

SMP6 Statement of Environmental Particulars



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Rev No	Comments	Checked by	Approved by	Date
2	Final Statement of Environmental Particulars	CC	NP	December 2012
1	Draft Statement of Environmental Particulars	CC	NP	November 2012

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Job No: 60052694

Reference

Date Created: October 2012

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1 Introduction

1.1 General Introduction

This Statement of Environmental Particulars (SoEP) indicates how environmental considerations, and the views of consultees and interested parties, were taken into account during the finalisation of the Kelling Hard to Lowestoft Ness Shoreline Management Plan (SMP6). The SEA Environmental Report was consulted upon with the draft Kelling Hard to Lowestoft Ness SMP6. This report has been issued in accordance with the requirements of the SEA Regulations (see 1.2) following the adoption of SMP6.

The report describes the basis for the selection of the preferred policy options for each policy unit for each epoch, in light of other reasonable alternatives. This SoEP explains how environmental considerations were integrated into the policy development and how the SEA process has influenced the final SMP6. It also explains how the stakeholder consultation responses were taken into account and how they influenced the adopted SMP6 document.

The Kelling Hard to Lowestoft Ness SMP is a product of work which began in 1996 on two separate SMPs, which have since been combined together in 2006 to provide a uniform text. The SEA process has therefore not been able to influence the policy development from the outset rather it has been used as a policy refining tool. No significant changes were made to the SEA as a result of consultation. However feedback resulted in a number of changes to the plan, which are discussed in chapter 6, resulting in amendments to the SEA being made.

The statement provides an overview of the significance of changes from the implementation of the policy and impacts on specified designations and sites in the frontage area. Finally, environmental monitoring measures are outlined which must be undertaken during the implementation period.

1.2 Purpose of the SEA Statement of Environmental Particulars

The SEA SoEP has been produced in accordance with 'The SEA Regulations' under the Environmental Assessment of Plans and Programme Regulations 2004. It provides an overview of the SEA findings, the views that resulted from the consultation period and then illustrates how these have been taken into account in the finalised Kelling Hard to Lowestoft Ness SMP6.

1.3 Structure of the SoEP

The following structure of this SoEP is as listed:

- Background- overview to SMP6.
- Alternatives- the reasons for selecting the preferred policy options for each frontage in each epoch in light of other reasonable alternatives.
- Integration of environmental considerations- how the environment was integrated in to the policy development.

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- Influence of the Environmental Report- how the SEA and consultation responses influenced the policies.
- Consultation- description of the consultation phase including explanation of how the results were taken into account in the revised work.
- Summary- overview of the significant of environmental changes from the implementation of the policy and impacts on designations/sites.
- Environmental monitoring- description of measures in place following the implementation and adoption of the SMP.

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2 Background

2.1 Kelling Hard to Lowestoft Ness Shoreline Management Plan (SMP6)

A Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with future coastal evolution and presents a policy framework to address these risks to people and the socio-economic, historic and natural environment in a sustainable manner to achieve the most beneficial approach. It sets out a route that can be followed by coastal strategies to manage the coast sustainably, identifying changes of policy needed over time. The SMP is a non-statutory policy document for future coastal defence management planning and was prepared in line with appropriate Defra guidance (Defra 2006 'Shoreline Management Plan Guidance Volume 2: Procedures'). It takes account of other existing planning initiatives and legislative requirements, and is intended to inform wider strategic planning.

The SMP6 area covers the length of coast between Kelling Hard in North Norfolk and Lowestoft Ness in Suffolk. This has a rich diversity in its physical form, human usage and natural environment. This includes cliffs of both habitat and geological interest and low-lying plains fronted by dunes and beaches, most notably the Broads which are of international significance. The coastline is also characterised by a number of towns and villages (such as Cromer, Great Yarmouth and Lowestoft) that are interspersed by extensive areas of agricultural land. This combination of assets creates a coastline of great value, with a tourism economy of regional importance.

The SMP set out a number of objectives as listed in section 1.1.2 of the Plan.

2.2 Plan Area

SMP6 provides the policy framework for the length of coast between Kelling Hard in North Norfolk and Lowestoft Ness in Suffolk. This area includes some of the most famous and scenic stretches of coastline in England. The north western part of the plan area is elevated with soft glacial cliffs dominating the coastline; sections of which are very prone to cliff erosion. The section of the coast in front of the Broads is much flatter and is fronted by extensive dune systems and broad sandy beaches. This section of the coast is liable to erosion and flooding, as the land behind the coastal strip is at or below sea level. South of this the land behind the coast rises again and is less vulnerable to coastal flooding, but there are still areas that are prone to coastal erosion.

The extents of the SMP area have been chosen as a section of shoreline which is largely self-contained with respect to coastal processes. There is very little alongshore sediment transport at the boundaries of this sub-cell and thus the policies within this SMP will not impact upon the coastlines covered by the neighbouring SMPs. Within the SMP6 the coastline is divided up into policy units for which Policies have been set out for three main epochs; short-term (or 'from the present day' 0 to 20 years), medium-term (20 to 50 years) and long-term (50 to 100 plus years). In the case of SMP6 there are 24 policy units upon which environmental assessment was based (termed 6.01-6.24) that are listed below and presented in **Figure 1**:

