



Suffolk Shoreline Management Plan 2

Natural and Built Environment Baseline

**Suffolk Coastal District Council/Waveney
District Council/Environment Agency**

November 2009

Final Report

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GLOSSARY OF TERMS

Action required	<p>This is a categorisation of the action that is required to bring the SSSI unit into favourable condition. There are typically three options:</p> <ul style="list-style-type: none"> i) Natural England funding; ii) Natural England negotiation / enforcement; and iii) other party action. <p>Any combination of these actions can be selected for one unit.</p>
Adverse condition	<p>If a SSSI unit is currently assessed as being in unfavourable no change, unfavourable declining, part destroyed or destroyed condition, it is described as being in adverse condition and therefore not meeting the PSA target.</p>
AONB	<p>Areas of Outstanding Natural Beauty are identified and designated by the Countryside Commission under Sections 87 and 88 of the National Parks and Access to the Countryside Act 1949, to protect landscapes of national importance.</p>
BAP	<p>Biodiversity Action Plan is the Government's strategy to maintain and enhance biodiversity, following the Convention on Biological Diversity at the Earth Summit in Rio, 1992.</p>
Biodiversity	<p>The variety of life on earth. It not only comprises the whole range of species but also includes the actual number of species, the availability in a species and the assemblages which together form ecosystems and natural or semi-natural habitats.</p>
British Red Data Book (BRDB) species	<p>The IUCN red list is a comprehensive inventory of the global status of plant and animal species. The list identifies threatened plant and animal species at high risk of global extinction which are listed as Critically Endangered, Endangered or Vulnerable. Other categories in the list include:</p> <ul style="list-style-type: none"> • Extinct (EX) - No individuals remaining. • Extinct in the Wild (EW) - Known only to survive in captivity, or as a naturalized population outside its historic range. • Near Threatened (NT) - Likely to become endangered in the near future. • Least Concern (LC) - Lowest risk. Does not qualify for a more at risk category. Widespread and abundant taxa are included in this category.

Brownfield sites	Land which has previously been developed. The term may encompass vacant or derelict land; infill sites; land occupied by redundant or unused buildings; and developed land within the settlement boundary where further intensification of use is considered acceptable. Existing areas of landscaped or amenity urban green space such as private and public gardens, sports and recreation grounds, woodlands etc. shall not be considered as brownfield sites for new development. The grounds of redundant institutions (such as schools or hospitals) shall not be considered as brownfield sites.
CHaMP	Coastal Habitat Management Plan.
Citation	The citation details the 'features of interest' for which a SSSI has been notified. Each citation shows details of the SSSI location, size and the date of notification. It also describes the general reasons for notification and the habitats, plants and animals that are found at the site.
Condition	The condition of the SSSI land in England is assessed by Natural England, using categories agreed across England, Scotland, Wales, and Northern Ireland through the Joint Nature Conservation Committee. There are six reportable condition categories: favourable; unfavourable recovering; unfavourable no change; unfavourable declining; part destroyed and destroyed.
Condition assessment comments	The condition assessment comments provide more detailed information about the condition assessment. Comments will not be present for every condition assessment.
Conservation Areas	An area designated under the Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990 on account of special architectural or historic interest, the character and appearance of which it is intended to conserve and enhance.
County Wildlife Sites (CWSs)	A designation for sites in the County which do not benefit from statutory protection but are still of high value to wildlife and are very important in a local context. Identified by the local Wildlife Trust.
cSAC	Candidate Special Area of Conservation. Sites designated under the European Union Habitats Directive of European importance for wildlife. Candidate sites have been recognised by the UK Government as being important but not yet finally designated.

CSG	The Client Steering Group is designed to support project leaders and sponsors in decision-making, monitor progress and report to the Governing Body. The project sponsor and the design champion need to be part of the Board as should key stakeholder representatives and users.
Date compiled	The date the information was extracted from the Natural England Site Information System (ENSIS).
Destroyed	Destroyed means that lasting damage has occurred to all the special conservation interest of the SSSI unit such that it has been irretrievably lost. This land will never recover.
EA	Environment Agency
ESA	Environmentally Sensitive Areas are areas for the maintenance, protection and enhancement of wildlife, landscape and historic environmental value through the encouragement of appropriate agricultural practices.
Favourable	Favourable condition means that the SSSI land is being adequately conserved and is meeting its 'conservation objectives'. However, there is also scope for the enhancement of these sites.
Greenfield sites	These are sites which have never been developed or used for an urban use, or are on land that has been brought into active or beneficial use for agriculture or forestry <i>i.e.</i> fully restored derelict land.
HAP	Habitat Action Plans are plans within the UK Biodiversity Action Plan which identify actions needed to stabilise and improve the status of habitats with high conservation value.
HBU	Habitat Behavioural Unit.
Latest assessment date	The date when the latest condition assessment was carried out.
LDF	The Local Development Framework is a statutory document which set out the local planning authority's policies and proposals for the development and use of land in their area. In areas with county and district authorities it is comprised of structure and local plans as well as minerals and waste local plans. Development decision must be in accordance with the Development Plan, unless material considerations indicate otherwise.

LNR	Local Nature Reserves are areas of land which are designated by Local Authorities as being important as a local natural heritage resource and/or for delivering environmental education opportunities, community enjoyment and appreciation of the countryside. LNRs are established under the National Parks and Access to the Countryside Act 1949.
Main habitat	The broadest classification of the feature on the unit selected from a list of habitats based on the BAP Broad Habitat classification.
Meeting the PSA target	If a SSSI unit is currently assessed as being in favourable or unfavourable recovering condition, it is described as 'meeting the PSA target'.
National parks	An extensive tract of countryside selected for its natural beauty and the opportunities afforded for open air recreation, having regard to both its character and position in relation to centres of population, and designated under the provision of the National Parks and Access to the Countryside Act 1949.
Natura 2000	Together Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are designated under the Habitats Directive and form a network of pan-European protected areas known as Natura 2000.
Natural England funding	Natural England funding may be required for the unit to reach favourable condition, e.g. a Wildlife Enhancement Scheme agreement is required.
Natural England negotiation/enforcement	Negotiation and / or enforcement by Natural England is required for the unit to reach favourable condition.
NNR	Statutory reserves designated under Sections 16 to 29 of the National Parks and Access to the Countryside Act 1949 and the Wildlife and Conservation Act 1981. They protect areas of wildlife and geological importance which have national and regional importance. In England they are owned or leased by Natural England or are managed in accordance with Nature Reserve agreements with landowners and occupiers. Most are 'Sites of Special Scientific Interest' (SSSIs).
Notification date	The date the SSSI was notified to the Secretary of State for Environment, Food and Rural Affairs by Natural England. If the SSSI notification has been amended, this will be the date of the last revision.
OLD	Operations Likely to Damage.

Operations requiring Natural England's consent (formerly known as operations likely to damage the special interest)	<p>Before any operations are undertaken the owner or occupier must consult Natural England and may require consent.</p> <p>It is usually possible to carry out many of these operations in certain ways or at specific times of year, or on certain parts of the SSSI, without damaging the features of interest. The Natural England Conservation Officer for the SSSI can provide advice and, where appropriate, issue consent.</p> <p>In certain circumstances it will not be possible to consent to these operations, because they would damage the features of interest. Where possible the Conservation Officer will suggest alternatives which would enable consent to be issued. To proceed without Natural England's consent may constitute an offence. If consent is refused, or if conditions are attached to it which are unacceptable to the owner or occupier, they may appeal to the Secretary of State for Environment, Food and Rural Affairs.</p>
Other party action	Action by a public or statutory body other than Natural England is required for the SSSI unit to reach favourable condition.
Part destroyed	Part destroyed means that lasting damage has occurred to part of the special conservation interest of a SSSI unit such that it has been irretrievably lost and will never recover. Conservation work may be needed on the residual interest of the land.
PSA	Public Service Agreements were first introduced to modernise and improve the Government's performance on a range of issues (including health, crime, education and the environment).
PSA target	The Government's Public Service Agreement (PSA) target to have 95% of the SSSI area in favourable or recovering condition by 2010.
Ramsar	Ramsar sites are wetlands of international importance designated under the Ramsar Convention.
Reason for adverse condition	The reason why the unit it is in adverse condition (i.e. unfavourable no change, unfavourable declining, part destroyed or destroyed). The reason is selected from a defined list.
Regionally Important Geological/Geomorphological	A scheme promoted by Natural England. RIGGs constitute a network of non-statutory earth science sites

Sites (RIGGs)	which are of county significance. Their notification should result in an increased level of protection and their promotion as sites for earth science education, leisure and amenity.
SAC	Special Area of Conservation (designated under Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive)).
Sites of Special Scientific Interest (SSSIs)	A site statutorily notified under the Wildlife and Countryside Act 1981 (as amended) as being of special nature conservation interest. SSSIs include wildlife habitats, geological features and land forms.
SMP	Coastal resource management plan produced by DEFRA for specific coastal cells.
Source (reason for adverse condition)	Whether the cause of the adverse condition is within the SSSI (on site) or outside the SSSI (off site).
SPA	Special Protection Area (designated under the EEC Council Directive on the Conservation of Wild Birds (79/409/EEC)).
SSSI unit	SSSI units are divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment. The size of units varies greatly depending on the types of management and the conservation interest. There are around 22,000 SSSI units.
SSSI unit area	The area of each SSSI unit in hectares calculated from digitised unit boundaries.
Staff member responsible	The Area Team staff member who is the main contact for the SSSI.
Strategic Plan	The development plan, prepared by the County Council, and to which the Plan (i.e. Local Plan) must generally conform.
Unfavourable declining	This means that the special interest of the SSSI unit is not being conserved and will not reach favourable condition unless there are changes to site management or external pressures. The site condition is becoming progressively worse.
Unfavourable no change	This means the special interest of the SSSI unit is not being conserved and will not reach favourable condition unless there are changes to the site management or

external pressures. The longer the SSSI unit remains in this poor condition, the more difficult it will be, in general, to achieve recovery.

Unfavourable recovering

Unfavourable recovering condition is often known simply as 'recovering'. SSSI units are not yet fully conserved but all the necessary management measures are in place. Provided that the recovery work is sustained, the SSSI will reach favourable condition in time.

In many cases, restoration takes time. Woodland that has been neglected for 50 years will take several years to bring back into a working coppice cycle. A drained peat bog might need 15-20 years to restore a reasonable coverage of sphagnum.

Views about Management (VAM)

The 'Views About Management' gives a straightforward account of the basic management that is needed to conserve and enhance the wildlife or geological features of the SSSI. By giving a clear and simple statement of management principles for conservation, these views will help to clarify and build upon the existing understanding between SSSI owners and occupiers and Natural England about the management of their SSSIs.

The views place no additional obligation on the owner or occupier of a SSSI nor do they replace any more detailed management advice which Natural England may have already given, such as advice in a Site Management Statement or a Management Agreement.

Under the Countryside and Rights of Way Act 2000, Natural England must notify the owners and occupiers of all SSSIs of its views about the management of the SSSIs. This programme must be completed by January 2006.

1 INTRODUCTION

1.1 Background

Royal Haskoning have been appointed to undertake a review of the Suffolk Shoreline Management Plan (SMP), based on the revised Defra SMP Policy Guidance (Defra, 2006). The management policies originally identified for this stretch of coastline will be reviewed to ensure that they are still the most appropriate ones, taking into account all research, coastal defence strategy plans and scheme studies and updates to the Local Plans that have been completed since 1996.

In order to provide a starting point for Stage 1 of the SMP review, this coastal characterisation study has been undertaken. The intent of this analysis, which is in addition to the tasks defined by the current SMP guidance, was to provide a comprehensive baseline and provide a focus to the project, at the earliest stage, regarding the main processes, environmental and socio-economic values of the area. This summary report is an important tool for validating our initial understanding of the key issues of the Suffolk coast with the client and the Client Steering Group (CSG). The original SMP for Suffolk was completed in 1998. The study frontage was classified as Sub-cell 3c and covered 72km from Ness Point (Lowestoft) to Landguard Point (Felixstowe).

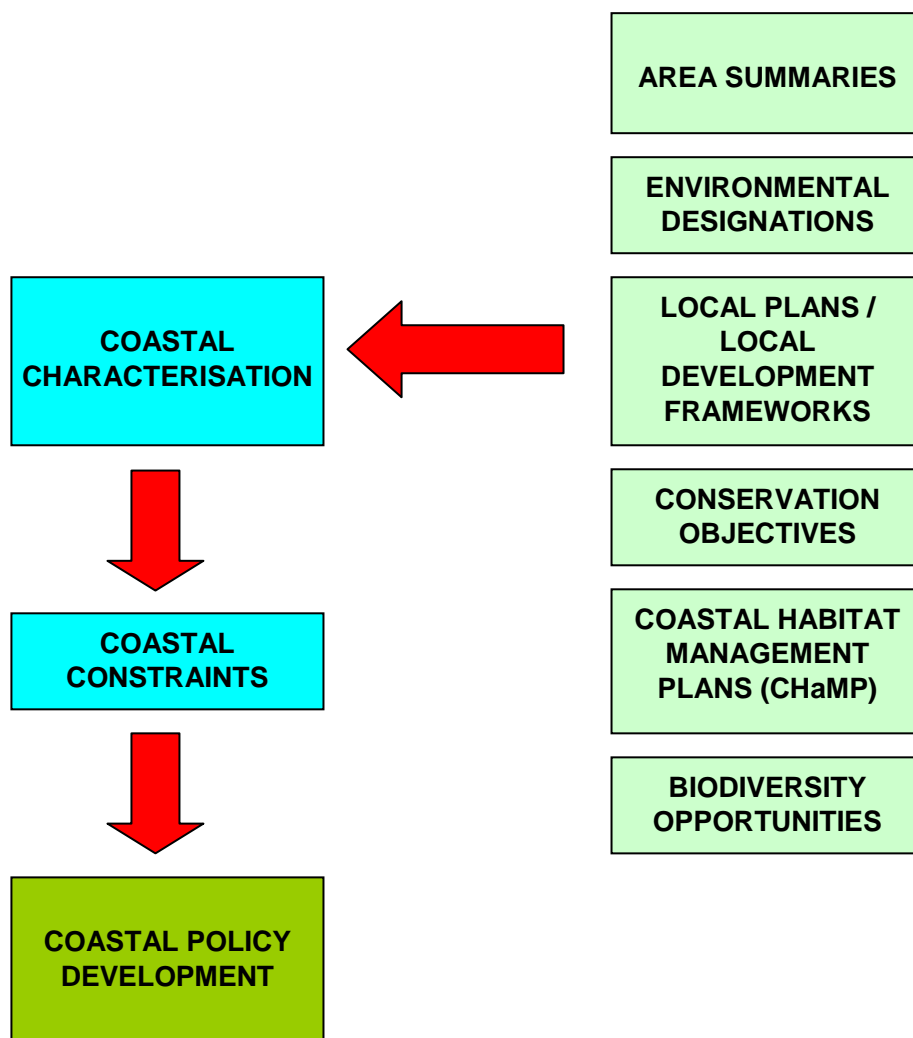
1.2 Structure of Report

This document sets out the existing conditions in the Suffolk SMP area in terms of statutory nature conservation, landscape and historic designations and physical condition and processes. Anthropogenic, socio-economic and environmental designations and processes are central to the development of this SMP and therefore this characterisation study is an important first step in the SMP II process.

The work undertaken has appraised all strategies, studies and policy documents completed since 1998 and other readily available sources of data and information which are pertinent to the development of SMP policy. The output from this task is a holistic categorisation of the coast, defining the critical environmental characteristics (**Section 2**) and national (UKBAP) and local (Suffolk BAP) targets (**Section 3**). **Section 4** provides an overview of the Suffolk Coastal Habitat Management Plan (CHaMP), especially in relation to areas of potential habitat creation and coastal issues influencing designated habitats. **Section 5** provides an appraisal of the Suffolk coastal biodiversity opportunities project and **Section 6** contains an appraisal of the coastline with respect to the human and built environment and includes an evaluation of local policies pertinent to the SMP II process (including local plans and Local Development Frameworks). Finally, **Section 7** presents an overview of the constraints on both the coastline and the development of SMP policy which have been derived from the analysis of **Sections 2 – 6**.

The purpose of this document is to inform the later stages of policy development, by creating as complete and rounded a picture of the coastline as possible. Through the use of other SMP II outputs, such as the summary documents produced in conjunction with the CSG, this document presents a wide body of evidence for the factors that make this stretch of the UK coastline such a unique and special environment. **Figure 1.1** shows how this document fits into the overall SMP II programme.

Figure 1.1 The role of this document in the SMPII process



1.3 Area of Interest

The Suffolk SMP study area encompasses approximately 72 km of coastline, stretching from Lowestoft (Ordnance Survey Grid Reference TM 555 936) to Harwich (Ordnance Survey Grid Reference TM 283 311) and is presented in **Figure 1.2**.



Key:

Title:
Suffolk Coast SMP Area of Interest

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:200,000@ A3

Figure:
1.2

Drawn:
AZ

Rev
0

2 OVERVIEW OF STATUTORY DESIGNATIONS

2.1 Introduction

The Suffolk coast contains some of the largest areas of undeveloped coastline in the UK, being characterised by low marshes and reed beds which are interspersed with sand and shingle beaches, large areas of enclosed tidal land, crumbling cliffs, heathland, forest and farmland. Each of these habitats in turn supports a range of species of high conservation value, including birds, plants and invertebrates. The high conservation value is reflected in the fact that the majority of the coastline is subject to statutory nature conservation and landscape designations, which have important implications for any prospective developments, management or policies relating to the Suffolk coast.

Nature conservation designations seek to conserve areas of conservation importance and the habitats and species which are the basis of their statutory designation. However, as the designations are derived from discrete and different pieces of legislation, each therefore varies in the nature and mechanisms of their protection. Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites are covered by the provisions of the Conservation (Natural Habitats &c.) Regulations (1994) (the Habitat Regulations), which is the highest level of statutory protection. This entails stringent requirements that 'plans or projects' not directly connected with or necessary for the management of the site can only proceed if it is demonstrated by the competent authority for consenting the plan or project that it will not adversely affect the ecological or functional integrity of the site. Shoreline Management Plans come under the definition of 'plan or project', and must therefore pass this test, via an 'appropriate assessment'.

The inherently dynamic nature of coastal environments and the potential of flood risk management structures and practices to both constrain (e.g. by holding or advancing the line) and create (e.g. from no active intervention or managed realignment) habitat ensures that SMP policy has a highly significant bearing on both natural habitats and designated sites. Where plans or projects (policies within the SMP in this context) can not be determined as having no adverse effect on site integrity, they may nonetheless proceed if no alternative solutions exist and are deemed necessary on the basis of having imperative reasons of over-riding public importance (IROPI). Where projects are allowed to proceed on this basis, compensatory measures must be secured to ensure that the overall coherence of the Natura 2000 network (SPAs and SACs) is maintained. In the context of coastal habitats, this might include the creation of new habitat on adjacent coastal areas by techniques including managed realignment.

The primary information source for statutory designations relevant to Suffolk was the Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk), which enabled quantification of the number, extent and type of each designated conservation area within Suffolk and its immediate environs. Confirmation of the presence of a particular designation then enabled the relevant documentation for each statutory designation to be obtained from other sources, including the Natural England and Joint Nature Conservancy Council (JNCC) websites. This therefore enabled the specific details of each designation to be sourced and detailed within this document (e.g. features covered under SAC and SPA designations).

Several of the types of designation present in the Suffolk SMP area are subject to monitoring or assessment regimes, with the status of the sites in terms of these monitoring regimes being valuable contextual information for the SMP, because:

- It may inform the extent to which coastal management is affecting the ecological objectives for the sites concerned; and
- Compliance with these regimes is directly relevant to the Environment Agency and local authorities and thus is a material consideration in undertaking the SMP and developing SMP policies.

The significance of these drivers is set out in the sub-sections below. Determination that sites are currently unfavourable due to existing flood risk management structures or practices would indicate instances where the opportunity exists for the SMP to rectify these to enable nature conservation objectives and favourable status to be met. Conversely, sites may be in favourable condition as a result of natural processes being prevented by existing flood risk management structures or practices. Although this information is unlikely to be indicated in condition assessment data, it is nonetheless an important consideration in evaluating the risks and opportunities presented by the SMP in achieving ecological objectives for designated nature conservation sites.

The Suffolk coastline is characterised by shingle backed beaches with sand and shingle foreshores, with sand being predominant in a few specific cases. Landward of the foreshore the backshore generally falls into three interspersed categories:

- Clay cliffs – e.g. Easton, Covehithe, Sizewell, Thorpeness, Bawdsey Manor and Cobbles Point;
- Shingle ridges at Benacre and Covehithe but, more typically, in front of large areas of low-lying land, such as Easton Broad, Dunwich, Minsmere, Aldeburgh, the Alde-Ore valleys, and coastal frontages at Alderton, Felixstowe Ferry and Felixstowe itself; and
- Short sections of narrow dune such as to either side of Walberswick Harbour or at Minsmere, Sizewell and Thorpeness

The frontage is typically described as being a retreated drift shoreline, now draped and partially fixed between more resistant but still eroding, high ground and dynamic estuary ebb deltas (Guthrie & Cottle, 2003). Behind this is a rare mixture of lowland habitats including heathland, grazing marsh and freshwater reedbed (including the largest area of reedbed in the UK). Both natural areas are of considerable importance to nature conservation. However, managing the coast to favour freshwater habitats such as grazing marsh and reedbed often requires that coastal and intertidal habitats are fixed and constrained and thus in an unfavourable condition, while allowing natural processes and dynamic behaviour of coastal habitats invariably results in the loss of freshwater habitats

2.1.1 Compensation – managed realignment

Although there continues to be the potential for an adverse impact on site integrity as a result of SMP policies, significant scope also exists to create compensatory habitat to offset adverse impacts (e.g. by managed realignment). The concept of ‘banking’ areas of coastal habitat to act as future compensatory habitat in anticipation of losses of SAC, SPA or Ramsar habitat has recently emerged. For example, significant areas of the

Humber Estuary have been, and will continue to be, realigned, thus creating habitat which can subsequently be designated, to maintain the overall coherence of SPA, SAC and Ramsar sites in light of losses elsewhere.

2.2 Ramsar sites

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention or Wetlands Convention) was adopted in Ramsar, Iran in February 1971 and was formally ratified by the UK Government in 1976 (JNCC, 2008a). Originally intended to protect important waterfowl habitat, the Convention has broadened its scope over the years to cover all aspects of wetland conservation and use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation (JNCC, 2008a). The Convention adopts a broad definition of wetland, being "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres" (JNCC, 2008a). Wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands".

The UK has reinforced the designation of Ramsar sites through the prior notification of these areas as Sites of Special Scientific Interest (SSSIs) (JNCC, 2008a). As a result, Ramsar sites receive statutory protection under the Wildlife & Countryside Act 1981, with further protection being afforded by the Countryside and Rights of Way (CROW) Act 2000. The same protection is offered to Ramsar sites at a policy level as that afforded to sites which have been designated as part of the EU Natura 2000 network (JNCC, 2007a).

Policy Planning Statement (PPS) 9 provides guidance on how respective Regional Spatial Strategies (RSSs) and Local Development Frameworks (LDFs) should address the issues of biodiversity and geological conservation. Governmental protection of Ramsar sites originates from PPS9 and the supporting documentation.

Ramsar sites located on the Suffolk coastline are presented in **Table 2.1**, while **Fig 2.1** shows the extent of Ramsar sites within the study area.

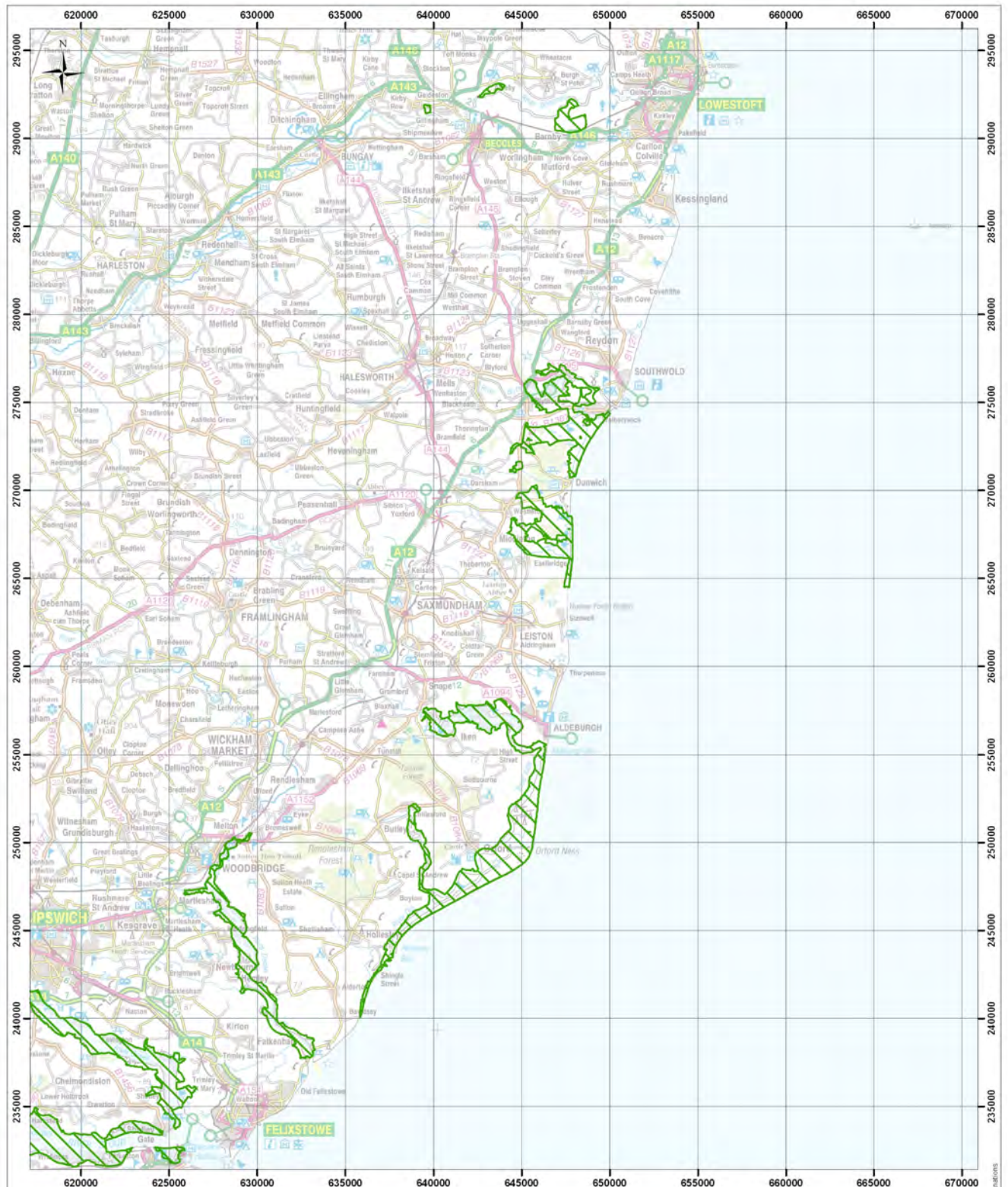
Table 2.1 Ramsar sites on Suffolk coastline

Ramsar site name	Area (ha)
Alde-Ore Estuary	2534
Broadland	5510
Deben Estuary	981
Minsmere-Walberswick	2009
Stour and Orwell Estuaries	3673

2.2.1 Alde-Ore Estuary

The site comprises the estuary complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness (JNCC, 2008b). The Alde-Ore is the only bar-built estuary in the UK with a shingle bar, which has been extending rapidly along the coast

since 1530, pushing the mouth of the estuary progressively south-westwards (JNCC, 2008b). The eastwards-running Alde River originally entered the sea at Aldeburgh, but now turns south along the inner side of the Orfordness shingle spit. It is relatively wide and shallow, with extensive intertidal mudflats on both sides of the channel in its upper reaches and saltmarsh accreting along its fringes (JNCC, 2008b). The Alde subsequently becomes the southwest flowing River Ore, which is narrower and deeper with stronger currents, while the smaller Butley River, which has extensive areas of saltmarsh and a reedbed community bordering intertidal mudflats, flows into the Ore shortly after the latter divides around Havergate Island (JNCC, 2008b). The mouth of the River Ore is still moving south as the Orfordness shingle spit continues to grow through longshore drift from the north. There are a variety of habitats, including intertidal mudflats, saltmarsh, vegetated shingle (including the second-largest and best-preserved area in Britain at Orfordness), saline lagoons and grazing marsh (JNCC, 2008b). The Orfordness / Shingle Street landform is unique within Britain in combining a shingle spit with a cusped foreland (JNCC, 2008b). The site supports nationally-scarce plants, British Red Data Book (BRDB) invertebrates, and notable assemblages of breeding and wintering wetland birds.



Key:

 Ramsar

Title:
Extent of Ramsar Sites
in the Study Area

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:200,000@ A3

Figure:
2.1

Drawn:
AZ

Rev
0

Table 2.2 Qualifying features for Alde-Ore Estuary Ramsar (JNCC, 2008b)

Ramsar feature
<i>Ramsar criterion 2</i>
The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates.
<i>Ramsar criterion 3</i>
The site supports a notable assemblage of breeding and wintering wetland birds.
<i>Ramsar criterion 6</i>
Qualifying species / populations (as identified at designation).
Species regularly supported during the breeding season:
<ul style="list-style-type: none"> Lesser black-backed gull <i>Larus fuscus graellsii</i>. 5790 apparently occupied nests, representing an average of 3.9% of the Western European / Mediterranean / West African breeding population (Seabird 2000 Census)
Species with peak counts in winter:
<ul style="list-style-type: none"> Pied avocet <i>Recurvirostra avosetta</i> 1187 individuals, representing an average of 1.6% of the European / Northwest African population (5 year peak mean 1998/9 – 2002/3); and Common redshank <i>Tringa totanus totanus</i> 2368 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9 – 2002/3).

2.2.2 Broadland

Broadland is a low-lying wetland complex straddling the boundaries between east Norfolk and northern Suffolk (JNCC, 2008c). The Broads are a series of flooded medieval peat cuttings within the floodplains of five principal river systems, including the river valley systems of the Bure, Yare and Waveney and their major tributaries (JNCC, 2008c). The distinctive open landscape comprises a complex and interlinked mosaic of wetland habitats including open water, reedbeds, Carr woodland, grazing marsh and fen meadow, forming one of the finest marshland complexes in the UK (JNCC, 2008c). The differing types of management of the vegetation for reed, sedge and marsh hay, coupled with variations in hydrology and substrate, support an extremely diverse range of plant communities (JNCC, 2008c). The region is important for recreation, tourism, agriculture and wildlife.

Table 2.3 Qualifying features for Broadland Ramsar (JNCC, 2008c)

Ramsar feature	
<i>Ramsar criterion 2</i>	
Habitat Directive code	Description
Annex I	
H7210	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> calcium-rich fen dominated by great fen sedge (saw sedge)
H7230	Alkaline fens with calcium-rich springwater-fed fens
H91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>). Alder woodland on floodplains
Annex II	
S1016	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>
S1355	Otter <i>Lutra lutra</i>
S1903	Fen orchid <i>Liparis loeselii</i>
The site also supports outstanding assemblages of rare plants and invertebrates including nine British Red Data Book plants and 136 British Red Data Book invertebrates.	

Ramsar feature
<i>Ramsar criterion 6</i>
Qualifying species / populations (as identified at designation): Species with peak counts in winter: <ul style="list-style-type: none"> Tundra swan <i>Cygnus columbianus bewickii</i>. North-western Europe. 196 individuals, representing an average of 2.4% of the GB population (5 year peak mean 1998/9 – 2002/3); Eurasian wigeon <i>Anas penelope</i>. North-western Europe. 6769 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9 – 2002/3); Gadwall <i>Anas strepera strepera</i>. North-western Europe. 545 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9 – 2002/3); and Northern shoveler <i>Anas clypeata</i> North-western and Central Europe. 247 individuals, representing an average of 1.6% Europe of the GB population (5 year peak mean 1998/9 – 2002/3). Species/populations identified subsequent to designation for possible future consideration under Criterion 6: Species with peak counts in winter <ul style="list-style-type: none"> Pink-footed goose <i>Anser brachyrhynchus</i>. 4263 individuals, representing an average of 1.7% of the Greenland, Iceland and UK population (5 year peak mean 1998/9 – 2002/3); and Greylag goose <i>Anser anser anser</i>. 1007 individuals, representing an average of 1.1% of the Iceland, UK and Ireland population (Source period not collated)

2.2.3 Deben Estuary

The Deben Estuary extends south-eastwards for over 12 km from the town of Woodbridge to the coast just north of Felixstowe. It is relatively narrow and sheltered, and has limited amounts of freshwater input (JNCC, 2008d). The estuary mouth is the narrowest section and is protected by the presence of shifting sandbanks, while the intertidal areas are constrained by sea-walls (JNCC, 2008d). The saltmarsh and intertidal mudflats that occupy the majority of the site, however, display the most complete range of saltmarsh community types in Suffolk (JNCC, 2008d). The estuary holds a range of swamp communities that fringe the estuary and occasionally form larger stands, being dominated by common reed (*Phragmites australis*) (JNCC, 2008d).

