

Suffolk Shoreline Management Plan 2
Statement of Case for Imperative Reasons of Overriding Public
Interest (IROPI)

Suffolk Coastal District Council

October 2010

Submission to the Secretary of State

CONTENTS

	Page
1 INTRODUCTION	1
2 BACKGROUND AND CONTEXT TO THE SUFFOLK SMP	2
2.1 Background to the Suffolk SMP	2
2.2 Key Conclusions of the HRA	5
2.3 In-combination assessment	5
2.4 Assumptions of the Statement of Case for IROPI	5
2.5 Quantification of Compensatory Habitat Requirements	6
3 APPENDIX 20 - BENACRE TO EASTON BAVENTS SPA	7
4 APPENDIX 20 - MINSMERE–WALBERSWICK SPA/RAMSAR	19
5 CONCLUSIONS	37
6 REFERENCES	38

FIGURES

Figure 1	International sites considered within Statement of Case
Figure 2	Benacre to Easton Barents SPA
Figure 3	Minsmere-Walberswick SPA and Ramsar
Figure 4	Anticipated habitat loss across SMP epochs

TABLES

Table 2.1	Management policies used in SMP development
Table 2.2	Management Area – 07 (COV 7.1 to COV 7.2)
Table 2.3	Management Area – 10 (BLY 10.1 to BLY 10.3)
Table 2.4	Management Area – 11 (DUN 11.1 to DUN 11.4)
Table 2.5	Management Area – 12 (MIN 12.1 to MIN 12.4)
Table 3.1	SMP policies anticipated to have an adverse effect
Table 4.1	Management Area 10 SMP policies anticipated to have an adverse effect
Table 4.2	Management Area 11 SMP policies anticipated to have an adverse effect
Table 4.3	Management Area 12 SMP policies anticipated to have an adverse effect
Table 4.4	Amount of habitat lost and compensatory habitat required

APPENDICES

Appendix 1	Suffolk SMP2 Habitats Regulations Assessment
Appendix 2	Suffolk SMP 2

1 INTRODUCTION

Suffolk Coastal District Council (SCDC) is the lead authority, along with Waveney District Council and the Environment Agency for the second Suffolk Shoreline Management Plan (SMP). During the development of the SMP2 a Habitats Regulations Assessment (HRA) was undertaken to take into account the requirements of Article 6(3) of the 'Habitats Directive'¹. Following the detailed assessment process (the Appropriate Assessment), it was not possible to conclude that the SMP would not lead to adverse effects on the integrity of the following sites of international nature conservation importance:

- Benacre to Easton Bavents Special Protection Area (SPA)²; and,
- Minsmere–Walberswick SPA/Ramsar³.

Under the Habitats Directive, and in accordance with the precautionary principle, if the HRA is unable to conclude that there will not be an adverse effect on integrity, despite the consideration and adoption of any available avoidance measures, then where appropriate and there being no alternative solutions a Statement of Case for Imperative Reasons of Overriding Public Interest (IROPI) must be submitted to, and agreed by, the Secretary of State for Environment, Food and Rural Affairs before the SMP2 can progress.

The Statement of Case for IROPI provides the evidence that no feasible alternatives exist and that the chosen SMP policies are necessary. Where projects are allowed to proceed on this basis, compensatory measures must be secured to ensure that the overall coherence of the Natura 2000⁴ network and Ramsar sites are maintained.

The purpose of this Statement of Case for IROPI report is to:

- Introduce the background and context to the Suffolk SMP2 in relation to the HRA;
- Provide the key conclusions of the HRA;
- Outline the need to undertake the Statement of Case for IROPI;
- Consider alternative options and the reasons for their rejection;
- Describe the IROPI for the pursuit of the SMP;
- Provide information on the compensatory habitat measures proposed; and,
- Describe the cumulative effects of the SMP on the international sites.

¹ Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.

² Special Protection Areas (SPA) are designated under the Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds).

³ Ramsar sites are designated under the Ramsar Convention (The Convention on Wetlands of International Importance especially as Waterfowl Habitat). UK Government policy (ODPM Circular 06/05) requires that Ramsar are subject to the requirements of the Conservation of Habitats and Species Regulations (SI 2010/490).

⁴ SPAs, potential SPAs, Special Areas of Conservation (SACs), candidate SACs and Sites of Community Importance (SCI)

2 BACKGROUND AND CONTEXT TO THE SUFFOLK SMP

2.1 Background to the Suffolk SMP

The Suffolk SMP2 provides a large-scale assessment of the risks associated with coastal evolution along this stretch of coastline (from Lowestoft Ness to Landguard Point) (**Figure 1**). SMPs are non-statutory assessments which aim to bring about reduced risks to the social, economic, natural and historical environment, while providing sustainable shoreline management over the next century, by using a range of methods which reflect both national and local priorities, to (Defra, 2006a):

- 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 was produced for the coastline of England and Wales in the late 1990s, based on sediment cell boundaries. These related to the movement of sand and shingle along the coast and, in most cases, the boundaries of the cells were set at locations where the net 'along shore' movement of sand and shingle changed direction. The current program of SMPs, SMP2s reflects the availability of new information about coastal processes, new considerations (for instance regarding site designations) and reduced uncertainty about climate change.

The most appropriate option for shoreline management will depend on the section of coastline in question and on technical, environmental, social and economic considerations. The four policy options available for shoreline management in the second generation SMPs are presented in **Table 2.1**.

Table 2.1 Management policies used in SMP development

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

Within the development of an SMP, an epoch (time period) based approach is used for planning purposes. The three epochs considered with SMP2s (short-, medium- and long-

term) broadly correspond to time periods of 0 – 20 years, 20 – 50 years and 50 – 100 years respectively.


For the purposes of policy selection within the SMP2 boundary the area was initially split into large segments of coast called Policy Development Zones (PDZ). There are seven PDZ within the Suffolk SMP2 study area. Each PDZ is then split into a number of Management Areas (MAs) to provide discrete, spatial areas for policy application. For the purposes of the Suffolk SMP2 there are 20 MAs which are then further divided into policy units (in total there are 66 policy units within the SMP2 area).

There are a number of Natura 2000 sites and Ramsar sites potentially affected by the Suffolk SMP2 and the implications of different policy options were carefully considered for each of them. However, it proved impossible to identify policies that would have no adverse consequences in all instances. This Statement of Case sets out the reasons why this is the case.

The proposed Suffolk SMP2 has the potential to adversely affect the site integrity of two International sites. These sites span the following MAs: 07; 10; 11; and, 12. The selected policies for each of these MAs are listed in **Tables 2.2 to 2.5**. The policies identified as leading to an adverse affect on site integrity are highlighted in green and only these are discussed further in this report. MAs are presented from north to south, and grouped according to which international site(s) they are expected to affect.

Benacre to Easton Bavents SPA

Table 2.2 Management Area – 07 (COV 7.1 to COV 7.2)

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
COV 7.1	Benacre Broad to Easton Broad	NAI	NAI	NAI	The policy would not preclude local small scale management of erosion to the cliffs if it could be demonstrated that any works would not impact on the overall sediment supply to the foreshore, did not significantly interrupt sediment drift and did not have a material impact on the nature conservation interests, geological processes and landscape quality of the area.
COV 7.2	Easton Broad	MR	NAI	NAI	The Southwold to Wrentham highway at Potter's Bridge will be exposed to increasing levels of flood risk.
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment  – Policy units where application of the preferred policy may result in an adverse affect on the integrity of Easton Bavents SPA					

Minsmere–Walberswick SPA/Ramsar

Table 2.3 Management Area – 10 (BLY 10.1 to BLY 10.3)

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
BLY 10.1	Lower inner estuary	MR	MR	MR	Maintaining the northern defences, subject to confirmation of funding.
BLY 10.2	A12 (middle estuary)	HTL	HTL	HTL	Improve defence.
BLY 10.3	Upper estuary	NAI	NAI	NAI	
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment – Policy units where application of the preferred policy may result in an adverse affect on the integrity of Minsmere – Walberswick SPA/Ramsar site					

Table 2.4 Management Area – 11 (DUN 11.1 to DUN 11.4)

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
DUN 11.1	Walberswick	HTL	HTL	HTL	Maintain and improve flood defences.
DUN 11.2	Walberswick Marshes	MR	MR	MR	Examine opportunity for managing inland defences.
DUN 11.3	Dunwich rear defences	HTL	HTL	HTL	Maintain and improve flood defences.
DUN 11.4	Dunwich Cliff	MR	MR	MR	Low level management is not precluded.
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment – Policy units where application of the preferred policy may result in an adverse affect on the integrity of Minsmere – Walberswick SPA/Ramsar site					

Table 2.5 Management Area – 12 (MIN 12.1 to MIN 12.4)

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
MIN 12.1	Dunwich and Minsmere Cliffs	NAI	NAI	NAI	
MIN 12.2	Minsmere North	MR	MR	NAI	Encouraging development of a more natural transition between the shingle bank and the cliffs.
MIN 12.3	Minsmere Central	MR	MR	MR	Through management of the sluice. In effect this would require holding the position of the sluice but in the context of managed realignment of the overall unit.
MIN 12.4	Minsmere South	MR	MR	MR	Possible minor works to address local weak spots.
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment – Policy units where application of the preferred policy may result in an adverse affect on the integrity of Minsmere – Walberswick SPA/Ramsar site					

As shown in **Table 2.1** the shoreline management policies considered are those defined by Defra and as such, at this strategic level, there is no scope to assess other potential policy options.