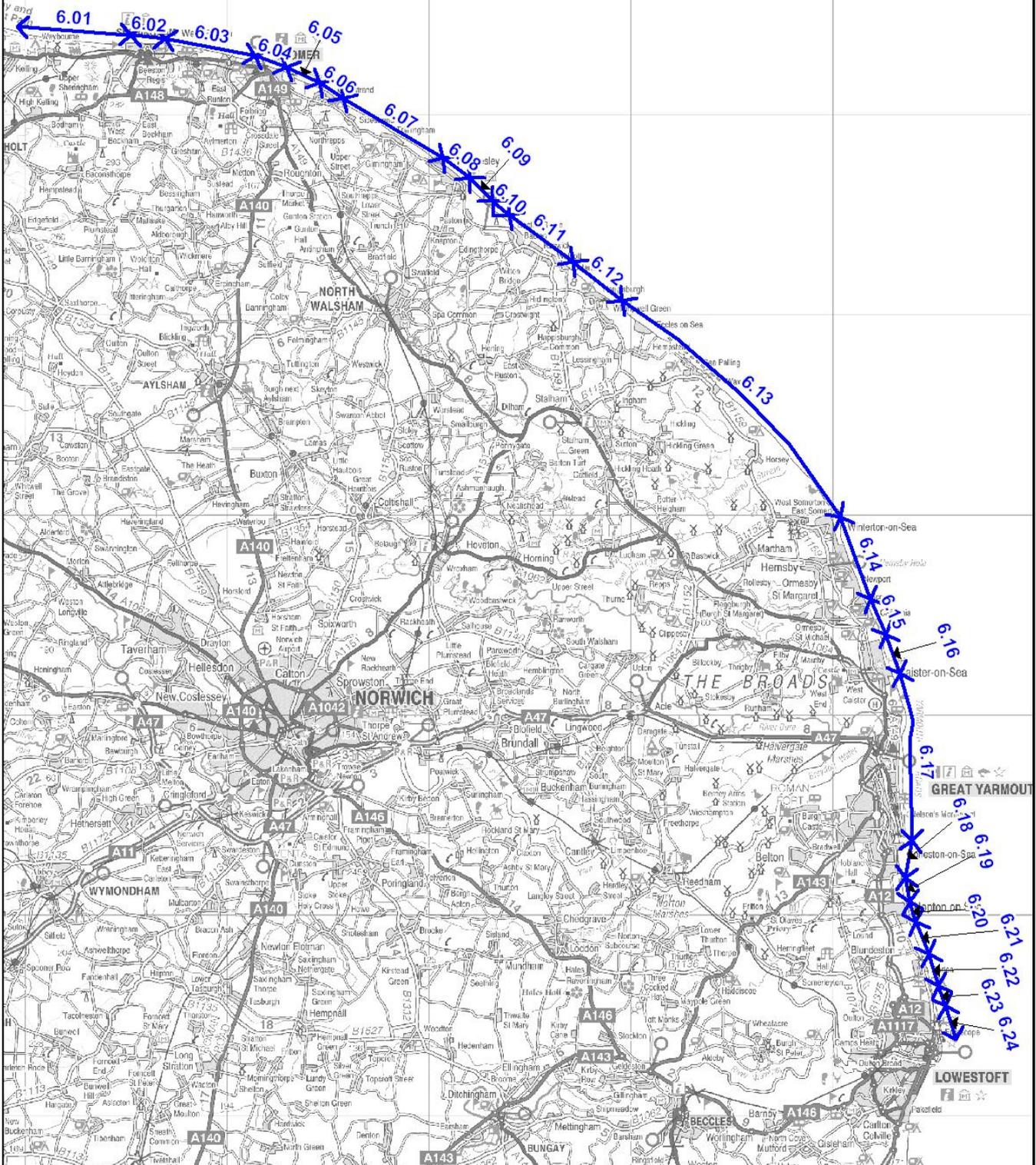
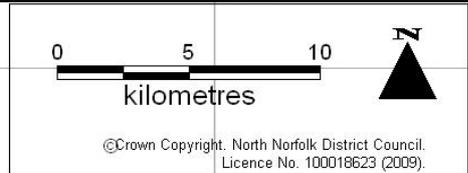
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<i>6.01 Kelling Hard to Sheingham</i>	<i>6.09 Mundesley to Bacton Gas Terminal</i>	<i>6.17 Great Yarmouth</i>
<i>6.02 Sheringham</i>	<i>6.10 Bacton Gas Terminal</i>	<i>6.18 Gorleston</i>
<i>6.03 Sheringham to Cromer</i>	<i>6.11 Bacton, Walcott and Ostend</i>	<i>6.19 Gorleston to Hopton</i>
<i>6.04 Cromer</i>	<i>6.12 Ostend to Eccles</i>	<i>6.20 Hopton</i>
<i>6.05 Cromer to Overstrand</i>	<i>6.13 Eccles to Winterton Beach Road</i>	<i>6.21 Hopton to Corton</i>
<i>6.06 Overstrand</i>	<i>6.14 Winterton to Scratby</i>	<i>6.22 Corton</i>
<i>6.07 Overstrand to Mundesley</i>	<i>6.15 California to Caister-on-Sea</i>	<i>6.23 Corton to Lowestoft</i>
<i>6.08 Mundesley</i>	<i>6.16 Caister-on-Sea</i>	<i>6.24 Lowestoft North (to Ness Point)</i>

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Kelling to Lowestoft Ness Shoreline Management Plan

Figure 1. Policy Unit Locations



↔ Policy Unit locations

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2.3 Strategic Environmental Assessment (SEA)

Whilst SEAs of SMPs are not required by legislative, regulatory or administrative provisions, they do set a framework for future development and have much in common with the kind of plans and programmes for which the Directive (2001/42/EC) is designed. For this reason, Defra has recommended that SMPs comply with the requirements of the Directive. Therefore an Environmental Report (ER) was produced as part of the SEA of the Kelling Hard to Lowestoft Ness Shoreline Management Plan.

The SEA process has been both iterative and systematic and has identified and assessed the likely significant environmental effects of the plan and its alternatives. The SEA was also used to aid policy development and helped to engage local groups throughout the consultation process. The SEA ensured the effects of the plan were considered in a structured way to demonstrate that policy development considered environmental and other effects. The Environmental Report informs the reader about:

- the approach used in undertaking the assessment;
- any significant effects have been identified; and
- the proposed methods of avoiding or mitigating these significant effects.

The focus of the SEA is to strategically assess how each of the policies which could be applied in a Policy Unit, over the three timeframes, would affect the coastal environment and to identify options or solutions for minimising or avoiding any significant adverse effects and maximising the benefits.

The assessment itself covered the following topics: biodiversity, flora and fauna; soil; water; air; noise; climatic factors; archaeology and heritage; landscape; material assets; population and human health.

2.4 Habitats Regulation Assessment and the Water Framework Directive

A Habitats Regulation Assessment report and Water Framework Directive (WFD) Compliance report were also produced to support the assessment of the SMP.

Habitat Regulations Assessment

A Habitats Regulation Assessment (HRA) report was undertaken to assess any likely significant impact upon any Natura 2000 (SPA / SAC) or Ramsar sites that could result from the policy decisions. It was considered that the SMP would be likely pose a significant effect to the: Winterton to Horsey Dunes SAC; Great Yarmouth North Denes SPA; The Broads SAC; and Broadland SPA / Ramsar.

The assessment, including consultation with Natural England (undertaken under Regulation 48(3)), concluded that the proposed (and now finalised) plan, can be shown to have no adverse effect on the integrity of any of the sites.

Water Framework Directive

The EU WFD has introduced a holistic integrated approach to the protection, management and monitoring of the water environment in England and Wales. It sets new ecological and chemical

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objectives and requires that water bodies (including rivers, coasts, estuaries and lakes) achieve a target referred to as 'good status' by 2015. Should this target not be reached then in certain situations it can be possible to extend the deadline or to even set a less stringent target.

The SMP was assessed, retrospectively, in order to determine whether the policies that the plan promotes might affect the ecological or chemical status of one or more of the relevant WFD water bodies within the plan area.

Overall, at a water body level, SMP policies were considered to neither cause deterioration nor prevent the Norfolk East and Suffolk water bodies from reaching their WFD objectives. Indeed, in the longer term, the SMP policies were considered to be likely to support the WFD objectives in the Norfolk East coastal water body insofar as they aim towards a more natural coastline.

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3 Alternatives

3.1 Coastal Management Policies

The policy options for future coastal management are defined by Defra; those that are relevant to SMP6 are:

- **Hold the existing defence line-** by maintaining or changing the standard of protection. This policy should 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. This policy description includes 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.
- **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) or to make safe defunct defences.
- **No active intervention**, where there is no investment in coastal defences or operations.