Table 2.4 Qualifying features for Deben Estuary Ramsar (JNCC, 2008d)

Ramsar feature	
<i>Ramsar criterion 2</i>	
Habitat Directive code	Description
Annex II	
S1014	Narrow-mouthed whorl snail <i>Vertigo angustior</i>
Martlesham Creek, within the Deben Estuary, is one of only about fourteen sites in Britain where the mollusc <i>Vertigo angustior</i> maintains a viable population (BRDB Endangered).	
<i>Ramsar criterion 6</i>	
Qualifying species / populations (as identified at designation): Species with peak counts in winter: <ul style="list-style-type: none"> Dark-bellied Brent goose <i>Branta bernicla bernicla</i>. 1953 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9 – 2002/3). 	

2.2.4 Minsmere-Walberswick

Minsmere-Walberswick comprises two large marshes and the tidal Blyth estuary, containing a complex mosaic of habitats including areas of marsh with dykes, mudflats, lagoons, shingle and driftline, woodland, areas of lowland heath and extensive reedbeds

(JNCC, 2008e). The site supports the largest continuous stand of reed in England and Wales, demonstrating the nationally rare transition in grazing marsh ditch plants from brackish to fresh water (JNCC, 2008e). The combination of habitats create an exceptional area of scientific interest, supporting a range of nationally scarce plants, BRDB invertebrates and nationally important numbers of breeding and wintering birds (JNCC, 2008e).

Table 2.5 Qualifying features for Minsmere-Walberswick Ramsar (JNCC, 2008e)

Ramsar feature	
<i>Ramsar criterion 1</i>	
The site contains a mosaic of marine, freshwater, marshland and associated habitats, complete with transition areas in between. Contains the largest continuous stand of reedbeds in England and Wales and rare transition in grazing marsh ditch plants from brackish to fresh water.	
<i>Ramsar criterion 2</i>	
Habitat Directive code	Description
Annex II	
S1014	Narrow-mouthed whorl snail <i>Vertigo angustior</i>
The Minsmere-Walberswick site supports a population of the mollusc <i>Vertigo angustior</i> (Habitats Directive Annex II; BRDB Endangered), which was recently discovered inhabiting river walls on the Blyth estuary. This site also supports nine nationally scarce plants and at least 26 red data book invertebrates, as well as an important assemblage of rare breeding birds associated with marshland and reedbeds including bittern <i>Botaurus stellaris</i> , gadwall <i>Anas strepera</i> , Eurasian teal <i>Anas crecca</i> , northern shoveler <i>Anas clypeata</i> , marsh harrier <i>Circus aeruginosus</i> , avocet <i>Recurvirostra avosetta</i> and bearded tit <i>Panurus biarmicus</i> .	
<i>Ramsar criterion 6</i>	
Qualifying species / populations (as identified at designation):	
Species with peak counts in winter:	
<ul style="list-style-type: none"> Dark-bellied Brent goose <i>Branta bernicla bernicla</i>. 1953 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9 – 2002/3). 	

2.2.5 Stour and Orwell Estuaries

The Stour and Orwell Estuaries are wetlands of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches (JNCC, 2008f). The estuaries provides habitat for an important assemblage of wetland birds in the non-breeding season, also supporting internationally important numbers of wintering and passage wildfowl and waders (JNCC, 2008f). The Orwell is a relatively long and narrow estuary with extensive mudflats bordering the channel that support large patches of eelgrass *Zostera* sp. The saltmarsh tends to be sandy and fairly calcareous with a wide range of communities and small areas of vegetated shingle on the foreshore of the lower reaches, while grazing marshes adjoin the estuary at Shotley (JNCC, 2008f). The Stour estuary is a relatively simply structured estuary with areas of higher saltmarsh, a sandy outer area and a muddier inner section which is rich in invertebrates. The shoreline vegetation varies from oak dominated wooded cliffs, through scrub-covered banks to coarse grasses over seawalls, with reed filled borrow dykes behind (JNCC, 2008f). The site also holds several nationally scarce plants and BRDB invertebrates (JNCC, 2008f).

Table 2.6 Qualifying features for Stour and Orwell Ramsar (JNCC, 2008f)

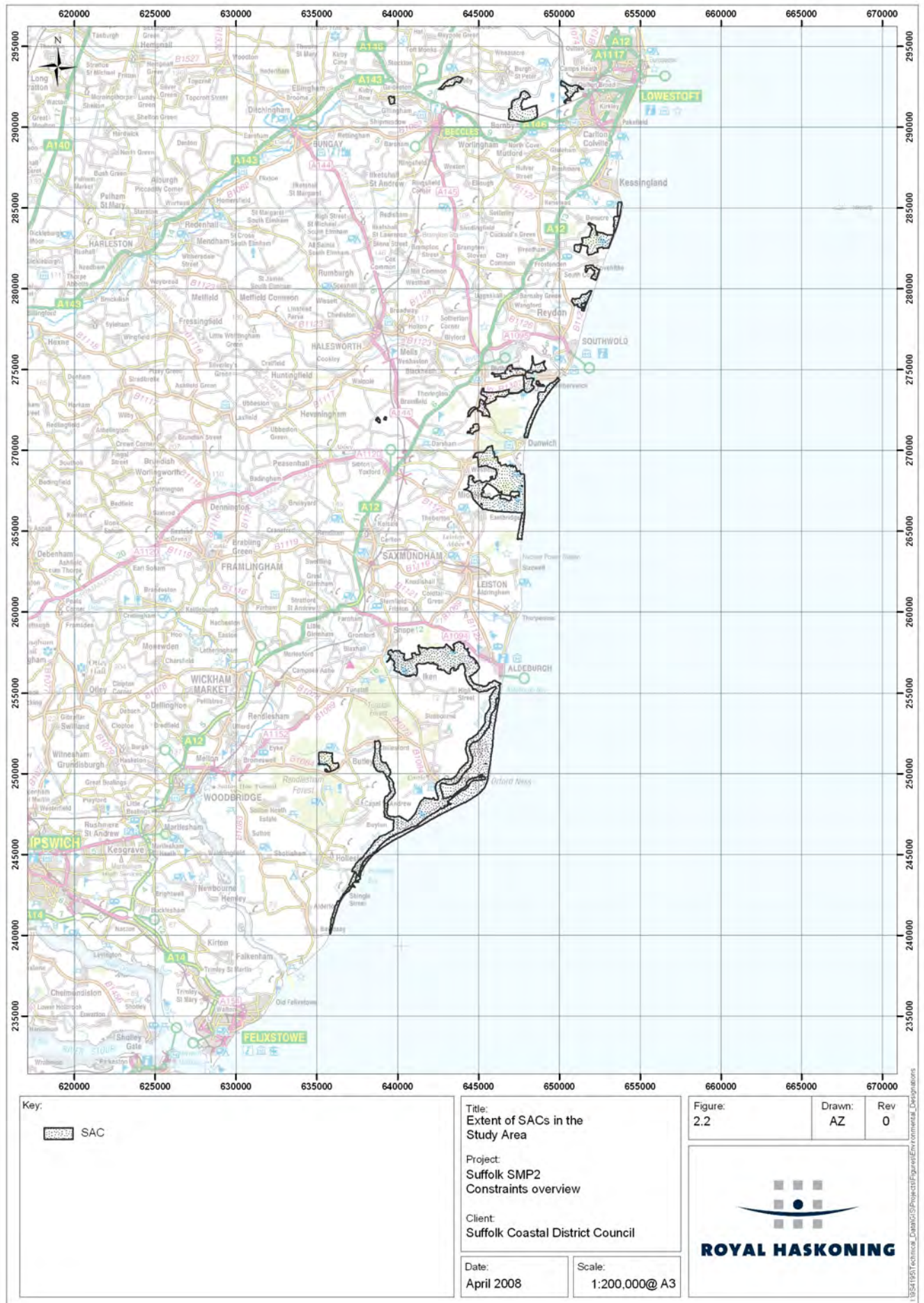
Ramsar feature
<i>Ramsar criterion 2</i>
<p>The Stour and Orwell Estuaries Ramsar contains seven nationally scarce plant species and five British Red Data Book invertebrates (JNCC, 2008f):</p> <ul style="list-style-type: none"> • Stiff saltmarsh-grass <i>Puccinellia rupestris</i>; • Small cord-grass <i>Spartina maritima</i>; • Perennial glasswort <i>Sarcocornia perennis</i>; • Lax-flowered sea lavender <i>Limonium humile</i>; and • Eelgrasses <i>Zostera angustifolia</i>, <i>Zostera marina</i> and <i>Zostera noltei</i>. • Muscid fly <i>Phaonia fusca</i>; • Horsefly <i>Haematopota grandis</i>; • Two spiders, <i>Arctosa fulvolineata</i> and <i>Baryphema duffeyi</i>; and • The endangered swollen spire snail <i>Mercuria confusa</i>
<i>Ramsar criterion 5</i>
<p>Assemblages of international importance.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 63 017 waterfowl (5 year peak mean 1998/99 – 2002/2003).
<i>Ramsar criterion 6</i>
<p>Species/populations occurring at levels of international importance, during the breeding season.</p> <p>Species with peak counts in spring / autumn:</p> <ul style="list-style-type: none"> • Common redshank <i>Tringa totanus totanus</i>. 2588 individuals, representing an average of 2% of the population (5-year peak mean 1995/96 – 1999/2000). <p>Species with peak counts in winter (JNCC, 2008f):</p> <ul style="list-style-type: none"> • Dark-bellied Brent goose <i>Branta bernicla bernicla</i>. 2627 individuals, representing an average of 1.2% of the population (5-year peak mean 1995/96 - 1999/2000); • Northern pintail <i>Anas acuta</i>. 741 individuals, representing an average of 1.2% of the North-west European population (5-year peak mean 1995/96 – 1999/2000); • Grey plover <i>Pluvialis squatarola</i>. Wintering, 3261 individuals, representing an average of 1.3% of the Eastern Atlantic / Western African population (5-year peak mean 1995/96 – 1999/2000); • Red knot <i>Calidris canutus islandica</i>. Wintering, 5970 individuals, representing an average of 1.3% of the Western & Southern African population (5-year peak mean 1995/96 – 1999/2000); • Dunlin <i>Calidris alpina alpina</i>. 19114 individuals, representing an average of 1.4% of the Western Siberian / Western European population (5-year peak mean 1995/96 – 1999/2000); • Black-tailed godwit <i>Limosa limosa islandica</i>. 2559 individuals, representing an average of 7.3% of the Icelandic / Western European population (5-year peak mean 1995/96 – 1999/2000); and • Common redshank <i>Tringa totanus totanus</i>. 3687 individuals, representing an average of 2.8% of the population (5-year peak mean 1995/96 – 1999/2000).

2.3 Special Areas of Conservation (SACs)

Special Areas of Conservation (SAC) are designated under Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive). SACs are designated due to the fact that they have been identified as best representing the range and variety of habitats and species listed on Annexes I and II of the Directive, with SACs in terrestrial areas and marine waters out to 12 nautical miles being designated under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Amendments to the Habitat Regulations have recently been introduced to provide a mechanism for the designation and conservation of SPAs and SACs in UK offshore waters between 12-200 nm (JNCC, 2008g). SACs within the study area are listed in **Table 2.7** and presented in **Figure 2.2**.

Table 2.7 Special Areas of Conservation (SAC) on the Suffolk coast

SAC site name	Area (ha)
Alde-Ore and Butley Estuary	1633
Benacre to Easton Bavents Lagoons	327
The Broads	5887
Minsmere to Walberswick Heaths and Marshes	1257
Orfordness – Shingle Street	888



2.3.1 Alde, Ore and Butley Estuaries

Qualifying features

Table 2.8 Qualifying features for the Alde, Ore and Butley Estuaries SAC site (JNCC, 2008h)

Qualifying feature	Description
<i>Annex I habitats that are a primary reason for selection of this site</i>	
Estuaries	This estuary, made up of three rivers, is the only bar-built estuary in the UK with a shingle bar. This bar has been extending rapidly along the coast since 1530, pushing the mouth of the estuary progressively south-westwards. The estuary contains large areas of shallow water over subtidal sediments and extensive mudflats and saltmarshes which are exposed at low water. Its diverse and species-rich intertidal sand and mudflat biotopes grade naturally along many lengths of the shore into vegetated or dynamic shingle habitat, saltmarsh, grassland and reedbed.
<i>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</i>	
Mudflats and sandflats not covered by seawater at low tide	
Atlantic saltmeadows <i>Glauco-Puccinellietalia maritimae</i>	

Vulnerability

Past canalisation and erosion together with sea-level rise has resulted in the loss of much of the saltmarsh (JNCC, 2008h). There are plans for managed coastal retreat which in the long-term will result in the creation of saltmarsh (JNCC, 2008h).

2.3.2 Benacre to Easton Lagoons

Qualifying features

Table 2.9 Qualifying features for the Benacre to Easton Lagoons SAC site (JNCC, 2008i)

Qualifying feature	Description
<i>Annex I habitats that are a primary reason for selection of this site</i>	
Coastal Lagoons	Benacre to Easton Barents Lagoons is a series of percolation lagoons on the east coast of England. The lagoons (the Denes, Benacre Broad, Covehithe Broad and Easton Broad) have formed behind shingle barriers and are a feature of a geomorphologically dynamic system. Sea water enters the lagoons by percolation through the barriers or by overtopping them during storms and high spring tides. The lagoons show a wide range of salinities, from nearly fully saline in South Pool, the Denes, to extremely low salinity at Easton Broad. This range of salinity has resulted in a series of lagoonal vegetation types, including beds of narrow-leaved eelgrass <i>Zostera angustifolia</i> in fully saline or hypersaline conditions, beds of spiral tasselweed <i>Ruppia cirrhosa</i> in brackish water and dense beds of common reed <i>Phragmites australis</i> in freshwater. The site also supports a number of specialist lagoonal species.

Vulnerability

The lagoons at the Denes were created through shingle extraction and the salinity is maintained through percolation and overtopping of the shingle barrier, with no management input being required to maintain these lagoons (JNCC, 2008i). The lagoons at Benacre, Covehithe and Easton are natural and result from ponded streams behind shingle barriers. Sea water enters the lagoons through overtopping of the barriers during high tides, with these lagoons now experiencing erosion and landwards movement of the confining barriers, leading to the reduction in the area of each lagoon (JNCC, 2008i). Natural processes will eventually lead to the loss of these features. Potential management actions to reduce the rate of erosion should be addressed through the Shoreline Management Plan process (JNCC, 2008i).

2.3.3 The Broads SAC

Table 2.10 Qualifying features for The Broads SAC site (JNCC, 2008j)

Qualifying feature	Description
<i>Annex I habitats that are a primary reason for selection of this site</i>	
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	<p><i>Priority feature</i></p> <p>The complex of sites contains the largest blocks of alder <i>Alnus glutinosa</i> wood in England. Within the complex complete successional sequences occur from open water through reedswamp to alder woodland, which has developed on fen peat. There is a correspondingly wide range of flora, including a number of uncommon species such as marsh fern <i>Thelypteris palustris</i>.</p>
Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i>	<p><i>Priority feature</i></p> <p>The <i>Cladium</i> habitat occurs in a diverse set of conditions that maintain its species-richness. The habitat type forms large-scale mosaics with other fen types, open water and woodland.</p>
Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp	<p>The Broads is the richest area for charophytes in Britain, with twenty species having been recorded, representing over 65% of the British flora. The core of this interest is the Thurne Broads and particularly Hickling Broad which is the richest site in the UK, with sixteen species having been recorded. Within The Broads, examples of <i>Chara</i> vegetation are also found within fen pools (turf ponds) and fen and marsh ditch systems. The Broads supports a number of rare and local charophyte species, including <i>Chara aspera</i>, <i>C. baltica</i>, <i>C. connivens</i>, <i>C. contraria</i>, <i>C. curta</i>, <i>C. intermedia</i>, <i>C. pedunculata</i>, <i>Nitella mucronata</i>, <i>Nitellopsis obtusa</i>, <i>Tolypella glomerata</i> and <i>T. intricata</i>.</p>

Qualifying feature	Description
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation	Although artificial, having arisen from peat digging in medieval times, these lakes and the ditches in areas of fen and drained marshlands support relict vegetation of the original Fenland flora and collectively this site contains one of the richest assemblages of rare and local aquatic species in the UK. The stonewort – pondweed – water-milfoil – water-lily <i>Characeae</i> – <i>Potamogeton</i> – <i>Myriophyllum</i> – <i>Nuphar</i> associations are well-represented, as are club-rush – common reed <i>Scirpo</i> – <i>Phragmitetum</i> associations. Some Broad, such as Martham North, Martham South and Upton Broad, have escaped the problem of enrichment that has so affected the flora and fauna on many of the other Broad. Others, such as Hickling Broad, are recovering from these effects as a result of remedial measures. Martham North, Martham South, Upton and Hickling Broad contain holly-leaved naiad <i>Najas marina</i> , a national rarity. The dyke (ditch) systems support vegetation characterised by water-soldier <i>Stratiotes aloides</i> , whorled water-milfoil <i>Myriophyllum verticillatum</i> and broad-leaved pondweed <i>Potamogeton natans</i> .
Transition mires and quaking bogs	The areas of transition mire, mainly of M5 <i>Carex rostrata</i> – <i>Sphagnum squarrosum</i> mire, M9 <i>Carex rostrata</i> – <i>Calliergon cuspidatum/giganteum</i> mire and S27 <i>Carex rostrata</i> – <i>Potentilla palustris</i> tall-herb fen, are relatively small, having developed in re-vegetated peat-cuttings as part of a complex habitat mosaic of fen, carr and open water.
Alkaline fens	There are areas of short sedge fen which in places form a mosaic with S24 <i>Phragmites australis</i> – <i>Peucedanum palustris</i> fen. There are complex zonations present and many differences exist between the individual fens that comprise the site. The fens are principally of the flood plain mire type. The site contains a range of rare and local plant species.
<i>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</i>	
<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils <i>Molinia caerulea</i>	
<i>Annex II species that are a primary reason for selection of this site</i>	
Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	The Broad is the main stronghold of Desmoulin's whorl snail <i>Vertigo moulinsiana</i> in East Anglia and is one of several sites selected in this part of its range. Several large populations are known, associated with standing and flowing water and ditch systems. This is a very important area for its wetland invertebrate fauna, and many Red Data Book and Nationally Scarce species occur here.
Fen orchid <i>Liparis loeselii</i>	The Broad provide representation of the Fenland form of fen orchid <i>Liparis loeselii</i> in the eastern part of its UK range. Three small populations of var. <i>loeselii</i> are known to occur on this site, and 242 plants were found in 1996.
<i>Annex II species present as a qualifying feature, but not a primary reason for site selection</i>	
Otter <i>Lutra lutra</i>	

Vulnerability

The site has suffered from management neglect and natural succession during the 20th century, although this is slowly being reversed through conservation and other management works undertaken by a number of bodies (JNCC, 2008j). Sea level rise and reduced summer flows in the northern rivers brought about by abstraction are resulting in an increasing saline intrusion into the site and generally drier summer conditions (JNCC, 2008j); as a result, the Environment Agency, Broad Authority and English Nature are investigating options to remedy this situation. The site also suffers from eutrophication, primarily from sewage outfalls and to a lesser degree, agriculture (JNCC, 2008j). Some of the sewage works in the northern rivers are now phosphorus

stripping and there is a programme of mud-pumping to remove enriched material from lakes, followed by bio-manipulation. Pressure from tourism and recreation is now being considered by the Broads Authority through the Broads Plan. Water Level Management Plans and the Environmentally Sensitive Area scheme are starting to raise water levels, revert arable areas and encourage sensitive management particularly of the ditches to address problems brought about by drainage in the past (JNCC, 2008j). Appropriate standards of flood defence are necessary for the wetland, and works are currently proceeding under the Environment Agency Broads Strategy (JNCC, 2008j).

2.3.4 Minsmere – Walberswick Heath and Marshes

Table 2.11 Qualifying features for Minsmere – Walberswick Heath and Marshes SAC site (JNCC, 2008k)

Qualifying feature	Description
<i>Annex I habitats that are a primary reason for selection of this site</i>	
Annual vegetation of drift lines	This site is one of two representatives of Annual vegetation of drift lines on the east coast of England. It occurs on a well-developed beach strandline of mixed sand and shingle and is the best and most extensive example of this restricted geographical type. Species include those typical of sandy shores, such as sea sandwort <i>Honckenya peploides</i> and shingle plants such as sea beet <i>Beta vulgaris</i> spp. <i>maritima</i> .
European dry heaths	Lowland European dry heaths occupy an extensive area of this site, which is at the extreme easterly range of heath development in the UK. The heathland is predominantly NVC type H8 <i>Calluna vulgaris</i> – <i>Ulex gallii</i> heath, usually more characteristic of western parts of the UK. This type is dominated by heather <i>Calluna vulgaris</i> , western gorse <i>Ulex gallii</i> and bell heather <i>Erica cinerea</i> .
<i>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</i>	
Perennial vegetation of stony banks	

Vulnerability

The European dry heath habitat was formed through and is dependent upon active management (JNCC, 2008k). As a result, without grazing or cutting of heather, scrub and tree invasion onto the heaths is rapid and can be extensive. Bracken can also dominate large areas if suitable management has not been undertaken over the past decade. The site management plan includes actions to ensure that open heathland is maintained and areas of scrub and bracken are cleared from former heath. Part of the cSAC is managed as Westleton Heath Nature Reserve, while the heathland at Minsmere forms part of a RSPB reserve (JNCC, 2008k).

Annual vegetation of drift lines is maintained through the action of natural coastal processes upon the shoreline (JNCC, 2008k). As such, the requirement for management is limited and is restricted to ensuring that significant human disturbance of the vegetated shore zone does not occur, which is currently being addressed on this site through the RSPB visitor management plan (JNCC, 2008k).

2.3.5 Orfordness and Shingle Street

Table 2.12 Qualifying features for Orfordness and Shingle Street SAC site (JNCC, 2008I)

Qualifying feature	Description
<i>Annex I habitats that are a primary reason for selection of this site</i>	
Coastal lagoons	<p><i>Priority feature</i></p> <p>Orfordness – Shingle Street encompasses a series of percolation lagoons on the east coast of England and together with Benacre to Easton Bavents SAC and The Wash and North Norfolk Coast SAC forms a significant part of the percolation lagoon resource concentrated in this part of the UK. The lagoons at this site have developed in the shingle bank adjacent to the shore at the mouth of the Ore estuary, while the salinity of the lagoons is maintained by percolation through the shingle, although at high tides sea water can overtop the shingle bank. The fauna of these lagoons includes typical lagoon species, such as the cockle <i>Cerastoderma glaucum</i>, the ostracod <i>Cyprideis torosa</i> and the gastropods <i>Littorina saxatilis tenebrosa</i> and <i>Hydrobia ventrosa</i>. The nationally rare starlet sea anemone <i>Nematostella vectensis</i> is also found at the site.</p>
Annual vegetation of drift lines	<p>Orfordness is an extensive shingle spit some 15 km in length and is one of two sites representing Annual vegetation of drift lines on the east coast of England. In contrast to Minsmere to Walberswick Heaths and Marshes, drift-line vegetation occurs on the sheltered, western side of the spit, at the transition from shingle to saltmarsh, as well as on the exposed eastern coast. The drift-line community is widespread on the site and comprises sea beet <i>Beta vulgaris</i> spp. <i>Maritima</i> and orache <i>Atriplex</i> spp. in a strip 2 – 5m wide.</p>
Perennial vegetation of stony banks	<p>Orfordness consists of a foreland, a 15 km-long spit and a series of recurves running from north to south on the Suffolk coast. This spit has been selected as it supports some of the largest and most natural sequences in the UK of shingle vegetation affected by salt spray. The southern end of the spit has a particularly fine series of undisturbed ridges, with zonation of communities determined by the ridge pattern. Pioneer communities with sea pea <i>Lathyrus japonicus</i> and false oat-grass <i>Arrhenatherum elatius</i> grassland occur. Locally these are nutrient-enriched by the presence of a gull colony; elsewhere they support rich lichen communities. The northern part of Orfordness has suffered considerable damage from defence-related activities but a restoration programme for the shingle vegetation is underway</p>

Vulnerability

Vegetated shingle is a sensitive habitat and the site is therefore managed to limit recreational pressures, although much of the interest is self-sustaining with little need for intervention (JNCC, 2008I). Natural coastal processes will lead to changes in the extent of lagoons at Shingle Street over time (JNCC, 2008I).

2.4 Special Protection Areas (SPAs)

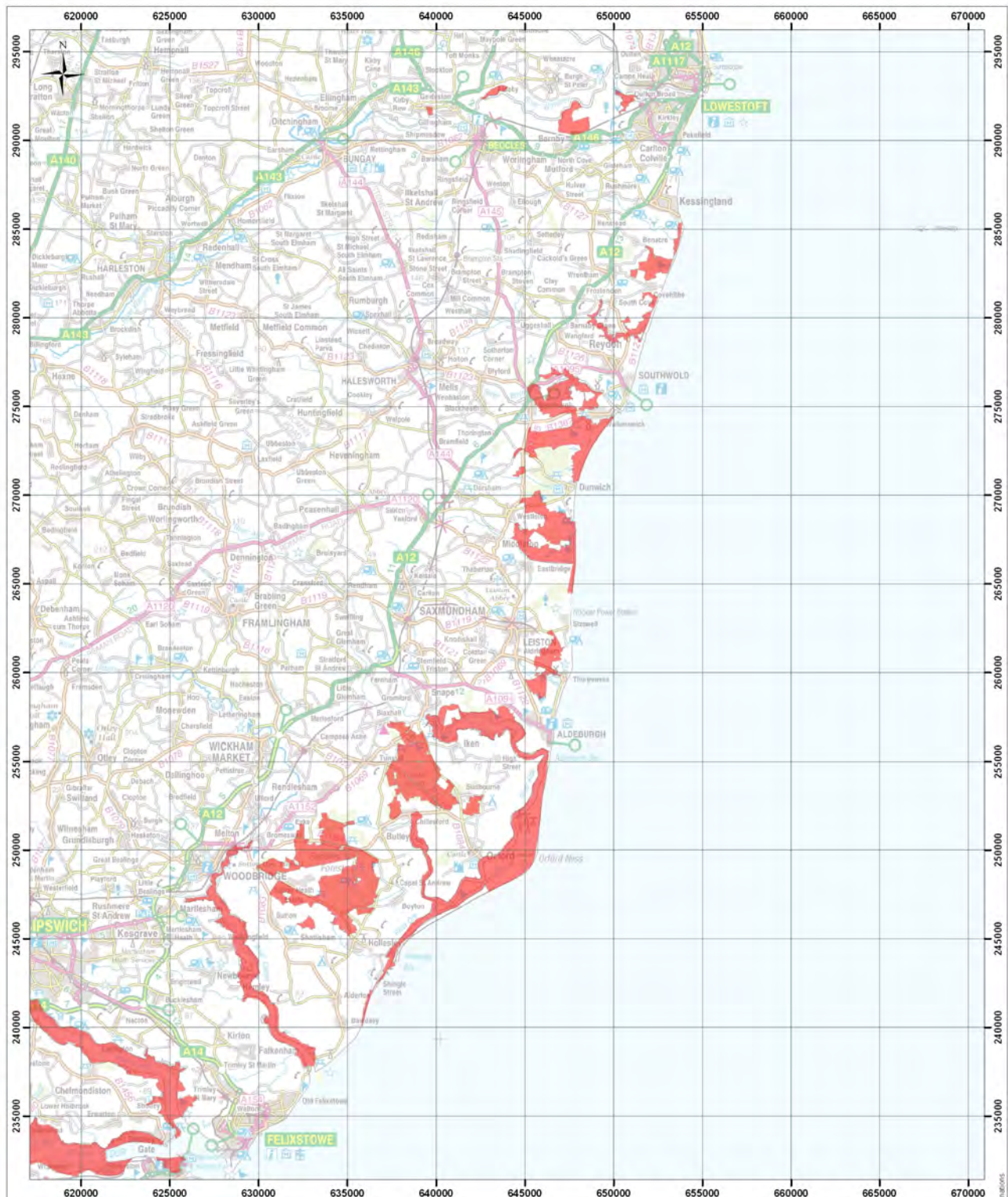
The European Community adopted Council Directive 79/409/EEC on the conservation of wild birds (the 'Birds Directive') in response to the 1979 Bern Convention on the conservation of European habitats and species (the 'Bern Convention'). The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State, with The Directive applying to the UK and to its overseas territory of Gibraltar. SPAs in terrestrial areas and territorial marine waters out to 12 nautical miles are classified under the Wildlife and Countryside Act 1981 (JNCC, 2008m). The provisions of the Directive pertinent to the SMP process include (JNCC, 2008m):

- The maintenance of the favourable conservation status of all wild bird species across their distributional range (Article 2) with the encouragement of various activities to that end (Article 3); and
- The identification and classification of Special Protection Areas for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4) (Together with Special Areas of Conservation (SACs) designated under the Habitats Directive, SPAs form a network of pan-European protected areas known as Natura 2000).

SPAs within the study area are listed in **Table 2.13** and presented in **Figure 2.3**.

Table 2.13 Special Protection Areas (SPA) on the Suffolk coast

SPA site name	Area (ha)
Alde-Ore	2404
Benacre to Easton Bavents	471
Broadland	5506
Deben Estuary	981
Minsmere-Walberswick	2020
Sandlings	3406
The Stour and Orwell	3673



Key:

SPA

Title:
Extent of SPA Sites in the
Study Area

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:200,000@ A3

Figure:
2.3

Drawn:
AZ

Rev
0

2.4.1 Alde-Ore Estuary

Table 2.14 Qualifying features for Alde-Ore Estuary SPA (JNCC, 2008n)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
<p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> Marsh harrier <i>Circus aeruginosus</i> at least 1.9% of the GB breeding population (5 year mean, 1993 – 1997); Avocet <i>Recurvirostra avosetta</i> (Western Europe / Western Mediterranean – breeding) 23.1% of the GB breeding population (5 year mean, 1990 – 1994); Little tern <i>Sterna albifrons</i> (Eastern Atlantic – breeding) 2% of the GB breeding population (5 count mean, 1993 – 1994, 1996 – 1998); and Sandwich tern <i>Sterna sandvicensis</i> (Western Europe / Western Africa) 1.2% of the GB breeding population (5 year mean, 1992 – 1996). <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> Ruff <i>Philomachus pugnax</i> (Western Africa – wintering) 0.4% of the GB population (5 year peak mean 1991/92 – 1995/96); and Avocet <i>Recurvirostra avosetta</i> (Western Europe / Western Mediterranean – breeding) 60.3% of the GB population (5 year peak mean 1991/92 – 1995/96).
<i>Article 4.2 Qualification (79/409/EEC)</i>
<p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> Lesser black backed gull <i>Larus fuscus</i> (Western Europe / Mediterranean / Western Africa) 11.3% of the breeding population (5 year mean 1994 – 1998). <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> Redshank <i>Tringa totanus</i> (Eastern Atlantic – wintering) 1.1% of the population (5 year peak mean 1991/92 – 1995/96).

Vulnerability

The area is vulnerable to sea-level rise and coastal squeeze, which is being addressed through the EA's Local Environment Action Plan, the Estuary Management Plan and potentially managed retreat (JNCC, 2008n). Human disturbance from recreation is minimal as this is a reasonably robust system and shooting is controlled through a management plan (JNCC, 2008n). Flood defence policy will need to take into account risks to the site from flooding and of flood control alleviation measures. A considerable part of the site is managed sympathetically by Suffolk Wildlife Trust, National Trust, Royal Society for the Protection of Birds and English Nature (JNCC, 2008n).

2.4.2 Benacre to Easton Bavents

Table 2.15 Qualifying features for Benacre to Easton Bavents SPA (JNCC, 2008o)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
During the breeding season the area regularly supports: <ul style="list-style-type: none"> Bittern <i>Botaurus stellaris</i> (Europe – breeding) 5% of the GB breeding population (5 year mean, 1992 – 1996); Marsh harrier <i>Circus aeruginosus</i> 5.1% of the GB breeding population (5 year mean, 1993 – 1997); and Little tern <i>Sterna albifrons</i> (Eastern Atlantic – breeding) 0.9% of the GB breeding population (5 year mean, 1992 – 1996).