2.2 Key Conclusions of the HRA

The HRA (**Appendix 1**), which includes the Appropriate Assessment, concluded that the Suffolk SMP2 has the potential to have an adverse effect on the integrity of two internationally designated sites:

- Benacre to Easton Bavents SPA; and,
- Minsmere–Walberswick SPA/Ramsar.

The key issues identified within the HRA:

- Loss of coastal brackish, freshwater and intertidal habitat through coastal squeeze, and overtopping/failure of defences as a result of sea level rise and climate change;
- The need to provide static and dynamic shingle areas in a balance to maintain featured vegetation;
- The importance of the interaction between estuaries and coastal habitat;
- The requirement for the maintenance of habitat for bird species; and,
- The requirement for a Statement of Case for IROPI.

Within the HRA and the development of SMP policy, some of the issues above were addressed to ensure that an adverse effect was avoided. However, the issues relating to the loss of freshwater habitat could not be prevented in all instances and the HRA was therefore unable to conclude no adverse effect on the integrity of the Benacre to Easton Bavents SPA and Minsmere–Walberswick SPA/Ramsar sites.

2.3 In-combination assessment

A wide range of plans and projects in the Suffolk coastal area were considered for their potential to have in-combination effects on the Natura 2000 sites and Ramsar sites under consideration. In particular, the potential adverse effects of this SMP have been considered in combination with the Environment Agency's three Suffolk Estuary Flood Risk Management Strategies (including the Blyth Estuary Strategy) and Land-use plans. The details of this assessment are provided in Section 5 of the HRA (Appendix 1). No adverse in-combination effects were identified.

2.4 Assumptions of the Statement of Case for IROPI

Key assumptions which have been made in the HRA are that:

- All other competent authorities will perform their duties; and,
- The Regional Habitat Creation Programme (RHCP) will deliver the compensatory habitat in advance of loss and to the satisfaction of Natural England.

It is also recognised that there is incomplete knowledge regarding the response of coastal systems (and the secondary impacts based on shifts in the natural defence function that shingle provides on this coast) to sea level rise over the full lifetime of the plan.

The Suffolk Coast and Estuaries Coastal Habitat Management Plan (CHaMP) (Guthrie and Cottle, 2002) has been a key document in the development of the SMP and the HRA. However, since the completion of the CHaMP in 2002 revised figures for sea level rise have been published (Defra, 2006b). Additionally the SMP2 process provided the opportunity to reconsider various management options along the coast. Therefore whilst the CHaMP remains useful reference in the appraisal of policy and alternatives, its findings may not be universally consistent with current thinking.

2.5 Quantification of Compensatory Habitat Requirements

Baseline erosion rates (based on monitoring and historical data and as stated in the SMP2) have been used to quantify the potential loss of habitat through direct land loss. This direct loss has been calculated based on the maximum erosion range at the end of each of the three Epochs (20, 50, and 100 years) and therefore represents a 'worst-case' estimation. In addition to the direct loss, areas of indirect habitat change, as a result of increased flooding, have been provided based on the EA Flood Risk Zone 2 (0.5% annual exceedance probability (AEP) (1 in 200 year tidal flood event)). For the MAs within the estuaries, precautionary estimates of direct habitat loss based on the worst case scenario at the end of Epoch 3 (100 years) have been made due to the lack of detailed information.

All direct and indirect habitat loss/change calculations are based on the implementation of the preferred policies. Habitat loss/change has been calculated for the MAs where the preferred policies are considered to result in an adverse effect on the integrity of the international sites.

The indicative habitat losses/changes are shown for each of the designated sites on **Figures 2 to 4**.

In discussions with Natural England to specify compensatory requirements, due regard will need to be given to the need for a multiplier of habitat quantity to ensure that functionality across the network is maintained. Within this assessment a 1:1 Ratio for compensatory habitat has been provided.



Habitats Directive Information to the Secretary of State/Welsh Ministers according to Article 6(4) of the Habitats Directive

Purpose: This document provides a framework and proforma for the provision of information to the Secretary of State/Welsh Ministers for cases of Overriding Public Interest under the Habitats Directive.

Scope: This document provides a format for Environment Agency staff to use when providing information to the Secretary of State/Welsh Ministers over cases of OPI under the Habitats Directive.

A: ADMINISTRATION

B: SITE DETAILS

C: SUMMARY OF THE PLAN OR PROJECT HAVING AN EFFECT ON THE SITE

D: SUMMARY OF THE ASSESSMENT OF THE NEGATIVE EFFECTS ON THE SITE

E: MODIFICATIONS CONSIDERED

F: ALTERNATIVE SOLUTIONS CONSIDERED

G: IMPERATIVE REASONS

H: COMPENSATION MEASURES

I: SUPPORTING DOCUMENTATION

A: Administration details

Date: 5th October 2010

Plan/Project Reference: Suffolk SMP 2

Contact person: Ian Cappitt - National Environmental Assessment Service (NEAS)

Address: Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE2 5ZR

Tel: 01733 464596

Fax: 01733 464372

E-mail: ian.cappitt@environment-agency.gov.uk

B: Site details

Name of European site affected: Benacre to Easton Bavents

- This site is:
- a designated Special Area of Conservation (SAC)
 - a candidate SAC under the Habitats Directive
 - a classified Special Protection Area (SPA)
 - a proposed SPA under the Birds Directive
 - a Ramsar hosting a priority habitat/species
 - a Site of Community Importance (SCI)

C: Summary of the plan or project having an effect on the site

Introduction

During the development of the SMP2, implications for Internationally designated sites, which fall within or adjacent to the study area (**Figure 1**) have been considered through an assessment under the Habitats Directive (HRA) This process concluded that there is the potential for adverse effects on the integrity of two international sites (Benacre to Easton Bavents SPA and Minsmere to Walberswick SPA/Ramsar) as a result of chosen SMP policies.

This chapter presents the statement of case for Benacre to Easton Bavents SPA Chapter 4 presents the statement of case for Minsmere to Walberswick SPA/Ramsar.

Table 3.1 presents the preferred policies anticipated to have an adverse effect on Benacre to Easton Bavents SPA

Policy Unit		2025	2055	2105
COV 7.1	Benacre Broad to Easton Broad	No Active Intervention	No Active Intervention	No Active Intervention
COV 7.2	Easton Broad	Managed Realignment – This policy specifically recognises the short term need to manage the loss of freshwater habitats	No Active Intervention	No Active Intervention

Key features of Benacre to Easton Bavents SPA

Benacre to Easton Bavents SPA comprises four broads:

- Easton;
- Benacre;
- Covehithe; and,
- Denes.

The Benacre to Easton Bavents SPA comprises freshwater reedbeds in coastal valleys with saline lagoons and shingle ridges at the seaward end.

Preferred policies for Policy Units COV 7.1 and 7.2 have been determined to affect Easton, Benacre and Covehithe broads only (for this reason Denes Broad is not considered any further). The key features of Easton, Benacre and Covehithe broads are outlined below:

- over wintering and breeding population of Annex 1 birds associated with the reedbed and shingle habitats within or on the periphery of the lagoons;
- important numbers of bittern *Botaurus stellaris* (Annex 1 bird species) during the breeding season (reedbed at Easton Broad and Benacre Broad in 2009 and 2010);
- over wintering bittern (reedbed at Easton, Benacre and Covehithe broads);
- breeding populations of marsh harrier *Circus aeruginosus* (Annex 1 bird species) (reedbed at Easton, Benacre and Covehithe broads); and,
- suitable breeding habitat for little terns *Sterna albifrons* (Annex 1 bird species), although there are no recent records of little tern using the shingle at Easton Broad probably due to the historic management. Little tern nest annually at Benacre Broad (*pers.comm.* Natural England, 2010).

Current and historic management

The only broad that has been managed is Easton Broad. Until very recently, management comprised mechanical management of the shingle ridge (by bulldozing) and control of the water levels using a pumping station/sluice. Mechanical management at this broad stopped in 2006 following damage due to a storm surge and advice from Natural England that the mechanical management of the ridge was not consistent with the conservation objectives for the saline lagoon behind the ridge. Since then the shingle ridge has become lower and wider, and although it still overtops it breaches less frequently than previously. Water levels are still managed using the pump, and the outfall pipe is cleared of shingle from time to time to allow drainage through the shingle bar.

No management has been undertaken to the shingle ridge at Benacre and Covehithe broads.