The fourth policy for future coastal management as defined by Defra is **advance the existing defence line**, which is where new defences are built on the seaward side of the original defences. This policy option was not considered for any of the units within SMP6.

SMP6 identifies a preferred policy option for each unit during each epoch in light of other reasonable alternatives that were considered. Table 3.1 below presents the reasons for selecting the preferred policy in light of the other reasonable alternatives for each of the 24 policy units.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.01 Kelling Hard to Sheringham	No active intervention over all three timeframes	<p>The policy from the present day is to allow natural processes to take place, i.e. allow coastal retreat through a policy of no active intervention on the open coast. This policy will enable a naturally-functioning coastline to operate.</p> <p>There are no defences along this frontage; if this frontage was to be defended and defences were to be implemented along this stretch of coast this would prevent cliff erosion which will decrease sediment supply into the system. A decrease in sediment supply coupled with low transfer rates along this frontage will result in a reduction in the beach levels and potentially a total loss of the beach by the long term. The benefits of not defending this coastline out way the dis-benefits.</p>
6.02 Sheringham	Hold the Existing Line over all three timeframes	<p>The long term plan for Sheringham is to continue to protect the assets within the town. There are low sediment transport rates along this section of the coast therefore protecting this section would not significantly impact upon adjacent shorelines.</p> <p>Should this section of coast go undefended this would result in a large loss of residential and commercial properties, infrastructure, services and facilities. This would have significant adverse impacts on material assets, activities and industries and physical and mental wellbeing. There would also be impacts in surrounding towns and villages as Sheringham is a key service centre for the region as such.</p>

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.03 Sheringham to Cromer	Managed Realignment in the short term and not active intervention in the medium and long term	The long term plan for this section is to allow the coastline to evolve naturally to ensure the input of sediment to the SMP coastline as a whole. If this unit was to be defended this would result in adverse effects on the nationally designated SSSI sites, designated for their geological exposure and reduce sediment supply to other units.
6.04 Cromer	Hold the existing line over all three timeframes	<p>The long term plan for Cromer is to continue to protect the assets. There are low sediment transport rates along this section of the coastline therefore maintaining the defences of this town should not have a significant impact on the adjacent shoreline.</p> <p>There are a significant number of socio-economic assets along this frontage as such if the alternative was implemented and this frontage was not longer afforded protection this would have significant adverse impacts on material assets, coastal activities and industries and physical and mental wellbeing as well as the built landscape. There would also be impacts on surrounding towns and villages as Cromer is a key service centre for the region.</p>