Vulnerability

The natural sea level rise will lead to more frequent saltwater inundation of the site, which whilst being beneficial for some habitats will lead to loss of others (JNCC, 2008o). Sea level rise is causing erosion of the lagoons through the landward movement of the confining shingle barrier (JNCC, 2008o). Natural processes if unchecked are likely over time to lead to the loss of these features and the area of reedbed will be reduced (JNCC, 2008o). New lagoons have been created further back from the coast and other management actions to decrease the rate of erosion should be addressed through the Shoreline Management Plan (JNCC, 2008o).

2.4.3 Broadlands

Table 2.16 Qualifying features for Broadlands SPA (JNCC, 2008p)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
During the breeding season the area regularly supports: <ul style="list-style-type: none"> Bittern <i>Botaurus stellaris</i> (Europe – breeding) at least 10% of the GB breeding population (three year mean 1996 – 1998); and Marsh harrier <i>Circus aeruginosus</i> 10.2% of the GB breeding population (5 year mean, 1987/8 – 1991/2).
Over winter the area regularly supports: <ul style="list-style-type: none"> Hen harrier <i>Circus cyaneus</i> 2.9% of the GB population (5 year peak mean 1987/8 – 1991/2); Bewick's swan <i>Cygnus columbianus bewickii</i> (Western Siberia / North-eastern & North-western Europe) at least 8.2% of the GB population (count as at 1996/7); and Hooper swan <i>Cygnus cygnus</i> (Iceland / UK / Ireland) 1.8% of the GB population (count as at 1996/7).
<i>Article 4.2 Qualification (79/409/EEC)</i>
Over winter the area regularly supports: <ul style="list-style-type: none"> Gadwall <i>Anas strepera</i> (North-western Europe) 0.8% of the population (5 year peak mean, 1991/2 – 1995/6).

Vulnerability

The site has suffered from management neglect and natural succession, which is slowly being reversed via conservation and other management works being undertaken by a number of bodies (JNCC, 2008p). Sea level rise and reduced summer flows in the River Bure brought about by abstraction are resulting in increasing saline intrusion into the site and generally drier summer conditions (JNCC, 2008p). The Environment Agency,

Broads Authority and Natural England are currently undertaking a project to investigate options to remedy this situation (JNCC, 2008p). The site also suffers from eutrophication, brought through the build up of nutrients over a long period, primarily through sewage outfalls and to a lesser degree, agriculture. Some of the sewage works are now stripping phosphorus and there is a programme of mud pumping to remove enriched material from lakes (JNCC, 2008p). The region as a whole is a centre for tourism and recreation; however, this pressure is now starting to be brought under control by the Broads Authority via the Broads Plan. Efficient drainage within much of the reclaimed parts of the wetland has reduced the wildlife value, although Water Level Management Plans and the Environmentally Sensitive Area (ESA) scheme are starting to raise water levels, revert arable areas and encourage sensitive management, particularly of the ditches (JNCC, 2008p). Flood defence works are carried out in accordance with the Environmental Agency Broads Strategy (JNCC, 2008p).

2.4.4 Deben Estuary

Table 2.17 Qualifying features for Deben Estuary SPA (JNCC, 2008p)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
Over winter the area regularly supports: <ul style="list-style-type: none"> Avocet <i>Recurvirostra avosetta</i> (Western Europe / Western Mediterranean – breeding) 7.5% of the GB population (5 year peak mean 1991/92 – 1995/96).
<i>Article 4.2 Qualification (79/409/EEC)</i>
Over winter the area regularly supports: <ul style="list-style-type: none"> Dark-bellied Brent goose <i>Branta bernicla bernicla</i> (Western Siberia/Western Europe) 0.8% of the population (5 year peak mean 1991/92 – 1995/96).

Vulnerability

The saltmarsh and intertidal habitats are vulnerable to sea level rise and coastal squeeze (JNCC, 2008p). These issues are being addressed through the Environment Agency LEAP, the estuary Shoreline Management Plan and research into possible managed retreat in parts of the site (JNCC, 2008p).

2.4.5 Minsmere-Walberswick

Table 2.18 Qualifying features for Minsmere-Walberswick SPA (JNCC, 2008q)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
During the breeding season the area regularly supports: <ul style="list-style-type: none"> Bittern <i>Botaurus stellaris</i> (Europe - breeding) 35% of the GB breeding population (5 year mean, 1993 – 1997); Nightjar <i>Caprimulgus europaeus</i> 0.7% of the GB breeding population (count as at 1990); Marsh harrier <i>Circus aeruginosus</i> 10.2% of the GB breeding population (5 year mean, 1993 – 1997); Avocet <i>Recurvirostra avosetta</i> (Western Europe / Western Mediterranean – breeding) 10.4% of the GB breeding population (count as at early 1990s); and Little tern <i>Sterna albifrons</i> (Eastern Atlantic – breeding) 1.2% of the GB breeding population (5 year mean, 1992 – 1996).

Qualifying feature
<p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> Hen harrier <i>Circus cyaneus</i> 2% of the GB population (5 year peak mean, 1985/6 – 1989/90)
Article 4.2 Qualification (79/409/EEC)
<p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> Shoveler <i>Anas clypeata</i> (North-western / Central Europe) 2.3% of the population in Great Britain (Count as at 1990); Teal <i>Anas crecca</i> (North-western Europe) 4.9% of the population in Great Britain (Count as at 1990); and Gadwall <i>Anas strepera</i> (North-western Europe) 3.1% of the population in Great Britain (Count as at 1990). <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> Shoveler <i>Anas clypeata</i> (North-western / Central Europe) 1% of the population in Great Britain (5 year peak mean 1991/92 – 1995/96); Gadwall <i>Anas strepera</i> (North-western Europe) 1.1% of the population in Great Britain (5 year peak mean 1991/92 – 1995/96); and White fronted goose <i>Anser albifrons albifrons</i> (North-western Siberia / North-eastern & North-western Europe) 1.1% of the population in Great Britain (5 year peak mean 1991/92 – 1995/96).

Vulnerability

The site is actively managed to prevent scrub and tree invasion of the heathlands, grazing marshes and reedbeds (JNCC, 2008q). Much of the land is managed by conservation organisations and positively by private landowners through ESA and Countryside Stewardship schemes (JNCC, 2008q). The coastline is going to be pushed back by natural processes, which should be addressed in the Shoreline Management Plan and alternative sites for reed bed creation are being sought to help offset the possible future natural losses (JNCC, 2008q).

2.4.6 Sandlings

Table 2.19 Qualifying features for Sandlings SPA (JNCC, 2008r)

Qualifying feature
Article 4.1 Qualification (79/409/EEC)
<p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> Nightjar <i>Caprimulgus europaeus</i> 3.2% of the GB breeding population (count as at 1992); and Woodlark <i>Lullula arborea</i> 10.3% of the GB breeding population (count as at 1997).

Vulnerability

Sandlings SPA comprises six SSSIs, with the largest of these, Sandlings Forest SSSI, being dominated by commercial forestry (JNCC, 2008r). Within the forest, large areas of open ground suitable for woodlark and nightjar were created by storm damage in 1987. Maintenance of open areas in the future relies on clear felling as the main silvicultural practice and the maintenance of some areas earmarked for woodlark and nightjar habitat (JNCC, 2008r). These objectives are included in the East Anglia Forest District Strategic Plan.

On the heathland SSSIs, lack of traditional management has resulted in the heathland being subjected to successional changes with the consequent spread of bracken, shrubs and trees, which is being addressed through habitat management work under the Countryside Stewardship Scheme and Tomorrows Heathland Heritage and is

resulting in the restoration of more typical heathland habitat favourable to both nightjar and woodlark (JNCC, 2008r). Human influences on the site include the frequent presence of travellers' caravans, which is a longstanding problem and a variety of mechanisms are utilised to keep them from the heathland, including the digging of trenches and construction of earth barriers around the borders of sites (JNCC, 2008r).

2.4.7 Stour and Orwell

Table 2.20 Qualifying features for Stour and Orwell SPA (JNCC, 2008s)

Qualifying feature
<i>Article 4.1 Qualification (79/409/EEC)</i>
During the breeding season the area regularly supports: <ul style="list-style-type: none"> Avocet <i>Recurvirostra avosetta</i> (Western Europe / Western Mediterranean – breeding) 3.6% of the population in Great Britain (5-year peak mean 1996 – 2000)
<i>Article 4.2 Qualification (79/409/EEC)</i>
Over winter the area regularly supports: <ul style="list-style-type: none"> Pintail <i>Anas acuta</i> (North-western Europe) 1.2% of the population (5 year peak mean 1995/96 – 1999/2000); Dark-bellied Brent goose <i>Branta bernicla bernicla</i> (Western Siberia / Western Europe) 1.2% of the population (5 year peak mean 1995/96 – 1999/2000); Dunlin <i>Calidris alpina alpina</i> (Northern Siberia / Europe / Western Africa) 1.4% of the population (5 year peak mean 1995/96 – 1999/2000); Knot <i>Calidris canutus</i> (North-eastern Canada / Greenland / Iceland / North-western Europe) 1.3% of the population (5 year peak mean 1995/96 – 1999/2000); Black-tailed godwit <i>Limosa limosa islandica</i> (Iceland – breeding) 7.3% of the population (5 year peak mean 1995/96 – 1999/2000); Grey plover <i>Pluvialis squatarola</i> (Eastern Atlantic – wintering) 1.3% of the population (5 year peak mean 1995/96 – 1999/2000); and Redshank <i>Tringa totanus</i> (Eastern Atlantic – wintering) 2.8% of the population (5 year peak mean 1995/96 – 1999/2000).
On passage the area regularly supports: <ul style="list-style-type: none"> Redshank <i>Tringa totanus</i> (Eastern Atlantic – wintering) 2% of the population (5 year peak mean 1995/96 – 1999/2000)
<i>Article 4.2 Qualification (79/409/EEC): An Internationally Important Assemblage of Birds</i>
Over winter the area regularly supports: <ul style="list-style-type: none"> 63017 waterfowl (5 year peak mean 19/05/2005), including: Great crested grebe <i>Podiceps cristatus</i>, cormorant <i>Phalacrocorax carbo</i>, dark-bellied Brent goose <i>Branta bernicla bernicla</i>, shelduck <i>Tadorna tadorna</i>, wigeon <i>Anas penelope</i>, gadwall <i>Anas strepera</i>, Pintail <i>Anas acuta</i>, goldeneye <i>Bucephala clangula</i>, ringed plover <i>Charadrius hiaticula</i>, grey plover <i>Pluvialis squatarola</i>, lapwing <i>Vanellus vanellus</i>, knot <i>Calidris canutus</i>, dunlin <i>Calidris alpina alpina</i>, black-tailed godwit <i>Limosa limosa islandica</i>, curlew <i>Numenius arquata</i>, redshank <i>Tringa totanus</i> and turnstone <i>Arenaria interpres</i>.

Vulnerability

There is pressure for increased port development and marine recreation in this area, with marine recreation being addressed within the Estuary Management Plan while port development is being considered by public inquiry (JNCC, 2008s). Maintenance dredging of the River Stour and River Orwell poses potential threats to the SPA, but the activity is being addressed through the provisions of the Habitats Regulations (JNCC,

2008s). The saltmarsh is eroding, partly as a result of natural coastal processes, dredgings being used in an attempt to combat these processes (JNCC, 2008s).

2.5 Sites of Special Scientific Interest (SSSIs)

Sites of Special Scientific Interest (SSSI) (England, Scotland & Wales) are the national suite of sites which provide statutory protection for sites regarded as the best examples of flora, fauna, geological or physiographical features in the British Isles (JNCC, 2008t). The SSSI designation is also used to underpin other national and international nature conservation designations, such as Ramsar sites, SPAs and SACs. The SSSI designation may extend into intertidal areas out to the jurisdictional limit of local authorities, generally Mean Low Water (MLW) in England (JNCC, 2008t). Originally notified under the National Parks and Access to the Countryside Act 1949, all current SSSIs have been re-notified under the Wildlife and Countryside Act 1981 (JNCC, 2008t). Improved provisions for protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales).

Under Section 28G of the Wildlife and Countryside Act (1981) (as amended by the Countryside and Rights of Way (CROW) Act (2000)), with regard to SSSIs, public bodies have a duty 'to take reasonable steps, consistent with the proper exercise of the authorities functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest'. Furthermore, under Section 28H of the Wildlife and Countryside Act (1981) (as amended by CROW Act, (2000)) a Section 28G authority (public body) may only carry out a specified 'Operation Likely to Damage'¹ (OLD) having first consulted Natural England. If assent is not received from Natural England, or if the public body intends to proceed in contradiction to Natural England's advice, it must write to Natural England, outlining how (if at all) it has taken account of Natural England's advice.

A public Service Agreement (PSA) also exists in relation to SSSIs, which states that 95% of SSSIs should be in favourable condition by 2010 (the current percentage in favourable condition is lower than this). This creates a further driver not only to avoid damage to SSSIs, but to seek to seek to improve their condition via SMP policies. It is incumbent on all public bodies to work towards achieving this PSA. SSSIs in the study area are displayed in **Figure 2.4** and listed in **Table 2.21**.

¹ For each SSSI a list of Operations Likely to Damage (OLDs) exist. These differ from site to site according to the specific sensitivities, vulnerabilities and conservation requirements of the site.

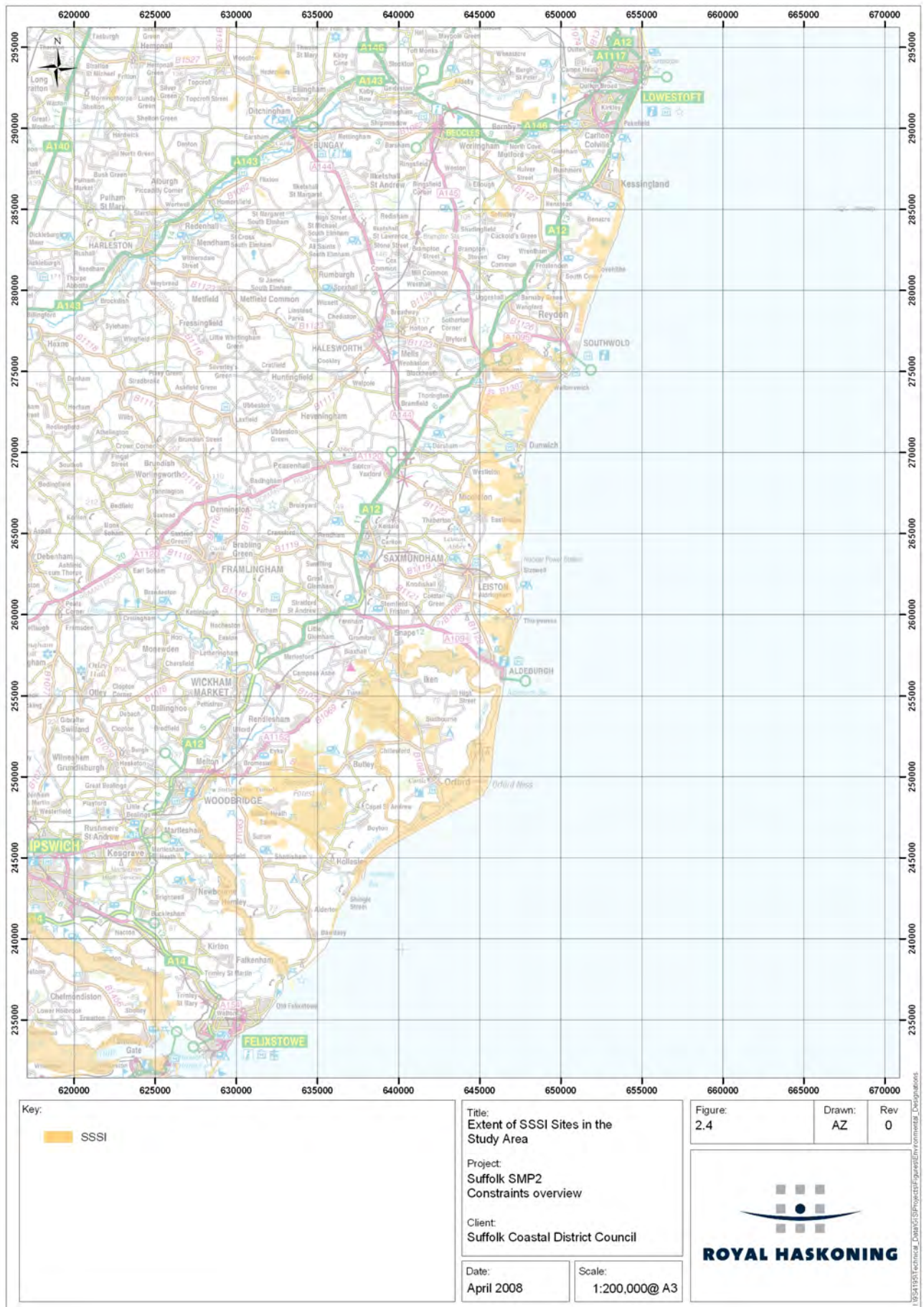


Table 2.21 Sites of Special Scientific Interest (SSSI) on the Suffolk coast (Natural England, 2008a)

SSSI name	Area (ha)
Alde-Ore Estuary	2,554.3
Barnby Broad and Marshes	189.6
Bawdsey Cliff	23.3
Corton Cliffs	6.5
Crag Pit, Aldeburgh	0.8
Deben Estuary	976
Gedgrave Hall Pit	0.6
Gromford Meadow	1.6
Landguard Common	31.4
Leiston-Aldeburgh	534.3
Minsmere-Walberswick Heaths and Marshes	2325.9
Orwell Estuary	1336.6
Pakefield to Easton Bavents	735.3
Red House Farm Pit, Sudbourne	0.5
Sandlings Forest	2473.9
Sizewell Marshes;	104.3
Sprats Water and Marshes, Carlton Colville	55.5
Stour Estuary	2252.6
Valley Farm Pit, Sudbourne	0.5

2.5.1 Alde-Ore Estuary SSSI

This site stretches along the coast from Bawdsey to Aldeburgh and inland to Snape. It includes Orfordness, Shingle Street, Havergate Island, and the Butley, Ore and Alde Rivers, with the scientific interests of the site being both outstanding and diverse (Natural England, 2008b). The shingle structures of Orfordness and Shingle Street are of great physiographic importance whilst the cliff at Gedgrave is of geological interest. The site also contains a number of coastal formations and estuarine features including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value. **Table 2.22** presents the SSSI condition summary (Natural England, 2008b).

Table 2.22 SSSI condition summary for Alde-Ore Estuary SSSI as at 4th September 2007 (Natural England, 2008b)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
78.06	75.96	2.10	0.59	21.36	0.00

Condition data undertaken in January 2005 indicates that the overall condition of the site is favourable. Of the 45 units, only 11 were in unfavourable condition (Natural England, 2008b). Coastal squeeze was the most common factor for the unfavourable condition of units, with the exception of unit 13 where inappropriate coastal management was attributable (Natural England, 2008b). At this site, the shingle which is used to re-enforce the shingle barrier at Slaughden is removed with diggers driving over the shingle ridges having historically damaged the shingle structures and vegetation (Natural

England, 2008b), although no shingle movement was undertaken during 2004 as the ridge was deemed sufficiently wide to hold the line. Although the practice has ceased it is too early to tell if this unit is recovering (Natural England, 2008b). An appropriate assessment is ongoing and new working methods have been implemented since 2003 to minimise vehicle impact (Natural England, 2008b). There is also monitoring of vegetation and key invertebrates.

2.5.2 Barnby Broad and Marshes SSSI

Barnby Broad and Marshes are situated in the Waveney Valley and comprise a large and varied area of open water, Carr woodland, fen, grazing marsh and dykes (Natural England, 2008c). Several of the communities are confined to the Broadland area of Norfolk and Suffolk where they are under increasing threat. The large area of semi-natural habitats and traditional grazing marsh make this site especially important as other areas of Broadland become fragmented (Natural England, 2008c). The plant communities are very rich in species and the site has an outstanding assemblage of rare and uncommon plants. The range of habitats is also attractive to nesting birds and several rare species breed in the area. There is, in addition, considerable entomological interest. **Table 2.23** presents the SSSI condition summary (Natural England, 2008c).

Table 2.23 SSSI condition summary for Barnby Broad and Marshes SSSI as at 4th September 2007 (Natural England, 2008c)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
94.93	49.97	44.96	5.08	0.00	0.00

Condition data (Natural England, 2008c) dating from April 2006 indicates that the site is in favourable to unfavourable recovering condition. Of the 24 units assessed, 2 were in unfavourable condition with flood risk management structures or practices not being implicated as the causes (Natural England, 2008c). The main causes were attributable to inappropriate weed control, water pollution from agriculture / run off and siltation.

2.5.3 Bawdsey Cliff SSSI

Bawdsey Cliffs are of great geological interest and potential for studies of non-glacial Pleistocene environments, with the cliffs providing a section of over 2km in length of the Butleyan division of the Early Pleistocene Red Crag (Natural England, 2008d). The site constitutes by far the largest available exposure of the Red Crag and is rich in marine Mollusca. **Table 2.24** presents the SSSI condition summary (Natural England, 2008d).

Table 2.24 SSSI condition summary for Bawdsey Cliff SSSI as at 4th September 2007 (Natural England, 2008d)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data (Natural England, 2008d) dating from June 2005, indicates that the entire site was in favourable condition. It did not appear that the sea was eroding the cliffs at all and a sufficient amount of the face was exposed for the site to be classed as favourable (Natural England, 2008d).

2.5.4 Corton Cliffs SSSI

The cliff at Corton is geologically important because it is the type locality for the Anglian Cold Stage – an epoch during which the most extensive Pleistocene glaciation of the British Isles occurred (Natural England, 2008e). The cliffs expose a clear sequence of two tills with non-glacial water lain sands between, together with a third till and associated deposits above (Natural England, 2008e). The whole Anglian sequence here can be clearly related to the underlying Cromerian freshwater beds. A nationally important Pleistocene site. **Table 2.25** presents the SSSI condition summary (Natural England, 2008e).

Table 2.25 SSSI condition summary for Corton Cliffs SSSI as at 4th September 2007 (Natural England, 2008e)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data (Natural England, 2008e) dating from May 2002, indicates that the entire site is in favourable condition. Sections of the cliffs are vegetated but regular slips are keeping the faces open.

2.5.5 Crag Pit, Aldeburgh SSSI

This site is of geological interest because it represents the most northerly existing exposure of Pliocene Coralline Crag. The deposit, which is up to 2.5 metres high, is of horizontally bedded Crag with prominent solution pipes in the upper surface. **Table 2.26** presents the SSSI condition summary (Natural England, 2008f).

Table 2.26 SSSI condition summary for Crag Pit, Aldeburgh SSSI as at 4th September 2007 (Natural England, 2008f)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data (Natural England, 2008f) dating from August 2003, indicates that the entire site is in favourable condition.

2.5.6 Deben Estuary SSSI

The boundary of this site partially overlaps the boundaries of two geological SSSIs, Ferry Cliff, Sutton and Ramsholt Cliff (Natural England, 2008f). The Deben Estuary is important for its populations of overwintering waders and wildfowl and also for its

extensive and diverse saltmarsh communities (Natural England, 2008g). Several estuarine plants and invertebrates with a nationally restricted distribution are also present. The estuary extends for over 12 km in a generally south-easterly direction. It is sinuous, relatively sheltered and narrow, particularly at its mouth which is protected by shifting sand banks. Much of the intertidal area is occupied by mudflats with more sandy deposits occurring where exposed Red Crag erodes from cliffs (Natural England, 2008g). The numbers of Redshank *Tringa totanus* overwintering on the estuary are of international importance and the summer breeding population of this species is of county significance. The site is of national importance for its winter populations of dark-bellied Brent goose *Branta bernicla*, shelduck *Tadorna tadorna* and black-tailed godwit *Limosa limosa* with the numbers of wigeon *Anas penelope*, pintail *Anas acuta* and grey plover *Pluvialis squatarola* approaching this level in some years. **Table 2.27** presents the SSSI condition summary (Natural England, 2008g).

Table 2.27 SSSI condition summary for Deben Estuary SSSI as at 4th September 2007 (natural England, 2008g)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
26.58	26.58	0.00	0.00	73.42	0.00

Condition assessment undertaken in May 2005 showed the site to be in an unfavourable declining condition. Of the 22 units assessed, 15 were in unfavourable condition with flood risk management structures or practices not being implicated as the causes (Natural England, 2008g). The main causes were attributable to coastal squeeze with possible contributions from water quality factors.

2.5.7 Gedgrave Hall Pit SSSI

This site consists of two pits of geological importance for the study of the development and stratigraphy of Coralline Crag deposited in the Pliocene age (Natural England, 2008h), with the two pits demonstrating different but complementary features. The larger pit shows over 5 metres of cross-stratified crag belonging to the sandwave facies, while the smaller pit, which is only a few metres away and slightly downslope, exhibits highly fossiliferous coralline crag sediments with an abundance of aragonitic mollusks preserved without alteration since deposition (Natural England, 2008h). **Table 2.28** presents the SSSI condition summary (Natural England, 2008h).

Table 2.28 SSSI condition summary for Gedgrave Hall Pit SSSI as at 4th September 2007 (Natural England, 2008h)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data (Natural England, 2008h) dating from January 2003, indicates that the entire site is in favourable condition.

2.5.8 Gromford Meadow SSSI

Gromford Meadow is a good example of an unimproved base-rich marsh on an alluvial soil with a high organic content, bordering the River Alde and being fed by springs. The site is species-rich and contains a variety of characteristic fen meadow and marshland plants. **Table 2.29** present the SSSI condition summary (Natural England, 2008i).

Table 2.29 SSSI condition summary for Gromford Meadow SSSI as at 4th September 2007 (Natural England, 2008i)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	0.00	100.00	0.00	0.00	0.00

Condition data dating from July 2007 indicates that the site is in unfavourable recovering condition, with the species-rich communities being in a good condition (Natural England, 2008i).

2.5.9 Landguard Common SSSI

Landguard Common is a sand and shingle spit, which protects the northern entrance to the haven ports of Harwich and Felixstowe. It consists of a loose shingle foreshore backed by a stabilised, vegetated beach, earth banks and scrub. Pioneer shingle plants and vegetated shingle beaches are fragile and is a nationally scarce habitat type. The site is also of some ornithological interest as a landfall site for passage migrants and for breeding shorebirds (Natural England, 2008j).

The north part of the foreshore is protected by sea defences, but this and the beach crest further south is sea washed and provides bare shingle for shingle colonising species, which includes a large population of sea kale *Crambe maritima* as well as sea pea *Lathyrus japonicus*, yellow-horned poppy *Glaucium flavum*, sea sandwort *Honkenya peploides* and sea campion *Silene maritima*. The bare shingle is also used by nesting little tern *Sterna albifrons* and ringed plover *Charadrius hiaticula* (Natural England, 2008j).

Inland the shingle is stabilised and vegetated: to the south, red fescue *Festuca rubra*, early hair grass *Aira praecox* and sand sedge *Carex arenaria* predominate whilst further north and on earthworks this merges with dry neutral grassland dominated by false oat grass *Arrhenatherum elatius*, cocksfoot *Dactylis glomerata* and sea couch grass *Elytrigia atherica* (Natural England, 2008j). Other plants include sea holly *Eryngium maritimum*, sea bindweed *Calystegia soldanella*, viper's bugloss *Echium vulgare*, English and biting stonecrops *Sedum anglicum* and *Sedum acre*, respectively, slender thistle *Carduus tenuiflorus* and crow garlic *Allium vineale* together with naturalised species such as rough dog's tail *Cynosurus echinatus*, hoary cress *Lepidium draba*, dittander *Lepidium latifolium* and red valerian *Centranthus ruber*. Rare and local species include bur medick *Medicago minima*, bird's-foot clover *Trifolium ornithopodioides*, clustered clover *T. glomeratum*, suffocated clover *T. suffocatum*, knotted clover *T. striatum*, bulbous meadow-grass *Poa bulbosa* and grass vetchling *Lathyrus nissolia* (Natural England, 2008j).

There are several wet areas which contain marsh or saltmarsh species including sea rush *Juncus maritimus*, saltmarsh rush *Juncus gerardi*, sea club-rush *Bolboschoenus maritimus* and sea milkwort *Glaux maritima*. Scrub, chiefly of tamarisk *Tamarix* spp., elder *Sambucus nigra*, rose *Rosa* spp. and bramble *Rubus fruticosus* occur particularly on some earthworks. This provides cover for small birds and forms a favoured landfall for migrant species. **Table 2.29** presents the SSSI condition summary (Natural England, 2008j).

Table 2.29 SSSI condition summary for Landguard Common SSSI as at 4th September 2007 (Natural England, 2008j)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data dating from 2001, indicates that the entire site is in favourable condition (Natural England, 2008j).

2.5.10 Leiston-Aldeburgh SSSI

Leiston-Aldeburgh contains a rich mosaic of habitats, including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. This mix of habitats in close juxtaposition and the associated transition communities between habitats is unusual in the Suffolk Coast and Heaths. The variety of habitats support a diverse and abundant community of breeding and overwintering birds, a high number of dragonfly species and many scarce plants. **Table 2.30** presents the SSSI condition summary (Natural England, 2008k).

Table 2.30 SSSI condition summary for Leiston-Aldeburgh SSSI as at 4th September 2007 (Natural England, 2008k)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
91.45	48.87	42.58	3.27	5.28	0.00

Condition data dating from April 2005, indicates that overall the site is in favourable condition (Natural England, 2008k), although of the 23 units assessed, 11 were in an unfavourable condition. However, of these, 7 of those were unfavourable yet recovering. The main cause for the unfavourable condition was noted as public access and disturbance, with flood risk management structures or practices not being implicated as causes of unfavourability.

2.5.11 Minsmere-Walberswick Heaths and Marshes SSSI

This site is an amalgam of the Minsmere Level SSSI (notified in 1954), Walberswick SSSI (notified in 1954) and Brick Kiln Walks SSSI (notified in 1972), with much of the site having been designated SPA and Ramsar and is within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB). Parts of the site are owned and/or managed as nature reserves (Walberswick National Nature Reserve (English Nature),

Westleton Heath National Nature Reserve (English Nature), Minsmere Reserve (Royal Society for the Protection of Birds), Dunwich Heath (National Trust) and Norman Gwatkin Reserve (Suffolk Wildlife Trust)) (Natural England, 2008l).

This composite site is situated on the coast of Suffolk between Southwold and Sizewell and contains a complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which combine to create an area of exceptional scientific interest. **Table 2.31** presents the SSSI condition summary (Natural England, 2008l).

Table2.31 SSSI condition summary for Minsmere-Walberswick SSSI as at 4th September 2007 (Natural England, 2008l)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
88.44	42.88	45.56	3.89	7.67	0.00

Condition data dating from August 2006, indicates that the site is in an unfavourable recovering condition (Natural England, 2008l). Out of around 100 units assessed, over 50 were in unfavourable condition; however, the majority of the unfavourable sites (around 36) were in unfavourable recovering condition. Factors attributable to the unfavourable declining condition are coastal squeeze, water pollution and agriculture/run off, under-grazing and public disturbance. Inappropriate coastal management can be attributed as the cause for 7 of the units in unfavourable declining condition (Natural England, 2008l).

2.5.12 Orwell Estuary SSSI

The Orwell Estuary is of national importance for breeding avocet *Recurvirostra avosetta*, breeding bird assemblages of open waters and their margins, nine species of wintering waterfowl (including black-tailed godwit *Limosa limosa islandica*), an assemblage of vascular plants and intertidal mud habitats. The Orwell is a long and relatively narrow estuary with extensive mudflats and some saltmarsh. **Table 2.32** presents the SSSI condition summary (Natural England, 2008m).

Table 2.32 SSSI condition summary for Orwell Estuary SSSI as at 4th September 2007 (Natural England, 2008m)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
78.50	75.49	3.01	6.88	14.62	0.00

Condition data dating from July 2005, indicated that site is in an overall favourable condition. Of the 23 units assessed, 8 were in unfavourable condition, although flood risk management structures or practices were not implicated as causative factors. Main causes were attributed as being coastal squeeze and water pollution from agriculture / run off (Natural England, 2008m).

2.5.13 Pakefield to Easton Bavents SSSI

Pakefield to Easton Bavents is nationally important for the geological exposures of the Lower Pleistocene Norwich Crag formations and associated Pleistocene vertebrate assemblages and for the coastal geomorphology of Benacre Ness. The site is also nationally important for its vegetated shingle features, saline lagoons, floodplain fens, an assemblage of nationally rare and nationally scarce vascular plants, scarce breeding birds, four breeding bird assemblages in four different habitats and wintering bitterns *Botaurus stellaris*. **Table 2.33** presents the SSSI condition summary (Natural England, 2008n).