Relationship to other Natura 2000 sites

Benacre to Easton Bavents SPA has an integral link with the Benacre to Easton Bavents Lagoons SAC, in particular, the saline lagoons at Benacre Broad, Covehithe Broad and Easton Broad (Figure 2) which are situated between the reedbed and shingle ridge habitats. The saline lagoons are a natural feature and result from ponded streams behind the shingle ridges. Sea water enters the lagoons by percolation through the shingle ridges or by overtopping during storms and high spring tides. Natural England's advice is that mechanical management of the ridge was not consistent with the conservation objectives for the saline lagoon, in that the natural processes of percolation and overtopping were affected. Natural England also advised that the eventual loss of the saline lagoon due to tidal inundation at some stage in the future is consistent with their naturally ephemeral nature, and is also consistent with the conservation objectives for this feature. Hence no adverse effect on the saline lagoon habitat has been concluded. The decision to stop mechanical management of the shingle bar has, in any case, been taken in advance of this SMP2.

The integrity of the Benacre to Easton Bavents Lagoons SAC is not anticipated to be adversely affected by the SMP based on No Active Intervention i.e. the shingle ridges will be allowed to roll landward naturally. However, this will result in the eventual loss of reedbed habitat, through increased frequency of flooding and increasing saline conditions as a result of the landward migration of shingle ridges and associated saline lagoons.

D: Summary of the assessment of the negative effects on the site

Reedbed habitat supporting SPA features (bittern and marsh harrier) at Easton Broad

Bittern (both breeding and over-wintering) are present in the reedbeds at Easton Broad (the largest reedbed in the whole designation and the second largest in the UK) where the conditions remain at or close to freshwater (ensuring the survival of freshwater prey fish such as rudd and eel for bittern). The reedbeds present also support breeding marsh harrier.

Managed realignment is proposed during Epoch 1 in the area of Easton Broad. The Environment Agency is in the process of considering the details of this managed realignment. Consultation was initially undertaken in 2005, when the preferred option included the provision of a retreated defence to maintain protection to most of the reedbed, whilst allowing the saline lagoon to migrate landward and continuing to provide water management. However, the details of the scheme are still being developed.

At this stage the details of the managed realignment are not known, but the SMP policy is to undertake the managed realignment to an as yet unknown retreated line. As a result, some reedbed will inevitably be lost during epochs 1 and 2, at least in the area between the B1127 and the saline lagoon. However, based on Natural England's advice, short term small scale works will be implemented on site to help avoid deterioration in epoch one prior to the managed realignment scheme. The nature of these works will be discussed and agreed with Natural England. Once details of the compensation requirements are known, they will be delivered through the Environment Agency's RHCP.

Beyond Epoch 1, with a no-active intervention policy, it is anticipated that there would be greater loss of freshwater conditions in the valley, and hence greater impact on bittern and marsh harrier populations. Reedbed habitat will be lost as a result of increased overtopping or failure of the shingle ridge and insufficient drainage leading to more prolonged or ultimately permanent saline inundation. This would be an adverse effect on the integrity on the site. This loss will require compensation, but the timing of loss depends on the details of the finalised scheme and the occurrence of natural events such as storm surges. Hence it is not known at this stage when the habitats upstream of the B1127 will be lost. The area and timing of the habitat compensation requirement will be determined when the Easton Broad scheme is completed. However, it is anticipated that c. 50ha of reedbed will be lost over epochs 1 and 2 and an additional c. 130 lost by the end of epoch 3.

Reedbed habitat supporting SPA features (bittern and marsh harrier) at Benacre Broad and Covehithe Broad

Benacre and Covehithe broads are of value for wintering bittern and for breeding marsh harrier. Benacre and Covehithe broads do not generally have the potential to support breeding bittern because the water present in the reedbeds is too saline. However, in 2009, 3 bittern nests were noted at Benacre Broad, with 2 bitterns booming⁵ so far in 2010, this is thought to be due to the water present becoming less saline.

A policy of no active intervention is proposed across all three epochs at Benacre and Covehithe broads. Reedbed habitat will be lost (approximately 21ha at Covehithe Broad and 87ha at Benacre Broad) through increased overtopping or failure of the shingle ridge, and insufficient drainage leading to more prolonged or ultimately permanent saline inundation. The increased salinity will also lead to the loss of freshwater fish species the primary food source of bittern and marsh harrier, with resulting adverse effects on population. This would constitute an adverse effect on the integrity of the site. This loss will require compensation in advance of loss.

⁵ Male bitterns boom during the breeding season to attract a female and to establish their territory

Overall

The loss of the SPA cited habitat (reedbed) within the freshwater areas of Easton, Benacre and Covehithe Broads (primarily affecting bittern and marsh harrier) is likely to affect the overall functioning of the site and therefore constitutes an adverse effect on the integrity on the site. This loss will require compensation in advance of loss. The compensatory habitat will be delivered in advance of loss by the Environment Agency's RHCP.

E: Modifications or restrictions considered

Initially, the policy option for Policy Unit 7.2 (Easton Broad) was no active intervention in all Epochs. However, this was changed to managed realignment in Epoch 1 in an attempt to minimise the adverse effect on the SPA through loss of reedbed. This allows time for development of modifications to the existing management regime to minimise loss of reedbed, and also allows more time to develop compensatory measures.

Detailed Habitat Regulations Assessments at a strategy/project level will be carried out and project-specific mitigation will be prescribed as part of these.

F: Alternative Solutions considered

The four possible alternative policy options considered in each Policy Unit are described in Section 2 (Table 2.1). These are Hold the Line (HTL), Advance the Line (ATL), Managed Realignment (MR), and No Active Intervention (NAI). In addition to these options, a zero option (i.e. not undertaking or implementing the SMP2) has been considered. This option would involve the continuation of existing policies from SMP1 and strategies which have been approved and supersede the policies of the SMP1. The preferred policies that are assessed as having an adverse effect on the Benacre to Easton Bavents SPA are described in Section C above. A key objective in the appraisal of the options was to try and find a solution with no significant effect on Natura 2000 sites and Ramsar sites. The reasons why the preferred policies were adopted, and alternative options were not considered feasible are set out below for MA 7, which covers Policy units COV 7.1 and 7.2.

Hold the Line

The hold the line management option along the frontage within this MA would involve ongoing drainage measures (to maintain fluvial drainage) and active management of the shingle ridge (to maintain the defence line) through the reprofiling of the shingle ridge in response to weakening or breaches, re-nourishment or by building new structures either on, in front of, or behind the shingle barrier. Adopting a Hold the Line policy through construction of new structures to control movement of sediment on this section has the potential to adversely affect coastal management at Southwold, where significant tourism infrastructure and residential areas would potentially be affected. For these reasons the Hold the Line option is not considered to be a feasible alternative.

The CHaMP evaluated the options for HTL (based on 2006 Defra sea level rise predictions). The CHaMP suggested that three HTL options were available; beach recharge, beach control and direct protection. A summary of the suggested effects of each option are provided below:

- Beach Recharge **+ve** - Maintains SPA habitats
 - ve** - Not sustainable in the long term
 - ve** - Adverse affect on the saline lagoon (SAC feature)

- Beach Control **+ve** - Maintains SPA habitats
 - ve** - Prevents sediment supply to the south
 - ve** - Adverse affect on the saline lagoon (SAC feature)

- Direct Protection **+ve** - Maintains SPA habitats (reedbed)
 - ve** - Loss of shingle habitat (SPA feature)
 - ve** - Control required for the saline lagoons (SAC feature)
 - ve** - Defence structure would need to be large scale

Under a hold the line scenario, the shingle ridge would be held in a seaward position relative to the adjoining coastline, limiting its ability to retreat landwards and roll back naturally. Continued artificial management of the shingle barrier is not consistent with the conservation objective of providing suitable nesting habitat for little terns (SPA designated feature). Sea water enters the lagoons by percolation through the shingle ridges or by overtopping during storms and high spring tides. Natural England's advice is that mechanical management of the ridge was not consistent with the conservation objectives for the saline lagoon (Benacre to Easton Bavents Lagoons SAC designated feature), in that the natural processes of percolation and overtopping are affected. It is therefore concluded that the HTL option would not result in a better outcome for the SPA, and would lead to an adverse effect on the SAC.

Holding the shingle ridge in a seaward position would increase its vulnerability to sea level rise. The ridge is likely to develop a steeper, more unstable profile further increasing its vulnerability. As a major failure becomes inevitable, the effects of the policy would effectively revert to that of non-intervention.

In summary, hold the line is not considered to be feasible for the following reasons:

- Potential to adversely affect coastal management at Southwold, where significant tourism infrastructure and residential areas would be potentially affected;
- Not consistent with conservation objective for nesting little terns (SPA feature);
- Not consistent with the conservation objective of the saline lagoon (SAC feature);
- Increased vulnerability to sea level rise; and
- Risk of uncontrolled/unmanaged breach of the shingle ridge leading to adverse effect on the SPA/Ramsar features.

No Active Intervention (the preferred policy for this MA, with the exception of Epoch 1 in COV 7.2)

No Active Intervention was the preferred policy for this MA, with the exception of Epoch 1 in policy unit COV 7.2.

No Active Intervention was not considered feasible for COV 7.2, in Epoch 1, due to the critical risk to the freshwater features at Easton Broad (part of the Benacre to Easton Bavents SPA site). The preferred option selected for this site in Epoch 1 (Managed realignment) will reduce the potential of habitat loss in the short term and allow time for compensatory habitat to be created.