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.05 Cromer to Overstrand	Managed realignment in the short term and no active intervention in the medium and long term	The cliffs along this length of shoreline provide a vital sediment source for much of the SMP frontage. If alternatives were implemented this sediment input would not be maintained, which is the key aim for the region as a whole. It would also be uneconomical to defend this frontage as there are few socio-economic assets at risk along this cliff-top to provide justification for investment. Secondly the implementation of the preferred policy will expose designated cliffs benefiting the successional cycles of plant communities.
6.06 Overstrand	Hold the existing line in the short term and managed realignment in the medium and long term	The cliffs between Cromer and Mundesley provide a vital source of beach sediment area for much of the SMP frontage. Therefore maintaining this sediment input and transport along the coast is a key long-term aim in this frontage. Secondly, historic defence construction at Overstrand has already formed a significant promontory which in the future could prevent approximately 20% of the entire SMP beach sediment budget from moving freely along the coast should the alternative of holding the existing line have been adopted. If alternative policies had been implemented the transport of sediment within the frontage would not be aided and there are few socio-economic assets present to justify new defences.
6.07 Overstrand to Mundesley	Managed realignment in the short term and no active intervention in the medium and long term	This frontage provides the largest source of sediment for maintaining beaches along much of the SMP frontage. Without this critical supply erosion elsewhere may be accelerated, leading to more rapid loss of property. Should the alternative policies have been implemented this sediment supply would be limited. Therefore maintaining this sediment input is a key aim for the region as a whole and the proposed long-term Plan is to allow natural functioning of the coast through allowing it to retreat. Although there are socio-economic implications these are not sufficient to economically-justify building new defences along this frontage.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.08 Mundesley	Hold the existing line in the short and medium timeframes and managed realignment in the long term	The long-term Plan is for this frontage is managed realignment. Should this frontage continue to be defended into the long term there would be a significant reduction in the sediment supply to the system. This could potentially block up to 70% of the sediment supply for the entire SMP area and potentially result in accelerated erosion elsewhere leading to rapid loss of property and destruction of natural habitats. The considerable socio-economic assets along this frontage mean that the line will be held in the short and medium terms to allow sufficient time to implement appropriate mitigation measures and or explore alternative solutions such as sediment bypassing.
6.09 Mundesley to Bacton Gas Terminal	Managed realignment in the short term and no active intervention in the medium and long term	To be consistent with implementation of the long-term Plan for the whole SMP and the approach being recommended at Mundesley, the long-term Plan for this area is to allow retreat. Should the frontage have adopted a hold the line approach a small number of socio-economic assets would have been protected however this would not be economically viable. A defensive approach would also not assist with the target to achieve a naturally-functioning coastline, by not providing sediment to beaches or allowing it to move freely along the coast, which in turn would not support nature conservation interests along this length of shoreline.
6.10 Bacton Gas Terminal	Hold the existing defence line over all three timeframes	Bacton Gas Terminal is currently a nationally-important facility and there is considerable justification for maintaining this site and subsurface pipelines. The position of this facility however could result in potentially 70% of the sediment supply for the entire SMP area being blocked from reaching beaches here and downdrift if it continues to form a promontory. Due to the national significance of this asset, the long term Plan is for hold the line but it is conditional on working with the owners of the facility to identify options for continuing the vital sediment movements in the medium and long term, which may include sediment bypassing.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.11 Bacton, Walcott and Ostend	Hold the existing defence line in the short term and managed realignment in the medium and long term	The long-term Plan for this area is to allow shoreline retreat once present defences reach the end of their present effective life. If this shoreline continues to be defended this would exacerbate problems here and elsewhere by impairing the movement of beach sediment. For the immediate future the adopted policy supports coastline defence within existing economic justification, giving time for measures to be put in place to manage the risk and mitigate the displacement of people and loss of property and facilities in the medium-term should this not be in place this benefit would not be achieved and losses would occur in the short term.
6.12 Ostend to Eccles	Managed realignment over all three timeframes	The long term plan for this unit is for managed realignment if defence was continued coastal retreat either side would result in the development of a promontory making it both technically difficult to sustain and impacting significantly upon coastal processes. Therefore the long term Plan is to allow natural functioning of the coast through allowing it to retreat. However, in the short term the council will make every effort to minimise the rate of coastal erosion at this location, using appropriate temporary measures with a view to allowing time for measures to be introduced to allow people to adapt to the changes in the medium and long term.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.13 Eccles to Winterton Road	Hold the existing defence line over all three timeframes. However the long term policy is conditional on this option remaining technically and economically viable.	The long term plan for this frontage is to hold the existing line, however this policy option is conditional in the long term. Not defending this frontage would result in a significant effect on the Norfolk Broads significantly affecting both the environmental designations and the local economy. However if this frontage is held beyond a certain point there may be a possibility it will never recover to reform as a natural system which in turn could accelerate erosion and compromise both defences and habitats in southern frontages. The coastline is also very exposed and this could mean that technically and economically it may become increasingly difficult to hold the present shoreline position in the longer term. This long term policy is therefore conditional on studies being undertaken regarding social, economic and environmental consequences to assess options for the long term plan.
6.14 Winterton-on-Sea (South of Beach Road) to	Managed realignment over all three timeframes	This area is of international significance for its dune habitats, which require a sediment supply to fronting beaches and fore dune-beach interactions to be able to function. While defences may protect assets in Newport and Scratby from becoming vulnerable, should this coastline be defended this vital requirement would not be met with defences proving detrimental to both habitats and natural defence provided by the beach-dune system. Therefore the long-term Plan is therefore to allow a naturally functioning coast to develop by allowing the beach and backshore to evolve with minimal intervention.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.15 California to Caister-on-Sea	Hold the existing defence line in the short term and managed realignment in the medium and long term	Together with frontage 6.16 this area currently forms a small promontory, which is expected to become more pronounced as sea levels rise and the adjacent shorelines to the north retreat. If this unit was to continue being defended this could eventually have detrimental impacts on downdrift areas, due to interruption to alongshore transport of sediments and increasing losses to offshore, diminishing natural defence and natural habitats elsewhere. Defending this frontage would only encourage this and in the long-term would also become technically more difficult, and thus more expensive, to maintain. Therefore long-term Plan is to allow retreat of the coastline, to improve sediment feed to downdrift areas.
6.16 Caister-on-Sea	Hold the existing defence line in the short and medium term and managed realignment in the long term	Together with frontage 6.15, this area currently forms a small promontory, which is likely to become much more significant as sea levels rise and the adjacent shorelines to the north retreat. Similarly to frontage 6.15 this could eventually have detrimental impacts for much of Caister and on downdrift areas, due to interruption to alongshore sediment transport and increasing losses to offshore, diminishing natural defence and natural habitats here and elsewhere if defences were maintained. Therefore the long-term Plan for the frontage is to enable the beach and backshore to evolve more naturally by improving the alignment between California and Caister Ness, and allow the shoreline position to retreat back to a more natural position.
6.17 Great Yarmouth	Hold the existing defence line over all three timeframes	Great Yarmouth is a major area of industry and commerce as such the long term plan is to hold the line. If the line was not held along this unit this would result in a significant risk of erosion and flooding to seafront residential and commercial properties and affecting the viability of Great Yarmouth as commerce centre. This could result in significant effects on the local economy and blight within the surrounding areas as such the long term plan is to continue to defend this unit.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.18 Gorleston	Hold the existing defence line over all three timeframes	Gorleston is an important residential, commercial and tourist centre. If alternative policies were adopted there would be a significant loss of socio-economic assets from properties to community facilities. Therefore the long term plan is to continue to defend this frontage, an option aided by the fact that the position of Gorleston on the coast means it has very little influence or impact upon coastal processes operating elsewhere.
6.19 Gorleston to Hopton	No active intervention over all three timeframes	The long-term Plan is for cliff retreat to allow sediment vital to the coastline to be sourced from cliff erosion and to pass freely along this frontage. It is estimated that erosion of cliffs between Gorleston and Lowestoft provide up to 10% of the total SMP area sediment and frontages along this stretch rely heavily upon this local source of sediment, due to the continued interruption to supply from areas further north within the SMP. If this frontage was defended rebuilding of defences would be required and this sediment supply would be reduced and therefore the long-term Plan for this section of coast is to allow retreat, enabling a naturally functioning coast with minimal human interference.
6.20 Hopton	Hold the existing defence line in the short term and managed realignment in the medium and long term	If defences were maintained along this frontage the area would form a promontory which would impact on sediment supply along this coast and be detrimental for the defence of adjacent areas. Ultimately the policy which will need to be implemented, possibly beyond the timeline of this plan, will be no active intervention to create a naturally functioning coastline. However the policy to hold the line in the short term to allow sufficient time to implement measures to offset social impacts, manage the impacts on Hopton and make existing defence ruins safe.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.21 Hopton to Corton	Managed realignment in the short and medium term and no active intervention in the long term	The long-term Plan is for retreat to allow sediment to be sourced from cliff erosion and to pass freely along this frontage. Alternative policies would not preserve this sediment but instead narrow the beach, with the area eventually becoming an embayment. However this sediment is vital to feed beaches and enhance protection to areas north and south, where defence is a priority along this length of coast. It is estimated that erosion of cliffs between Gorleston and Lowestoft provides up to 10% of the total SMP area sediment and frontages along this stretch rely heavily upon this local source of sediment, due to the continued interruption to supply from areas further north within the SMP. Therefore the long-term Plan for this section of coast is to allow cliff retreat, enabling a naturally functioning coast with minimal human interference.
6.22 Corton	Hold the existing defence line in the short term and managed realignment in the medium and long term	The long-term Plan for Corton is to allow the cliffs to retreat to attain a natural shoreline position. This is because the exposure of this coastline means that technically it is already becoming increasingly difficult to hold the present shoreline position, with beaches becoming almost impossible to retain. This is due to the prominent position of this frontage, relative to the shoreline either side, with it being some distance forward of its natural position. The alternatives have not been adopted as continued defence at this location will also increasingly interrupt sediment movement along this coastline, which will be to the detriment of Gunton Warren and Lowestoft. Secondly, there is also insufficient economic justification for providing defence against ongoing erosion.

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Table 3.1- Summary of the reasons for the selection of the preferred policy options

Policy Unit	Preferred option	Reason
6.23 Corton to Lowestoft	Managed realignment in the short term and no active intervention in the medium and long term	If this frontage was defended socio-economic assets would be protected, however they are few in number so economic justification is limited. Defence rebuilding and maintenance would be required. However, in the long term it may be appropriate to slow the erosion due to potential pollution risk from both possible erosion of the Eleni V oil dump sites and exposure of sewage and waste water return pipes. Secondly, with limited advantages of allowing sediment throughput onto the Lowestoft Ness frontage, there may be some technical justification to introduce measures to slow (rather than halt) erosion. However due to the limited socio-economic assets the long term Plan in this frontage is for a naturally-functioning coast by allowing retreat
6.24 Lowestoft Ness (to Ness)	Hold the existing defence line over all three timeframes	The long-term Plan is to continue to protect assets within Lowestoft, a key area of industry and commerce, defending the present position. Should alternatives policies have been adopted here there would be significant loss of socio-economic assets in Lowestoft such as properties, loss of roads, as well as heightened flood and erosion risk. This would significantly affect the local ecology and blight this and the surrounding areas.