Table 2.33 SSSI condition summary for Pakefield to Easton Bavents SSSI as at 4th Sept 2007 (Natural England, 2008n)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
76.78	52.51	24.27	6.53	16.70	0.00

Condition data dating from May 2006, indicates that overall the site is in favourable condition (Natural England, 2008n). Out of around 50 units assessed, 20 were unfavourable, although flood risk management structures or practices were not implicated as causes of unfavourability (Natural England, 2008n).

2.5.14 Red House Farm Pit, Sudbourne SSSI

This site is designated for an exposure of Pliocene Coralline Crag, a 3.5 m section of which is exposed, showing well-defined large-scale cross-stratification (current-bedding) in the sediments (limestones) (Natural England, 2008o). These rocks have been affected by the selective dissolution of the mineral aragonite. The sediments are rich in the skeletal remains of bryozoans (colonial fossils). This locality thus provides important information on the processes of transportation and on facies relationships in Coralline Crag. **Table 2.34** presents the SSSI condition summary (Natural England, 2008o).

Table 2.34 SSSI condition summary for Red House Farm Pit SSSI as at 4th September 2007 (Natural England, 2008o)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data dating from June 2002 indicates that the site is entirely in favourable condition (Natural England, 2008o).

2.5.15 Sandlings Forest SSSI

This site is notified for its coniferous woodland which supports internationally important populations of woodlark *Lullula arborea* and nightjar *Caprimulgus europaeus*. The Sandlings Forest SSSI lies between Snape and Woodbridge and is comprised of the areas known as Tunstall Forest and Rendlesham Forest. The site is dominated by

commercial forestry plantations on sandy soils which once supported extensive heathland. **Table 2.35** presents the SSSI condition summary (Natural England, 2008p).

Table 2.35 SSSI condition summary for Sandlings Forest SSSI as at 4th September 2007 (Natural England, 2008p)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data (Natural England, 2008p) dating from September 2001 indicates that the site is in favourable condition.

2.5.16 Sizewell Marshes SSSI

Sizewell Marshes are important for their large area of lowland, unimproved wet meadows which support outstanding assemblages of invertebrates and breeding birds, with several nationally scarce plants also being present (Natural England, 2008q). The site occupies a low-lying basin of deep fen peat and the water table is permanently high. The area is also prone to flooding, with an extensive network of ditches being located across the site (Natural England, 2008q).

Sizewell Marshes are of exceptional interest for their invertebrate fauna, supporting a wide range of taxa and many nationally rare or scarce species. These include terrestrial and aquatic beetles (Coleoptera), flies (Diptera), moths (Lepidoptera), dragonflies (Odonata) and spiders (Araneae). **Table 2.36** presents the SSSI condition summary (Natural England, 2008q).

Table 2.36 SSSI condition summary for Sizewell Marshes SSSI as at 4th September 2007 (Natural England, 2008q)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00

Condition data dating from April 2003 indicates that the site is in favourable condition (Natural England, 2008q).

2.5.17 Sprats Water and Marshes, Carlton Colville

Sprat's Water and Marshes are situated in the Lower Waveney Valley and comprise areas of spring-fed mixed fen, open water, alder Carr and wet grazing marsh on deep peat. The fen community is of a type that is typical of Broadland, but which is otherwise rarely found in Suffolk (Natural England, 2008r). Maintenance of high summer water levels together with seasonal grazing and reed cutting has led to the development of a very rich flora which includes several uncommon species (Natural England, 2008r). The site is also important for breeding birds. **Table 2.37** presents the SSSI condition summary (Natural England, 2008r).

Table 2.37 SSSI condition summary for Sprats Water and Marshes SSSI as at 4th September 2007 (Natural England, 2008r)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
70.44	13.58	56.86	11.43	18.13	0.00

Condition assessment undertaken in March 2006 showed the site to be in unfavourable recovering condition (Natural England, 2008r). Of the 12 units assessed, 6 were in unfavourable condition, although flood risk management structures or practices were not implicated as causative factors (Natural England, 2008r).

2.5.18 Stour Estuary SSSI

The Stour Estuary forms the eastern part of the Essex / Suffolk county boundary and is a relatively simply structured estuary with a sandy outer area and a muddier inner section. The six main bays of Seafeld, Holbrook and Erwarton on the north bank and Jacques, Copperas and Bathside on the south bank contain the majority of the intertidal flats (Natural England, 2008s). The mud is extremely rich in invertebrates and this, coupled with its relative lack of disturbance, enables the estuary to support an internationally significant assemblage of wildfowl and wading birds. The shoreline is one of the most natural in the region, often possessing low cliffs, with those at Stutton and Wrabness containing nationally important geological exposures (Natural England, 2008s).

The Stour Estuary is nationally important for 13 species of wintering waterfowl and three species on autumn passage (Natural England, 2008s), while the estuary is also of national importance for coastal saltmarsh, sheltered muddy shores, two scarce marine invertebrates and a vascular scarce plant assemblage (Natural England, 2008s). Further to this, the Stour includes three nationally important geological sites, providing exposures of early Eocene sediments containing volcanic ash formations between Harwich and Wrabness. The same rocks are also important for the fossil fruits and seeds that they contain. At Stutton, much younger Pleistocene sediments have yielded an important and rich fossil vertebrate fauna (Natural England, 2008s).

This site has been re-notified to include Bathside Bay and part of Copperas Bay. The SSSI is part of the Stour and Orwell Estuaries Wetland of International Importance under the Ramsar Convention and the Stour and Orwell Estuaries Special Protection Area under the EEC Council Directive on the Conservation of Wild Birds (79/409/EEC). **Table 2.38** presents the SSSI condition summary (Natural England, 2008s).

Table 2.38 SSSI condition summary for Stour Estuary SSSI as at 4th September 2007 (Natural England, 2008s)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
0.28	0.28	0.00	0.00	99.72	0.00

Condition assessment undertaken in October 2002 showed the site to be in unfavourable declining condition (Natural England, 2008s). Of the 10 units assessed, 7 were in unfavourable condition although flood risk management structures or practices were not implicated as causative factors (Natural England, 2008s). The main causes were attributable to coastal squeeze with possible contributions from recreational disturbance, water quality factors, and maintenance dredging.

2.5.19 Valley Farm Pit, Sudbourne SSSI

This quarry is of geological interest for its exposure of Coralline Crag, which is believed to be at the margin of the sandwave facies, with a section around 5.5 metres having been exposed. The quarry faces give excellent exposures of large-scale trough cross-stratification with more tabular cross-stratification exposed in some parts of the pit. This pit is important in the study of the local stratigraphic relationship between the Pliocene and Pleistocene, as well as being an important sedimentological site. **Table 2.39** presents the SSSI condition summary (Natural England, 2008t).

Table 2.39 SSSI condition summary Valley Farm Pit SSSI as at 4th September 2007 (Natural England, 2008t)

% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
100.00	100.00	0.00	0.00	0.00	0.00%

Condition data (Natural England, 2007) dating from August 2005 indicates that the site is in favourable condition.

2.5.20 Conclusions on SSSI condition assessment

Of those SSSIs identified as being within the geographical scope of the SMP, analysis of condition assessment data has indicated that existing coastal flood risk management structures or practices cannot be identified as a cause of unfavourability at any SSSI, with the exception of one site. At the Minsmere-Walberswick Heaths and Marshes SSSI, seven units were assessed as being in an “unfavourable declining” condition due to inappropriate coastal management combined, with public access and disturbance. However, as the last assessment at this site was undertaken in October 2003, it may be likely that management structures and practices may have been improved.

Several condition assessments also state that coastal squeeze is responsible for unfavourable condition in several SSSI. It seems logical, therefore, that the SMP review develops policies which will allow the restoration of favourable condition to these sites through sympathetic coastal management.

2.6 National Nature Reserves (NNR)

National Nature Reserves (NNRs) are designated for containing some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats or to provide special opportunities for scientific study of the habitats communities and species represented within them (JNCC, 2008s). NNRs are declared by the statutory country conservation agencies under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981. NNRs in the study area are shown in **Table 2.40**.

Table 2.40 NNRs on the Suffolk coastline

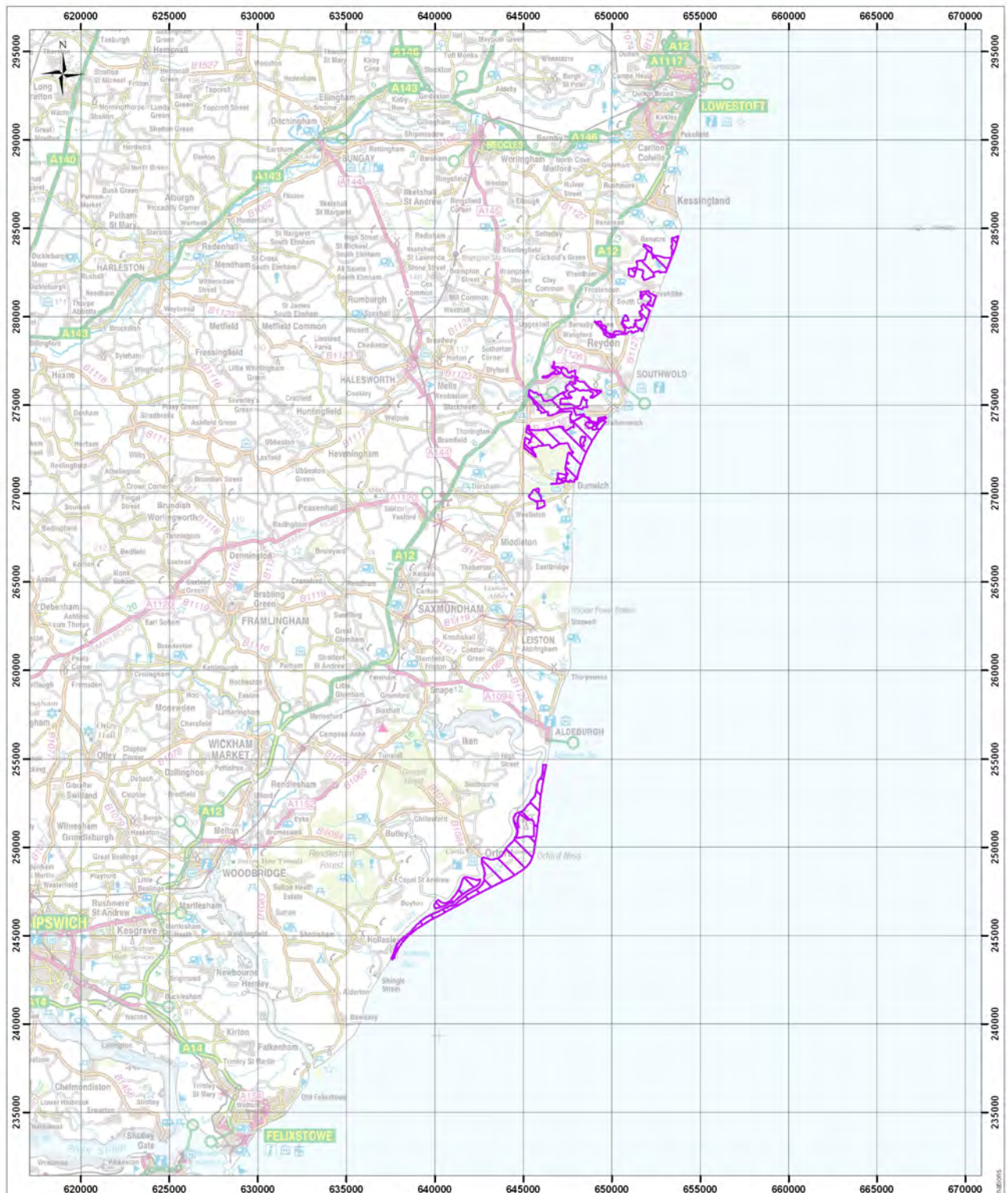
NNR name	Area (ha)
Benacre	393
Orfordness-Havergate	909
Suffolk Coast	1340

2.6.1 Benacre NNR

The Benacre NNR includes the reedbeds and lagoons of Benacre, Covehithe and Easton Broads, together with woodland and heathland on the higher ground between them. Some features of the reserve are man-made and many of the site's woodlands were planted as game cover, with the pits at Benacre Ness being created by gravel extraction (Natural England, 2008u). The saline lagoons of the reserve were formed in shallow valleys when ice age glacial drift blocked the out flow to the sea. These lagoons are the reserve's main interest and support specialist species such as lagoon shrimp and starlet sea-anemone (Natural England, 2008u). Over 100 breeding bird species use the reserve including marsh harrier *Circus aeruginosus*, bearded tit *Panurus biarmicus*, water rail *Rallus aquaticus*, a variety of ducks, and, in some years, bittern *Botaurus stellaris*. Little terns are summer visitors to the shore and the heathlands are home to woodlark *Lullula arborea*, wheatear *Oenanthe oenanthe* and hobby *Falco subbuteo* (Natural England, 2008u).

A typical East Anglian shingle flora is to be found along the shore, with yellow-horned poppy *Glaucium flavum*, sea kale *Crambe maritima*, sea holly *Eryngium maritimum* and prickly saltwort *Salsola kali*. The northern dunes support extensive areas of sheep-bit *Jasione montana* and the rare grey hair grass *Corynephorus canescens* (Natural England, 2008u).

The reedbeds support marsh sow-thistle *Sonchus palustris*, marsh mallow *Althaea officinalis* and golden dock *Rumex maritimus* while on other parts of the reserve wild daffodil *Narcissus pseudonarcissus*, climbing corydalis *Corydalis claviculata*, orpine *Sedum telephium* and greater broomrape *Orobancha rapum-genistae* can be found (Natural England, 2008u).



Key:

 NNR

Title:
Extent of NNRs in the
Study Area

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:200,000@ A3

Figure:

2.5

Drawn:

AZ

Rev

0

2.6.2 Orfordness-Havergate NNR

The Orfordness-Havergate NNR lies just south of Aldeburgh on the Suffolk coast and is managed by the National Trust and the RSPB (Natural England, 2008v). The site is a large shingle spit separated from the mainland by the River Alde, with the spit having been formed by the deposition of shingle deposits through wave action and longshore drift. This is an on-going process and as the spit is growing, the site is of great value to coastal defence research (Natural England, 2008v).

The site supports large lichen and moss communities. Many plant species that are nationally rare are found here in abundance (Natural England, 2008v). The shingle supports a number of rare and scarce invertebrates - particularly beetles and spiders - and the site is also an important breeding place for many bird species including terns and avocets (*Recurvirostra avosetta*) (Natural England, 2008v).

2.6.3 Suffolk Coast NNR

The Suffolk Coast reserve (formerly known as Walberswick) is managed by Natural England, the Suffolk Wildlife Trust and the RSPB and comprises three reserves: Walberswick, Hen Reedbed and the Dingle Marshes (Natural England, 2008w). Walberswick exhibits many types of habitat including reedbed, hay meadows, grazing marshes and a variety of woodlands. Resident wildlife includes otters *Lutra lutra* and five species of deer, and natterjack toads *Bufo calamita* have been re-introduced to the area. Over 280 bird species have been recorded, there is a rich invertebrate fauna and around 500 species of butterflies and moths live in Walberswick.

Hen Reedbed reserve is a blend of reedbeds, fens, dykes and pools that provides an important wildlife breeding habitat. Bird-life includes bitterns *Botaurus stellaris*, marsh harriers *Circus aeruginosus*, herons, bearded tits *Panurus biarmicus*, reed *Acrocephalus scirpaceus* and sedge warblers *Acrocephalus schoenobaenus*, while the invertebrate fauna includes the four-spot chaser dragonfly *Libellula quadrimaculata* and hairy dragonfly *Brachytron pratense*. The mammal population includes otters *Lutra lutra* and water voles *Arvicola terrestris*.

Dingle marshes reserve attracts breeding and wintering wildfowl and wading birds including avocets *Recurvirostra avosetta*, white-fronted geese *Anser albifrons*, lapwings *Vanellus vanellus* and redshanks *Tringa totanus*. The site also holds a significant proportion of the UK's marsh harrier *Circus aeruginosus* and bittern *Botaurus stellaris* populations. Dingle Marshes is also internationally important for the starlet sea anemone *Nematostella vectensis* that lives at the edges of the creeks, saltmarshes and brackish pools.

2.7 Areas of Outstanding Natural Beauty (AONB)

The Area of Outstanding Natural Beauty (AONB) designation is primarily to conserve natural beauty, including wildlife, physiographic features and cultural heritage as well as more conventional concepts including landscape and scenery. As an aspect of this, the need to safeguard agriculture, forestry and other rural industries in addition to the economic and social needs of local communities must be considered (JNCC, 2008s). From a conservation viewpoint, AONBs have a status equivalent to National Parks. AONBs are legislated for under the National Parks and Access to the Countryside Act 1949, which was amended in the Environment Act 1995. The Countryside and Rights of Way Act 2000 further clarifies the procedure and purpose of AONB designation (JNCC, 2008s). The Countryside and Rights of Way Act (2000), places duties on public bodies in carrying out their functions to:

'have regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty' (Section 85 (1)).

This mechanism is not in itself a stringent requirement; however, Planning and Policy Guidance Note 7 (PPG7) states that nationally designated areas comprising National Parks, the Broads, the New Forest Heritage Area and Areas of Outstanding Natural Beauty (AONB), have been confirmed by the Government as having the highest status of protection in relation to landscape and scenic beauty. The conservation of the natural beauty of the landscape and countryside should therefore be given great weight in planning policies and development control decisions in these areas. The conservation of wildlife and the cultural heritage are important considerations in all these areas. Although scenic beauty is an important part of an AONB, the designation has a much deeper meaning. In its guidance to AONBs, Natural England (Countryside Agency, 2006) defines 'natural beauty' as:

'not just the look of the landscape but also the landform and geology, plants and animals, landscape features and the rich history of human settlement over the centuries.'

The AONB within the study area is the Suffolk Coasts and Heaths AONB, which is presented in **Table 2.40** and **Figure 2.6**.

Table 2.40 NNRs on the Suffolk coastline

AONB name	Area (km ²)
Suffolk Coasts and Heaths	403

2.7.1 Suffolk Coasts and Heaths AONB

The Suffolk Coast and Heaths AONB was confirmed in March 1970, with the designated area covering a total of 403 km² (Suffolk Coasts and Heaths AONB, 2007). Stretching south from Lowestoft to the river Stour, the AONB protects heathland, reed beds, salt-marsh and mud-flats, a rich mixture of unique and vulnerable lowland landscapes, all of which are under pressure of change. The AONB is deeply indented by the estuaries of the Blyth, Alde, Deben, Orwell and Stour and bounded by the crumbling cliffs and tidal spits of the low and lonely North Sea coastline, the nearest unspoilt coast to Greater London.

This stretch of coastline is one of the most important natural areas in Britain and includes three NNRs, many SSSIs and the RSPB's Minsmere Reserve. The mud-flats and creeks of the AONB's salt-marsh-fringed estuaries contain wildlife wetland sites of national and international importance, many of which are sites of International or European Importance.

The unique character of the Suffolk Coast and Heaths is a product of its underlying geology, shaped by the effects of the sea and the interaction of people with the landscape. It is a mainly flat or gently rolling landscape, often open but with few commanding viewpoints (Suffolk Coasts and Heaths AONB, 2007). In many places, and especially near the coast, habitats and landscape features lie in an intimate mosaic, providing great diversity in a small area. The AONB comprises mainly farmland but is best known for the coast and lowland heaths that give it its name. The coast consists of predominately shingle beaches, often extensive in nature, sometimes backed by sandy cliffs, which are broken by the series of estuaries with extensive inter-tidal areas of mud and salt marsh. In some places, estuary mouths have become blocked, creating large areas of brackish or freshwater marshland. A low plateau of heathland, known locally as the Sandlings, is now much fragmented and follows the line of the coast. Large areas that were once part of this heath have been planted with conifers and are managed as commercial forests (Suffolk Coasts and Heaths AONB, 2007).

The Suffolk Coast and Heaths remains a lightly populated, relatively undeveloped area, popular for outdoor recreation and prized for a feeling of peace and tranquillity, and for its outstanding wildlife. Compared to other parts of Great Britain it has a relatively dry climate (Suffolk Coasts and Heaths AONB, 2007).

2.8 Heritage Coasts (in England and Wales)

A Heritage Coast is a section of coast which exceeds one mile in length and is of exceptionally fine scenic quality, substantially undeveloped and containing features of special significance and interest (JNCC, 2008s). The designation is agreed between local authorities and (in England) Natural England or (in Wales) the Countryside Council for Wales, as an aid to local authorities in planning and managing their coastlines. The Heritage Coast designation is non-statutory (JNCC, 2008s), unlike the formally designated National Parks and Areas of Outstanding Natural Beauty (AONBs) and are defined by agreement between the relevant maritime local authorities and Natural England. Most are part of a National Park or AONB.

The Heritage Coast occupies an area of approximately 122 km², running from just south of Kessingland to Old Felixstowe.

2.9 National Park

In England and Wales, the National Park designation is intended to allow for the conservation and enhancement of landscapes within the countryside whilst promoting public enjoyment of the areas, including regard for socio-economic development of the communities within these areas (JNCC, 2008s). National Parks were established in England and Wales through the National Parks and Access to the Countryside Act 1949

(JNCC, 2008s). Further to this, the Environment Act 1995 requires relevant authorities to have special regard for nature conservation (JNCC, 2008s).

2.9.1 The Broads National Park

The Broads was designated under its own Act of Parliament in 1989 and is renowned for boating holidays, being one of England's finest wildlife areas. Five rivers flow through the Broads, making the area resemble the fingers of a giant hand (Broads Authority, 2008). Water and land merge on these flood plains, which stretch from Norwich in the west to the sea at Great Yarmouth.

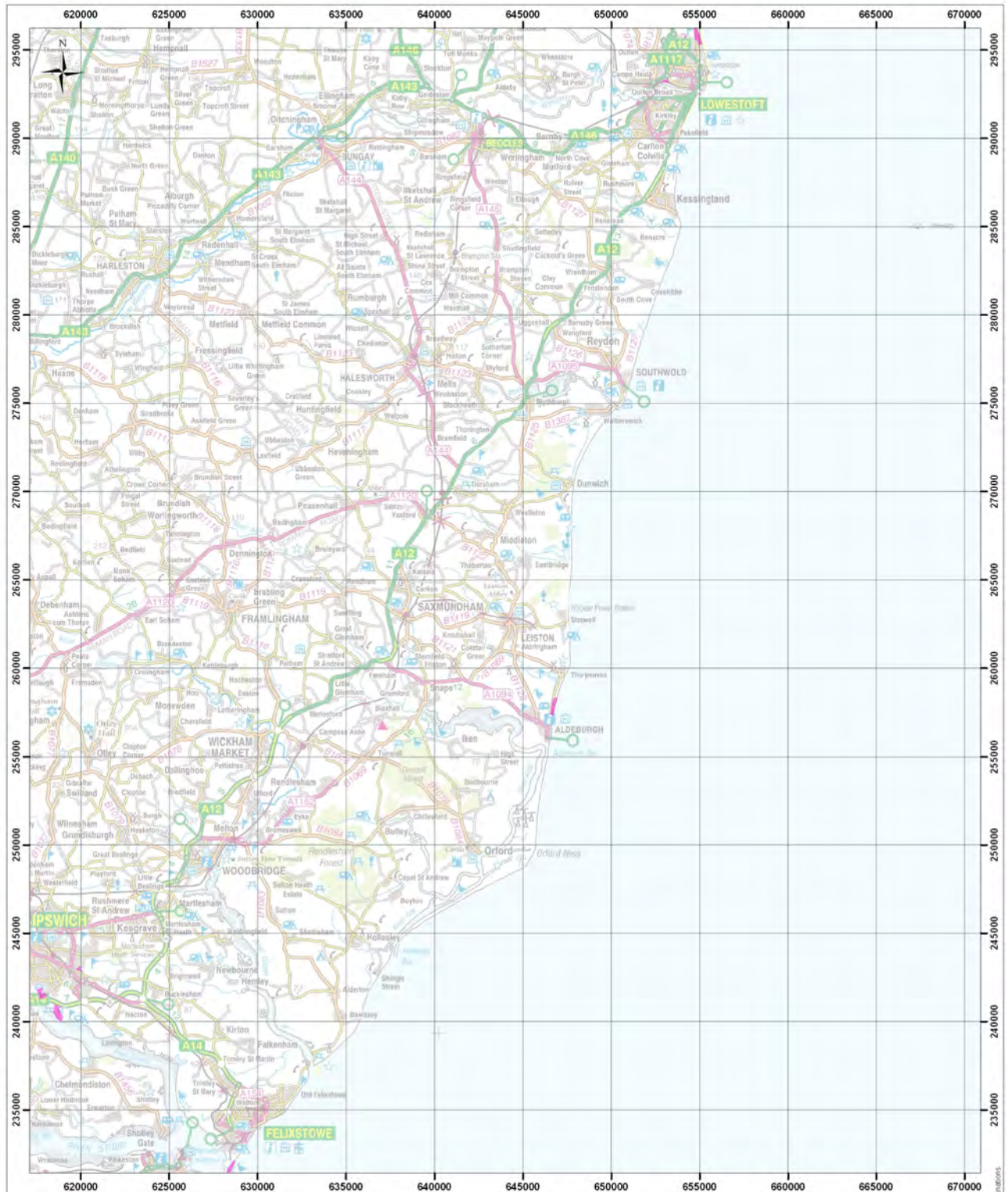
The Broads is a fascinating area with a rich history, reflected in the many wonderful places to visit and the unique wildlife (Broads Authority, 2008). For many people, a great way to explore the Broads is by water, as much of the history of the Broads revolves around the way the rivers have been used over the years. The charm of the Broads rests on the illusion of remoteness you get when you're on the water. Over two million people visit the Broads every year, exploring by land or water or a combination of both (Broads Authority, 2008). Boats are an integral part of the Broads, which is one of the most extensive and varied inland waterways in the country and one of the most popular in Europe, offering 200 km (125 miles) of boating on lock-free tidal rivers (Broads Authority, 2008).

2.10 Local Nature Reserves (LNRs)

Under the National Parks and Access to the Countryside Act 1949 Local Nature Reserves (LNRs) may be declared by local authorities after consultation with the relevant statutory nature conservation agency (JNCC, 2008s). LNRs are declared and managed for nature conservation and provide opportunities for research and education, or simply enjoying and having contact with nature (JNCC, 2008s). LNRs within the study area are presented in **Table 2.41** and **Figure 2.7**.

Table 2.41 LNRs on the Suffolk coastline

LNR name	Area (ha)	LNR Type
Gunton Warren and Corton Woods	32.43	Urban fringe
The Haven, Aldeburgh	20.3	Rural
Landguard Common	16.34	Urban fringe
Leathes Ham	6.01	Urban



Key:

LNR

Title:
Extent of LNRs in the
Study Area

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:200,000@ A3

Figure:
2.7

Drawn:
AZ

Rev
0

2.11 Environmentally Sensitive Areas (ESAs)

The overall policy objective of the Environmentally Sensitive Area (ESA) programme is to maintain, protect and enhance the wildlife, landscape and historic environmental value of the designated areas, through the encouragement of appropriate agricultural practices (JNCC, 2008s). The ESA scheme is based on either 5 or 10 year contracts with farmers and landowners to carry out beneficial agricultural practices in return for fixed area based payments, and are voluntary and open to all managing suitable land within targeted areas (JNCC, 2006b). The ESA approach has now been adopted elsewhere in Europe under the EU Agri-environment Regulation 2078/92/EEC, although there is no legislative framework currently governing ESAs. The ESA Scheme was introduced in 1987 to offer incentives to encourage farmers to adopt agricultural practices which would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value, although the scheme has now closed to new applicants (Defra, 2008b). Defra introduced a new Environmental Stewardship Scheme in March 2005 which superseded (with enhancements) both the Environmentally Sensitive Areas and Countryside Stewardship Schemes (Defra, 2008b). ESAs within the study area are listed in **Table 2.42**.

Table 2.42 Environmentally Sensitive Areas (ESA) within the study area

ESA name	Area (ha)
The Broads	43 200
Suffolk River Valleys	43 734

2.11.1 The Broads

The Broads ESA extends over 43,200 hectares of river valley, marsh and fen in Norfolk and northern Suffolk, with the total agricultural area being approximately 32,400 hectares, which equates to approximately 75% of the total ESA area (Defra, 2008c). The lower parts of the valleys and the floodplains, notably in the area known as the Halvergate Marshes, have a unique character and are renowned for their remoteness and sheer visual expanse. The area forms a network of wetland that is unique in Europe in terms of both ecology and landscape, forming one of the few remaining large areas of lowland river grassland in Britain. The 'Broads' are a series of shallow lakes, which are thought to result from medieval peat workings and in addition to being generally rich in wildlife, the mosaic of wetland habitats in the ESA supports many rare and interesting species of plant, invertebrate and bird life (Defra, 2008c).

The national importance of the area for nature conservation is recognised by various statutory designations; NNRs within the ESA include the Bure Marshes, the Upper Thurne Broads and Marshes and the Ludham Marshes and Hickling Broad, in addition to 32 SSSIs (Defra, 2008c). The broads and the associated river valleys, are of international importance for birds and most of the area is designated both SPA and Ramsar. Over 1,300 pairs of wading birds (such as lapwing, redshank, snipe and oystercatchers) nest on ESA land, while The Broads also provide habitat for other endangered species such as the swallowtail butterfly *Papilio machaon*, fen orchids *Liparis loeselii*, sharp-leaved pondweed *Potamogeton acutifolius*, whorl water snails, fen raft spider *Dolomedes plantarius*, water vole *Arvicola terrestris*, otter *Lutra lutra* and crested buckler-fern *Dryopteris cristata* (Defra, 2008c).

2.11.2 Suffolk River Valleys

The Suffolk River Valleys ESA extends over 43,734 hectares and encompasses eight main river systems (Defra, 2008d). These are mainly located in eastern and southern Suffolk, with one bordering north Essex. Significant areas of grassland still occur and the landscape remains traditional and pastoral in character, contrasting with the broader arable landscape of the surrounding countryside. The valleys, which may be very narrow in their upper reaches, typically widen into open coastal marshes, which are flanked on the inland side by the sandy, and sometimes healthy, slopes of the Suffolk Sandlings (Defra, 2008d).

The boundary of the ESA closely follows the eight river valleys, and much of the ecological interest lies in the semi-natural wetland habitats within the valley bottoms. These areas are important for a variety of wildfowl and waders as well as other wildlife including a diversity of wetland plants, amphibians, otters and other birds. Areas of dry acid grassland and heathland on some valley slopes and coastal strips are also of importance, especially for their plant and invertebrate interest. The ESA contains two NNRs and several SSSIs (Defra, 2008d).

2.12 Protected Wreck Sites

The Protection of Wrecks Act (1973) allows the Government to designate a wreck to prevent uncontrolled interference, with designated sites being identified as those likely to contain the remains of a vessel, or its contents, which is deemed to be of historical, artistic or archaeological importance (English Heritage, 2008a). A 'statutory instrument' such as a buoy is used to identify the location of the site, in addition to marking the extent of the restricted area to ensure the protection of the site. All protected wrecks are listed in the annual Admiralty Notices to Mariners and are marked on appropriate UK Hydrographic Office charts (English Heritage, 2008a).

Dunwich bank wreck was designated as a protected wreck site under section 1 of the Protection of Wrecks Act 1973 on 14th July 1994 (English Heritage, 2008b). Once suggested to be a casualty of the Battle of Sole Bay 1672, this site is now believed to be the remains of a 16th century armed merchant vessel or possibly a rare example of an early military transport vessel. Although no ship structure or items such as ballast are currently visible it is possible that they may be buried in the sediments around the site (English Heritage, 2008b). At present, objects located on the site consist of a scatter of bronze and iron guns and iron concretions either fully exposed or partially buried, centred on a small mound, and another discreet group nearby. This site is unique in being the only known site in the UK with bronze guns still in situ which suggests contemporary salvage was unlikely. The collection includes land artillery as well as naval, supporting the idea that the ship was a transport vessel (English Heritage, 2008b).

2.13 Country Wildlife Sites

Country Wildlife Sites (CWS) or Country Geological Site (CGS) (also known as Regionally Important Geological or geomorphological Sites (RIGS)) are non-statutory

designations for sites of county significance for wildlife or geology. Suffolk has nearly 900 CWS, amounting to some 19,000 hectares, which represents 5% of the county (SWT, 2008). CWS designation is non-statutory but is recognition of a site's high value for wildlife with many sites being of county and often regional or national importance for wildlife. They often support characteristic or threatened species or habitats included in Local or National Biodiversity Action Plans (SWT, 2008). Sites may be privately or publicly owned and vary in size and shape from small meadows, green lanes, dykes and hedges to much larger areas of ancient woodlands, heathland, greens, commons and marsh (SWT, 2008).