In summary, no active intervention for COV 7.2 in Epoch 1 was not considered feasible for the following reasons:

- Risk of uncontrolled failure of the shingle ridge leading to loss of reedbed and effects on SPA features; and,
- The need for compensatory habitat to be functional before loss.

Managed realignment (the preferred policy for Epoch 1 in COV 7.2)

Managed realignment is the preferred policy for COV 7.2 for Epoch 1, the intent being to provide short term measures (up to 20 years) whilst compensatory habitat is being created.

With the exception of policy unit COV7.2 in Epoch 1, managed realignment would have no benefit for the SPA. This option was rejected for policy unit COV 7.2 for Epochs 2 and 3, and for policy unit COV 7.1 as the need to manage the landward movement of the shingle ridge was not identified throughout the development of the SMP and would lead to an adverse effect on the saline lagoon (SAC feature). In addition, the frontage at COV 7.2 has not historically been managed and the area will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels.

In summary, managed realignment for COV 7.2 for Epochs 2 and 3, and for policy unit COV 7.1 for all epochs was not considered to be feasible for the following reasons:

- Increasingly difficult to defend and manage; and,
- Adverse effects to both the SAC and SPA features.

Advance the line

There is no social, economic or environmental justification to advance the line in this MA. The frontage within the MA will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels. In addition, an advance the line policy in this MA would have an adverse effect on the saline lagoons (SAC feature), as they would not be able to behave naturally.

In summary, advance the line is not considered to be feasible for the following reasons:

- Adverse effect to the SAC;
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

Zero option

This option would involve not undertaking the SMP2 and, therefore, current policy for COV7.1 (Benacre Broad to Easton Broad) and COV 7.2 (Easton Broad) would continue. Current policy, based on the Lowestoft to Thorpeness Strategy (2003), is no active intervention for the area covered by COV 7.1 and MR for COV 7.2. The difference between the current policy and the SMP2 policy is that for epochs 2 and 3 at COV 7.2 the SMP2 policy is no active intervention.

Managed realignment for COV 7.2 in epochs 2 and 3 would not be feasible for the following reasons (discussed in further detail above):

- Increasingly difficult to defend and manage; and,
- Adverse effects to both the SAC and SPA features.

G: Imperative reasons of Overriding Public Interest

SMPs identify coastal management policies to enable effective use of this fund to reduce risks to life and property in a strategic way. The Flood Risk Management Operating Authorities (including the Environment Agency and coastal local authorities) seek to maximise the benefits to human health and safety that can be achieved with the available funding, and SMPs play a very important role in this process. With sea level rise and increased coastal storminess, it is forecast that flood risk and erosion will increase, resulting in increased risk to life and properties within the SMP2 area. Without the SMP, risk to life and property would not be properly managed.

In partnership with Natural England, the authors of the SMP have identified the least damaging alternative to managing the coastline and its designated habitats over the next 100 years.

There are imperative reasons of overriding public interest for implementing this SMP2, notwithstanding the assessment of adverse effect on site integrity. The reasons are:

- The need to address the wider risks to human health and public safety in the nation; and,
- The SMP as a whole is the least damaging option for the Natura 2000 sites on this section of coast, and will help them to adjust to sea level rise. The SMP therefore also has beneficial consequences of primary importance for the environment.

The Imperative Reasons of Overriding Public Interest specific to this Policy Units COV1 and COV2 are presented below.

Beneficial consequences of primary importance for the environment

The adoption of this policy is necessary to avoid damage to the Benacre to Easton Bavents Lagoons SAC. Saline lagoons cannot readily be re-created at other locations, and need to be present on a dynamic coastline in order to function. The plan policies will allow the saline lagoons of the SAC to be maintained in a favourable condition, and adapt to coastal change during the SMP life. However, this will result in the loss of the SPA freshwater reedbed habitat. As there is no option identified that will protect both sites, it is concluded that compensation habitat for the loss of the SPA can be more readily provided than replacement SAC saline lagoons (a priority habitat under the Habitats Directive).

Short term small scale works and a managed realignment policy during Epoch 1 at Easton Broad will provide sufficient time to establish compensatory freshwater habitat, after which ongoing management would be unsustainable.

For the reasons stated above, it has been concluded that this is the option that is least damaging for both the Benacre to Easton Bavents Lagoons SAC and Benacre to Easton Bavents SPA.

Human health and public safety

With sea level rise and increased coastal storminess, it is forecast that flood risk and erosion will increase, resulting in increased risk to life and properties within the SMP2 area.

The SMP coordinates the management of risks to life and properties to ensure that the social, environmental and economic impacts of coastal flooding and erosion are managed in the best way over the long term. Without the plan, coastal engineering in the area may be uncoordinated, ineffective and miss opportunities to manage the coastal environment in the most balanced and positive way so as to ensure risks to human health and public safety are addressed. In this particular location, more interventionist options for managing the coast would have had adverse consequences for managing flood and coastal erosion risks at Southwold, where there are important tourism and residential areas. In Southwold there are currently 133 properties within the flood warning area. There is also a large

campsite near the harbour, a sewage treatment works in Buss Creek Valley and the A1095 which are at risk from flooding.

H: Compensatory measures

Required compensation for this international site is shown on **Figure 4** and summarised in the text below.

The preferred policies within the SMP2 will lead to a loss of reedbed in the Benacre, Covehithe and Easton Broads. The loss of reedbed would have an adverse affect on overwintering and breeding bittern, and breeding marsh harriers through the loss of the reedbed habitat and the prey fish species (such as rudd and eel) as a result of increasingly saline conditions. Compensatory habitat will therefore need to provide equivalent habitat and food supply for bittern and marsh harrier.

At Easton Broad up to 50 ha of reedbed habitat may be lost in Epoch 1 or 2 and the remaining 130 ha by the end of Epoch 3. Approximately 21ha of reedbed at Covehithe Broad and 87ha at Benacre Broad will be lost by the end of epoch 3 through gradual roll back of the shingle ridge.

Compensatory habitat will be provided through the Environment Agency's RHCP, in advance of loss.

I: Supporting Documentation

Appendix 1 – Suffolk SMP2 Habitats Regulation Assessment Appendix 2 – Suffolk SMP2



Habitats Directive Information to the Secretary of State/Welsh Ministers according to Article 6(4) of the Habitats Directive

Purpose: This document provides a framework and proforma for the provision of information to the Secretary of State/Welsh Ministers for cases of Overriding Public Interest under the Habitats Directive.

Scope: This document provides a format for Environment Agency staff to use when providing information to the Secretary of State/Welsh Ministers over cases of OPI under the Habitats Directive.

A: ADMINISTRATION

B: SITE DETAILS

C: SUMMARY OF THE PLAN OR PROJECT HAVING AN EFFECT ON THE SITE

D: SUMMARY OF THE ASSESSMENT OF THE NEGATIVE EFFECTS ON THE SITE

E: MODIFICATIONS CONSIDERED

F: ALTERNATIVE SOLUTIONS CONSIDERED

G: IMPERATIVE REASONS

H: COMPENSATION MEASURES

I: SUPPORTING DOCUMENTATION

A: Administration details

Date: 5th October 2010

Plan/Project Reference: Suffolk SMP2

Contact person: Ian Cappitt - National Environmental Assessment Service (NEAS)

Address: Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE2 5ZR

Tel: 01733 464596

Fax: 01733 464372

E-mail: ian.cappitt@environment-agency.gov.uk

B: Site details

Name of European site affected: Minsmere-Walberswick

- This site is:
- a designated Special Area of Conservation (SAC)
 - a candidate SAC under the Habitats Directive
 - a classified Special Protection Area (SPA)
 - a proposed SPA under the Birds Directive
 - a Ramsar hosting a priority habitat/species
 - a Site of Community Importance (SCI)

C: Summary of the plan or project having an effect on the site

Introduction

During the development of the SMP2, implications for Internationally designated sites, which fall within or adjacent to the study area (**Figure 1**) have been considered through an assessment under the Habitats Directive (HRA). This process concluded that there is the potential for adverse effects on the integrity of two international sites (Benacre to Easton Bavents SPA and Minsmere to Walberswick SPA/Ramsar) as a result of chosen SMP policies.

This chapter presents the statement of case for Minsmere to Walberswick SPA/Ramsar Chapter 3 presents the statement of case for Benacre to Easton Bavents SPA.

Tables 4.1 to 4.3 present the preferred policies anticipated to have an adverse effect on Minsmere to Walberswick SPA/Ramsar

Table 4.1: Management Area 10 SMP policies anticipated to have an adverse effect

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
BLY 10.1	Lower inner estuary	MR	MR	MR	Maintaining the northern defences, subject to confirmation of funding (and caveats outlined in the plan)
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

Table 4.2: Management Area 11 SMP policies anticipated to have an adverse effect

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
DUN 11.2	Walberswick Marshes	MR	MR	MR	Examine opportunity for managing inland defences.
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

Table 4.3: Management Area 12 SMP policies anticipated to have an adverse effect

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
MIN 12.2	Minsmere North	MR	MR	NAI	Encouraging development of a more natural transition between the shingle bank and the cliffs.
MIN 12.3	Minsmere Central	MR	MR	MR	Through management of the sluice. In effect this would require holding the position of the sluice but in the context of managed realignment of the overall unit.
Key: HTL - Hold the Line, ATL - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

Key features of Minsmere to Walberswick SPA/Ramsar

The Minsmere to Walberswick SPA/Ramsar site comprises three connected but discrete sites:

- Blyth Estuary
- Walberswick to Dunwich Marshes; and
- The marshes at Minsmere.