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4 Integration of Environmental Considerations

4.1 Introduction

Environmental considerations were fully integrated into the development of SMP policies through the collation of appropriate baseline information, identification of key features and issues and an assessment of the preferred policy options against the alternatives considered. Where the assessment of alternatives identified, on balance, environmentally preferable policy options, this was fed back into the SMP policy development. The SEA was also proactive in its approach in suggesting alternatives for a particular unit or epoch.

4.2 Establishment of the Baseline Scenario

The environmental characteristics of each frontage were fully integrated into the policy development and the proposed policies through the establishment of an appropriate baseline scenario. This data, both quantitative and qualitative, sought to describe the status of the environment and population (including human health) that may potentially be affected by the plan. A thorough understanding of the baseline data was fundamental to determining how it would change following the implementation of measures/policies proposed within the SMP.

It is important to note that the baseline is only a snap shot of the existing situation. It is subject to continual change, either via natural processes/change or human intervention. Therefore, when assessing how measures/policies introduced through the SMP would affect the environment, consideration had to be given to how the baseline would change in the absence of the SMP. This required analysis of how the baseline has changed over time to predict how it may change in the future e.g. data trends.

The baseline data also reflected the level of detail, subject matter and geographical scale of the SMP. Consequently in terms of the SEA the baseline data that was collated was high level and strategic, reflecting the content of the plan.

4.3 Identification of Key Issues

From the establishment of the baseline scenario key features and issues were identified for each of the policy units. The key features and associated issues were defined as something that provides a benefit or service in one form or another, all issues associated with that feature were also identified. The key issues were derived by identification of where a feature is at risk from flooding or erosion or where management intervention could impact upon a feature.

4.4 Assessment of the Preferred Policies and Alternatives

The assessment used the baseline data to assess the effects of the preferred policy options and alternatives on the key features of each policy unit. For each policy unit an assessment was made of the effects of the continuation of current management, the proposed policy and for those policy units where the policy was hold the line or managed realignment an assessment was also made of the no active intervention scenario. This process allowed the proposed preferred policies to be challenged tested against each scenario to ensure the policy proposed was the most environmentally sustainable option.

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Also, the development of the revised SMP was also largely aided by an Extended Steering Group (ESG). The ESG involved elected representatives and key players in coastal management from stakeholder groups. Meetings with the ESG were held to aid the process of identifying and understanding the issues, review the objectives and set direction for appropriate management scenarios, as well as to review and comment upon the Plan and its policy options.

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5 Influence of the Environmental Report

5.1 Introduction

The Legislation underpinning Strategic Environmental Assessment is intended to ensure that environmental considerations, both adverse and beneficial are taken into account alongside socio-economic considerations in the development of relevant plans and programmes. Despite the fact that an SEA was not a legislative requirement the process was conducted as if it were and the Environmental Report was fully integrated with the SMP process.

5.2 Influence of the SEA

The Kelling Hard to Lowestoft Ness SMP is a product of work which began in 1996 on two separate SMPs which have since been combined together in 2006. After an extensive consultation exercise the three councils and the Environment Agency amended and/or accepted different versions of the SMP and three versions were in use. This SMP has been produced to provide uniform text to be adopted by all three authorities and the Environment Agency. As such the 2006 version and the two amended versions have been used as the basis for this single plan. The SEA process has therefore not been able to influence policy development from the outset rather it has been used as a policy refining tool to ensure the policies taken forward for adaption were fully assessed against the environmental baseline and amendments to policies made, where appropriate. The SEA also identified strategic mitigation measures to be taken forward in the development of coastal strategies.

An example of this refinement is policy unit 6.13 where in the original documents the policy was to hold the line over all three epochs. Following the SEA and HRA identifying a potential for a significant effect on the protected sites in the long term this policy has now been amended so the policy is to hold the line in the short and medium term with the long term policy being conditional on the policy remaining technically, economically and environmentally sustainable. More detailed strategies and monitoring is required to demine this.

A second example of the SEAs influence is policy unit 6.10, following consultation this policy unit became hold the line over all three timeframes due to the national importance of the gas terminal and the potential to use this facility as part of offshore gas storage proposals. However by maintaining this facility could result in the formation of a promontory and block up to 70% of the sediment supply from reaching beaches downdrift. The SEA identified that holding the line in the long term could result in adverse effects on Winterton to Horsey Dunes SAC and Great Yarmouth North Denes SPA, through the formation of a promontory. As such the preferred policy for this unit is conditional on further monitoring being undertaken and measures included within the policy to work with the owners of the facility to indentify options for continuing vital sediment movements, such as sediment bypassing in the medium and long terms.

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5.3 How the Results of the SEA will influence the Coastal Strategies and future SMP revisions

The SEA identified that if the policy options were to be taken forward, as they stand there will be significant adverse effects on the built landscape and townscape, coastal material assets, coastal activities and industries and physical and mental wellbeing, which has been attributed to the loss of housing, infrastructure and associated industries. Other adverse impacts were identified on protected sites and species, ecosystems and biological diversity, coastal processes, water quality, coastal flooding and the historic environment and archaeology.

The SEA also identified beneficial impacts on coastal processes as the reduction in the amount of defences along this stretch of the coastline will allow for a more naturally functioning coastline to develop. This in itself could result in positive impacts along some sections of the SMP area as it will allow the natural beaches to re-establish and sediment supply to be maintained to a number of European protected sites. The reduction of defences will also have beneficial impacts on a number of SSSI and SAC designated cliffs which are designated for their geological exposure.

As discussed the SEA process was not commenced at the SMP outset and thus the influence over the plan has been limited albeit the SEA has been used to refine policy options as highlighted above. The results of the SEA, however, will be used as a starting point to inform the coastal strategies and future SMP reviews as well as highlighting areas where there are uncertainties and which require future monitoring in order to confirm or otherwise the results of the assessment.

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6 Influence of Consultation

6.1 Background

The publication of the SMP in November 2006 generated a great deal of discussion. Whilst the Plan had been prepared in accordance with the SMP guidance, some of the policies proposed proved highly controversial. This process generated 2,430 responses, predominantly objections, from residents, businesses, Parish Councils and other organisations. In particular, proposed policies involving 'managed realignment' or 'no active intervention' in previously defended areas caused alarm. This was because many important questions went unanswered about how and when such changes might be made, and whether any support would be provided to affected communities and individuals. As a result, the local authorities and other operating authorities either made their own amendments to the published document, or simply did not adopt the SMP. This was not a satisfactory outcome, not least because the SMP is necessary in order to secure funding for those locations where defences are to be maintained.

Following this there were discussions between the local authorities and a variety of key local groups. These helped to develop a better understanding of the concerns and helped the various parties to begin to work together towards an agreed final document. In particular, SMP documents did not deal with the consequences of proposed shoreline management policies. This has proved to be one of the major areas of concern for affected coastal communities. As a result of the public response to the SMP the Government was lobbied to address these important issues. In response, the Government investigated potential ways to facilitate adaptation to coastal change, and Department for Environment, Food and Rural Affairs (Defra) issued guidance in 2009, and launched a number of Coastal Pathfinder Studies, aimed at addressing these challenging issues.