County Wildlife Sites are recognised by national planning policy (Planning Policy Statement 9) as having a fundamental role to play in meeting overall national biodiversity targets. County Wildlife Sites are not protected by legislation but their importance is recognised by local authorities when considering any planning applications that may affect them. Indeed, under planning policy there is a presumption against granting permission for development that would have an adverse impact on a site's importance for wildlife (SWT, 2008). Such measures have been strengthened by the provisions of the Natural Environment and Rural Communities Act 2006 that require all public bodies to have regard for the conservation of biodiversity (SWT, 2008).

3 BIODIVERSITY ACTION PLANS

3.1.1 Implications for SMP II

Biodiversity Action Plans (BAPs) present potential opportunities and constraints for shoreline management plans, especially regarding the loss of coastal habitat. Defra has established high level targets for the Environment Agency (Defra, 2008) that, in addition to delivering effective flood risk management it must also create new BAP habitat per annum. As the lead organisation for saltmarsh and mudflat BAPs, the Environment Agency has a key role in delivering these BAP targets.

Although BAP targets do not specify where new habitat creation should occur in England and thus do not place a particular requirement on the Suffolk Coast to contribute to this, clearly policies within the Suffolk SMP II have the potential to further constrain saltmarsh and mudflat habitat on a national basis, by holding or advancing the line. Therefore, whilst the Habitats Regulations place strict requirements to ensure no net loss of SAC / SPA / Ramsar habitats, the UKBAP (United Kingdom Biodiversity Action Plan) places a driver, albeit less of an exacting one, to produce a net gain in coastal habitats. The Biodiversity Action Plan priority habitats present on the Suffolk study site are presented in **Table 3.1**.

Table 3.1 UKBAP habitats within the study area

UKBAP habitat type
Coastal & floodplain grazing marsh
Coastal saltmarsh
Coastal sand dunes
Coastal vegetated shingle
Fen
Lowland Dry Acid Grassland
Lowland Heathland
Lowland Mixed Deciduous Woodland
Maritime Cliffs and Slopes
Mudflats
Purple Moor Grass and Rush Pasture
Reedbeds
Wet Woodland

3.1.2 Revised UKBAP targets

For priority habitats and species, targets provide the milestones against which progress towards a level at which their long-term viability is assured can be assessed and at which special conservation action is no longer necessary (UKBAP, 2008). In order to remain effective at guiding conservation action, targets need to be updated periodically to take into account the latest knowledge about status and trends and to reflect changes in threats, pressures and opportunities for conservation (UKBAP, 2008). The first full review of UK Biodiversity Action Plan (UK BAP) targets since the national species and habitat action plans were published (1995 – 1999) has just been completed. The revised targets have been considered in the context of ecosystems, climate change, the

priority list review and the need to set priorities in the light of limited resources (UKBAP, 2008). The revised targets have a number of new features that will make them more fit for purpose. In particular (UKBAP, 2008):

- In recognition that biodiversity conservation is now the responsibility of devolved administrations, the targets have been set for each country not just the UK;
- The targets follow a new structure: nearly all are now quantified and allocated to standard categories, making assessment more objective and facilitating links to local biodiversity partnership targets;
- A new 'description' section includes information on priority areas and good practice for delivery;
- A new 'monitoring' section explains how progress towards the target will be assessed; and
- For some groups of habitats and species, new types of targets have been set that aim to improve the resilience of species populations and habitats in a changing climate.

3.1.3 Outcomes of the UK Biodiversity Action Plan Targets Review

Targets have been revised for all terrestrial, freshwater and coastal habitats and for most species, although a notable exception is the targets for most marine habitats and species. The revision of these targets, together with those of the few terrestrial species for which no revised targets were submitted, will await completion of the priority species and habitats list review (UKBAP, 2008).

3.1.4 Overview of Lead Partner returns

Revised targets have been agreed for 34 out of the current 47 priority habitat types (i.e. the 45 habitats for which there are published HAPs, and also Lowland mixed deciduous woodland and Upland birchwood) and for 315 priority species (UKBAP, 2008). No revised targets were set for 13 habitats and 98 species, including most marine habitats and species (UKBAP, 2008).

3.1.5 Setting targets in the context of ecosystems

The UK BAP targets summarise the aims for individual components of our biodiversity; however, when determining how best to deliver these targets, priority habitats and species cannot be treated in isolation (UKBAP, 2008). Trends in species and habitats are not only important in their own right, but also as key indicators of the success of our ecosystem approach and in line with the thinking behind the Millennium Ecosystem Assessment approach, there is a need to consider ecosystems as a whole and how the different components function and depend on one another, especially as these relationships respond to climatic and other environmental changes (UKBAP, 2008). One of the main concerns is that the highly fragmented natural ecosystems typical of much of the UK will be a major constraint for the long term viability of many species and habitats. Action is therefore required to overcome the fragmentation of priority habitats and to reduce pressures on biodiversity more generally in the wider environment through which species move. These broader, landscape-scale actions are reflected in some of the new targets, such as the targets to increase the patch sizes of grassland habitats and the cross-cutting target to establish landscape-scale complexes for wetlands (UKBAP, 2008).

3.1.6 Setting targets in the context of climate change

Climate change is likely to have an impact on some priority species and habitats during the period for which the new targets have been set. Whilst the general principles and direction of climate change impacts on biodiversity in the UK are understood, the details and timing of impacts on individual species, habitats and sites remain very uncertain (UKBAP, 2008). In cases where the limited evidence and these uncertainties permit, the likely effects of climate change have been taken into account when setting the new targets. For example, the targets for woodland expansion have been proposed with the aim of buffering and reducing the fragmentation of ancient woods (UKBAP, 2008). For two water plants – floating water plantain *Luronium natans* and grass-wrack pondweed *Potamogeton compressus* – the targets are about increasing the connectivity between existing populations, while for small cow-wheat *Melampyrum sylvaticum*, the target is about increasing genetic diversity to help the species adapt to the effects of climate change (UKBAP, 2008). For some butterflies, such as the adonis blue *Lysandra bellargus* and silver-spotted skipper *Hesperia comma*, climate change may actually help. An ongoing programme of research and monitoring will be needed to inform implementation of action plans, future assessment of progress and further updates of targets.

Climate change in particular and other environmental changes, underline the need for a long-term, ecosystem-based approach (UKBAP, 2008). Not only will habitats and species be affected directly by climate changes and sea level rise but, probably as significant, they will also be affected by policy and behavioural shifts in other sectors such as agriculture, water and energy. In making investments and undertaking actions to deliver biodiversity targets it will be important to allow for major but, as yet, uncertain changes in climatic conditions and resource management regimes (UKBAP, 2008). In these circumstances investments which aim to reduce other pressures, improve ecosystem resilience and facilitate natural responses are most likely to deliver long term benefits.

3.1.7 Setting priorities in the light of limited resources

The revised UK BAP targets represent an ambitious programme for reversing the declines of our priority species and habitats (UKBAP, 2008). Achieving them will make an important contribution towards meeting the 2010 target to halt biodiversity loss, particularly as other species and habitats will also benefit from general improvements in our natural environment associated with the actions taken to meet the UK BAP priorities.

Existing resources, such as agri-environment schemes, are being better targeted to meet the UK BAP priorities and many organisations are already contributing towards meeting the UK BAP species and habitat targets. Nonetheless, achieving our targets will be challenging and will require prioritisation of the limited resources available and better co-ordination of policies and programmes across Government and non-Government organisations. In particular, meeting the maintenance targets should be seen as a top priority because it is usually better for biodiversity as a whole and more cost-effective, to prevent further losses than to re-create habitats or reintroduce new populations of species (UKBAP, 2008). The revised UKBAP targets for the habitat types assessed as being present within the study area are presented in the following section.

3.2 National Biodiversity Action Plans

3.2.1 Coastal and Floodplain Grazing Marsh

Table 3.2 Revised UKBAP targets for coastal and floodplain grazing marsh (UKBAP, 2006)

Revised UKBAP target for coastal and floodplain grazing marsh	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintain ² : Maintain the extent of the existing resource of C&FPGM habitat with no net loss. (In particular, ensure that grazing marsh of similar quality is created to landward of flood defences that have been abandoned or breached as sea level rises, by mapping where compensatory habitat will be created in Shoreline Management Plans and other plans set out by statutory agencies).	216 140	170 000	216 140	170 000	-	-	-	
Improve condition ³ : Maintain the condition of C&FPGM habitat where already favourable and establish by 2010, management to secure favourable condition for all areas of grazing marsh currently judged as unfavourable. The target condition for all such areas should be favourable or unfavourable recovering by 2020.	-	-	54 036	42 500	97 263	76 500	194 526	153 000
Restoration ⁴ : Restore and improve 25,000 ha of relict habitat that does not qualify as C&FPGM habitat by 2020 (e.g. dry C&FPGM with inappropriate hydrological regime, agriculturally improved sites etc by implementing appropriate management at all sites)	-	-	6 150	3 750	12 300	7 500	24 600	15 000
Expansion ⁵ : Re-establish 3,200 ha of C&FPGM of wildlife value from appropriate land sources (e.g. arable land) by 2020 (which is capable of supporting a diverse range of invertebrates, mammals and breeding waders).	-	-	800	625	1 600	1 250	3 200	2 500
New target type ⁶ : Establish 8 new landscape scale wetland complexes by 2020, at least 1 in each country in which C&FPGM is a major component along other wetland types. This cross-refers to targets in the uplands, lowland raised bog, wet woodlands, fens and reedbed HAPs (units in landscape scale wetland complexes).	-	-	1	1	5	2	8	4

² For habitat to qualify as C&FPGM BAP habitat, it must meet the definition criteria as set out in the HAP.

³ Rehabilitation will differ from restoration in that the habitat will conform to the revised habitat definition and the degree of work to be undertaken will be minimal in comparison. In addition, only parts of the site will be in poor condition. Example of habitat in poor condition that qualifies as BAP habitat: hydrological regime in place but site inappropriately managed, i.e. water levels too low, insufficient or no wet surface features or flooding, inappropriate sward condition, incorrect hedge height, excessive scrub cover. The condition of grazing marsh can be assessed using the list of criteria for higher level agri-environment schemes.

⁴ Restoration will differ from rehabilitation in that the habitat will not conform to the revised habitat definition and the degree of restoration work to be undertaken will be significant in comparison. In addition, the whole of the site will be degraded. Example of relict habitat that does not presently qualify as BAP habitat: hydrological regime no longer in place but typical physical features of C&FPGM present, e.g. ditches reflecting land that has previously and more recently been managed as wet grassland and also reflected in either the existing land use and / or botanical communities present (e.g. intensively cultivated drained land). Appropriate management will include, (in the first instance), a sustainable and appropriate hydrological regime capable of supporting typical C&FPGM botanical communities (e.g. MG4, MG9, MG11, MG13). Thereafter, an appropriate habitat management regime that ensures continuation of botanical interest with habitat capable of supporting a diverse range of species such as invertebrates, mammals and breeding waders.

⁵ Action 1: By 2007 and using tools such as 'visioning', identify areas for the future creation of C&FPGM for potential inclusion in Regional Spatial Strategies and Catchment Flood Management Plans (for England). Priority: re-established area to be adjacent to existing grazing marsh or other semi-natural habitat by 2010. Example of new C&FPGM habitat: generally agricultural land with no typical physical features of C&FPGM present reflecting land that has not recently been managed as wet grassland and also reflected in either the existing land use and / or botanical communities present (e.g. intensively cultivated drained land). In addition, also ensure that grazing marsh of similar quality is created to landward of flood defences that have been abandoned or breached as sea level rises, by mapping where compensatory habitat will be created in Shoreline Management Plans and other plans set out by statutory agencies.

⁶ The current reduced and threatened status of the UK's wetlands is now well understood and there are a wide range of initiatives developing to restore and recreate wetlands. There is also an almost unprecedented policy opportunity created by changes to the Common Agricultural Policy, the Water Framework Directive (with catchment management and changing approaches to hydromorphology), Flood Risk Management and other areas that could enable recovery and restoration of landscape scale wetlands. No quantitative targets have been set at this stage. However, the long term target is to create up to 8 landscape scale wetland complexes across the UK by 2020. The location of sites may be determined through wetland visions (or other methods) and will ultimately be determined by opportunities within each country.

3.2.2 Coastal Saltmarsh

Table 3.3 Revised UKBAP targets for coastal saltmarsh (UKBAP, 2006)

Revised UKBAP target for coastal saltmarsh	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁷ : There should be no further net loss of extent of intertidal sediment ecosystems, currently estimated at 600ha per year. This breaks down to: the vegetated part of the intertidal sediment ecosystems (saltmarsh), currently estimated at 100ha per year and the unvegetated part of the intertidal sediment ecosystems (mudflats), currently estimated at 500ha per year (This is a cross-plan target with mudflats).	1 200	1 080	2 400	2 160	3 600	3 240	-	
Expansion ⁸ : Create by the year 2015, 3,600 ha of intertidal sediment habitat to offset historical losses of which 90% should be in England and 10% in Wales. This breaks down to: 40ha/year for vegetated intertidal sediment and 200ha/year for unvegetated intertidal sediment (This is a cross-plan target with mudflats).	-	-	42 098	30 000	-	TBC	-	
Achieving condition ⁹ : Achieve favourable or recovering condition by appropriate management of stated area of intertidal sediment habitat currently in unfavourable condition by 2010 (This is a cross-plan target with mudflats).	56 500	11 900	56 500	11 900	-		-	

⁷ Targets apply to coastal saltmarsh (vegetated intertidal sediment) and mudflats (unvegetated intertidal sediment). Both of these are part of the intertidal sediment system found in both estuaries and open coast. Mudflat and saltmarsh are two parts of a sedimentary system and will naturally be in state of flux; in addition the balance between the two can be affected by human activities. This process is also affected by sea level rise and coastal squeeze (especially in South-East England). In order to maintain extent, there is a need to create habitat to offset losses and achieve a 'no net loss' target.

⁸ Progress towards this target will be measured through the creation of intertidal habitat in realignment schemes. Note that this is not a static amount, so there will need to be an adequate number of schemes of large enough size to ensure that saltmarsh and mudflats are always represented as part of the habitat.

⁹ To achieve condition, there needs to be a combination of habitat creation as well as suitable management (or removal / adjustment of inappropriate management) of intertidal sediment habitat. Therefore, this target needs to be considered as a whole with the targets for maintenance and expansion. The achievement of this target will also require much wider action for example diffuse pollution from agricultural catchments feeding into estuaries. Therefore there needs to be a link to other relevant plans.

3.2.3 Mudflats

Table 3.4 Revised UKBAP targets for mudflat (UKBAP, 2006)

Revised UKBAP target for mudflat	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ¹⁰ : There should be no further net loss of extent of intertidal sediment ecosystems, currently estimated at 600ha per year. This breaks down to: the vegetated part of the intertidal sediment ecosystems (saltmarsh), currently estimated at 100ha per year and the unvegetated part of the intertidal sediment ecosystems (mudflats), currently estimated at 500ha per year (This is a cross-plan target with mudflats).	277 705	206 900	277 705	206 900	-	-	-	-
Expansion ¹¹ : Create by the year 2015, 3,600 ha of intertidal sediment habitat to offset historical losses of which 90% should be in England and 10% in Wales. This breaks down to: 40ha/year for vegetated intertidal sediment and 200ha/year for unvegetated intertidal sediment (This is a cross-plan target with mudflats).	1 200	1 080	2 400	2 160	3 600	3 240	-	-
Achieving condition ¹² : Achieve favourable or recovering condition by appropriate management of stated area of intertidal sediment habitat currently in unfavourable condition by 2010 (This is a cross-plan target with mudflats).	-	-	42 098	30 000	-	TBC	-	-

¹⁰ Targets apply to coastal saltmarsh' (vegetated intertidal sediment) and 'mudflats' (unvegetated intertidal sediment). Both of these are part of the intertidal sediment system found in both estuaries and more open coast. Mudflat and saltmarsh are two parts of a sedimentary system and will naturally be in state of flux; in addition the balance between the two can be affected by human activities. This process is also affected by sea level rise and coastal squeeze (especially in South-East England). In order to maintain extent, there is a need to create habitat to offset losses and achieve a 'no net loss' target (links to expansion).

¹¹ Progress towards this target, will be measured through the creation of intertidal habitat in realignment schemes. Note that this is not a static amount, so there will need to be an adequate number of schemes of large enough size, to ensure that saltmarsh and mudflats are always represented as part of the habitat.

¹² To achieve condition, there needs to be a combination of habitat creation as well as suitable management (or removal / adjustment of inappropriate management) of intertidal sediment habitat. Therefore, this target needs to be considered as a whole with the targets for maintenance and expansion. The achievement of this target will also require much wider action for example diffuse pollution from agricultural catchments feeding into estuaries. Therefore there needs to be a link to other relevant plans.

3.2.4 Coastal Sand Dunes

Table 3.5 Revised UKBAP targets for coastal sand dunes (UKBAP, 2006)

UKBAP target for coastal sand dunes	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ¹³ : There should be no further net loss of the existing UK sand dune resource, its distribution and the range of habitat types. Approximately 56 500 ha (71,600 ha with Scottish Machair) should be prevented from suffering further losses to anthropogenic factors, whether caused directly or indirectly (e.g. by flood risk management schemes affecting coastal processes). This is a 'no net loss' target to take account of the dynamic nature of sand dunes.	56 500	11 900	56 500	11 900	-	-	-	-
Achieving condition ¹⁴ : Achieve favourable or recovering condition by appropriate management of stated area of coastal sand dune systems currently in unfavourable condition by 2010. This should achieve the retention or enhancement of populations of BAP priority species associated with sand dunes.	-	-	-	TBC	-	TBC	-	-
Achieving condition ¹⁵ : Control natural succession to scrub, woodland, bracken and other invasive non-native plants. A target value of 200 ha by 2010.	-	-	200	45	-	-	-	-
Restoration ¹⁶ : Restore sand dune habitat lost or severely degraded as a result of to afforestation, agriculture and infrastructure. A target figure of 1000 ha (minimum) to be reinstated to dune habitat by 2010 (to be reviewed as a result of the inventory development).	-	-	1 000	210	-	-	-	-

¹³ Sand dunes are dynamic in the sense that their extent will vary naturally due to storm events. The dune frontage may recede and expand as sand is eroded or deposited, but the sand may also blow inland and cause roll-back of the whole system if space is available. The delivery of this target will therefore need to consider the sediment supply to dunes. Sand dune habitats are widely spread around the UK coast and represent the geographic variation of the habitat type and different formations. An area of Coastal Sand Dune will count as being maintained when: the semi-natural vegetation of the range of dune types and the dune landform and physical processes (e.g. sediment supply and coastal processes) including those affecting the embryo dunes, are maintained and there are no further anthropogenic losses or human activities affecting the quality of habitats present. The target will link to the impacts of operations such as beach cleaning. The maintenance target should not include the known extent of feature such as golf course greens, plantations and other altered parts of a dune system, as these areas should be incorporated into the restoration target. To maintain extent, some systems may need to roll landwards in response to coastal processes and sea level rise. These areas may or may not be areas that supported dune habitats in the past.

¹⁴ All dune SSSIs in unfavourable condition will form basis for delivery of this target. Favourable condition usually requires the whole sequence of dune habitats to be present, from foredunes to more stable areas. It should be made clear that species targets should not prevent the dynamic functions of the dune system.

¹⁵ This target only relates to the natural succession, often of native species but in several cases of non-native species (e.g. garden escapes). It would generally only apply to the more fixed dunes/dune slacks. Lack of grazing/nutrient enrichment/drying out and over-stabilisation all result in succession, and is a major cause of unfavourable condition in English dune SSSIs. In these situations the pattern of dune ridges and hollows would be undisturbed.

¹⁶ An area of coastal sand dune will count as being restored when: a change in land use, for example from forestry, agriculture (and in some cases, golf courses or parts of golf courses) on all or part of a dune system will lead to an improvement in the quality of the dune system or when existing degraded dune vegetation is returned to favourable condition by positive management. The changes described in this target are the result of deliberate human activities that may change either or both of the dune structure and vegetation cover. These are usually commercial uses, or in the cases of afforestation, attempts to stabilise the dunes. The focus for this target is likely to be on the more stable dunes, but may extend into adjacent land behind existing dune systems that was been converted to agricultural land in the past (dune formation may still be present).

3.2.5 Coastal vegetated shingle

Table 3.6 Revised UKBAP targets for coastal vegetated shingle (UKBAP, 2006)

UKBAP target for coastal vegetated shingle	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ¹⁷ : Maintain total extent of coastal vegetated shingle habitat throughout the UK and the structures, sediment and coastal processes that support them (approximately 5800ha). This is a 'no net loss' target to take account of the dynamic nature of shingle. This includes the maintenance of transitions to other habitats landward and seaward.	6 203	5 343	6 203	5 343	-	-	-	-
Achieving condition ¹⁸ : Achieve favourable or recovering condition by appropriate management of stated area of coastal vegetated shingle systems currently in unfavourable condition by 2010. This should achieve the retention or enhancement of populations of BAP priority species associated with vegetated shingle.	-	-	-	TBC	-	TBC	-	-
Restoration ¹⁹ : In key locations initiate restoration of shingle communities on arable land over shingle deposits by 2015 (units in sites).	-	-	1	1	2	2	-	-

¹⁷ Need to link this target with other HAP targets, especially wetland, heathland and grassland, which are often present on the more mature stable parts of shingle structures. There is also a critical link between some types of saline lagoon and shingle structures. Shingle habitat is dependent on the presence of sedimentary structures that may vary in extent and distribution depending on erosion and accretion patterns. Vegetation will go through a series of successional stages. Sediment supply is vital to the maintenance of shingle vegetation in the long-term. This needs to be addressed at key sites to ensure that they will be viable in the long-term. An area of coastal vegetated shingle will count as being maintained when: the natural coastal processes are still active, the landforms are retained and the extent and quality of the habitats present are maintained. In many cases the supply of shingle to sites has been interrupted, which could affect the ability to achieve this target.

¹⁸ All vegetated shingle SSSIs in unfavourable condition will form basis for delivery of this target. There should be no deterioration of the vegetated shingle habitat known to be in favourable condition, with new areas being brought into favourable condition through improved management. Management required to achieve favourable condition will include: cessation or modification of damaging activities e.g. re-profiling of shingle banks or shingle recycling; allowing the development of young ridges on the seaward side; better coastal management practices including addressing sediment supply to shingle structures; routing of access to reduce trampling; and replanting of native species to initiate succession. Vegetation can be easily damaged by human activities but is possible to restore elements with suitable management practices, including restricting surface damage. As shingle beaches contribute to flood risk management, their management should be sensitive to the vegetation. Quality for some invertebrate assemblages may also be related to areas of bare shingle-the vegetation patterning is a vital feature for the interest of this habitat.

¹⁹ Landward areas of shingle have been ploughed for agriculture and these are potential areas for restoration. This will be mainly in England, focused around the Dungeness / Rye Harbour Area in Kent and Sussex.

3.2.6 Fen

Table 3.7 Revised UKBAP targets for fen (UKBAP, 2006)

UKBAP target for fen	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ²⁰ : Maintain the current extent of the UK fen resource and diversity of fen types. This target represents a "no loss" of habitat.	18 050	8 000	18 050	8 000	-	-	-	-
Achieving condition ²¹ : Maintain condition of fen habitat where already favourable and establish by 2010, management to secure favourable condition for all areas of fen currently judged as unfavourable. The target condition for all such areas should be favourable or unfavourable recovering by 2020.	-	-	9 490	3 600	13 400	7 200	18 050	8 000
Restoration: Initiate by 2020, the restoration of 2,800 ha of former fen habitat across the UK.	-	-	925	750	1 850	1 500	2 775	2 250
New target type ²² : Establish 8 new landscape scale wetland complexes by 2020, at least 1 in each country in which fen is a major component along other wetland types and in which successional processes within the fen are allowed to proceed unchecked. This cross-refers to targets in the uplands, lowland raised bog, wet woodlands and reedbed HAPs. (Contributes to restoration target) (units of landscape scale wetland complexes)	-	-	1	1	5	2	8	4

²⁰ Fens occur on soils that experience at least periodic waterlogging and can encompass a wide range of plant communities on both peat and mineral soils and can include swamps, mires, springs and flushes. Fens often occur in association with other semi-natural habitats especially wet woodland, wet grassland and open water. No loss through development / land use change. Some loss of fen to wet woodland or bog as a result of natural succession is desirable.

²¹ It should be noted that targets to achieve condition may eventually be cartographically based to target future management of fen across the UK (similar 'Vision' based approach as LRB). The objective is to move on from listing targets and develop more precise and meaningful targets related to particular sites. It should be noted that particular fen 'sub-types' will be of greater importance in certain areas of the UK. Actions for achieving condition should concentrate on these fen sub-types'.

²² The current reduced and threatened status of the UK's wetlands is now well understood and there are a wide range of initiatives developing to restore and recreate wetlands. There is also an almost unprecedented policy opportunity created by changes to the Common Agricultural Policy, the Water Framework Directive (with catchment management and changing approaches to hydromorphology), Flood Risk Management and other areas that could enable recovery and restoration of landscape scale wetlands. No quantitative targets have been set at this stage. However, the long term target is to create up to 8 landscape scale wetland complexes across the UK by 2020. The location of sites may be determined through wetland visions (or other methods) and will ultimately be determined by opportunities within each country

3.2.7 Lowland Dry Acid Grassland

Table 3.8 Revised UKBAP targets for lowland dry acid grassland (UKBAP, 2006)

UKBAP target for lowland dry acid grassland	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ²³ : Maintain the current extent of Lowland Dry Acid Grassland in the UK (target represents no loss of BAP habitat).	61 646	20 142	61 646	20 142	-	-	-	-
Achieving condition ²⁴ : Maintain at least the current condition of Lowland Dry Acid Grassland.	61 646	20 142	61 646	20 142	61 646	20 142	61 646	20 142
Achieving condition ²⁵ : Achieve favourable or recovering condition for 29,220 ha of Lowland Dry Acid Grassland by 2010.	24 918	13 907	29 220	16 051	34 745	17 295	39 390	17 770
Restoration ²⁶ : Restore 313ha of Lowland Dry Acid Grassland from semi-improved or neglected grassland, which no longer meets the priority habitat definition by 2010.	31	-	313	142	597	285	879	427
Expansion ²⁷ : Re-establish 363ha of grassland of wildlife value from arable or improved grassland by 2010.	53	-	363	250	411	276	492	329
New target type ²⁸ : 270 ha (75%) of re-established area to be adjacent to existing Lowland Dry Acid Grassland or other semi-natural habitat by 2010 (refer to expansion target).			272	188	312	207	373	247
New target type ²⁹ : 180 ha (50%) of re-established area to contribute to resultant habitat patches of 6 ha or more of Lowland Dry Acid Grassland by 2010 (refer to expansion target).	-	-	182	125	208	138	249	165

²³ Target does not include new habitat created through restoration and expansion programmes, with the maintenance target representing no loss rather than no net loss, but excludes losses to lowland heathland where there is consensus that the biodiversity value of the restored heath is greater than that of the acidic grassland.

²⁴ There should be no deterioration of lowland dry acid grassland known to be in favourable condition. There is also a presumption that further decline in condition of currently unfavourable lowland dry acid grassland will be halted. Target for all dates = no change from favourable to unfavourable, and no unfavourable declining condition assessments. See Footnote 25 for management required to achieve favourable condition.

²⁵ New areas will be brought into favourable condition through improved management. Recovering is considered with favourable as long as confident that management will recover the feature to favourable condition (FC) in due course. Management required to achieve FC will include: 1) Appropriate grazing levels for relevant stock species and breeds. 2) Avoidance of damaging agricultural inputs such as artificial fertilisers, farm-yard manure, slurry, herbicides or use of supplementary feeding. 3) No improvement through ploughing, re-seeding or drainage. 4) Removal of bracken and scrub where appropriate. The time required for lowland dry acid grassland to achieve favourable condition will vary across the UK and will depend upon local climate and soil conditions. It may take 5 years or more to achieve this target. Favourable condition for lowland dry acid grassland SSSI features is based on the attributes and targets for lowland dry acid grassland within JNCC's Common Standards Monitoring guidance for lowland grasslands.

²⁶ The target is for habitat that was formerly lowland dry acid grassland and that which has not already been included within the Maintain extent target. The target will be achieved through: (i) improved management (as indicated in the Achieving condition target), and (ii) specific measures which are needed to return an area to lowland dry acid grassland. Former lowland dry acid grassland which could be restored includes: 1) Semi-improved grassland resulting from inappropriate stocking levels. 2) Semi-improved grassland resulting from agricultural inputs such as artificial fertilisers, farm-yard manure, slurry or use of supplementary feeding. 3) Areas of scrub and bracken which were formerly lowland dry acid grassland. But will not include either re-seeded and fertilised rye-grass pastures/leys or arable land. Specific restoration measures may involve: 1) Appropriate grazing. 2) Halting all additional agricultural inputs. 3) Removal of scrub and bracken. Restoration measures will be mainly achieved through: 1) Agri-environment schemes. 2) GAP (Grazing Animals Project) and similar initiatives. 3) On statutory sites, Section 15 agreements, WES (Wildlife Enhancement Scheme) in England and MOSS (Management of Sensitive Sites) in N. Ireland. 4) Local projects, e.g. NGO or HLF funded initiatives. The time required for lowland dry acid grassland to achieve favourable condition will vary across the UK and will depend on local climate and soil conditions. It therefore may take 10 years or more to achieve this target. See T3 for definition of favourable condition.

²⁷ The general approach has been to place more emphasis on habitat restoration, than expansion, but the potential for each has also strongly influenced targets. Expansion effort should be proportional to the degree of habitat fragmentation. The expansion target is for habitat that may not have been lowland dry acid grassland for some time, and is currently either arable land or improved pasture. The location of expansion effort is also important - see both new type targets. Specific expansion measures may include: 1) Initial nutrient stripping through cropping or in some exceptional cases turf-stripping. 2) Sowing appropriate local provenance seed mix. 3) Appropriate grazing. 4) Halting all additional agricultural inputs. Expansion will be mainly achieved through agri-environment schemes and local projects, e.g. NGO or HLF funded initiatives. The time required to re-create habitat resembling lowland dry acid grassland in favourable condition from arable and improved grassland precursors will vary across the UK and will depend on local climate and soil conditions. It therefore may take 20 years or more to achieve this target.

²⁸ Target for all dates = 75% of re-established area. When prioritising areas for expansion, consideration should be given to the development of habitat networks to allow habitat (and species) movement in response to climate change.

²⁹ Target for all dates = 50% of re-established area. When prioritising areas for expansion, consideration should also be given to increasing existing habitat patch size, in order to lessen the 'edge effect' and promote viable populations.

3.2.8 Lowland Heathland

Table 3.9 Revised UKBAP targets for lowland heathland (UKBAP, 2006)

UKBAP target for lowland heathland	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ³⁰ : Maintain the current extent of all existing lowland heathland. This target represents no net loss of habitat.	94 788	58 000	94 788	58 000	-	-	-	-
Achieving condition ³¹ : Maintain the area of lowland heathland currently in favourable condition.	29 514	13 049	29 514	13 049	-	-	-	-
Achieving condition ³² : Improve the condition of lowland heathland on sites currently in unfavourable condition.	-	-	33 992	28 885	46 755	34 086	57 352	37 351
Expansion ³³ : Increase the extent of lowland heathland by 7,600 ha by 2015.	2 200	2 000	3 784	3 050	7 568	6 100	11 352	9 150
New target type ³⁴ : Increase the number of heathland patches over 30 ha from 10% of the total resource to 50% by 2030.	288	288	342	342	395	395	448	448

³⁰ Maintain the current extent of all existing lowland heathland, which will increase when the expansion targets are achieved.

³¹ Maintain the existing area of lowland heathland in favourable condition. The area will increase when the "achieving condition" targets are achieved.

³² Restore to favourable condition the area of lowland heathland currently in unfavourable condition . Areas of newly created heath will initially be in unfavourable condition.

³³ The aim is to double the area of lowland heathland in England by 2100 (3 050 ha every 5 years) and continue the re-creation efforts in the other countries. Although not all existing heathland sites are appropriately managed currently, it is envisaged that larger sites will be easier and cheaper to manage than smaller ones.

³⁴ 30 ha in size is the minimum size of a heathland patch considered to be sustainable. The area of current patches <10 ha (n=2367) = 5459 ha. The area of potential patches <10 ha (n=511) = 1045 ha. The number of current patches over 30 ha = 288 (9.7% of total patches), the total area of which is 45982 ha (79.2% of total resource). The number of potential patches over 30 ha = 554 (48.8% of total patches, the total area of which is 109494 ha (94.9% of total potential resource). NB potential = 250m buffer excluding 500m buffer of urban + existing, i.e. 115,355ha.