The Minsmere-Walberswick SPA and Ramsar sites comprise a complex mix of habitats, notably areas of grazing marsh with dykes, extensive reedbeds (the largest continuous stand in England and Wales), mudflats, lagoons, shingle, woodland and areas of lowland heath. This combination of habitats supports nationally scarce plants, rare invertebrates and nationally important numbers of breeding and wintering birds.

Current and historic management

Blyth Estuary

Within the Blyth estuary (MA 10) there are a number of clay banks that have failed in recent decades due to breaches during storm surge events. There are still several banks that are maintained, but they are generally in poor condition. A flood risk management strategy has recently been completed for the estuary, which sets out a strategic plan for the future management of the estuary, taking account of Natura 2000 commitments. A separate Appropriate Assessment has been completed for this strategy, and a Statement of Case has been submitted to Defra. On the northern bank in the middle estuary the SMP2 policy is for managed realignment but to hold defences subject to sufficient funding (and other caveats outlined in the SMP) being available. The defence of the north shore protects the SPA / Ramsar reedbed and grazing marsh at Hen Reedbed.

Walberswick to Dunwich Marshes

The primary defence along the Walberswick to Dunwich Marshes frontage is the line of shingle ridge. Secondary defences are present to the east and west of Point Marsh (the Natural England embankment and 1596 embankment respectively). Along with the current coastal flood defences, flood management is dependant on a network of ditches which are drained via gravity by sluices.

Historically, there have been improvements to the sluices, the clay embankments raised/improved, and the shingle ridge managed.

Minsmere Marshes

The primary defence at Minsmere is the line of natural and modified sand dunes and shingle ridge. A secondary defence is present in the northern part of the Minsmere frontage and comprises a clay embankment along the back of the dunes. Along with the current coastal flood defences, flood management is dependant on a network of ditches which are drained via gravity by a sluice. The sluice discharges to the sea via an outfall located midway along the coastal frontage.

The current (and historic) management regime involves reactive works to repair storm damage to the primary and secondary defences, and works to address health and safety concerns.

Relationship to other Natura 2000 sites

Minsmere–Walberswick Heaths and Marshes SPA/Ramsar site has an integral link with the Minsmere–Walberswick Heaths and Marshes SAC, in particular, with the shingle ridges. The shingle ridges are a designated feature of the SPA/Ramsar site. However, the perennial vegetation found on the shingle ridges are a designated feature of the SAC. In order to support this SAC feature, a balance of dynamic and static shingle is required. The natural roll back of the shingle ridge is necessary for the favourable condition of the perennial vegetation which forms on the ridges.

The integrity of the Minsmere–Walberswick Heaths and Marshes SAC is not anticipated to be adversely affected by the SMP based on a combination of Managed Realignment and No Active Intervention i.e. the shingle ridges will be allowed to roll landward naturally and the principle of ‘natural change’. However, this policy will result in the eventual loss of reedbed habitat, through increased frequency of flooding and increasing saline conditions as a result of the landward migration of shingle ridges.

D: Summary of the assessment of the negative effects on the site

Features of the Minsmere-Walberswick SPA and Ramsar sites

The Minsmere-Walberswick SPA and Ramsar sites contain a complex mix of habitats, notably areas of grazing marsh with dykes, extensive reedbeds (the largest continuous stand in England and Wales), mudflats, lagoons, shingle, woodland and areas of lowland heath. This combination of habitats supports nationally scarce plants, rare invertebrates and nationally important numbers of breeding and wintering birds. The SPA qualifies under Article 4.1 of the EU Birds Directive by supporting populations of European importance of the following seven regularly occurring Annex 1 species:

- Hen harrier *Circus cyaneus*;
- Avocet *Recurvirostra avosetta*;
- Bittern *B. stellaris*;
- Marsh harrier *C. aeruginosus*;
- Little tern *S. albifrons*;
- Nightjar *Caprimulgus europaeus*; and,
- Woodlark *Lullula arborea*.

The site also qualifies under Article 4.2 by supporting nationally important wintering populations of three migratory waterfowl:

- European white-fronted goose *Anser albifrons*;
- Gadwall *Anas strepera*; and,
- Shoveler *A. clypeata*.

The Ramsar features of the site include:

- The mosaic of marine, freshwater, marshland and associated habitats, complete with transitional areas in between;
- Nine nationally scarce plants and at least 26 red data book invertebrates;
- A population of the mollusc, narrow-mouthed whorl snail *Vertigo angustior* (Habitats Directive Annex II; British Red Data Book Endangered); and,
- An important assemblage of rare breeding birds associated with marshland and reedbeds including bittern, gadwall, shoveler, marsh harrier, avocet and bearded tit *Panurus biarmicus*.

The Blyth Estuary forms a component of the wider SPA and Ramsar site. The intertidal area of mudflat, saltmarsh and transitional habitat in the Blyth Estuary forms part of the mosaic of marine, freshwater, marshland and associated habitats. In addition to important assemblages of overwintering and breeding birds, the estuary also supports a population of the endangered narrow-mouthed whorl snail (associated with the intertidal fringes). The boundaries of the SPA and Ramsar site are almost identical, stretching from the River Blyth estuary in the north to Eastridge in the south (6km south of Dunwich).

As shown on **Figure 3**, the SPA and Ramsar sites fall within three of the SMP MAs (10, 11 and 12). Given the range of policies across these areas and for ease of reference to other SMP documentation, each MA is discussed separately, highlighting only the policies where it could not be determined that they would not have an adverse effect on site integrity.

Grazing Marsh and Reedbed habitat in Management Area 10 (Policy Unit BLY 10.1) supporting SPA features (bittern, marsh harrier and avocet) – Blyth Estuary

This MA comprises the Blyth Estuary with its associated intertidal habitats and freshwater habitats. The mosaic of habitat in this MA forms a key component of the Ramsar and SPA designations supporting many of the cited qualifying species.

The policy within the lower inner estuary (Policy Unit 10.1) seeks to remove the unsustainable defences within the estuary through managed realignment (MR), whilst maintaining the defence on the north bank, subject to funding being available and monitoring.

Managed realignment at Tinkers Marsh will lead to the estimated loss of 40 ha of grazing marsh over epochs 2 and 3. No loss will be experienced in epoch 1 as short term measures will be implemented to avoid deterioration. This will also allow for the creation of compensatory habitat in advance of loss. The degradation and ultimate loss of grazing marsh habitat over epochs 2 and 3 will lead to adverse effects on avocet (SPA/Ramsar feature).

Funding for the defence protecting Hen Reedbeds is not secure, and hence the loss of reedbed and grazing marsh at Hen reedbed is uncertain. The conclusion of the HRA is therefore to assume that habitat at Hen reedbed will be lost in the course of the plan. The Blyth Estuary Strategy suggests this loss is likely in Epoch 1. The Appropriate Assessment for the Blyth Estuary Strategy concludes that the loss of 40ha of reedbed and 23ha of grazing marsh at Hen Reedbed, which supports breeding and overwintering bittern and breeding marsh harrier, is an adverse effect which requires compensation measures. The compensatory reedbed habitat and grazing marsh for Hen Reedbed is currently being created through the RHCP at Snape. Physical work on half of the Snape site has been completed, with the remaining to be started in April 2011.

Reedbed habitat in Management Area 11 (Policy Unit DUN 11.2) supporting SPA features (bittern and marsh harrier) – Minsmere-Walberswick

Managed realignment of the coastline under Policy DUN 11.2 is needed to maintain the integrity of the Minsmere-Walberswick SAC, by avoiding damage to its shingle ridge habitats. However, allowing the shingle bank to overtop and roll inland in response to coastal change will pose a greater risk (from saline intrusion and direct land loss) to freshwater and brackish habitat features of the SPA and Ramsar, with resulting adverse effects on the SPA qualifying species that rely on these habitats. These freshwater and brackish habitats, which support SPA qualifying species, are not sustainable in situ and therefore need to be replaced at more sustainable locations inland.

Short term measures to avoid deterioration of the landward marshes are currently being undertaken by the Environment Agency and will provide time for compensatory habitat to be established, without having a detrimental impact on the natural evolution of the shingle ridge and associated perennial vegetation (designated SAC feature). The management of these inland defences, namely the 1596 and Natural England embankments (where current raising works are due for completion by the end of 2010) will protect the freshwater habitats of Westwood Marshes throughout Epochs 1 and 2.