6.2 Development of the SEA

The development of the unified SMP and the SEA was largely aided by an Extended Steering Group (ESG). The ESG involved elected representatives and key players in coastal management from stakeholder groups. Meetings with the ESG were held to aid the process of identifying and understanding the issues, review the objectives and set direction for appropriate management scenarios, as well as to review and comment upon the Plan and its policy options.

6.3 Influence of the SEA Consultation on the SMP

Consultation took place on the SEA from May-July 2010. Its purpose was to make stakeholders aware of the SEA Report and final SMP Policies and to provide stakeholders with an opportunity to support or object and to move to resolve any remaining differences. The key questions of the consultation were to establish:

- Whether the environmental issues associated with the SMP had been completely identified;
- If the report used appropriate evaluation criteria in order to identify the potential effects of the plan;
- If the information provided within the report was correct; and

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- If any issues or detail had been omitted which should be a key element of the assessment.

Over 100 consultation responses were received. Each response was addressed individually however these were grouped into key themes. Where appropriate the SEA and thus the SMP were updated to reflect these changes. The majority of the changes made to the SEA and thus the SMP were factual amendments, however changes were made to policy options for units 6.10 and 6.21. The comments received have been addressed through a number of different mediums in particular these have been addressed within the action plan. This sets out a series of actions to be addressed through the coastal strategies when more detail is established. The responses received during consultation guided the action plan so that the key issues raised are at the forefront of this document. Mitigation measures as set out within the SEA have been included within the action plan to ensure the issues raised will be appropriately actioned.

Two of the key issues raised during the consultation was the loss of value to properties / compensation and the request for continued protection. These comments will be addressed through SMP actions which assess and seek to address the consequences of changing a currently defended area to managed realignment or no active intervention. Social mitigation measures will be identified before a SMP policy change from a currently defended coastline to managed realignment or no active intervention. If measures are not implemented the defences will continue to be maintained. The mitigation measures will be established through effective engagement with local stakeholders in order to identify appropriate solutions and policies will be developed to mitigate and minimize potential blight on the wider communities. The existing defences will be maintained until further assessments are undertaken to confirm the deliverability of the policy options proposed.

The following table outlines the other key themes which were raised and details how the process will address them:

Table 6.3 – Key themes raised	
Key Themes Raised	Method of Addressing Themes
Continued Protection	See text above
Loss in value of properties / compensation	See text above
Concerns were raised as to the effects dredging is having on coastal erosion	Monitoring will continue and coastal strategies will seek to further clarify the effects of dredging, if any, on the SMP coastline.
The effects Great Yarmouth outer harbour is having on coastal erosion	The Harbour has a legal requirement for monitoring to be undertaken relating to the newly constructed Great Yarmouth Outer Harbour. Where required,

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	measures should be implemented to minimise any effect of the harbour development on the coastal communities to the south of this development.
How do you know the erosion predictions are correct and that the proposed policies are suitable?	A detailed database will continue to be developed that will record information such as coastal erosion, flooding events, modeling outcomes etc. This will ensure that policies are developed using adequate and appropriate data.
Concerns that the coastlines rich heritage will be degraded by losses due to coastal erosion.	The detailed coastal strategies will confirm the risks to these assets and where effect is unavoidable mitigation will be developed in consultation with English Heritage and the appropriate local authority
Concerns were raised that the SMP will result in effects on wildlife and in particular marrams	The effects on protected sites and species have been predicted within the SEA and HRA, the assessment of effects was based on existing information. Mitigation presented in both the SEA and HRA and the action plan have a commitment to undertake further detailed monitoring and modeling to clarify effects and where appropriate revisions made to SMP policies in future plan reviews and or appropriate mitigation developed such as compensatory habitat.

6.4 Continuation of engagement

Following amendments to a number of policies as a consequence of consultation the SEA was updated and re consulted upon. In total 17 responses were received from the re consultation, all of which were from Hopton and related to a request for protection and a public meeting to understand the SEA. Whilst stakeholder engagement has been integral to the development of the SEA and SMP process throughout, the extent of the plan covers a wide area and thus a wide area of stakeholders. It is recognised that it is essential to maintain the involvement of the wider community to a greater degree than has previously been the case. This engagement with the local communities will be a forefront of the development of the strategies.

7 Summary of Effects

7.1 Introduction

This chapter summarises the significant effects that have been predicted as a result of implementing the plan. Where significant effects have been identified mitigation measures have been proposed and actions included within the action register as part of the SMP to reduce the significance of any effects. These measures will be implemented through the coastal strategies and projects falling out of the those strategies, and where required revisions to policy options made through the SMP review process.

7.2 Protected sites and species

The potential effects on European Sites was considered within the Habitat Regulations Assessment. A summary of the findings of this assessment is included in section 2.4 of this report.

Generally the impact of SMP6 on other protected sites that are located along the coastline will be beneficial, as where defences are allowed to deteriorate and fail this will result in increased exposure of a number of SSSIs that are designated for their geological exposure. However, there is the potential for some negative impacts in the short and medium term on some small sections of these sites, where the defences are maintained to allow for appropriate social mitigation to be implemented; however ultimately the long term aim is to allow the coastline to function naturally.

7.3 Environmental Changes

7.3.1 Ecosystems and biological diversity

Ultimately the overall aim of SMP6 is to achieve, as far as possible, a naturally functioning coastline. The movement of policy units from being defended to no active intervention will result in the loss of cliff top habitats and grasslands. Yet it should be noted that the influence of SMP6 could potentially result in new habitats being forming as the coastline adjusts to more natural processes.

7.3.2 Sediment, geology, geomorphology (coastal processes)

Where the SMP6 policy results in sections of the coast changing from being defended to no active intervention or managed realignment this will result in beneficial impacts on coastal processes as it will allow a more naturally functioning coastline and encourage beach development. On the other hand, the reverse is true within policy units such as Cromer and Great Yarmouth, where the policy option is to hold the existing defence line into the long term as this will have a negative impact on coastal process and, at some locations, a complete loss of the beach.

7.3.3 Water quality

As described in Chapter 2, a separate report has been produced which assesses SMP6 against the requirements of the Water Framework Directive (WFD). This report assessed the potential

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for impacts on whole water bodies. The SEA identified the potential for impacts at a local scale within the individual policy units. It has been identified that where the policy options result in a loss of infrastructure, such as properties, roads and any associated services such as sewers, this could have a negative impact on water quality if without mitigation. Within several of the policy units sewage pumping stations are located close to the coast which, if allowed to erode without appropriate mitigation in place, could have a negative impact on local water quality. In addition there is an oil dump within policy unit 6.23 which, if the no active intervention policy option is implemented, will result in oil dump eroding during the medium term. If this is allowed to happen without remediation first taking place, then there will be adverse impacts on water quality.