3.2.9 Lowland Mixed Deciduous Woodland

The lowland mixed deciduous woodland UKBAP has been grouped with upland oakwood, lowland beech and yew woodland, upland mixed ashwoods, wet woodland, native pine woodlands, upland birchwoods and lowland mixed deciduous woodland to form the native woodland HAP. This information is presented in **Table 3.10**.

Table 3.10 Revised UKBAP targets for native woodland (UKBAP, 2006)

UKBAP target for native woodland	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ³⁵ : Maintain the existing area of ancient broadleaved woodland, which qualifies as native woodland, <i>i.e.</i> no change in the existing area of 251 kha (leaving 88 kha of conifer and mixed plantations on ancient woodland sites (See first restoration target)).	-	251 000	-	251 000	-	-	-	-
Maintaining extent ³⁶ : No net loss of native woodland, <i>i.e.</i> the area of non-ancient broadleaved woodland totals at least 284 kha.	-	284 000	-	284 000	-	-	-	-
Achieving condition ³⁷ : Achieve favourable or recovering condition of 350 kha (65%) of native broadleaved woodland by 2010.	-	325 000	-	350 000	-	375 000	-	400 000
Restoration ³⁸ : Ensure by 2010, 19 kha (22%) of the 88 kha of coniferous or mixed plantations on ancient woodland sites (PAWS) have been restored or are under gradual restoration.	-	-	-	19 000	-	36 000	-	53 000
Restoration ³⁹ : Ensure by 2020, a further 14,000 ha (10%) of the coniferous or mixed PAWS are being actively conserved.	-	-	-	-	-	-	-	14,000
Expansion ⁴⁰ : Expand the area of native broadleaved woodland by 26,000 ha by 2010, through a combination of converting (restocking) existing plantations and creating native woodland on ex-agricultural land.	-	-	-	26 000	-	53 000	-	80 000

³⁵ The working definition for native woodland will be: woodland where at least 80% of the canopy comprises species that are suited to the site and are within their natural range, taking into account both history and future climate change. All 5 native woodland HAPs have been combined into one set of generic native woodland targets. This reflects the fact that on the ground there is a dynamic continuum between woodland types. The setting of targets for individual types was deemed unrealistically precise, too complex and unduly prescriptive. However, this will not dilute the emphasis placed on nativeness and on achieving the right type of woodland for each individual site. The total area of ancient woodland which qualifies as native woodland is thus 251,000 ha; and the total area of other native woodland is 284,000 ha. The total area of PAWS is 140,000 ha but only 50,000 ha currently qualifies as native woodland.

³⁶ Although the basic target for non-ancient woodland only requires gains to exceed losses, it will be necessary to monitor the following aspects: the level of flux and rate of change in native woodland area; the change to other priority habitats rather than to other land use (with an aim of 'no net loss of semi-natural habitat'); likely considerable interchange between native woodland and wood pasture HAP; and the area of woodland as patches or dynamic areas within other habitats. The total area of existing native woodland is approximately 535,000 ha. This comprises the following categories: 200,000 ha of ancient semi-natural woodland (ASNW) (average of several AWI and NIWT figures: 193 - 205 kha); 284,000 ha of non-ancient semi-natural woodland (>80% broadleaved); and 51,000 ha of broadleaved (or restored) PAWS (from NIWT data on PAWS).

³⁷ Meeting this target would initially require improving an average of 1% of the native woodland resource (*i.e.* about 5300 ha each year). More precisely, it means initiating work each year in 5300 ha which will, in time, result in the site reaching favourable condition. Probably as big a task will be continuing the work in areas which are in 'recovering' condition. Achieving these targets, particularly the 2010 target, will be a particular challenge. These figures may need to be revised once baselines estimates have been improved.

³⁸ By 2020 85% of existing PAWS will fall into one of the following categories: already broadleaved, fully restored, under restoration or being actively conserved. Meeting the restoration targets will require felling and restocking around 1000 ha p.a. and thinning around 3000 ha p.a.

³⁹ An additional target for 2020 is for a further 14 kha of the coniferous or mixed PAWS resource to be managed in a manner that conserves and enhances biodiversity.

⁴⁰ Target equates to increasing the area of broadleaved woodland by 5300 ha (1%) per annum. Such woodland needs to be created in locations where it will enhance existing native woodland, particularly ancient woods, and other priority habitats. This will be achieved by: buffering the margins of woodland or other habitats; expanding small woods; complementing and diversifying the age structure of even-aged woods; contributing to habitat networks and 'ecological connections' across landscapes; developing clusters of inter-connected woodland; and creating some large new woods.

3.2.10 Maritime Cliffs and Slopes

Table 3.11 Revised UKBAP targets for maritime cliffs and slope (UKBAP, 2006)

UKBAP target for maritime cliffs and slope	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁴¹ : Maintain the existing free-functioning maritime cliff & slope resource (including of cliff-top and slope habitat) estimated to be approximately 4500 km. This is essentially a 'no net loss' target that should take account of the balance between the extent of coast protection works and free-functioning cliff systems.	4 656 km	1 164 km	4 656 km	1 164 km	- (km)	- (km)	- (km)	- (km)
Maintaining extent ⁴² : No overall net loss of cliff and slope functionality as a result of coast protection or engineering works (unit in km).	-	Data not available	-	Target still to be set	-	-	-	-
Restoration ⁴³ : Increase the extent of Maritime Cliff and Slope unaffected by coastal engineering/coast protection from 250km to 275km by 2015 (applicable to England only) (unit in km).	250 km	250 km	265 km	265 km	275km	275 km	-	-
Expansion ⁴⁴ : Increase the area of cliff-top semi-natural habitats by at least 500 ha (minimum) by 2015.	-	-	200	80	500	200	-	-
Achieving condition ⁴⁵ : Achieve favourable or recovering condition for 1,500 km/30% of maritime cliff and slope including cliff-top vegetation, by 2010 (unit in km).	-	-	1 498 km	350 km	2 971 km	700 km	4 657 km	1 164 km

⁴¹ This target relates to all types of cliff. There are many locations with softer geology that are still vulnerable to proposals for cliff stabilisation as part of coast protection schemes. Cliffs that are unconstrained by coastal protection to reduce erosion are the primary focus of this target. Some areas may have structures that aim to reduce cliff mobility-these are covered in restoration targets. The recognition of the importance of the cliff top supporting semi-natural vegetation is also part of this target. If maintenance and restoration targets are to be achieved, there needs to be close links with the development of the 'Adaptation toolkit' being developed as part of the Defra Making Space for Water strategy and the delivery of the Defra High Level Target 4 for Operating Authorities. All coastal operations should assess how they may affect other parts of the local sea cliff resource. A section of Maritime Cliff and Slope will count as being maintained when: the semi-natural vegetation of the cliff slope, other important habitats such as bare ground and exposed rock and any pre-existing semi-natural vegetation of the cliff top are maintained, along with the physical processes that have created and maintained the cliff system. The overall width of the cliff and slope, with associated cliff top vegetation, is maintained, though the system as a whole may move inland as the cliff recedes.

⁴² This target relates primarily to cliffs on softer geology and/or where there are seepage points forming part of the cliff habitat. Although this may seem very similar to first maintenance target, there are increasing numbers of proposals to slow the rate of soft cliff recession by partial stabilisation measures such as drainage. This is likely to change the quality of the cliff slopes, even though the extent would stay the same. The target should also include reference to drainage works.

⁴³ This target is about restoring functionality to degraded cliffs and linking up fragmented areas. Drainage should also be included in the target and relates primarily to cliffs on softer geology. The main area where this is an issue is in England, especially where there are coast protection schemes reaching the end of their operational life-these are likely to be identified by the revision of Shoreline Management Plans. A section of Maritime Cliff and Slope will count as being restored when: coast protection works that were preventing the operation of the physical processes that could maintain a cliff in a dynamic state are removed, are modified to allow controlled erosion or are allowed to become inoperative. All bodies, including the Environment Agency, responsible for management within coastal sediment cells in the UK should set targets for increasing the amount of maritime cliff and slope habitats unaffected by coastal defence and other engineering works.

⁴⁴ This would be on arable land or improved grassland. This applies to both soft and hard cliffs. The role of the High Level Stewardship will be important in delivery, although there isn't a specific option in HLS for maritime cliffs - it would need to be linked to other habitat restoration options and carefully targeted. Targeting will be done in England through the Joint Character Areas targeting for agri-environment schemes. A section of Cliff-Top semi-natural habitat will count as being re-created when: Semi-natural cliff top habitat is established behind a section of maritime cliff and slope where such habitat had previously been destroyed, or where the establishment extends the width of this current existing habitat. The aim is to improve the long-term prospects especially on eroding soft cliffs but will also apply to hard cliffs. There is a link to other HAPs here especially grassland and heathland.

⁴⁵ This would be on a wider range of semi-natural habitats than T4 - there could be a wide range of habitat types depending on the geology and land use history, but most likely are the grassland or heathland types which have some maritime influence. The target needs to link to similar targets for these other habitats. Condition assessment by country agencies of SSSIs and N2K sites will help to target those areas where restoration is needed. Habitat inventory work will provide a useful starting point for both monitoring and targeting in England and the approach could be extended to the whole of the UK. Targeting will be done in England through the Joint Character Areas targeting for agri-environment schemes. There should be no deterioration of the semi-natural cliff top habitat known to be in favourable condition¹. In addition, new areas will be brought into favourable condition through improved management. Management required to achieve favourable condition will include: Appropriate grazing levels aimed at developing structure of vegetation and allowing indicator species to survive; Removal of non-native species where accessible; Removal of structures or drainage systems aimed at reducing mobility or cliff recession; Non-intervention in some cases; Encouraging whole range and succession of habitat types from splash zone to cliff tops; It will normally be a pre-condition for achieving favourable condition that the physical processes responsible for erosion continue to operate.

Purple moor grass and rush pasture

Table 3.12 Revised UKBAP targets for purple moor grass and rush pasture (UKBAP, 2006)

UKBAP target for purple moor grass and rush pasture		UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁴⁶ : Maintain the current extent of Purple Moor-grass and Rush Pastures in the UK. (Target represents no loss of BAP habitat).		79 392	21 544	79 392	21 544	-	-	-	-
Achieving condition ⁴⁷ : Maintain at least the current condition of Purple Moor-grass and Rush Pastures.		79 392	21 544	79 392	21 544	79 392	21 544	79 392	21 544
Achieving condition ⁴⁸ : Achieve favourable or recovering condition for 45,059ha of Purple Moor-grass and Rush Pasture by 2010.		35 662	12 203	45 059	18 118	52 695	19 195	59 018	19 409
Restoration ⁴⁹ : Restore 642ha of Purple Moor-grass and Rush Pasture from semi-improved or neglected grassland, which no longer meets the priority habitat definition by 2010.		260	-	642	114	926	128	1 408	342
Expansion ⁵⁰ : Re-establish 270ha of grassland of wildlife value from arable or improved grassland by 2010.		441	-	270	125	342	151	541	304
New target type ⁵¹ : 200 ha (75%) of re-established area to be adjacent to existing Purple Moor-grass and Rush Pastures or other semi-natural habitat by 2010 (refer to expansion target)		-	-	203	94	257	113	406	228
New target type ⁵² : 135 ha (50%) of re-established area to contribute to resultant habitat patches of 2 ha or more of Purple Moor-grass and Rush Pasture by 2010 (refer to expansion target)		-	-	135	63	171	76	270.5	152

⁴⁶ Target does not include new habitat created through restoration and expansion programmes. The maintenance target represents no loss rather than no net loss.

⁴⁷ There should be no deterioration of purple moor-grass and rush pasture known to be in favourable condition. There is also a presumption that further decline in condition of currently unfavourable purple moor-grass and rush pasture will be halted. Target for all dates = no change from favourable to unfavourable, and no unfavourable declining condition assessments. See second achieving condition target for management required to achieve favourable condition.

⁴⁸ New areas will be brought into favourable condition through improved management. Recovering is considered with favourable as long as confident that management will recover the feature to favourable condition in due course. Management required to achieve favourable condition will include: 1) Appropriate grazing levels for relevant stock species and breeds, together with occasional cutting, where applicable. 2) Avoidance of damaging agricultural inputs such as artificial fertilisers, farm-yard manure, slurry, herbicides or use of supplementary feeding. 3) No improvement through drainage, ploughing or re-seeding. 4) Removal of bracken, scrub and excess purple moor-grass litter where appropriate. The time required for to achieve favourable condition will vary across the UK and will depend upon local climate and soil conditions, although it may take 5 years or more to achieve this target.

⁴⁹ The target is for habitat that was formerly purple moor-grass and rush pasture (see examples below) and that has not already been included within the Maintain extent target. The target will be achieved through: (i) improved management (as indicated in the Achieving condition target) and (ii) specific measures which are needed to return an area to purple moor-grass and rush pasture. Former purple moor-grass and rush pasture which could be restored includes: 1) Semi-improved rush pasture resulting from inappropriate stocking levels 2) Semi-improved rush pasture resulting from agricultural inputs such as artificial fertilisers, farm-yard manure, slurry or supplementary feeding 3) Semi-improved grassland resulting from drainage of former purple moor-grass and rush pastures 4) Areas of scrub and bracken which were formerly purple moor-grass and rush pasture. But will not include either re-seeded and fertilised rye-grass pastures or arable land. Specific restoration measures may involve: 1) Appropriate grazing and cutting (where applicable) 2) Halting all additional agricultural inputs 3) Removal of scrub and bracken by cutting, or occasional burning in some situations 5) Blocking of artificial drainage (if appropriate). Restoration measures will be mainly achieved through: 1) Agri-environment schemes. 2) GAP (Grazing Animals Project) and similar initiatives 3) On statutory sites, Section 15 agreements, WES (Wildlife Enhancement Scheme) 4) Local projects, e.g. NGO or HLF funded initiatives. The time required for purple moor-grass and rush pasture to achieve favourable condition will vary across the UK and will depend on local climate and soil conditions. It therefore may take 10 years or more to achieve this target. See second achieving condition target for definition of favourable condition.

⁵⁰ The general approach has been to place more emphasis on habitat restoration, than expansion, but the potential for each has also strongly influenced targets. Expansion effort should be proportional to the degree of habitat fragmentation. The expansion target is for habitat that may not have been purple moor-grass and rush pasture for some time, and is currently either improved pasture, or less frequently, arable land. The location of expansion effort is also important - see first and second new type targets. Specific expansion measures may include: 1) Initial nutrient stripping through cutting and removal, if appropriate 2) Introducing appropriate local provenance seed 3) Appropriate grazing and cutting (where applicable) 4) Halting all additional agricultural inputs 5) Blocking of artificial drainage. Expansion will be mainly achieved through agri-environment schemes and local projects, e.g. NGO or HLF funded initiatives. The time required to re-create habitat resembling purple moor-grass and rush-pasture in favourable condition from improved grassland and arable precursors will vary across the UK and will depend on local climate and soil conditions. It therefore may take 20 years or more to achieve this target.

⁵¹ Target for all dates = 75% of re-established area.

⁵² Target for all dates = 50% of re-established area.

3.2.12 Reedbeds

Table 3.13 Revised UKBAP targets for reedbed (UKBAP, 2006)

UKBAP target for reedbeds	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁵³ : Maintain the extent of the existing resource of BAP habitat by active management and with no net loss (priority will be to maintain blocks of greater than 2ha, where appropriate). Links to Bittern SAP.	9 360	5 200	9 360.0	5 200	-	-	-	-
Achieving condition ⁵⁴ : Maintain the condition of wet reedbed habitat where already favourable and establish by 2010, management to secure favourable condition for all areas of targeted reedbed currently judged as unfavourable. The target condition for all such areas should be favourable or unfavourable recovering by 2020.	-	-	5 500	3 120	7 900	4 680	9 360	5 200
Expansion ⁵⁵ : Continue creating reedbed from land of low nature conservation interest with the objective of expanding the BAP resource by 3,000 ha across the UK by 2020.	-	-	1 700	1 400	2 300	1 900	3 000	2 400
New target type ⁵⁶ : Establish 8 new landscape scale wetland complexes by 2020, at least 1 in each country in which reedbed is a major component along other wetland types. This cross-refers to targets in the uplands, lowland raised bog, wet woodlands, fen and coastal and floodplain grazing marsh HAPs (Contributes to expansion target) (Unit is landscape scale wetland complexes)	-	-	1	1	5	2	8	4

⁵³ Reedbeds are swamps and are often associated with fen and it would be perfectly appropriate for reedbed to be covered by the Fen HAP. However, for the purposes of this HAP, it is considered important to distinguish wet reedbed from reed dominated fen due to its association with the bittern (*Botaurus stellaris*), a priority species that relies almost solely on this type of habitat. The wet reedbed HAP has therefore been developed to compliment the Species Action Plan for bittern. For habitat to qualify as BAP habitat, it must meet the definition criteria as set out in the HAP.

⁵⁴ Management required to achieve good condition may include: maintaining water control structures in good working order; controlling scrub cover and retaining some open water; cleaning ditches and foot-drains no more than once in every five years; cutting ditch banks in rotation; and no fertiliser use. Restoration work may include: clearing scrub; cutting reeds in the summer; implementing a water management regime; restoring the ditch network. The condition of reedbed can be assessed using the list of criteria for higher level agri-environment schemes: 1. Cover of scrub within the reedbed must be less than 10%; 2. The vegetation must include at least 60% reeds; 3. Surface water is present over at least part of the reedbed for most of the year. (30% to 50% of reedbed should comprise open water); and 4. Cover of undesirable species (docks, thistles, ragworts, Indian (Himalayan) balsam) must be less than 5%.

⁵⁵ Action 1: By 2007 and using tools such as 'visioning', identify areas for the future creation of reedbed for potential inclusion in Regional Spatial Strategies and Catchment Flood Management Plans (for England).

⁵⁶ The current reduced and threatened status of the UK's wetlands is now well understood and there are a wide range of initiatives developing to restore and recreate wetlands. There is also an almost unprecedented policy opportunity created by changes to the Common Agricultural Policy, the Water Framework Directive (with catchment management and changing approaches to hydromorphology), Flood Risk Management and other areas that could enable recovery and restoration of landscape scale wetlands. No quantitative targets have been set at this stage. However, the long term target is to create up to 8 landscape scale wetland complexes across the UK by 2020. The location of sites may be determined through wetland visions (or other methods) and will ultimately be determined by opportunities within each country.

3.2.13 Saline Lagoons

Table 3.14 Revised UKBAP targets for reedbed (UKBAP, 2006)

UKBAP target for saline lagoons	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁵⁷ : There should be no further net loss in extent of saline lagoons, subject to natural change. Any loss due to anthropogenic pressures should be offset with habitat enhancement / creation.	5 184	1 205	5 184	1 205	-	-	-	-
Maintaining extent ⁵⁸ : Maintain (no reduction in) the current number and distribution of coastal saline lagoons, subject to natural change.	365	183	365	183.00	-	-	-	-
Achieving condition ⁵⁹ : Achieve favourable or recovering condition for 4,925 ha of coastal saline lagoon resource by 2010, subject to natural processes (as measured by physico-chemical form and function and community and species diversity).	4 650	1 000	4 925	1 145	-	-	-	-
Expansion ⁶⁰ : Create, by the year 2015, 120 ha of saline lagoon to offset estimated historical losses.	41.75	15.75	90	76	120	100	-	-

⁵⁷ Areas of saline lagoon will continue to be lost especially in SE England, due to both natural processes and coastal squeeze against flood defence structures. Loss from some parts of the coast will, to an extent, be offset by gains through natural processes in other areas. However, it is likely that the losses will continue to exceed the gains and consequently, maintaining extent will require the creation of new saline lagoon habitat. The current target is 6 ha of new (created) habitat a year. Therefore the extent data is approximate and may fluctuate as a result of: dynamic environmental parameters, further survey data and improved management. This target represents best estimate of the total current value and is intended to encompass the entire resource. Provision should be made for the ephemeral nature of some types of saline lagoons and reflected in the target.

⁵⁸ This target is relevant to both the number and distribution of saline lagoons within the UK. The number of saline lagoons may fluctuate as a result of: natural dynamic environmental parameters, further survey data, and improved management / ecological knowledge. Habitat creation / enhancement will need to address the ephemeral nature of saline lagoons along with loss to anthropogenic pressures / threats. This target represents best estimate of the total current value and is intended to encompass the entire resource.

⁵⁹ The current condition of saline lagoon habitat as a whole in the UK is unknown. No target is currently set, although this should add up to 95% of the resource total detailed in the 'maintaining extent' target. Together this will deliver information on area of habitat in favourable and unfavourable condition. There is data available for all English lagoons within SSSIs or N2K sites. There is a lot of supporting information obtained through the Review of Consents process as part of the Environment Agency's delivery towards the Water Framework Directive. The unit most informative for this target is area in hectares. All condition monitoring will measure extent and all site condition will reflect the area of the feature. This is the route used by English Nature to report against the PSA target for SSSIs. This is more informative than using site as the unit (e.g. if 1 lagoon out of 178 in England is unfavourable this doesn't look too bad, but if that site is The Fleet then ~40% of England's lagoons will in poor condition - a more useful reporting tool). This target should achieve the retention of lagoonal specialist BAP Priority and Red Data Book species where these occur. The target also implies maintaining condition of resource currently in good condition.

⁶⁰ The current expansion target of 6 ha per year (from 1995) should be retained with the aim of expanding the resource by 120 ha by 2015. The target should be revisited after 2015 to establish whether further habitat expansion is required, with the main focus being England, which has historically lost a lot of the habitat. Key projects will deliver saline lagoons through managed re-alignment sites & changes to water management, particularly in East Anglia. Project delivery will consider long-term sustainability (100+ yrs) of new sites. Links will be established to Environment Agency habitat creation projects.

3.2.14 Wet Woodland

The wet woodland UKBAP has been grouped with native woodland, upland oakwood, lowland beech and yew woodland, upland mixed ashwoods, native pine woodlands, upland birchwoods and lowland mixed deciduous woodland to form the native woodland HAP. This information is presented in **Table 3.15**.

Table 3.15 Revised UKBAP targets for native woodland (UKBAP, 2006)

UKBAP target for native woodland	UK baseline (2005) (ha)	England baseline (2005) (ha)	UK target (2010) (ha)	England target (2010) (ha)	UK target (2015) (ha)	England target (2015) (ha)	UK target (2020) (ha)	England target (2020) (ha)
Maintaining extent ⁶¹ : Maintain the existing area of ancient broadleaved woodland, which qualifies as native woodland, <i>i.e.</i> no change in the existing area of 251 kha (leaving 88 kha of conifer and mixed plantations on ancient woodland sites (See first restoration target)).	-	251 000	-	251 000	-	-	-	-
Maintaining extent ⁶² : No net loss of native woodland, <i>i.e.</i> the area of non-ancient broadleaved woodland totals at least 284 kha.	-	284 000	-	284 000	-	-	-	-
Achieving condition ⁶³ : Achieve favourable or recovering condition of 350 kha (65%) of native broadleaved woodland by 2010.	-	325 000	-	350 000	-	375 000	-	400 000
Restoration ⁶⁴ : Ensure by 2010, 19 kha (22%) of the 88 kha of coniferous or mixed plantations on ancient woodland sites (PAWS) have been restored or are under gradual restoration.	-	-	-	19 000	-	36 000	-	53 000
Restoration ⁶⁵ : Ensure by 2020, a further 14,000 ha (10%) of the coniferous or mixed PAWS are being actively conserved.	-	-	-	-	-	-	-	14,000
Expansion ⁶⁶ : Expand the area of native broadleaved woodland by 26,000 ha by 2010, through a combination of converting (restocking) existing plantations and creating native woodland on ex-agricultural land.	-	-	-	26 000	-	53 000	-	80 000

⁶¹ The working definition for native woodland will be: woodland where at least 80% of the canopy comprises species that are suited to the site and are within their natural range, taking into account both history and future climate change. All 5 native woodland HAPs have been combined into one set of generic native woodland targets. This reflects the fact that on the ground there is a dynamic continuum between woodland types. The setting of targets for individual types was deemed unrealistically precise, too complex and unduly prescriptive. However, this will not dilute the emphasis placed on nativeness and on achieving the right type of woodland for each individual site. The total area of ancient woodland which qualifies as native woodland is thus 251,000 ha; and the total area of other native woodland is 284,000 ha. The total area of PAWS is 140,000 ha but only 50,000 ha currently qualifies as native woodland.

⁶² Although the basic target for non-ancient woodland only requires gains to exceed losses, it will be necessary to monitor the following aspects: the level of flux and rate of change in native woodland area; the change to other priority habitats rather than to other land use (with an aim of 'no net loss of semi-natural habitat'); likely considerable interchange between native woodland and wood pasture HAP; and the area of woodland as patches or dynamic areas within other habitats. The total area of existing native woodland is approximately 535,000 ha. This comprises the following categories: 200,000 ha of ancient semi-natural woodland (ASNW) (average of several AWI and NIWT figures: 193 - 205 kha); 284,000 ha of non-ancient semi-natural woodland (>80% broadleaved); and 51,000 ha of broadleaved (or restored) PAWS (from NIWT data on PAWS).

⁶³ Meeting this target would initially require improving an average of 1% of the native woodland resource (*i.e.* about 5300 ha each year). More precisely, it means initiating work each year in 5300 ha which will, in time, result in the site reaching favourable condition. Probably as big a task will be continuing the work in areas which are in 'recovering' condition. Achieving these targets, particularly the 2010 target, will be a particular challenge. These figures may need to be revised once baselines estimates have been improved.

⁶⁴ By 2020 85% of existing PAWS will fall into one of the following categories: already broadleaved, fully restored, under restoration or being actively conserved. Meeting the restoration targets will require felling and restocking around 1000 ha p.a. and thinning around 3000 ha p.a.

⁶⁵ An additional target for 2020 is for a further 14 kha of the coniferous or mixed PAWS resource to be managed in a manner that conserves and enhances biodiversity.

⁶⁶ Target equates to increasing the area of broadleaved woodland by 5300 ha (1%) per annum. Such woodland needs to be created in locations where it will enhance existing native woodland, particularly ancient woods, and other priority habitats. This will be achieved by: buffering the margins of woodland or other habitats; expanding small woods; complementing and diversifying the age structure of even-aged woods; contributing to habitat networks and 'ecological connections' across landscapes; developing clusters of inter-connected woodland; and creating some large new woods.

3.3 Suffolk Biodiversity Action Plan targets

Each Local Biodiversity Action Plan works on the basis of partnership to identify local priorities and to determine the contribution they can make to the delivery of the national Species and Habitat Action Plan targets. As such, there are targets that should be achieved in Suffolk to contribute to the overall UK targets and these are discussed in this section.

3.3.1 Ancient and / or Species-rich Hedgerows

Comprehensive survey work to establish the status of the habitat is still urgently required. Although the Lifescapes project (Suffolk Coasts and Heaths) has assessed some of the species-rich hedgerow resource, the area has never been an important one for this habitat. The Suffolk Hedgerow Survey has been undertaken by some parishes but data quality is variable and remains paper based. The Suffolk objectives for this Habitat Action Plan (HAP) are as listed (Suffolk County Council, 2008):

- Obtain an up to date picture of the status and extent of ancient and/or species rich hedgerows in the county;
- Ensure that most existing field boundaries are hedged, by encouraging planting along currently un-hedged boundaries (where this would have been a typical landscape feature), retaining hedgerow trees and the planting up of gaps; and
- Planting schemes should take account of the historical and cultural context, that is, local traditions and structures of boundary features.

3.3.2 Cereal Field Margins

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Continue promotion of appropriate management, taking into account the species present;
- Recognise the value of soil type, particularly with regard to maintaining populations of declining arable plants through annual cultivation techniques;
- Encourage examination of crop management techniques favouring biodiversity;
- Ensure farmers, land managers and their agronomic advisers recognise the importance of HAPs, particularly with regard to the species associated with them; and
- Promote the adoption of a user-friendly guide to farmland biodiversity, easily accessible to farmers, land owners and their advisers, emphasising the link between BAP species and habitats and agri-environment schemes.

3.3.3 Coastal and Floodplain Grazing Marsh

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Improve knowledge of extent and quality of coastal and floodplain grazing marsh;
- Maintain the existing extent of biologically important grazing marsh, ensure no net loss;
- Take steps to restore and re-create 200ha of grazing marsh by 2018;
- Integrate grazing marsh restoration into initiatives for reedbed and fens creation;

- Ensure there is no net loss of coastal grazing marsh during the implementation of flood defence strategies in Suffolk's estuaries, which may involve managed realignment schemes; and
- Encourage the restoration and improvement of degraded grazing marsh.

3.3.4 Coastal sand dunes

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Protect existing area and nature conservation status of sand dunes from further losses to anthropogenic factors. Management may be required especially in areas holding rare species;
- Offset any losses since 1992 (year of adoption of Habitats Directive) and expected losses due to natural causes over 20 years by allowing new dunes to accrete and by allowing mobile dune systems to move inland;
- Improve knowledge of extent, quality and current level of threat to Suffolk sand dunes; and
- Promote the importance of sand dunes.

3.3.5 Coastal vegetated shingle

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain the existing 859 ha of coastal vegetated shingle in Suffolk with no net loss;
- Prevent further exploitation of, or damage to, existing vegetated shingle sites through human activities and maintain the quality of existing plant and invertebrate communities. Where necessary restore to a favourable condition; Promote importance of habitat to users / public;
- Ensure conditions are suitable on damaged sites for natural recovery of vegetated shingle; and
- Continue the monitoring of experimental restoration sites to assess the potential and feasibility for carrying out further restoration of severely damaged habitats.

3.3.6 Fens

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Through survey of existing fen resource, come up with a definition and more accurate picture of extent and variation in Suffolk's fenland resource;
- Ensure by 2010 the long-term sustainable management (including water resources) of all fens over 5ha, which are currently in favourable condition or will be brought into favourable condition following restoration;
- Promote the rehabilitation of degraded or declining fens, and encourage the creation of new fens providing the environmental conditions to allow the development of target fen communities or species to exist; and
- Maintain and enhance populations of key BAP species associated with Suffolk fens.

3.3.7 Lowland Heathland

Targets in this plan are short-term and based on current knowledge, assumptions about the ecological functionality and limits imposed by current funding streams and competition from other land uses (Suffolk County Council, 2008). Targets should be regularly revised taking account of improved knowledge of species requirements, climate change and the amount of habitat required to achieve ecological functionality. The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Secure without damage or loss, all existing areas of heath and implement restoration management where it is needed;
- Identify, and secure sympathetic management for all designated heathland areas with the aim of achieving favourable status by 2010;
- Maintain and improve the wildlife value of existing heathland through appropriate and sustainable grazing management systems where this is feasible;
- Encourage the establishment of heathland in the Sandlings and in Breckland (Norfolk and Suffolk) from arable and forestry use where possible. The Lifescapes Heathland potential model should be used to target links between fragmented heaths for re-establishment to create sustainable heathland units; and
- Maintain and strengthen populations of key BAP species associated with heathland.

3.3.8 Lowland Mixed Deciduous Woodland

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- The targets established in this plan aim to maintain, restore and where possible expand the extent of lowland mixed native broadleaf woodland;
- Maintain the 2007 current extent and distribution of mixed deciduous woodland;
- Restore 7 hectares of mixed deciduous woodland on PAWS sites by 2010, 17 by 2015, and 27 by 2020;
- Achieve favourable condition or favourable recovering of 95% of SSSI mixed deciduous woodland by 2010; and
- Link existing woodlands by expansion or joining to other biodiversity habitat wherever possible and where this will not be detrimental to other habitats of biodiversity value.

3.3.9 Maritime cliffs and slopes

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- The targets established in this plan are in accordance with the UK Biodiversity Action Plan for Maritime Cliff and Slope and aim to maintain, restore and where possible expand the extent of maritime cliff and slope;
- Seek to maintain the 2006 baseline of existing resource of maritime cliff, cliff top and slope habitat (as mapped by Suffolk Biological Records Centre) by 2010;
- Maintain wherever possible free functioning of coastal physical processes acting on maritime cliff and slope habitats. Ensure that all maritime cliffs and slopes of SSSI or county wildlife site status are in favourable condition or unfavourable recovering by 2010 and 2020 respectively.

- Retain the amount of maritime cliff and slope habitats unaffected by coastal defence and other engineering works.
- Where possible increase the amount of maritime cliff and slope habitats unaffected by coastal defence and other engineering works.
- Increase the area of cliff-top semi-natural habitats by a minimum of 15% by 2020

3.3.10 Mudflats

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain total extent of habitat (3523 ha in 2006), there should be no net loss subject to natural change by 2010. This takes account of the dynamic nature of this habitat;
- Expand their extent to 1992 levels (thus aim to increase by 50ha) by 2015 to offset any losses since then (year of adoption of Habitats Directive) due to a gradual squeeze; and
- Achieve condition: achieve favourable or recovering condition by appropriate management of mudflat systems currently in unfavourable condition by 2015.