During Epochs 1 and 2, East Hill and Point Marsh, which support bittern and marsh harrier, will experience increasing salinity as a result of prolonged tidal inundation and will continue to become more brackish. The increased salinity will lead to the loss of freshwater fish species the primary food source of bittern, with resulting adverse effects on population. After Epoch 2, Westwood Marshes will be subject to the same effects as experience by East Hill and Point Marsh in Epoch 1. The degradation and ultimate loss of c. 190ha of reedbed by the end of Epoch 3 (through high salinity and wave attack) will have adverse effects on bittern and marsh harrier.

Many of the SPA and Ramsar habitats seaward of the inland defence line will continue to increase in salinity (as a result of increased overtopping) and will ultimately undergo change as the shingle ridge moves inland. Inundation of the area landward of the shingle barrier would not result in the loss of

ecological interest; a complex of brackish-saline coastal habitats (e.g. saltmarsh, saline lagoons etc.) could develop within the site. Whilst this would replace the existing interest it would lead to the creation of a dynamic section of coastline (with integral habitats and features) and maintain the overall function of the SPA and Ramsar. As such these losses are considered acceptable in regard to enabling the natural evolution of the shingle (designated SAC and supporting SPA habitat) areas and do not represent an adverse effect on integrity. The development of this area would be subject to natural change, which in accordance with the conservation objectives of the site is not considered to be an adverse effect on site integrity.

The loss of the reedbed within East Hill, Point Marsh and Westwood Marsh (affecting bittern and marsh harrier) is likely to affect the overall functioning of the site and therefore constitutes an adverse effect on the integrity on the site. This loss will require compensation.

Reedbed and grazing marsh habitat in Management Area 12 (Policy Units MIN 12.2 and 12.3) supporting SPA features (bittern and marsh harrier) – Minsmere

Managed realignment of the coastline in Policy Units MIN 12.2 and 12.3 is needed to maintain the integrity of the Minsmere-Walberswick SAC, at Minsmere, by avoiding damage to its shingle ridge habitats. However, allowing the shingle bank to overtop and roll inland in response to coastal change will pose a greater risk (from saline intrusion and direct land loss) to freshwater and brackish habitat features of the SPA and Ramsar, with resulting adverse effects on the SPA qualifying species that rely on these habitats. These freshwater and brackish habitats, which support SPA qualifying species, are not sustainable in situ and therefore need to be replaced at more sustainable locations inland.

In the short to medium term the preferred policies across the Minsmere valley (MIN 12.2 and 12.3) would lead to the loss of North Marsh (28 ha) which includes SPA and Ramsar freshwater and brackish habitat (reedbed) critical for SPA qualifying species such as bittern and marsh harrier.

By the end of Epoch 3, it is anticipated that the remainder of the low lying Ramsar and SPA site (an additional 178 ha of reedbed and 40ha of grazing marsh) will be at risk from increased saline flooding and a potential longer term breach throughout the Minsmere Valley. The increased salinity will lead to the loss of freshwater fish species the primary food source of bittern, with resulting adverse effects on population. The degradation and ultimate loss of reedbed (through high salinity and wave attack) and the loss of grazing marsh will have adverse impacts on both bittern and marsh harrier.

The loss of the reedbed and grazing marsh at Minsmere (primarily affecting bittern and marsh harrier) is likely to affect the overall functioning of the site and therefore constitutes an adverse effect on the integrity on the site. This loss will require compensation.

Overall

The loss of the reedbed and grazing marsh within the Blyth Estuary, Minsmere-Walberswick, and Minsmere (primarily affecting bittern, marsh harrier and avocet) is likely to affect the overall functioning of the international site and therefore constitutes an adverse effect on the integrity on the site. This loss will require compensation. Compensatory habitat will be delivered through the Environment Agency's RHCP in advance of loss.

E: Modifications or restrictions considered

The options for policy selection within an SMP do not lend themselves to modification. The policy options are restricted to the four options bulleted in **Section F**. No modifications to policy were therefore identified during the SMP process that would have mitigated and/or avoided an adverse effect on the integrity of the site.

Mitigation will be undertaken at a project level to reduce or remedy the adverse effects of SMP policy implementation on the International site. Detailed Habitat Regulations Assessments at a strategy/project level will be carried out and project-specific mitigation will be prescribed as part of these.

F: Alternative Solutions considered

The four possible alternative policy options considered for each Policy Unit are described in Section 2 (Table 2.1), and the preferred policies that give rise to adverse effect are identified in Section C above. In addition to these four options, a zero option (i.e. not undertaking or implementing the SMP2) has been considered. This option would involve the continuation of existing policies from SMP1 and strategies which have been approved and supersede the policies of the SMP1. The reasons why the preferred policies were adopted, and alternative options were not considered feasible are set out below for MA 10 (policy unit BLY 10.1), MA 11 (policy unit DUN 11.2), and MA 12 (policy units MIN 12.2 and MIN 12.3).

Management Area 10 – Blyth estuary

Hold the Line

The current policy provides an element of HTL (as an intent) for the northern defences (the Reydon Marshes bank), which currently protects Hen Reedbed, through the remainder of its design life (subject to local funding, the response of the frontage to climate change and monitoring). Due to this uncertainty of funding, a precautionary approach has been adopted which assumes the loss of the Hen Reedbed within 10 years, and compensation habitats are being developed in anticipation.

Under a hold the line scenario the frontage within this MA will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels. In addition, adopting a Hold the Line policy for 100 years would cause coastal squeeze and loss of intertidal habitats within the estuary. This in turn would lead to adverse effect on the SPA and Ramsar wintering bird populations. Hence, although a Hold the Line approach throughout the strategy period would have had some benefits for the SPA/Ramsar site at Hen Reedbed and Tinkers Marsh, overall it was assessed as being less beneficial for these sites than the preferred option.

In summary, hold the line is not considered to be feasible for the following reasons:

- Coastal squeeze leading to loss of intertidal habitat and adverse effect on SPA/Ramsar features;
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

No Active Intervention

Under a No Active Intervention scenario, all management (flood defences and water level management) would be withdrawn. This was not considered to be a feasible alternative because it would have a greater impact on the freshwater habitats and associated species (SPA/Ramsar features) at Hen Reedbed through uncontrolled/unmanaged inundation. The selected policy of managed realignment reduces the loss of freshwater habitats by providing continued protection to some areas.

In summary, no active intervention is not considered to be feasible because of the potential for uncontrolled/unmanaged inundation of freshwater habitat with greater adverse effects on SPA/Ramsar features than the preferred policy.

Advance the line

There is no social, economic or environmental justification to advance the line in this management unit. The frontage within the MA will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels. In addition, an advance the line policy in this MA would

have adverse affects on intertidal habitat, leading to an adverse effect on the SPA and Ramsar wintering bird populations.

In summary, advance the line is not considered to be feasible for the following reasons:

- Coastal squeeze leading to loss of intertidal habitat and adverse effect on SPA/Ramsar features;
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

Although the preferred combination of Hold the Line and Managed Realignment does not entirely eliminate adverse effects on the SPA/Ramsar features, there were no other feasible alternatives with lesser effects.

Zero option

This option would involve not undertaking the SMP2 and, therefore, current management/policy for BLY 10.1 (lower inner estuary) would continue. Current management/policy at this frontage is based on maintaining the defences and therefore holding the line. SMP2 policy is managed realignment across all three epochs.

Hold the line and therefore the zero option for BLY 10.1 was not considered feasible for the following reasons (discussed in further detail above):

- Coastal squeeze leading to loss of intertidal habitat and adverse effect on SPA/Ramsar features;
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

Management Area 11 – Minsmere to Walberswick

Hold the Line

The shingle habitat in this area (DUN 11.2) is designated not only for SPA species (little tern) but also as an SAC for perennial vegetation of stony banks (requiring static shingle) and annual vegetation of drift line (requiring dynamic shingle).

The HTL management option at Walberswick marshes would involve active management of the shingle ridge either through a continuation of former management (i.e. reprofiling the ridge in response to weakening or breaches) or to construct new structures either on, in front of, or behind the shingle barrier.

Both measures would be directly damaging to the structure and integrity of the SAC shingle features which are dependent on a balance of static and dynamic shingle habitat. A HTL policy would therefore prevent the natural development and diversity of shingle vegetation, constituting an adverse effect on the integrity of the SAC.

The former regime of mechanical management was not effective in reducing saline inundation of the marshes, and hence reinstating this approach would not prevent adverse effects to SPA features behind it. Reinstatement of mechanical management would be technically difficult, given the declining shingle volumes, but would also hold the ridge in a seaward position relative to the adjoining coastline; this would limit its ability to retreat landwards, and increase its vulnerability, as sea level rises. The ridge is also likely to develop a steeper, more unstable profile further increasing its vulnerability. As a major failure becomes inevitable, the effects of the policy would effectively revert to that of non-intervention, only in a less predictable manner. Hence this is not a feasible alternative policy.

Building new structures either on or offshore is likely to have a detrimental effect on the coastline to the south by interrupting the flow of sediment. Significant areas of shingle habitat would be permanently lost under the footprint of new embankments.

Overall, holding the line at Walberswick Marshes was determined to be unsustainable, having an adverse effect on SAC shingle features, and accordingly all options considered for this approach were rejected as not being feasible alternatives.