7.3.4 Coastal flooding

An increase in coastal flooding in the future will primarily be attributed to a rise in sea level. However where coastal flood defences are currently present but are proposed to be removed or allowed to deteriorate, this will have a negative impact on coastal flooding. Within policy units where the intention is to hold the existing defence line, protection against flooding will continue. However, it is within these units where the beach will be significantly reduced or lost in the long term, which will result in the defences becoming more exposed and increasingly in need of maintenance.

7.3.5 Dust, noise and reducing CO₂ emissions

The SEA identified that impacts on these topics will be temporary and short term. Where increased maintenance / replacement of coastal defences are required this could have short term temporary impacts on noise, dust and increased CO₂ emissions.

7.3.6 Adapting to the change in climate

It is predicted that in the future the climate will become warmer, with wetter winters and dryer summers. It is also predicted that there will be sea level rise (6mm/year (Defra 2003) and increased storminess, including an increased frequency in storm surges. The SEA identified negative impacts on policy units where no defences are proposed. Oppositely, positive impacts have been identified in the policy units where it is proposed that the defences will remain in place, providing protection against storm surges and a rise in sea level. However, it should be noted that where defences are lost or allowed to deteriorate and a naturally functioning coastline is allowed to develop, this in itself will provide a level of natural protection against the effects of change in climate, whereas where the defences remain it is highly likely that increased maintenance will be required in order to protect their integrity.

7.3.7 Historic environment and archaeology

Where the policy option is for no active intervention or managed realignment, coastal archaeological and historical sites will be lost as a result of coastal erosion. These sites include monument sites of high importance within policy unit 6.01; listed buildings the 'Sea Marge' and 'The Pleasaunce' within policy unit 6.06; a Saxon Cemetery in policy unit 6.09; heritage buildings

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on the Sites and Monuments Record (SMR) register in policy unit 6.11; a Grade I listed St Mary's Church and grade II listed Manor House and Hill Hotel within policy unit 6.12 and a Grade I listed Waxham Barn in policy unit 6.13 under the managed realignment scenario (note that the policy 6.13 is conditional on holding the existing line).

7.3.8 Natural landscape and seascape

In general where the policy options are for no active intervention or managed realignment this will result in a naturally functioning coastline and in general a positive effect on the natural landscape. Where the defences are to remain in place, and as a result the beach is lost, this will have a negative effect on the natural landscape. In addition where coastal erosion is allowed to take place within the AONB this will result in a net loss of the area and could have an effect on local character as a result of property loss and any associated change in land use. However, it should be considered that the ultimate aim along the AONB coastline is to allow natural processes to take place.

7.3.9 Built landscape and townscape

The SEA identified that in general where the policy options are to hold the line preventing property loss there will be a positive effect on the built landscape and where the defences are allowed to fail resulting in property loss there will be a negative effect. However, there could be indirect effects on the town areas caused by blight and dereliction associated with impacts on the tourism industry caused by the loss beaches along the frontage and property and infrastructure in the surrounding areas.

7.3.10 Coastal material assets

Where no active intervention and managed realignment policy options have been adopted there will be loss of property and infrastructure thus within these policy units a negative impact on coastal material assets has been identified in the SEA.

7.3.11 Coastal activities and industries

Where property, infrastructure and land are lost, this will have a negative effect on coastal activities and industries. The loss of tourist facilities, such as holiday homes and caravan parks, may result in negative impacts on the local tourist economy. In addition the loss of beach along the main town frontages such as Cromer and Great Yarmouth, could also result in an impact on the local tourist trade. Other industries along the coast may also be affected as a result of the loss of coastal roads, preventing employees and supplies reaching these industries.

7.3.12 Physical and mental wellbeing

Adverse effects on physical and mental well being are identified where the policy options will result in a loss of property, in particular homes and businesses. It has also been identified that in the areas where the hold the line policy is proposed in the long term, which will protect property, this may also result in a negative impact on physical and mental wellbeing associated

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with a downturn in tourism and any associated blight as a result, for example due to the loss of beaches.

7.3.13 Cumulative Environmental Effects

For impacts to be fully assessed the cumulative effects along the shoreline also needs to be looked at as implementing a policy within one unit may result in impacts further along the coast. For example maintaining defences in one policy unit may prevent the supply / transfer of sediment along the coast. Cumulative impacts can also be secondary for example the loss of the beach could result in a reduction in visitor numbers. These impacts were also assessed and are detailed further within the SEA.

7.4 Mitigation and Residual Effects

The SMP is a very high level plan and the policies contained within it will be subject to the more detailed activities set out within the SMP Action Plan to determine viability of the plan in terms of the economic, social and environmental impacts. Until these detailed actions are carried out it is not possible to determine detailed mitigation measures as the specific impacts are not fully known. However, changes of policy away from coast protection will only be implemented once appropriate mitigation has been developed.

As the detailed strategies have not been carried out, The SEA has not identified specific mitigation measures, therefore at this stage it has not been possible for the SEA to predict the residual effects of the assessment as they could be misconstrued. It is expected that once the detailed activities have been undertaken and detailed mitigation developed some of the significant adverse impacts that have been identified will be reduced.

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8 Environmental Monitoring

Environmental monitoring is a fundamental ongoing process throughout the lifetime of the SMP. The information gathered through monitoring will assist the relevant authorities in identifying and mitigating the environmental effects of implementing the adopted plan. Monitoring of the shoreline is necessary to identify ongoing behaviour, together with targeted study/investigation where specific aspects need to be addressed to enable SMP implementation. These aspects will include a wide range of issues such as social and economic consequences and potential impacts on areas of habitat of international importance. If adverse environmental effects are identified, these can be addressed by altering the way in which the plan is implemented.

The uncertainties associated with high level, strategic assessment make monitoring all the more important. Monitoring allows for periodic checks to confirm the accuracy of the assumptions on which the original assessment was based and to ensure that the proposed mitigation measures remain relevant and are being effectively implemented. Monitoring and mitigation go hand-in-hand and one holds implications for the other.

Monitoring should measure the following:

- A change in environmental baseline that will indicate the effects of the plan;
- The significant effects that have been identified during this the assessment;
- Whether the mitigation measures proposed to offset or reduce the significant effects have been implemented and are effective; and
- Any unforeseen impacts that have occurred.