3.3.11 Reedbeds

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain existing overall area and quality as a minimum. This will require the creation of at least 445 hectares in the next 20 years to replace any losses through natural coastal processes and should be as near as possible to existing sites on areas of low current nature conservation interest;
- Enhance reedbed habitat and also manage for key reedbed species ensuring all main reedbeds contain habitat at all stages of the hydrosphere and have sufficient reed / open water interface;
- Develop new reedbeds away from the coast, particularly broad reed dominated pool margins. Investigate post extraction management of gravel workings and flood-plain restoration schemes; and
- Ensure newly created reedbeds are targeted to areas of most benefit (e.g. linking separate blocks of habitat such as between Suffolk coast and reedbeds on the Broads and also mid Suffolk reedbeds to link with large reedbed creation projects on the edge of the Fens).

3.3.12 Saline Lagoons and Associated Species

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Identify the extent of saline lagoons that were present in 1992, and use this as baseline data against which future changes are assessed;
- Maintain the favourable condition of existing saline lagoons in terms of species and community diversity;
- Establish a programme of annual monitoring condition of existing lagoons and the rate of loss of saline lagoons for a five-year period, to quantify the average annual rate of loss;
- Increase the extent of saline lagoons to 1992 levels (10 ha increase by 2010) to offset any losses since then (year of adoption of Habitats Directive);

- Increase the area of saline lagoons in the most appropriate locations, to maintain baseline levels and take opportunities for recreation in appropriate locations to enhance the distribution and population levels of rare lagoon species, and to compensate for potential habitat loss through coastal erosion; and
- Encourage all estuary and coastal users to communicate so all needs are reconciled.

3.3.13 Saltmarsh

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain total extent of saltmarsh habitat (1107 ha in 2006), there should be no net loss subject to natural change by 2010. This takes account of the dynamic nature of the habitat;
- Expand. Increase the area of saltmarsh in Suffolk by 50 ha by 2015. This will help to offset losses nationally in the recent past (100ha has been lost between 1992 and present) and to offset likely losses due to coastal squeeze; and
- Achieve condition - achieve favourable or recovering condition by appropriate management of saltmarsh currently in unfavourable condition by 2015.

3.3.14 Sea-grass beds *Zostera* spp.

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain and where possible enhance seagrass beds in Suffolk.

Proposed action:

- Re-survey area of seagrass in Stour estuary in 2004.

Determine presence of seagrass at Nacton and Covehithe during 2005 – 6. Little can be done restore the habitat in Suffolk estuaries through direct local action, due to the combined effects of viral infection and nitrate enrichment. The action plan for seagrass beds has thus been replaced with this statement. Monitoring of the Stour Estuary will continue and if the habitat shows signs of a natural recovery, the plan can be resumed.

3.3.15 Eutrophic standing waters

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Await national classification by EA of eutrophic water bodies in Suffolk into three tiers according to naturalness, biodiversity and restoration potential. (The exact criteria for these categories have yet to be agreed and the total number of sites falling into each tier confirmed);
- Ensure protection & continuation of favourable condition of eutrophic standing waters classified in Suffolk as Tier 1 by 2005. Restore 50% of Tier 2 sites damaged by human activity to favourable condition by 2020;
- Ensure no further deterioration in water quality & wildlife of Tier 3 resource. This means no net loss; and

- Set up a pilot community pond initiative involving a network of volunteer wardens.

3.3.16 Lowland dry acid grassland

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain extent of ecologically valuable acid grassland;
- Secure restoration management for all significant stands of acid grassland with the aim of achieving favourable status by 2010; and
- Seek to promote the establishment of acid grassland through agri-environment schemes or wherever feasible as part of new developments such as industrial or housing estates.

3.3.17 Lowland meadow

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Maintain as a minimum the current extent of unimproved grassland resource of approximately of 2000 ha in Suffolk for 2010, 2015 and 2020;
- Expand the current resource of unimproved grassland resource by creating 0.5 – 1 ha of new herb rich grassland per annum up to 2010 through green hay and seed harvesting; and
- Aim to restore and therefore reduce the number / area of sites currently in unfavourable condition.

3.3.18 Wet woodlands

The objectives for this HAP are as listed (Suffolk County Council, 2008):

- Improve knowledge of extent, distribution and quality of wet woodlands in Suffolk;
- Identify wet woodlands that may need clearance to restore higher priority habitats;
- Improve the targeting of the Woodland Grant Scheme to assist in wet woodland habitats;
- Maintain the existing extent of high quality wet woodland;
- Initiate measures to achieve favourable condition in 100% of wet woodlands within SSSIs, SACs and in 80% of the total resource by 2004. Achieve favourable conservation condition over 70% of the designated sites and 50% of the total resource by 2020 where appropriate;
- Fully restore to site native species 50% of the sub-optimal wet woodlands by 2010 and complete this by 2015 where appropriate;
- Maintain and strengthen populations of key BAP species associated with wet woodlands including; a weevil *Melanapion minimum* and a jumping weevil *Rhynchaenus testaceus*;
- Achieve the favourable management of 25% of wet woodlands by 2005 and of 50% by 2010. Develop new wet woodlands; and
- Develop favourable conservation status guidance.

3.3.19 Wood pasture and parkland

- During 2007 map the current extent of these habitats and then by 2010 map the historic extent;
- Maintain the extent of wood-pasture and parkland based on current baseline data (2007);
- Ensure favourable condition or recovering condition of the two known SSSIs by 2010 and three sites of derelict wood-pasture and parkland by 2010;
- Identify potential CWS sites, assess condition and designate by 2008;
- Expand the area of wood-pasture and parkland, in appropriate areas to help reverse fragmentation and reduce the generation gap between veteran trees; and
- Identify and create three new sites in Suffolk by 2010.

4 **SUFFOLK COASTS AND ESTUARIES COASTAL HABITAT MANAGEMENT PLAN (CHAMP) POLICY**

The coastline is a dynamic environment, where habitats and species, under natural conditions and functions, are able to respond to changes in physical processes (e.g. the balance between sediment provision and coastal form). Man's activities, particularly through the construction of coastal defence systems (flood defence and coastal protection) may interfere with and modify physical processes and, hence, the ability of habitats to respond to process change (Guthrie & Cottle, 2002).

The Suffolk coastline and its associated estuaries clearly illustrate this classic cause and effect mechanism and the interaction between man's activities, process modification and habitat response. Significant areas of the Suffolk coastal inter-tidal area, particularly in the southern part of the CHaMP area (e.g. Alde-Ore and Deben estuaries) were subjected to extensive reclamation between the 15th and the 19th Centuries (Guthrie & Cottle, 2002). Integral to this phase of extensive reclamation was the construction of coastal defences in order to protect the fertile agricultural land from flooding. The presence of these man-made defences and the decrease in the width of the estuarine channel (due to reclamation) has constrained the ability of intertidal habitats (notably saltmarsh) to move landward in response to sea-level rise. This inevitably results in habitat loss: the term 'coastal squeeze' has been coined for this effect. With a predicted significant increase in sea-level due to climate change this process is likely to continue, resulting in the loss of greater areas of intertidal habitat (Guthrie & Cottle, 2002).

In some locations habitats protected by man made coastal defences or natural beach systems are designated (under national and international legislation) for the freshwater and terrestrial features that are present (e.g. reedbed habitat at Minsmere, grazing marsh adjoining the Orwell Estuary). Potentially, in situations where internationally designated features are present to seaward and landward of the defences, options to remove coastal defences to enable coastal habitats to migrate landward may lead to direct conflict between the conservation of freshwater (i.e. terrestrial) and coastal designated habitats (Guthrie & Cottle, 2002). This potential conflict between the maintenance of ecological interests either side of artificial boundaries (within an ecological context) is one of the key issues facing the conservation of habitats and species in the coastal environment and represents a significant area of consideration for the CHaMP.

This CHaMP places actions in the context of obligations under the Habitats Regulations, taking account of coastal geomorphology, providing a science-based forecast of the next 30 to 100 years of coastal change driven by sea level rise, the forces of nature and coastal management decisions. Defra policy, set out in the guidance to second generation Shoreline Management Plans, states that the information provided in the CHaMPs must be taken into account during the development of the second generation SMPs. This is to help ensure that, as far as possible, the revised SMP complies with the requirements of the Habitats Regulations. The following section provides an appraisal of the Suffolk Coasts and Estuaries CHaMP (Guthrie & Cottle, 2002).

4.1 Habitat Behavioural Unit (HBU) A: Covehithe, Kessingland to Southwold

Benacre Denes

As Benacre Ness has progressively moved northwards so the protection provided by the structure to this area has decreased. The erosion of the shingle at Benacre can be viewed as a 'natural' process and the loss of the lagoons at the Denes a consequence of this process. Human management of the Benacre coastal section may have reduced the rate of potential loss of these features and under a purely natural scenario the lagoons could have been lost entirely some years ago. Due to the relative lack of significant dynamic shingle movement along this frontage the potential for the 'natural' creation of new lagoons is considered to be limited. Management of beach recharge for this section of the coast would therefore be difficult as it would require an on-going and increasing volume of material to provide the down drift bulk necessary to ensure protection to the lagoon.

Benacre Ness has moved north as the tail of the Ness has been eroded to the south. By retaining the material in the tail of the Ness, protection of the remaining lagoon would be maintained. It is important to recognise the role that defence of this frontage could provide in protecting Kessingland Levels from inundation and preventing loss of a potential area for freshwater habitat creation.

Benacre Broad

During the early part of the 20th Century, Benacre Broad was situated behind Benacre Ness, held in position by the high ground of Covehithe cliffs. The area of lagoons was more extensive, continuing southwards behind the Ness. With erosion of the cliffs and movement north of the Ness, Benacre Broad has been retained within the broad valley base between Long Covert and Boathouse Covert. The Broad is contained in this area by a relatively natural broad-crested bank of shingle and sand. Due to the relatively rapid steepening of the valley sides there is very limited scope for the landward transgression of habitats. There is likely to be a more stable, if shorter shingle ridge beach fronting the two valleys. Under a non-intervention scenario the internationally designated features of Benacre Broad would not be maintained.

Covehithe Broad

Over the last 150 years there has been erosion of some 300 m of coastline at Covehithe Broad with a reduction in the size of the Broad from some 2 ha to less than 0.5 ha. Further erosion would lead to the shoreline translating into a narrower valley profile, reducing both the area of saline lagoon and extent of the shingle bank. In order to achieve no net loss, habitat creation to offset the loss of the saline lagoon habitat and reduction in available area for breeding little tern would be required.

Implementation of a managed realignment policy will result in little change compared to a non-intervention scenario. Any attempt to reform the shingle ridge could damage the function of the ridge with respect to its role in protecting the saline lagoon and acting as a conduit for the passage of saline water. As with non-intervention this policy would not maintain existing designated features and habitat creation to offset loss would be required.

The only technically appropriate action to protect *in situ* would be via erosion control. Typically this could involve construction of a hard point to the south of the area allowing a build up of material to the north. This action would however result in more rapid erosion to the south, in comparison with non-intervention. This approach would create or maintain a dynamically stable shingle bank, while maintaining the position and extent of the lagoon. The works would have a fundamental effect on the evolution of the shoreline and would result in a reduction of shingle to the south.

Easton Broad

Easton Broad, until quite recently (1945), was the largest of the three broads between Southwold and Benacre, being some 25 ha in extent. The Broad has reduced in size to around 4 ha of open broad, which is backed by approximately 120 ha of brackish/freshwater reed bed and associated wet fen and grasslands up into Easton Valley. Under a non-intervention policy, there would be a broadening and lowering of the shingle ridge, with more regular overtopping and increased potential for breaching. With continued erosion, particularly of the Easton cliffs, the shingle ridge will tend to move landward, rapidly closing down the remnants of the existing broad and transgress up valley. Due to the landward transgression of the shingle bank and reedbed dieback, this scenario would provide no significant area of habitat creation in the longer term. Over the period of erosion and transgression, there would be the opportunity for saline lagoons to develop.

The present policy of realignment is considered to be unsustainable in the long term as it will maintain an increasingly unnatural situation, whereby the shingle ridge becomes increasingly vulnerable to cataclysmic failure which would not allow a more gradual transition to a new state to be achieved. The retreat option would achieve some delay in the loss of the designated features (reedbed and wetland habitats to landward) in the short term. It would be expected under this option to maintain a flood defence line at Potter's Bridge to prevent saline inundation of the extensive reedbed and wetland habitats to landward and safeguard these areas from potential deterioration. However, this approach would, ultimately, result in the loss of a large area of reedbed and saline and brackish habitats to the east of Potter's Bridge, an area which is used by SPA designated populations (bittern and marsh harrier).

Potentially, it may be possible to manage a realignment process whereby the shingle ridge fronting the Broad is modified to provide a more stable structure (e.g. a crescentic shape). This would make the ridge less susceptible to breaching but would increase the frequency of overtopping events. As a consequence, the lagoonal area behind the ridge would be likely to increase in size, or excavation could be undertaken to increase its size as part of the overall managed realignment process. As with any realignment of the shingle ridge there would be a resulting loss of reedbed (SPA) habitat and the replacement of this habitat would need to be considered. In order to safeguard freshwater habitats further up the Easton Valley it would also be necessary to combine this option with the construction of improved flood defences at Potter's Bridge (i.e. a sluice at the bridge).

4.1.1 Appraisal

Under the existing policy of non or limited intervention, erosion of the low cliffs between Southwold and Benacre would continue. The roll-back and breach of the shingle bar /

beach system fronting the saline lagoons and wetland complexes at Benacre, Covehithe and Easton would be an on-going process. As a consequence, it is predicted that a significant component of the designated SPA/Ramsar features of this area, notably reedbed, would be lost. The gradual northwards shift of Benacre Ness would also increase the vulnerability of low-lying areas such as the Kessingland levels to tidal flooding. Selective measures such as the installation of a tidal barrier as Pottersbridge in the Easton Valley would safeguard freshwater reedbed and other wetland habitats to landward and therefore maintain part of the ecological interest of this site. Other measures could be undertaken to either reduce the rate of erosion and to maintain areas of habitat in their present locations. However, to do so would represent intervention and the emplacement of engineered structures along a section of coastline which is fundamentally dynamic and open to natural processes.

The long-term loss of the saline lagoons and associated wetland habitats represents a 'natural' progression in the evolution of these features. Saline lagoons of the percolation type are ephemeral features and their presence on this stretch of coastline reflects a period of time when conditions (e.g. sediment supply) were suitable for their formation. Trying to maintain the features is technically feasible but would reduce the dynamic nature of the frontage with potentially knock on effects for other ecological and socio-economic interests. While potentially sustainable from a purely technical perspective, this is not the recommended way forward and there should be an acceptance that these features will be lost over the next 100 years.

It is apparent that unless intervention occurs, there will be significant loss of habitat from the designated areas. As such, areas for the creation of new habitat may need to be sought, with the overall requirement depending to a certain extent on the view as to whether the change is 'natural'. Within the immediate coastal area, Kessingland Levels offers the opportunity to offset predicted freshwater and terrestrial habitat loss, although appropriate development of this habitat would take a number of years. The site is unlikely, without significant modification, to provide replacement for loss of the saline lagoons and shingle banks. In order to advance this measure, it would be necessary to implement and maintain a policy of hold-the-line for this frontage. This policy is currently in place in order to provide protection to the pumping station at Kessingland and prevent inundation of the levels.

4.1.2 HBU issues

Continuing erosion, coupled with an increasing attrition of material to shingle ridges would result in a reduction and potential complete loss of the designated saline lagoons (cSAC interest features). Intermittent, but potentially more frequent breaching and overtopping of the shingle ridges at Benacre and Easton would lead to the loss of brackish and freshwater reedbed habitats and the SPA designated bird populations (bittern and marsh harrier) that these areas support. Changes to the foreshore may result in loss of open coast shingle habitat, potentially leading to the loss or reduction of suitable habitat for breeding little tern (designated SPA interest). The sites form part of a habitat chain for mobile species such as marsh harrier and bittern linking areas to south with the Norfolk Broads.

4.1.3 Areas for mitigation habitat creation

Two areas of potential habitat creation are considered to be suitable along this stretch of coastline, these being at Benacre Ness and Kessingland Levels. The former provides an extensive area of shingle habitat in which new saline lagoons could be excavated. It is considered unlikely that saline lagoons would form naturally along this frontage due to the relative lack of dynamic shingle movement. There are a number of factors that would need to be fully considered in advancing such a proposal:

- The longevity of any newly created lagoons. This aspect would need to be linked to proposed flood defence policy;
- Existing ecological interest of the shingle habitat;
- Existing human use and activity on the site;
- Technical aspects of ensuring saline intrusion into the newly created lagoons; and
- Public perception of undertaking such works in an area of existing interest and activity.

Although it may be technically feasible to create new lagoons within the ness, given the well established human interest of the area and its existing ecological interest (although not internationally designated) it is suggested that such action would be inappropriate. Kessingland levels could provide a significant opportunity for recreation of freshwater reedbed and associated habitats and potentially saline lagoons. Saline input to the levels would have to be managed, and as such it may not be possible to recreate the specific value of the existing saline lagoons along this frontage. In order to advance this measure, it would be necessary to implement and maintain a policy of hold-the-line for this frontage. This policy is currently in place in order to provide protection to the pumping station at Kessingland and prevent inundation of the levels. Although northward movement of the ness could make the Kessingland section more prone to potential breach and inundation in the future, it is considered that the potential opportunity for habitat creation offered by the site coupled with protection of development to the north would justify a hold-the-line policy.

4.1.4 Conclusion for Habitat Behavioural Unit A

The internationally important features of this unit cannot be retained without intervention; there is the potential for loss to both the cSAC and SPA features both in terms of saline and freshwater habitats. Kessingland Levels offers the opportunity to offset predicted freshwater and terrestrial habitat loss from within the HBU, although appropriate development of this habitat would take a number of years. The site is unlikely, without heavy modification, to provide replacement for loss of the saline lagoons and shingle banks, with mitigation for this aspect needing to be considered in the assessment of other HBUs. Alternatively, if a policy on non-intervention is taken, then potentially there may be no requirement to offset habitat losses resulting from this decision. This particularly applies to the saline lagoon habitat present along this frontage. The current policy of managed realignment is only of value in the short term while the mitigation for future losses is addressed. In the longer term, the policy of re-profiling the shingle ridges would be likely to result in increasing damage to this habitat.

4.2 Habitat Behavioural Unit (HBU) B: Blyth Estuary to Dunwich

The Blyth Estuary

The present morphology of the Blyth estuary has developed, over the last several centuries, largely through reclamation up to the principal low water channel. Subsequent loss of defences around Bulcamp Marshes has led to an unbalanced estuary, with considerable stress on sections of remaining defence. The shape and hydraulic performance of the estuary has limited the potential for fine sediment deposition, with little scope for accretion of the mudflats. Predicted sea level rise would exacerbate the current situation of stress on the existing flood defences.

Under a non-intervention policy there would be further deterioration of defences and eventual failure progressively throughout the estuary. Although a flood defence strategy for the estuary has been developed, this is currently not adopted and therefore no agreed policy is defined for the flood defences within the estuary. Current management practice is to maintain the existing defences throughout the estuary. In order to implement this policy, major investment in the upper estuary and to the defences of Reydon and Tinkers Marshes would be required. There is neither adequate benefit nor environmental requisite at present for continuing protection to the upper tidal limits of the estuary.

Southwold Town Marsh

This element comprises managed wet grassland marsh situated behind the defences along Southwold Harbour. Under a non-intervention policy, the defences would fail and there would be a progressive change to saline conditions over the marshes. The failure of these defences, together with the failure of the harbour control structures, would result in a widening of the estuary mouth and could allow a change in tidal pattern within the estuary. This could potentially increase net deposition of fine material throughout the estuary. Under this non-intervention scenario the internationally important features of the element would not be maintained resulting in the loss of the lowland wet grassland and the SPA/Ramsar interests that this supports.

Current management practice is to maintain the existing defences. While requiring continued and possibly increasing investment and effort, the line of the defence is sustainable. This approach would maintain the internationally designated features to landward of the defences without specific damage to other designated ecological interests within the HBU. Maintaining this element would maintain the control the estuary imposes on the immediate coastline.

Tinkers Marsh

There is considerable stress on the form of the estuary in maintaining the defences between Reydon and Tinkers Marsh. Under a non-intervention scenario, the internationally designated features of Tinker's Marsh would not be maintained. There maybe a requirement to offset the loss of terrestrial habitat through habitat creation. There is the potential for saltmarsh creation and development of transitional habitats up to the heathland below Squires Hill. The main habitat change, without intervention, would be to increase the area of intertidal mudflat, which would provide additional area for wintering waterfowl thus increasing and supporting this ecological aspect of the SPA.

Current management practice is to maintain the existing defences, although at present only minimal maintenance is carried out. To maintain the defences, even in the short term, there would have to be significant investment. In order to justify this, there would have to be long term commitment, potentially leading to an inflexible approach to both management of defences and the natural environment of the estuary. With a recognised need for responsive management, in the face of climate and sea level change, this approach is considered unsustainable.

As a result of concerns over sustainability, an alternative scenario is considered whereby there is a realignment of the estuary channel through the Tinkers Marsh area. The intent, would be to allow natural change to occur and for transitional habitat from intertidal to higher ground to develop.

Dunwich to Westwood Marshes and Shingle Banks

This division of the coastline comprises three principal, but integral areas; Westwood Marshes; the valley of the Dunwich River (Dingle and Reedland Marshes) separated by the high ground of Dunwich Forest and Dingle Great Hill; and Corporation Marshes forming the confluence between the two other two areas. All three areas are protected on the open coast by a shingle bank that stretches between the harbour structures of the Blyth and Dunwich Village.

The shingle bank has developed as a result of long term erosion of the Blyth/ Dunwich delta, moving back to form the present coastline. Movement of the bank over the last century has been relatively slow, on average approximately 0.5 m per year, which emphasises the basic stability of the bay. The frontage is, however, dynamic with movement of material both north and south, and regular overtopping and flattening of the artificially maintained steep shingle ridge. There is a problem with a lack of new material being transported along the frontage, such that continued retreat and continual reworking of material is increasingly creating a fragile and unsustainable defence. Under a non-intervention policy, it is likely that there would be a relatively rapid dissolution of the shingle bank, with frequent breaching and overtopping.

Current management practice is to allow the existing defences to retreat; this involves responding to weakening or breach in the shingle bank, reforming the ridge to maintain its height and general integrity. Continuing with this policy is likely to become increasingly difficult, creating an ever steeper and more vulnerable profile. As a major failure becomes inevitable, the effects of the policy would effectively revert to that of non-intervention.

4.2.1 Appraisal

Within this area of the CHaMP there are two issues critical to the future development of the internationally designated habitats and the overall extent and distribution of ecological interests. The first issue concerns the future management of the Blyth Estuary. The present morphology of the estuary has developed, over the last few centuries, largely through reclamation of the former estuarine floodplain up to the principal low water channel. Subsequent loss of defences, around Bulcamp Marshes, has led to an unbalanced estuary, with considerable stress on sections of remaining defence. With sea-level rise, the predicted physical development of the Blyth Estuary

will increase the stress placed on the current flood defences. Maintaining the existing line of defence, although technically feasible, would become increasingly costly and unsustainable in the longer term. Continued coastal squeeze would result in the loss of saltmarsh habitat and although this would lead to a concomitant increase in intertidal mudflat, this area would decrease over time due to the landward migration of the Low Water Mark. Selected realignment of the defence line is seen as the most sustainable approach to dealing with this issue. On the basis of analysis of the predicted morphological change to the estuary and an examination of the present defence line configuration it is suggested that realignment of the defences to Tinker's Marsh on the southern side of the Blyth and Robinson Marsh towards the mouth of the estuary should be undertaken. Of these areas, Tinker's is an area of designated SPA and Ramsar wetland habitat and thus realignment would effectively lead to the loss of the existing ecological interest of this area.

Within the Blyth Valley, but outside of the designated SPA / Ramsar, the valley section immediately upstream of the A12 is viewed as a critical area to the overall management of the estuary system. The flood defences to the tidal channel in this area are in poor condition and without significant works to them a large area of the Blyth Valley would be inundated. This would lead to a large increase in the tidal volume of the estuary and result in the erosion of downstream estuarine habitats (notably saltmarsh) and also increase the pressure on flood defences to other sections of the estuary. The continued maintenance of flood defences to this area is therefore a crucial aspect of the overall management of the estuary. If the flood defences within the Valley are maintained then this also opens up the opportunity to improve the management of the valley floor riverine habitats and to create a significant area of freshwater wetland habitat (e.g. grazing marsh, reedbed), which could mitigate the potential loss of freshwater wetland habitats within other parts of the CHaMP area.

Overall the opportunity exists to increase the extent of estuarine and wetland habitats within the Blyth Valley to create a more sustainable and ecologically functional suite of habitats. Potentially areas such as Tinker's Marsh offer the opportunity for the creation of estuarine-terrestrial transitional habitats, which are, due to the extensive construction of defences, rare within the Suffolk CHaMP and wider coastal areas. These transitional habitats provide the opportunity for the establishment of species assemblages and communities typical of 'natural' systems which could be viewed as a benefit over the maintenance of similar features within 'artificial' and managed locations.

The other main issue within this frontage is the predicted evolution of the shingle ridge fronting the coastal section between Walberswick and Dunwich and the habitats to landward which are protected from extensive and potentially detrimental tidal inundation by this ridge. The prediction under sea-level rise and increased storminess is for the shingle ridge to continue its gradual roll-back. If existing management measures are continued (i.e. reforming of the ridge following overtopping and breaching) the potential for catastrophic failure is increased as the morphology of the ridge is effectively artificially maintained in a state which is out of keeping with the prevailing physical conditions. It is considered that the most sustainable option within the timeframe of the CHaMP would be to allow dynamic processes to operate along the open coast, but to provide a retired defence to landward in order to maintain much of the reedbed and wetland complex of Westwood Marshes. However, even under this option there is the possibility that significant tidal inundation could occur and therefore consideration should

be given to seeking sites for the creation of new wetland habitats that could eventually replace those present at Walberswick.

Inundation of the area to landward of the shingle barrier would not result in the loss of ecological interest but a change and potentially an interesting complex of brackish-saline coastal habitats (e.g. saltmarsh, saline lagoons etc.) could develop within the site. While this would replace the existing interest it would lead to the creation of a functional and dynamic section of coastline with its integral habitats and ecological interest. The potential for some interesting transitional brackish water habitats (e.g. heathland, freshwater springs/seepages and woodland) could be realised. It is likely that a requirement will exist for the creation of freshwater / brackish grassland and reedbed under the continued policy of re-profiling the shingle bank between Dunwich and Walberswick. Potential sites for the replacement of this habitat include Kessingland Levels and the Blyth Valley (upstream of the A12). Between them these sites have the capability to provide in the order of 500 ha of suitable land which would more than offset loss from this area and from Benacre to the north. The section between Walberswick and Dunwich represents an example of the classic issue of trying to deal with dynamic change whilst ensuring protection (i.e. maintenance) to existing designated features. In the time period covered by the CHaMP (i.e. less than 100 years) it may be technically feasible to maintain features to landward of the shingle barrier. However, over the longer term and under accelerated sea-level rise this situation is not considered to be sustainable and therefore consideration should be given to seeking sites for the creation of new wetland habitats which could eventually replace those present at Walberswick.

It would not be possible to replace in entirety the existing diverse ecological interests of the wetland habitats at Walberswick. The site is in effect unique, but then this attribute can be applied to all sites, as the physical, biological and human components that contribute towards the overall ecological interest of an area vary from site to site. Certainly there are ecological elements of the wetland habitats at Walberswick that could be relatively easily replaced. Habitat creation schemes elsewhere in the UK demonstrate that it is feasible to create extensive areas of reedbed and wetland habitats over relatively short timescales. In this context it should be noted that the reedbed / wetland mosaic at Walberswick has only been in existence since the 1940's when former grazing marsh was flooded as a defence against invasion during World War II. Colonisation by key species typical of habitats such as reedbed can occur relatively rapidly, including all of the bird species associated with freshwater reedbed (bittern, marsh harrier and bearded tit) for which sites such as Walberswick are important. The same applies to many of invertebrate species, although some would appear to be coastal specialists such as the white mantled wainscot moth *Archanara neurica*, which is only found in the UK in the coastal reedbeds of Suffolk, although it has a much wider distribution in mainland Europe.

The invertebrate assemblage at Walberswick-Dunwich reflects the diversity of wetland habitats present at the site. Many of the invertebrate species present are associated with freshwater-brackish transitional habitats and the creation of new freshwater reedbed / wetland habitat away from the coast would not replicate these types of niches and therefore not compensate for the potential loss of some species from the area if inundation were to occur. However, a change to a tidally influenced system at Walberswick would be unlikely to lead to the complete elimination of transitional niche habitats (e.g. brackish-freshwater) and potentially the extent of some of these habitats could be increased. While ecological change would therefore be significant the impact

on existing invertebrate communities and populations may not be as drastic as first thought. This aspect also has to be considered against the potential new niches and ecological interest that could be created through breakdown of the shingle barrier and inundation of the existing wetland complex.

4.2.2 HBU issues

Continued coastal defence management work on the immediate coastline has the potential to damage cSAC (annual vegetation) and SPA / Ramsar interests. Significant loss of ecological interest could occur over the long term due to failure of the fronting shingle ridge and tidal inundation of freshwater and brackish wetland habitats to landward. Realignment or uncontrolled failure of defences within the Blyth estuary would result in significant change to existing designated ecological interests.

4.2.3 Areas for mitigation habitat creation

A major factor along this stretch of coastline is the opportunity for either mitigation or the adjustment of the balance of habitats within the existing designated areas. Tinkers Marsh is clearly viewed as a potential site for realignment, with the opportunity of not just creating additional intertidal area but also providing saline to heathland / terrestrial transitional habitat. Similarly, while failing to maintain the main area of Westwood Marshes incurs a massive and unacceptable loss of reed bed and freshwater fringe habitat, constructive management of the seaward edge of this area could create important new coastal saline features, potentially compensating for the loss of saline lagoons to the north of Southwold (see **Section 3.1**).

In addition to these internal areas there are several areas external to the existing designated sites which could be incorporated to provide mitigation for achieving a better physical and ecological balance within the HBU. Two areas considered are Robinson Marsh, close to the mouth of the Blyth estuary and the various marshes upstream of the A12 bridge in the valley of the Blyth River. These latter areas comprise river valley floodplain semi-improved to improved grassland habitat with some areas of marshland, which is of existing ecological interest (a CWS). Management of this floodplain could provide additional wet grassland and wetland habitats (e.g. reedbed, open water) which over time could potentially become of greater ecological interest and importance.

Enhancement or conversion to wet grassland habitat would require the improvement of flood defences to prevent tidal inundation upstream of the A12. This would have the added benefit of maintaining a reduced tidal volume within the estuary, potentially relieving pressure on defences lower downstream within the estuary. There is potential for loss of this opportunity due to the poor condition of the existing defences above the A12. Failure of these defences, along with an agreed strategy to maintain them as fresh water habitat, could result in their loss to intertidal habitat with transitions to brackish water and terrestrial habitat. In addition to this, Robinson's Marsh, opposite Southwold Harbour could provide an opportunity for the creation of intertidal habitat through realignment of the existing defence line.

4.2.4 Conclusion for Habitat Behavioural Unit B

The internationally important features of this unit cannot be retained fully, either by intervention or by allowing the natural evolution of the coast and estuary to prevail. The

main threat within this unit is the loss of freshwater habitat rather than, as the case of HBU A, the loss of coastal habitat. There are concerns also as to the ultimate sustainability of an approach to maintain defences throughout the Blyth Estuary. It is considered that within this HBU there is significant potential to create a more sustainable coastal environment, while looking either to place defence of freshwater habitat on a more sustainable footing or move it to mitigation areas further inland. The scenarios considered would all make use of the area above the A12 Bridge. In addition, mitigation would be required outside the HBU, but within the CHaMP area.

As a corollary to this, the unit would provide scope for mitigatory habitat for loss in other areas, while still providing, potentially, overall important additional intertidal areas. It is important that an appropriate strategy for the Blyth is agreed in the near future as this is fundamental to allowing interchange of habitat to be taken forward with confidence.