In summary, hold the line is not considered to be feasible for the following reasons:

- Adverse effect on shingle vegetation (SAC feature);
- Risk of uncontrolled/unmanaged breach of the shingle ridge leading to adverse effect on the SPA/Ramsar features;
- Building new structures would have a detrimental effect on the coastline to the south by interrupting sediment flow; and,
- Increased vulnerability to sea level rise.

No Active Intervention

Under a No Active Intervention scenario, all management (flood defences and water level management) would be withdrawn. This was not considered to be a feasible alternative because it would have a greater impact on the freshwater habitats and associated species (SPA/Ramsar features) landward of the defences (at Westwood Marshes and Dingle Reedbed), and the uncertainty of impacts on these features associated with the complete withdrawal of management. The selected policy of managed realignment reduces the loss of freshwater habitats by providing continued protection to some areas.

In summary, no active intervention was not considered feasible because of the risk of habitat being lost in an uncontrolled manner leading to greater effects of SPA/Ramsar features than the preferred option.

Advance the line

There is no social, economic or environmental justification to advance the line in this management unit. The frontage within the MA will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels. In addition, an advance the line policy in this MA would have an adverse affect on the shingle vegetation (SAC feature), as the shingle ridge would not be able to behave naturally. Accordingly, this option was identified as not being a feasible alternative at an early stage and therefore was not actively considered in the development of the SMP.

In summary, advance the line is not considered to be feasible for the following reasons:

- Adverse effect on the shingle vegetation (SAC feature);
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

Although the preferred Managed Realignment option does not entirely eliminate adverse effects, there were no other alternatives with lesser effects on the SPA and Ramsar site.

Zero option

This option would involve not undertaking the SMP2 and, therefore, current policy for DUN 11.2 (Walberswick Marshes) would continue. Current policy, based on the Lowestoft to Thorpeness Strategy (2003) is managed realignment. SMP2 policy for DUN 11.2 accords with the Strategy and is managed realignment across all three epochs.

Management Area 12 - Minsmere

Hold the Line

As for MA 11, the HTL option would involve active management of the shingle ridge/dune either through a continuation of former management (i.e. reprofiling the ridge in response to weakening or breaches) or by constructing new structures either on, in front of, or behind the shingle barrier.

Both measures would be directly damaging to the structure and integrity of the SAC shingle features which are dependent on a balance of static and dynamic shingle habitat. A HTL policy would remove dynamism from the system and prevent the natural development and diversity of designated shingle vegetation, constituting an adverse effect on the integrity of the SAC.

The continuation of the current (hold the line) management would not only be technically difficult, given the declining shingle volumes, but would also hold the ridge in a seaward position relative to the adjoining coastline; this would limit its ability to retreat landwards, and increase its vulnerability, as sea level rises. The ridge is also likely to develop a steeper, more unstable profile further increasing its vulnerability. As a major failure becomes inevitable, the effects of the policy would effectively revert to that of non-intervention, only in a less predictable manner.

Building new structures either on or offshore could also have potential impacts on other parts of the coastline to the south. Significant areas of designated coastal habitat would be permanently lost under the footprint of new embankments. This approach would also be technically challenging and require significant defence works.

Overall, holding the line at policy units MIN 12.2 and MIN 12.3 was determined to be unsustainable, having an adverse effect on SAC shingle features, and accordingly all options considered for this approach were considered not to be feasible alternatives.

In summary, hold the line is not considered to be feasible for the following reasons:

- Adverse effect on shingle vegetation (SAC feature);
- Risk of uncontrolled/unmanaged breach of the shingle ridge leading to adverse effect on the SPA/Ramsar features;
- Building new structures would have a detrimental effect on the coastline to the south by interrupting sediment flow; and,
- Increased vulnerability to sea level rise.

No Active Intervention (the preferred policy for MIN 12.2 in Epoch 3)

Under a No Active Intervention scenario, all management (flood defences and water level management) would be withdrawn. This was not considered as a feasible alternative for MIN 12.2 (epochs 1 and 2) and MIN 12.3 because the adverse effect on the freshwater habitats and associated species (SPA/Ramsar features) would be greater than for the preferred option. The selected policy of limited management to enable the transition to a more natural system gradually reduces this uncertainty and reduces the risk of habitat being lost in an uncontrolled manner.

In summary, no active intervention was not considered feasible because of the risk of habitat being lost in an uncontrolled manner leading to greater effects of SPA/Ramsar features than the preferred option.

Managed realignment (the preferred policy for MIN 12.2 in epochs 1 and 2 and for MIN 12.3)

Managed realignment for epoch 3 at MIN 12.3 was not considered to be feasible because of the need to allow the coastline to behave naturally and prevent an adverse effect on the SAC in the longer term.

Advance the line

There is no social, economic or environmental justification to advance the line in this management unit. The frontage within the MA will become increasingly difficult to defend and manage in the future in the face of climate change and rising sea levels. In addition, an advance the line policy in this MA would have an adverse effect on the shingle vegetation (SAC feature), as the shingle ridge would not be able to behave naturally. Accordingly, this option was identified as not being a feasible alternative at an early stage and therefore was not actively considered in the development of the SMP.

In summary, advance the line is not considered to be feasible for the following reasons:

- Adverse effect on the shingle vegetation (SAC feature);
- Increasingly difficult to defend and manage; and,
- Increased vulnerability to sea level rise.

Zero option

This option would involve not undertaking the SMP2 and, therefore, current policy for MIN 12.2 (Minsmere north) and MIN 12.3 (Minsmere central) would continue. Current policy, based on the Lowestoft to Thorpeness Strategy (2003), is managed realignment for MIN 12.2 and hold the line for MIN 12.3. The difference between the SMP2 policy and the current policy is that for MIN 12.2 the policy is no active intervention in epoch 3 and for MIN 12.3 the policy is managed realignment across all three epochs.

The zero option for MIN 12.2 and MIN 12.3 was not considered feasible for the following reasons (discussed in further detail above):

- Adverse effect on shingle vegetation (SAC feature);
- Risk of uncontrolled/unmanaged breach of the shingle ridge leading to adverse effect on the SPA/Ramsar features;
- Building new structures would have a detrimental effect on the coastline to the south by interrupting sediment flow; and,
- Increased vulnerability to sea level rise.

G: Imperative reasons of Overriding Public Interest

SMPs identify coastal management policies to enable effective use of this fund to reduce risks to life and property in a strategic way. The Flood Risk Management Operating Authorities (including the Environment Agency and coastal local authorities) seek to maximise the benefits to human health and safety that can be achieved with the available funding, and SMPs play a very important role in this process. With sea level rise and increased coastal storminess, it is forecast that flood risk and erosion will increase, resulting in increased risk to life and properties within the SMP2 area. Without the SMP, risk to life and property would not be properly managed.

In partnership with Natural England, the authors of the SMP have identified the least damaging alternative to managing the coastline and its designated habitats over the next 100 years.

There are imperative reasons of overriding public interest for implementing this SMP2, notwithstanding the assessment of adverse effect on site integrity. The reasons are:

- The need to address the wider risks to human health and public safety in the nation; and,
- The SMP as a whole is the least damaging option for the Natura 2000 sites on this section of coast, and will help them to adjust to sea level rise. The SMP therefore also has beneficial consequences of primary importance for the environment.

The Imperative Reasons of Overriding Public Interest specific to each of the Management Areas where adverse effects have been identified are given below.

Management Area 10

Beneficial consequences of primary importance for the environment

Preferred policies in this MA seek to foster the natural evolution of the Blyth Estuary in a controlled manner whilst having regard to the fact that, at present, the freshwater habitats at Hen Reedbed and Tinkers Marsh are under threat due to rising sea levels and the current condition of the existing defences. These habitats, supporting SPA/Ramsar bird species are not considered to be sustainable in situ, and need to be recreated at more sustainable locations inland to maintain the SPA/Ramsar.

Of the alternative options considered for the Blyth Estuary, the preferred policy is the least damaging way of managing the balance between intertidal habitats and brackish/freshwater habitats landward of flood defences. The development of intertidal habitat that would occur as a result of the preferred policy avoids an adverse affect on SPA and Ramsar bird species.

It is confirmed, therefore, that this is the least damaging alternative for the SPA/Ramsar site in this Management Area.

Human health and public safety

With sea level rise and increased coastal storminess, it is forecast that flood risk and erosion will increase, resulting in increased risk to life and properties within the SMP2 area.

The SMP coordinates the management of risks to life and properties to ensure that the social, environmental and economic impacts of coastal flooding and erosion are managed in the best way over the long term. Without the plan, coastal engineering in the area may be uncoordinated, ineffective and miss opportunities to manage the coastal environment in the most balanced and positive way so as to ensure risks to human health and public safety are addressed. In this specific Management Area, the preferred policy provides continued protection to the aquifer from which water supply is provided to the urban population in Southwold and provides protection to other significant infrastructure.

Management Area 11

Beneficial consequences of primary importance for the environment

The adoption of this policy is necessary to avoid damage to the Minsmere–Walberswick Heaths and Marshes SAC. The policy will allow for the shingle ridge to behave naturally, and therefore conditions for the formation of shingle vegetation (SAC feature) will be maintained. However, this will result in the loss of the SPA freshwater reedbed habitat. These habitats, supporting SPA/Ramsar bird species are not considered to be sustainable in situ, and need to be recreated at more sustainable locations inland to maintain the SPA.

