major positive effect.	Infrastructure	Critical infrastructure lost
	Will the SMP policy result in changes affecting the A149?	The A149 would not be at any increased risk and the effect is therefore neutral.		Extent and frequency of A149 flooding.
	Will the SMP policy change the quality or security of abstraction for PWS or irrigation?	The licensed abstraction point within PDZ 3D is to support the current agricultural use of the land. In light of the planned realignment, the land use would change and this abstraction point would therefore no longer be required. The overall effect is therefore neutral.	Abstraction	Number of abstraction points affected.
<b>Need to maintain a balance of providing navigation and access to channels behind barrier islands whilst recognising their value to local communities</b>				
Material assets	Will the SMP policy change the ability to navigate within the existing channels and/or the operation of harbours?	As stated above, the managed realignment policies here are intended to increase the tidal prism and therefore strengthen these channels. The effect is therefore major positive.		Length of navigable channel and number of operable harbours.
<b>Protection of historic and archaeological features on a dynamic coastline</b>				
Cultural heritage, including architectural and archaeological heritage	Will the SMP policy result in changes to historic features identified through the RCZAS?	The managed realignments in this area will lead to the loss of one listed building – the ruins of Blakeney chapel. This matter requires the attention of English Heritage to establish if a site investigation is necessary. Overall the effect therefore is minor negative.	Historic environment	Qualitative judgement

Assessment unit F3b – PDZ 3Aii, Aiii and Av.				
SEA receptor (based on SI 1633)	SEA assessment criteria	Assessment	Feature identified in the SEA scoping report baseline	SEA indicator (blue shading is where there is a directly equivalent SMP indicator)
<b>Threats from inappropriate coastal management on the coastal landscape and AONB, with regard to the provision of a mosaic of landscape features which is characteristic of the north Norfolk coast</b>				
Landscape	Will the SMP policy result in changes in the quality of the coastal landscape?	The policies will maintain the presence of the channels which are a key historical and social feature in the landscape. The managed realignments will lead to a shift in the appearance of the coastal landscape to reflect the provision of a more dynamic system. Overall the combined effect is considered minor positive.	Landscape	Extent and overall balance of features identified as fundamental in supporting the AONB designation.