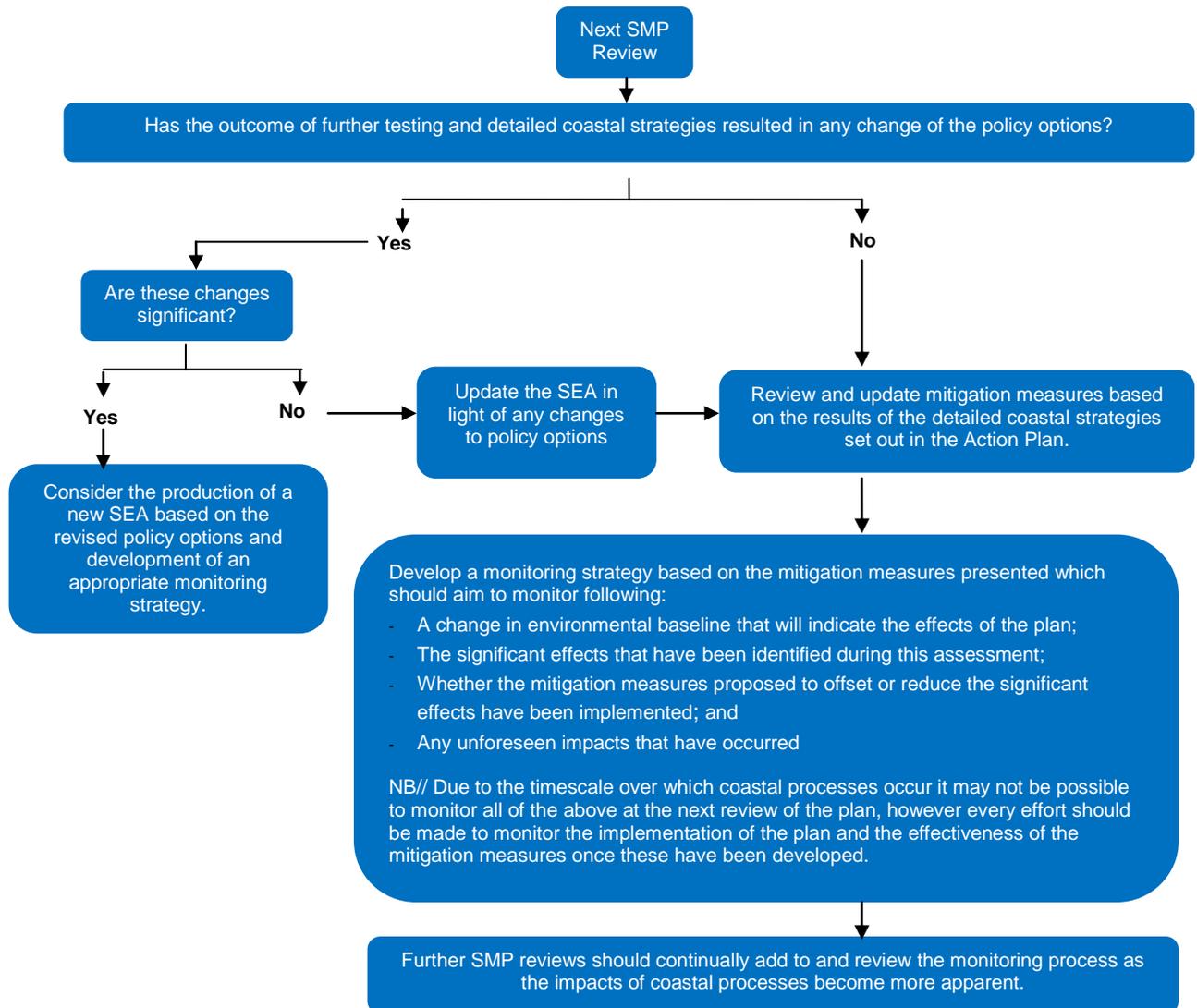
As highlighted previously, the SMP, and therefore the SEA, is high level nature. In addition there is uncertainty surrounding the implementation of the policy options until further strategies have been carried out. As a result it was not possible to present a detailed monitoring strategy for the SMP environmental effects in the SEA. It was therefore proposed that monitoring should instead be tightly linked to the five to ten yearly reviews of the SMP and a commitment made in the Action Plan of the SMP to pursue this monitoring at the appropriate time. This monitoring will ensure the additional detail is available within the next review to produce a more detailed monitoring plan.

The entire frontage is routinely monitored as part of the Anglian Coastal Monitoring Programme, led by the Environment Agency. Data collected from this monitoring programme will be used to review predicted cliff retreat rates and provide information for future updates of the SMP, continually improving certainty in the shoreline evolution and the extent of erosion that may be expected.

The SEA presents a high level monitoring strategy which is intended to provide guidance until the uncertainties which surround the policy options are determined based on the outcomes of future strategies

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Monitoring Strategy



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Glossary of Terms

Area of Outstanding Natural Beauty (AONB) – sites in England, Wales and Northern Ireland designated to conserve and enhance the natural beauty of the area which comprises the area's distinctive landscape character, biodiversity and geo-diversity, historic and cultural environment.

Broads – A National Park in Norfolk (east) and Suffolk (north) made up of coastal and inland areas. It is Britain's largest wetland system, designated at international, European and national levels and an area popular for recreation.

Dune systems – areas of actively moving sand, typically located transversing the coast.

Environmental Report (ER) – a document prepared as part of the Strategic Environmental Assessment process that report's findings, identifies options for mitigating adverse effects and opportunities for enhancing or improving the overall sustainability of the environment assessed.

Habitat Regulations Assessment (HRA) – A process undertaken, specified under Habitat Regulations (Amendment) 2007 to assess any likely significant impact upon Natura 2000 (SPA / SAC) or Ramsar sites that could result from the effects of a plan / programme or development.

Listed buildings – a protected structure recorded on the Statutory List of Buildings of Special Architectural or Historic Interest.

Marrams – grasses common to sandy coastal environments. They are able to withstand dry conditions and important for sand dune development due to their stabilising nature.

Policy unit – a length of the coast which shares process characteristics and has similar economic assets at risk.

Ramsar sites – wetland sites that are of international importance and designated under the Ramsar Convention (signed in Ramsar, Iran 1971). This designation aims to conserve wetlands.

Shoreline Management Plan (SMP) – a report providing large-scale assessment of the risks associated with coastal evolution and a policy framework to address these risks to people and the developed, historic and natural environment in a sustainable manner.

Site of Special Scientific Interest (SSSI) – this conservation designation protects sites of wildlife and geological value in the United Kingdom.

Soft glacial cliffs – Natural coastal landforms made of boulder clay material, formed in ice age epochs, which can be susceptible to coastal erosion.

Special Area of Conservation (SAC) – sites designated under the European Union's Habitats Directive giving heightened protection to species of flora, fauna and habitats (excluding birds).

Special Protected Area (SPA) – a European designation of sites in European Union countries protected under the 'Birds Directive 1979' given to areas identified to have International importance for the breeding, feeding, wintering or migration of rare and vulnerable bird species.

Statement of Environmental Particulars (SoEP) – A document produced in accordance with 'The SEA Regulations' under the Environmental Assessment of Plans and Programme

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Regulations 2004. The statement overviews how the SEA process and consultation undertaken contributed to the adopted plan / strategy / programme it accompanies.

Strategic Environmental Assessment (SEA) – a process that is a requirements under certain plans and programmes under the SEA Directive and associated Environmental Assessment of Plans and Programmes Regulations 2004. The Directive seeks to ensure that environmental considerations are taken into account alongside economic and social considerations in the development of a plan / programme.

Water Framework Directive (WFD) - a European Union Directive, which became law in England and Wales in 2003, that introduces an integrated approach to the protection, management and monitoring of the water environment. It looks to protect and enhance rivers, lakes, estuaries and coast waters (one mile out from the low water mark) by setting out chemical and ecological objectives for these environments to achieve.