Due to the history of previous management, a gradual removal of management is provided to reduce uncertainty regarding habitat loss and to provide time for the provision of compensation habitat (reedbed) to be provided for SPA species (bittern and marsh harrier).

It is confirmed, therefore, that this is the least damaging alternative for the SPA/Ramsar in this Management Area.

Management Area 12

The adoption of this policy is necessary to avoid damage to the Minsmere–Walberswick Heaths and Marshes SAC. The policy will allow for the shingle ridge to behave naturally, and therefore conditions for the formation of shingle vegetation (SAC feature) will be maintained. However, this will result in the loss of the SPA freshwater reedbed habitat. These habitats, supporting SPA/Ramsar bird species, are not considered to be sustainable in situ, and need to be recreated at more sustainable locations inland to maintain the SPA/Ramsar.

The policy provides for the maintenance and management of the sluice in MIN 12.3 to provide interim protection of freshwater habitats whilst compensatory habitat is created. In addition, gradual removal of management is provided to reduce uncertainty regarding habitat loss and to provide time for the provision of compensation habitat (reedbed) to be provided for SPA species (bittern).

It is confirmed, therefore, that this is the least damaging alternative for the SPA/Ramsar in this Management Area.

Human health and public safety

With sea level rise and increased coastal storminess, it is forecast that flood risk and erosion will increase, resulting in increased risk to life and properties within the SMP2 area.

The SMP coordinates the management of risks to life and properties to ensure that the social, environmental and economic impacts of coastal flooding and erosion are managed in the best way over the long term. Without the plan, coastal engineering in the area may be uncoordinated, ineffective and miss opportunities to manage the coastal environment in the most balanced and positive way so as to ensure risks to human health and public safety are addressed. In this Management Area, the preferred policy maintains protection to the Minsmere RSPB reserve, which is one of the most important tourist attractions on the Suffolk coast.

H: Compensatory measures

Required compensation for this international site is shown on **Figure 4** and summarised in the text and Table 4.4 below. All compensatory habitat will be provided through the Environment Agency RHCP, in advance of loss.

Management Area 10

The preferred policies within the SMP would lead to an estimated loss of 40ha of reedbed and 63ha of grazing marsh over the next 100 years. The loss of reedbed and grazing marsh habitats would occur through increased frequency of flooding and increased saline conditions due to managed realignment. The loss of reedbed would have an adverse affect on overwintering and breeding bittern, foraging and breeding avocet. Compensatory habitat will therefore need to provide equivalent habitat and food supply for bittern, marsh harrier and avocet, in advance of loss.

The compensation habitats for Hen Reedbed (40ha of reedbed and 23ha of grazing marsh) are currently under construction at Snape through the RHCP.

Management Area 11

The preferred policies within the SMP would lead to an estimated loss of c. 190 ha of reedbed over the next 100 years. This is based on the assumption that the entirety of the affected designated habitat is reedbed and thus constitutes the worse case scenario. The eventual loss of reedbed habitat would occur through increased frequency of flooding and increasing saline conditions as a result of the landward migration of shingle ridges. The loss of reedbed would have an adverse affect on overwintering and breeding bittern, and foraging marsh harriers through the loss of the reedbed habitat and prey fish species (such as rudd and eel) as a result of increasingly saline conditions. Compensatory habitat will therefore need to provide equivalent habitat and food supply for bittern and marsh harrier, in advance of loss.

Management Area 12

The preferred policies within the SMP would lead to an estimated loss of c. 210 ha of reedbed and c.40ha of grazing marsh over the next 100 years. Of this, c 30 ha of reedbed is anticipated to be lost by the end of Epoch 1. This is based on the assumption that the entirety of the affected designated habitat is reedbed and thus constitutes the worse case scenario. The eventual loss of reedbed habitat would occur through increased frequency of flooding and increasing saline conditions as a result of the landward migration of shingle ridges. The loss of reedbed and grazing marsh would have an adverse affect on overwintering and breeding bittern, and foraging marsh harriers through the loss of the reedbed habitat and prey fish species (such as rudd and eel) as a result of increasingly saline conditions. Compensatory habitat will therefore need to provide equivalent habitat and food supply for bittern and marsh harrier, in advance of loss.

Overall Summary

Based on a 1:1 ratio, 432 ha of compensatory reedbed habitat and 103ha of compensatory grazing marsh habitat will be required. Work to create new reedbed has started at Snape, where 90ha of new habitats (primarily reedbed) will be created over the next two years. Plans are at an advanced state for a similar area or new reedbed at another site in east Suffolk. The overall requirement will be refined through monitoring, as detailed in the SMP action plan, and through subsequent Habitats Regulation Assessment for SMP3, strategies and projects. These future projects will confirm the appropriate ratio, hence allowing the total requirement to be adjusted. Monitoring will provide an increased understanding

of how the system is responding to management and sea level rise, enabling a more informed quantification of habitat loss and enabling the provision of compensation in advance of such loss.

Compensatory habitat will be provided through the Environment Agency’s RHCP, in advance of loss.

Table 4.4: Amount of habitat to be lost and compensatory habitat required

Management Area	SMP Epochs		
	1	2	3
MA 10	40 ha of reedbed 23ha of grazing marsh	40ha of grazing marsh	
MA11	c. 30 ha of reedbed		c. 150 ha of reedbed
MA 12	c. 30 ha of reedbed		c. 180 ha of reedbed 40ha of grazing marsh

I: Supporting Documentation

<p>Appendix 1 – Suffolk SMP2 Habitats Regulations Assessment Appendix 2 – Suffolk SMP2</p>
--

5 CONCLUSIONS

There are no feasible alternative solutions and there are imperative reasons of over-riding public interest for approving the preferred policies set out in the SMP, at this stage in the SMPs' lifecycle.

The HRA concluded that the SMP2 policies cannot be shown to have no adverse effect on the integrity of the following international sites:

- Benacre to Easton Bavents SPA; and,
- Minsmere–Walberswick SPA/Ramsar.

Specifically, it cannot be concluded that there will be no adverse effect due to loss of freshwater and transitional brackish habitat, in particular reedbed, at Minsmere-Walberswick SPA/Ramsar and Benacre to Easton Bavents Lagoons SPA. This loss has a potentially adverse effect on the cited species within these sites, in particular bittern, marsh harrier and avocet.

An assessment of a range of alternative solutions concluded that none could be considered to be sustainable or feasible over long term or likely to produce lesser adverse effects than the preferred policies. It can, therefore, be concluded that there is an absence of alternative solutions.

The preferred policies are required for IROPI as they fulfil the key principle of the SMP2 and national guidance by providing policies which will most appropriately manage the human health and public safety risks posed to people and property from flooding and coastal erosion whilst delivering the greatest environmental, social and economic benefit in a sustainable manner. The key aspect within this SMP is that policies have been pursued which move the coast towards a more natural state. For the following areas outlined in this report (and therefore where an adverse effect has been concluded) this move towards the natural development of the coast is accompanied by a loss of previously defended designated habitat. Whilst this loss represents an adverse effect on the integrity of two international sites (as detailed), alternative management approaches would have more significant adverse effects, by removing the dynamic nature of the coast and preventing natural change. The effects of such management would seek to maintain habitat in situ. This is considered unsustainable and likely to lead to the loss of and/or decline in condition of features such as saline lagoons (feature of the Benacre to Easton Bavents Lagoons SAC) and shingle ridge vegetation (feature of Minsmere–Walberswick Heaths and Marshes SAC).

Based on a 1:1 ratio, c. 720 ha of compensatory reedbed habitat and c.105ha of compensatory grazing marsh habitat will be required by the end of Epoch 3 (100 years) (**Figure 4**). This figure will be refined through monitoring, as detailed in the SMP action plan, and through subsequent Habitats Regulations Assessment for SMP3, strategies and projects. Monitoring will provide an increased understanding of how the system is responding to management and sea level rise, enabling a more informed quantification of habitat loss and enabling the provision of compensation in advance of such loss. It is anticipated that the final figures of compensatory habitat required will be less than the precautionary estimate.

Compensatory habitat will be provided through the Environment Agency's RHCP.

6 REFERENCES

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

Defra (2006b) Flood and Coastal Defence Appraisal Guidance FCDPAG3 Economic Appraisal. Supplementary Note of Operating Authorities – Climate Change Impacts. October 2006

Environment Agency (2008) Blyth Estuary Flood Risk Management Strategy – Statement of Case (Appendix 20)

Guthrie, J.G.L. and Cottle, R. (2002). Suffolk Coast and Estuaries Coastal Habitat Management Plan; Final Report. Posford Haskoning Report, October 2002.

JNCC (2008). Information Sheet on Ramsar wetlands. Available from URL: <http://www.jncc.gov.uk/pdf/RIS/UK11017.pdf>. Accessed on 15 / 02 /2010

APPENDIX 1

HABITATS REGULATIONS ASSESSMENT

APPENDIX 2
SUFFOLK SMP2