4.3 Habitat Behavioural Unit (HBU) C: Minsmere

Dunwich Heath

There is likely to be continued erosion of the cliffs. Over the last century this has resulted in annual retreat in the order of 1 m to 2 m, with it being estimated that this has provided some 40,000 m³ of sediment to the nearshore system per year, although this supply varies on an annual basis and in the type of material (sand or coarser pebbles from the Westleton Beds). This material is distributed both north and south along the shore and indeed may also act to feed the offshore banks indirectly, with it being understood to be important to the Minsmere frontage.

The only means of protecting *in situ* the designated feature would be the full protection of the cliffs. This would introduce a management approach to the whole frontage which would be likely to have a detrimental impact on the development of the shore and is not considered appropriate.

Minsmere

The frontage has been relatively stable over the last century and is envisaged to remain so; there is continued erosion of the cliffs to the north and some intermittent periods of erosion to the south of Minsmere. Under a non-intervention policy the erosion of the Dunwich cliffs may well result in a weak area developing in the defence line between the intersection of the cliffs and the Minsmere bank. Should there be a breach at this point there is likely to be major inundation of the Minsmere reserve, resulting in the conversion of the current freshwater/ brackish reedbed and freshwater marsh area to saline conditions if the breach remained open. As these conditions develop, with the disruption of drift along the frontage, the position of the breach may well relocate to the old course of the river, resulting in a permanent inlet to a new estuary. There would be likely to be significant development of saltmarsh and mud flats, with the possible further loss of freshwater grassland towards the back of the site. The establishment of a new estuary system (long term) would eventually lead to the creation of an ebb delta, which would build out from the coastline. As a result, new areas of shingle and sand dune habitats could develop at the mouth of the estuary. This could increase the extent of suitable conditions for the establishment of annual vegetation and potential breeding area for species such as a little tern.

4.3.1 Appraisal

The geomorphological predictions for the Minsmere frontage indicate that over the time period under consideration, the frontage is likely to be relatively stable. At Dunwich cliffs, the principal loss of designated habitat would be cliff top heathland (cSAC/SPA). However, it is recommended that the cliffs remain undefended to ensure that the supply of sediment the cliffs provide is maintained, particularly given that this supply may be important in supplying material to the Minsmere frontage to the south. The loss of heathland, based on current rates of erosion, would amount to approximately 20 ha. This loss can be attributed to natural change and therefore the loss may not need to be replaced. However, if it is determined that it is important to maintain the overall resource it is suggested that a new area of heathland could be re-created on existing agricultural land adjacent to heathland in the Minsmere-Walberswick area over the CHaMP period. The gradual roll-back of the shingle beach / barrier fronting the wetland complex at Minsmere would result in the loss of some shingle and sand dune habitat along the immediate coastal fringe; however, features to landward could be maintained in situ. This would require some limited intervention in the form of strengthening any potentially weak sections of the flood defence to landward of the barrier. If no works were taken to strengthen the existing, retired defence then potentially non-intervention may result in the formation of a new estuary system / embayment at the Minsmere Levels due to breach and breakdown of the shingle barrier. While the formation of a significant area of new coastal and estuarine habitats would be beneficial with respect to the overall extent of these habitat types and the longer-term functionality of the coastal system, the loss of the features to landward would constitute a major change in the ecological interest of the area. Again, as with the situation at Walberswick-Dunwich, in the longer term, consideration should be given to undertaking large-scale habitat creation to replace terrestrial and freshwater features away from the immediate coastline. The context of such works with respect to areas such as Minsmere should be borne in mind. As many of the wetland habitats at Minsmere and Walberswick have been in existence for less than 60 years (since the end of World War II), such decisions should be made as early as possible, in order to allow significant time periods (i.e. >50 years) for wetland complexes to become established. This approach would enable decisions on the establishment of dynamic coastal functionality to be more easily made and for future management at sites such as Minsmere to be geared towards alternative habitat suites.

Under the existing policy it is unlikely that there will be a significant requirement for the replacement of designated habitats. Both the loss of heathland and sand dune could be attributed to natural change and therefore there may be no requirement to directly offset their loss. Potentially, in the longer term, there may be a need to replace the freshwater habitat complex at Minsmere and if this is the case then approximately 350 ha would be required. Potential replacement sites include former estuarine areas around the Alde-Ore and the Deben which between them could provide almost 1500ha of suitable land. Alternatively, the potential exists for the creation of a new wetland complex away from the immediate coastal area (e.g. the Fens). However, significant consideration would have to be given to the likely ecological differences between an inland and coastal site and whether such differences would be acceptable with respect to the Habitats Directive.

4.3.2 HBU issues

The cliffs at Dunwich will continue to erode with the loss of cliff top heathland vegetation (designated cSAC / SPA). Any failure of the natural shoreline defence and secondary embankment to landward at Minsmere would cause saline inundation and therefore potentially result in significant change to existing designated habitats and features, depending on the scale and duration of inundation.

4.3.3 Mitigation Habitat

There is scope for mitigation habitat within the HBU area for heath and potentially wet Grassland, with these areas being located behind and to the north of the designated sites.

4.3.4 Conclusion for Habitat Behavioural Unit C

The internationally important features of this unit cannot be retained fully, either by intervention or by allowing the natural systems of the coast to continue. The principal loss is in relation to cliff top heathland, although there may be a potential need for the recreation of coastal fringe habitats due both to human interaction and the localised landward transgression of the shoreline. Allowing landward movement of the shore would, however, then infringe on terrestrial features within the main bulk of the Minsmere-Walberswick site. There is believed to be adequate area adjacent to the designated sites to allow for the creation of heathland habitat to offset loss from within the HBU (e.g. through reversion of suitable agricultural land on sandy substrates).

4.4 Habitat Behavioural Unit (HBU) D: Alde-Ore Estuary and Orfordness

Alde / Ore

The estuary has developed in a constrained manner through reclamation of large areas of intertidal land (some 2500 ha within the system). Under a non-intervention policy the defences around the estuary would be allowed to deteriorate and in time would fail. Due to the relatively low level of many of the surrounding reclaimed areas and therefore, the high energy inundation of these areas, existing fringe saltmarsh is likely to be lost with creation of mudflat within the areas of flooding. This problem would be exacerbated as flood areas add to the volume of the estuary, increasing flow along the remaining defences. Despite the possible creation of important new mud flat habitat, this would tend to reduce the variety over the estuary, and certainly within the existing designated boundaries. Compensatory habitat to replace losses to landward (grazing marsh, reedbed) may need to be sought.

The current management practice, in the absence as yet of adopting an estuary strategy for defence, is for ad hoc response maintenance and repair of existing defences, (the EA no longer have responsibility for Lantern and Kings Marshes defences and the northern Lantern Marsh and defences at Havergate Island are abandoned). Under realistic sea level change scenarios, maintenance of all defences would become increasingly difficult and increased flow pressure would increase the loss of fringe habitat. Furthermore, with the almost inevitable loss of Lantern and Kings Marsh and the consequential increase in intertidal area of some 350ha and increase in tidal volume

of some 20%, there would be substantial increased pressure over the lower reaches of the estuary. Almost certainly, an increase in tidal volume of this nature would restrict the ability for realignment elsewhere within the estuary.

It has already been identified above that realignment over Lantern and Kings Marsh area fails to address this problem, potentially increasing the problem of sustainability, while not dealing with the primary stress points of the estuary. Hazlewood Marsh and Boyton Marsh have been considered for realignment, primarily due to a lack of economic justification for continuation of their defence. Neither of these areas is critical to the management of the estuary element and therefore neither is considered in the assessment of this element of the HBU, although both are considered later, as elements in their own right and as potential mitigation areas respectively.

The most critical area of stress within the estuary is around the Aldeburgh bends. Due to increased flows through this area, there is a significant loss of saltmarsh fringe and potential for further loss in the area of Cob Island and along the High Street (East Iken Marsh) frontage. Realignment, within certain limits, of Aldeburgh Marshes together with a re-alignment of the tip of the Sudbourne Marsh, could potentially relieve pressure on the fringe habitats as well as the defences in this area. Realignment of this form would provide opportunity for habitat creation (within the aligned area) but is also likely to result in some habitat loss (where breaches are created) of the saltmarsh fringe.

Butley

The estuary is a relatively stable offshoot to the main Alde / Ore, with reedbed and saltings both along the fringes of the channel and more significantly at the head of the estuary. Under a non-intervention policy, the defences around the estuary would be allowed to deteriorate and in time fail, with the failure of the defences resulting in loss of key features within the existing designated area as flooding occurs to low-lying land behind the defences. There would also be loss of reedbed habitat further upstream under accelerated sea level rise.

The abandonment of defences would substantially increase the potential for intertidal habitat creation (outside the current designated area) but would also result in critical increases in the tidal volume of the main estuary. This would therefore fail to maintain existing internationally designated features although a natural and ecologically functional estuary tributary would result and the area of intertidal habitat would increase. Depending on likely ecological succession there could be a requirement to offset, through habitat creation, the loss of reedbed habitat from within the site. Under realistic sea level change scenarios, maintenance of defences is sustainable, although there would be loss of fringing saltmarsh habitat and brackish water reedbed and saltmarsh at the head of the estuary.

Hazelwood

The defences of Hazelwood marshes are in generally poor condition. Even so, there is little stress in relation to estuary behaviour and there is no technical reason for not maintaining these defences. Under a non-intervention policy, the defences would be allowed to deteriorate and in time would fail. The individual increase in estuary volume would not be significant in terms of stress elsewhere in the estuary although its cumulative impact, should other defences be abandoned, would need to be examined.

This approach would provide opportunity for the development of new intertidal areas with, because of its position, a realistic chance for the area to warp up to provide saltmarsh. This area offers a significant opportunity for mitigation habitat in line with the ecological function of the estuary. The scenario, however, fails to maintain the existing internationally designated feature (wet grazing marsh) and as such mitigation for the wet grassland may have to be sought.

Orford Ness and Marshes

There is a reducing supply of sediment from the north onto the Orford Ness frontage. The result of which is in effect, a gradual straightening of the shoreline between Aldeburgh and Shingle Street. Such change would be over a very long time scale (500 to 2,000 years) but provides the context over which the change should be viewed. The present day impact of this process is the vulnerability of the neck of land between the river and the sea at Slaughden. This has been variously protected by hard defences and more recently by beach management, bringing material from the designated areas of beach seaward of the Lantern Marshes. In the absence of some form of management it is likely that the neck of land would breach and probably in the longer term remain as a new opening to the Alde Estuary. Failure of the Kings and Lantern Marshes would result in substantial loss of designated freshwater and maritime grassland as well as some saline lagoons. Although there would be significant development of intertidal and transitional habitat, mitigation may need to be considered to offset the loss of some ecological elements (e.g. saline lagoons). To protect the interests of the marshes full defence could be continued. While feasible, such an approach would be onerous and would increasingly maintain an artificial and vulnerable situation with respect to ecological interests. The approach would assume continued high level protection on the seaward side of the Ness and this, in the longer term, may similarly become onerous, requiring artificial strengthening of the shingle face or retired flood defences. Either way, over time such operations may become more frequent and may result in extensive damage to the shingle ecology (both perennial and annual vegetation) of the coastline. This approach may eventually require extensive mitigation measures and is not considered to be sustainable in the long term.

Shingle Street

Material moves down the coast from Orford Spit and is transferred onto the Shingle Street frontage. Under a non-intervention approach, there would be little change in the processes to the north of the element. Material would still move south feeding the frontage. However, under this approach East Lane would not be defended and as it fails it would increasingly allow a greater quantity of material to move southwards.

A policy of maintaining the existing line by defending East Lane would maintain the coastal processes, allowing the lagoons to form and to be lost periodically. In strict terms, this approach would fail to protect these important features. However, in practice this process allows a continuing revitalisation of the lagoon system, with it being arguable, therefore, that no mitigation is required and that the policy for the frontage is therefore sustainable.

4.4.1 Appraisal

There is recognition in the designation of the Alde / Ore and Butley as a cSAC, that the estuary is an important functioning system. This same interaction is reflected in the physical performance of the estuary, not least in the balance achieved over the lower reaches between estuary flow and coastal dynamics. The current management practice for the main estuary and the Butley, in the absence as yet of adopting an estuary strategy for defence, is for ad hoc response maintenance and repair of existing defences. The most critical area of stress within the estuary is around the Aldeburgh bends. Due to increased flows through this area, there is a significant loss of saltmarsh fringe and potential for further loss in the area of Cob Island and along the High Street (East Iken Marsh) frontage.

Under realistic sea level change scenarios, maintenance of all defences would become increasingly difficult and increased flow pressure would increase the loss of fringe habitat. Furthermore, with potential short-medium term failure of defences to Lantern and Kings Marsh (the defences to these areas are the responsibility of the National Trust) and the consequential increase in intertidal area of some 350 ha and increase in tidal volume of some 20%, there would be substantial increased pressure over the lower reaches of the estuary. Almost certainly, an increase in tidal volume of this nature would restrict the ability for realignment elsewhere within the estuary. This overall approach restricts balanced responsive management of the estuary, while resulting in a loss of internationally designated intertidal habitats. This approach would require habitat mitigation and is considered to be unsustainable in the longer term. The defences to Hazelwood marshes are in generally poor condition and will require upgrading. Even so, there is little stress in relation to estuary behaviour and there is no technical reason for not maintaining these defences, thereby maintaining the SPA / Ramsar designated grazing marsh to landward.

Along the open coast frontage of Orfordness there is a reducing supply of sediment from the north, resulting in an increasing loss of material along the face of the Spit (south of the Ness). In effect this is leading to a gradual straightening of the shoreline between Aldeburgh and Shingle Street. Such change would be over a very long time scale (500 to 2,000 years) but provides the context over which the change should be viewed. The present day impact of this process is the vulnerability of the neck of land between the river and the sea at Slaughden. The potential for a breach at Slaughden and the impact that this could have on the rest of the system represents one of the key topics for the management of the estuary. The neck of land between the river and the sea at Slaughden has been variously protected by hard defences and more recently by beach management, bringing material from the beach seaward of Lantern Marshes. In the absence of some form of management it is likely that the neck of land would breach and probably in the longer term remain as a new opening to the Alde Estuary. Based on a best estimate of likely evolution of the estuary it is considered that as a breach or entrance developed at Slaughden, the complex interaction of tide through both entrances would be likely to result in increased water levels in the vicinity of Kings Marsh, although flows would be reduced. This increase in water level would make the Kings and Lanterns Marshes more vulnerable to flooding and, due to the lack of defence maintenance, failure would result. It remains uncertain how flows would distribute between the two entrances but there is a distinct possibility that the northern entrance may dominate. Certainly there would be a reduction in flow within the Ore entrance and,

as a consequence, there is likely to be an increased rollover of Orford Spit towards the marshes of Boyton and Orford Haven.

Whether the reduced flow within the river Ore would be sufficient to maintain its entrance is again uncertain; there is a possibility that Orford Spit may, in time, attach itself to the shoreline. Although there is the potential that a breach at Slaughden would lead to the development of a more sustainable estuary form, the implications for the designated habitats and species (as well as socio-economic interests) are extremely significant. The potential changes have not been investigated in detail in the CHaMP and it is recommended that this would require a separate and more detailed study. From Orford Spit, sediment moves down the coast and is transferred onto the Shingle Street frontage. This transfer can occur as a gradual feed through the series of banks at Orford Haven or as a process by which the banks detach from the northern side of the Estuary mouth and attach themselves to the Shingle Street frontage. The shoreline to the south of Shingle Street is maintained at its southern end by the promontory of East Lane. The bay between Shingle Street and East lane is relatively stable in alignment, although material feeding from the north tends to make its way along the frontage and is lost to the coast further south. The overall prediction for the Alde-Ore system is that the designated internationally important features cannot be retained in their existing extent and distribution either by intervention or by allowing the natural systems of the coast and estuary to continue. Allowing 'natural' change to occur could have significant consequences with respect to the entire morphology of the estuary and its associated habitats and socio-economic interests. While significant gains in coastal intertidal habitats could be gained the overall change is of such a scale that it would be difficult to justify. In order to address potential habitat change within the system a number of alternative defence scenarios and overall approaches to the management of the estuary have been considered. The main objective behind the alternatives is to allow a more controlled and adaptive approach to be taken.

The main scenario considered is one whereby all defences within the estuary are maintained apart from those to Kings and Lantern Marshes on Orfordness. This is because it is considered that it is almost inevitable that there will be change to Orfordness and in order to prevent significant disruption to the rest of the estuary system and allow a more natural transition to a new ecological state / equilibrium this change should be managed. It is proposed that the line and integrity of the estuary defences to Kings and Lantern Marshes should be maintained but no attempt made to raise their level, in effecting lowering the defence level as sea level rise occurs. This would allow, gradually, more frequent tidal inundation from extreme events over the next 50 years. A similar attitude would be taken to the seaward defence in not attempting to maintain the current defence standards in the face of sea level change. The management of this in relation to the use of the marshes to act as control to mitigate extreme increases in tidal volume would need to be examined in more detail. The longer-term intent of this approach would be to allow movement to a saline dominated environment, over the next 50 to 100 years, which would minimise the need for future intervention.

The ecological interest of the Ness would therefore largely be left to evolve, albeit through a more controlled and gradual process. The main impact would be a change from existing terrestrial grassland habitats at Kings and Lantern marshes into saline features, probably intertidal mudflat and saltmarsh, which would provide benefits with respect to SPA estuarine bird populations. It is likely that there would be a loss of saline lagoon interest due to the overall development of intertidal habitat. The approach is

sustainable but would require a long-term programme of mitigation for the loss of terrestrial SPA / Ramsar designated features and the cSAC saline lagoons.

The loss of the existing SPA / Ramsar brackish grassland, grazing marsh and reedbed at King's and Lantern Marshes (approximately 350 ha) could be offset by the management of land around the estuary in order to re-create these habitat types. Suitable areas include the main block of Sudbourne and Orford Marshes (approximately 500 ha) and Gedgrave Marshes (approximately 200 ha) where wet grasslands and potential reedbed development could be undertaken at the heads of freshwater flows into the area. Similarly, areas adjacent to the Butley would provide appropriate mitigation for these wetland habitats (e.g. Stone Marshes, 150 ha). Offsetting the long-term loss of shingle habitat from Orfordness and the loss of saline lagoons from Kings and Lantern Marshes is more problematic. It is considered impractical and unsustainable to replace the shingle habitat, as this would require the import and retention of sediment in place. Potentially, saline lagoon habitat could be engineered and incorporated into wetland habitat creation schemes to replace the brackish grassland lost from the estuary.

Two other potential habitat creation areas are Boyton Marsh and Aldeburgh Town Marsh. Both areas offer the potential for the creation of either wet grassland or intertidal habitat. Re-alignment of Aldeburgh Town Marsh may be advanced as a solution to dealing with the stress on the defences in this area rather than solely as a habitat creation measure. There is therefore quite extensive scope for a balance of habitat extent and distribution to be achieved, while still maintaining the control of the estuary.

4.4.2 HBU issues

Natural long-term change could cause major change to the existing designated features.

4.4.3 Mitigation Habitat

Within a controlled situation various areas offer potential mitigation. In some areas where these are already within the SPA or cSAC they are included in the assessment tables. These include:

- Kings and Lantern Marshes, with the potential to add to the saline dominant or intertidal areas, at the expense of the existing freshwater and maritime grassland already present; and
- Hazelwood Marshes, with the potential for development as saltmarsh and intertidal mudflat at the expense of the existing wet grassland.

Areas outside the designated boundaries which could be used as mitigation include:

- Boyton Marsh as potential intertidal area or freshwater grassland (143 ha); and
- Aldeburgh Town Marsh, again as potential intertidal marsh or possibly freshwater grassland (100 ha).

The abandonment of both these areas would result in significant increase in tidal prism which could result, in turn, in damage to the inner face of the Spit. Any further realignment over significant flood plain areas is likely to result in failure of the spit and a substantial increase in the loss of intertidal mudflat and saltmarsh within the designated boundary of the cSAC/SPA.

Other areas of mitigation habitat could be found in the main block of Sudbourne, Orford and Gedgrave Marshes. Here, mitigation would be through management as wet grasslands and potential reedbed development at the heads of freshwater flows into the area. The total area of these marshes is 920 ha, although only part of this would be suitable for mitigation. Similarly, areas adjacent to the Butley would provide appropriate mitigation for similar habitat (potential of approximately 460 ha). There is therefore quite extensive scope for a balance of habitat extent and distribution to be achieved, while still maintaining the control of the estuary.

4.4.4 Conclusion for Habitat Behavioural Unit D

The internationally important features of this unit are unlikely to be retained fully, either by intervention or by allowing the natural systems of the coast and estuary to continue. The recognised intent of management of this area is to maintain control of the way in which the estuary and Orford Spit behave, with the main concern being to achieve a balance of habitats throughout the estuary. There will be a continuing loss of saltmarsh and intertidal mudflat and a threat of loss of reedbeds as a result of anticipated sea level rise.

Within the estuary (but outside the existing designated areas) several potential areas where mitigation can be sought for loss of wet grassland and reedbed have been identified. There is, therefore, scope to concentrate on re-creation of mudflat and saltmarsh by realignment from defended areas within the designated areas, which are limited by their suitability and their impact on the response to increased tidal volume. Alternative approaches would include the realignment of the defences at Boyton and Hazelwood. However, in neither case would this relieve existing pressure on a critical part of the estuary. In the case of Boyton, realignment could lead to the loss of saltmarsh fringing the defences. It would also exclude Boyton (which is already in part managed as a wet grassland area) from use as mitigation for loss of this habitat elsewhere. In the case of Hazelwood, this would result in the loss of already established and designated wet grassland and would be contrary to the presumption of defence *in-situ* where possible. As such the findings of the CHaMP indicate that realignment of this area is unnecessary, with this being used to update the findings of the estuary strategy.

4.5 Habitat Behavioural Unit (HBU) E: The Deben Estuary: Bawdsey to the Dip including Estuary

The Deben Estuary

The Deben Estuary has developed, over the last several centuries, with reclamation occurring within the lower estuary, up to the principal low water channel. In the upper part of the estuary there has not been a similar restraint, reclamation being confined to offshoot valleys. There has been considerable development of saltmarsh within the natural width of the upper estuary, which is now suffering from erosion due to coastal squeeze. However, realignment of defences will carry with it potential problems in that it may result in damage to existing fringing saltmarsh and may also result in excessive pressure on defences and in particular, the mouth of the river. There is a need, however, to provide mitigation for the loss of saltmarsh habitat if the maintenance of

defences continues. Various areas have been identified within the estuary envelope and these would provide adequate sites for intertidal habitat creation.

4.5.1 Appraisal

Current management practice is to maintain the existing defences throughout the estuary, which will require significant investment but is sustainable. The approach would, however, lead to a continuing loss of SPA designated saltmarsh habitat which would require mitigation in order to offset loss. This policy would also maintain the potential for freshwater grassland habitat creation within areas of low-lying land on either side of the estuary. Selective realignment from critical defences would provide the opportunity for the creation of intertidal habitat and offset the loss of saltmarsh vegetation while maintaining control of the development of the estuary. This provides a more sustainable approach without extensive disruption to the rest of the estuary system or open coast processes. Particular areas identified for realignment within the estuary strategy are at Melton, Martlesham Creek, White Hall, Waldringfield, Ramsholt Lodge and Ramsholt and at Nursery Wood. The loss of saltmarsh habitat from within the Deben Estuary could not be offset from within the confines of the existing SPA / Ramsar designated area and therefore re-alignment of areas adjacent to the estuary (as listed above) could provide for the predicted loss of saltmarsh habitat.

4.5.2 HBU issues

There has been extensive loss of saltmarsh over the last 30 years (71 ha). The small wet grassland areas adjacent to the estuary are an important supporting habitat to the SPA, although not designated. Similarly, the extensive areas of agricultural land to the lower estuary are important feeding and roosting areas for some waterfowl species.

4.5.3 Mitigation Habitat

The maintenance of the designated features in-situ is not an option; minimal disruption to both the estuary and the existing habitat can be achieved through strategic realignment. This carries with it the necessary mitigation, in that the loss of saltmarsh would be mitigated by the potential for saltmarsh re-creation in the realigned areas.

The CHaMP suggests that further investigation should be carried out to examine in more detail the scope for recreation of habitat within each area. Should any area be unsuitable, particularly those of Melton and Nursery Wood, which offer the greatest opportunity, then mitigation for saltmarsh may need to be sought outside the HBU, with the Alde / Ore HBU D potentially offering scope for this.

4.5.4 Conclusion for Habitat Behavioural Unit E

Due to the continuing loss of saltmarsh within the Deben estuary, the internationally important feature will not be maintained, mainly as a result of coastal squeeze, either against natural constraints or man made defences. Realignment of defences also carries with it potential problems in that: first it may result in damage to existing fringing saltmarsh and secondly that it may result in excessive pressure on defences and, in particular the mouth of the river. There is a need, however, to provide mitigation for the loss of saltmarsh habitat if the maintenance of defences continues. Various areas have been identified within the estuary envelope and these would provide adequate sites for

intertidal habitat creation, although this needs to be investigated in more detail. Further mitigation may be required and could potentially be found in the Alde / Ore or in the area of Hamford Water (Essex).

4.6 Habitat Behavioural Unit (HBU) F: Stour and Orwell Estuaries

4.6.1 Appraisal

There is currently no strategy plan for flood defences within the Orwell. The southern side of the Stour Estuary is covered by the Essex SMP which advocates a general policy of Hold the Line apart from small sections of eroding cliff where the policy is Do Nothing. Within the Orwell, private effort has been put in to maintaining the existing defences at Trimley. Such an approach is seen as being sustainable, but will require considerably greater investment than at present. While this policy does act to defend an important supporting habitat, this is outwith the designation of the SPA. Continued maintenance of the flood defences to grazing marsh habitat at Shotley could reduce the brackish water influence on this site. Additionally, the maintenance of both the Trimley and Shotley frontages would significantly limit opportunities within the estuaries to offset the loss of saltmarsh habitat from within the estuary.

In the Stour Estuary, maintaining the existing defences would have no significant impact on the morphology of the estuary. Under this approach there would, however, continue to be general squeeze on the saltmarsh habitats within the estuary (much of this due to the topography of the system) and no opportunity to re-establish saltmarsh. A hold the line policy would maintain the existing small tributary valleys along the northern side of the estuary. These valleys have some existing ecological interest (e.g. Holbrook) although none of them are included within the SSSI or SPA/Ramsar site. As such they do offer the potential for some small-scale freshwater grassland or intertidal habitat creation.

4.6.2 HBU issues

There is continuing loss of saltmarsh and intertidal area within both estuaries. Trimley provides an important function within the system although this is not recognised within the SPA designation.

4.6.3 Mitigation Habitat

There is little scope for the creation of intertidal mitigation habitat within the designated area, in addition to the Shotley / Trimley realignments, which have already been undertaken.

4.6.4 Conclusion for Habitat Behavioural Unit F

The internationally important features of this unit cannot be retained fully either by intervention or by allowing natural processes to prevail. Potentially mitigation for loss of both intertidal and grassland could be achieved within the general area of the estuaries although not within the existing boundaries of the SPA. Potential areas for compensatory habitat creation would be the Alde/Ore (although this may be limited) or Hamford Water (Essex) area for intertidal habitat.

5 BIODIVERSITY OPPORTUNITIES IN THE SUFFOLK COAST & SUFFOLK COAST AND HEATHS NATURAL AREAS

English Nature (now Natural England) commissioned The Biodiversity Opportunities in the Suffolk Coast & Suffolk Coast and Heath's Natural Areas project in 2004 (Royal Haskoning, 2004) to identify opportunities to enhance, create and restore coastal habitats along the Suffolk coast, within the area covered by this SMP. Environmental enhancement opportunities were sought, with these ranging from potential large-scale habitat creation schemes to small scale habitat management projects that would be able to implement the local Biodiversity Action Plan (BAP) targets.

Each opportunity was considered with respect to current SMP policies and suggestions for revising the policies were produced. These recommendations have been included within this section, where appropriate. It is also of note that a number of the opportunities relate more to the Estuary Strategies than they do to this SMP; this is largely because many of the most promising sites are located within existing or former estuarine floodplain.

The opportunities identified comprised a number of different approaches to coastal management, with these being grouped into the SMP policy options. The most frequent opportunity identified was no active intervention, closely followed by managed realignment. In all cases, both these approaches have been considered in order to allow the coast to behave naturally, allowing habitats to develop and change, wherever possible.

A summary of the opportunities identified are presented in **Table 5.1**, with conclusions that can be drawn from these opportunities and resulting discussion being presented in **Section 5.1**. The opportunities presented were considered without the constraints of socio-economic or feasibility factors. It also must be emphasised that these opportunities are not necessarily comprehensive and that other opportunities may also exist, as described in **Section 4**.

5.1 Potential biodiversity enhancement opportunities

One of the main conclusions drawn from the Biodiversity Opportunities project was that the Suffolk Coast was lacking in opportunities to develop "quick wins", where habitat could be rapidly created without extensive feasibility studies and capital outlay. The opportunities identified tended to be large schemes, which would involve lengthy timescales and major constraints. This is a reflection of the complexity of the Suffolk coast, the interrelationship between estuarine and coastal habitats, the need to consider the evolution of sites and the provision of compensatory freshwater habitat.

5.1.1 Allow natural processes and dynamic behaviour

A paradigm exists in coastal management relating to the fact that the management of freshwater habitats such as grazing marsh and reedbed often requires that coastal and intertidal habitats are fixed and constrained (and thus in an unfavourable condition), while allowing natural processes and dynamic behaviour of coastal habitats invariably results in the loss of freshwater habitats.

Table 5.1 Summary of identified biodiversity opportunities and suggested policy changes to realise the opportunity

Location	Description of Biodiversity Opportunity	Current SMP Policy	Suggested SMP Policy
Benacre Ness	To allow the ness to continue to move northwards along the Suffolk Coast. Loss of saline lagoons within the ness represents natural change, As the ness moves past Kessingland Levels; this provides the opportunity for intertidal habitats and transitions to freshwater habitats to develop in the river valley.	Hold the line	No active intervention
Kessingland Levels	To provide a transition from freshwater to brackish and marine habitats over the epochs of the SMP in this river valley fronted by Benacre Ness, and which is in close proximity to freshwater sites threatened by sea-level rise.	Hold the line	Managed re-alignment / no active intervention
Benacre Broad	To allow dynamic behaviour of coastal habitats.	Do nothing	No active intervention
Covehithe Broad	To allow dynamic behaviour of coastal habitats.	Do nothing	No active intervention
Easton Broad	To allow the shingle ridges to evolve and roll back, enabling the development of saline and brackish habitats, and with compensatory freshwater habitats being replaced in more sustainable locations.	Managed re-alignment	Do nothing
Southwold	To provide intertidal habitat by opening Buss creek to tidal action.	Hold the line	Managed re-alignment
Upper Blyth Valley	To provide transitions from freshwater to marine habitats over the epochs of SMP.	N/A	N/A
Blyth Estuary	Managed re-alignment opportunities to create intertidal habitat.	N/A	N/A
Reydon Marshes	To provide freshwater habitat within the Blyth estuary.	N/A	N/A
Westwood / Dingle	To allow the shingle ridges to evolve and roll back, enabling the development of saline and brackish habitats, and with compensatory freshwater habitats being replaced in more sustainable locations.	Managed re-alignment	No active intervention
Dunwich Cliffs	To allow the continued exposure of coastal cliff habitats dynamic behaviour of coastal habitats	Do nothing	No active intervention
Minsmere	Managed re-alignment of sea defences to allow a greater degree of mobility of intertidal and shingle habitats.	Managed re-alignment	Managed re-alignment
North Warren / Aldeburgh Beach	To allow dynamic behaviour of coastal habitats.	Hold the line	Managed re-alignment / No active intervention
Alde-Ore Estuary	Managed re-alignment opportunities to create intertidal habitat dependent on the outcome of the Alde-Ore Estuary Strategy	N/A	N/A
Slaughden	To allow the shingle spit of Orfordness to evolve and roll back, and to enable the formation of a more sustainable estuary form.	Hold the line	Managed re-alignment / No active intervention

Location	Description of Biodiversity Opportunity	Current SMP Policy	Suggested SMP Policy
Aldeburgh marshes Sudbourne marshes Boyton marshes	To provide freshwater or intertidal habitats over the epochs of SMP.	N/A	N/A
Shingle Street, East Lane, and Bawdsey hinterland	To allow the shingle ridges to evolve and roll back, enabling the development of saline and brackish habitats and transitions.	Hold the line	No active intervention / Managed re-alignment
Deben estuary	Managed re-alignment opportunities to create intertidal habitat.	N/A	N/A

This paradigm can be resolved by promoting the adoption of certain policies which allow more dynamic behaviour and natural evolution of coastal habitats. These habitats would be able to develop and evolve in response to sea level rise over various timescales depending on the location and freshwater habitats would be replaced at more sustainable locations at the heads of river valleys or in fluvial floodplains not affected by sea level rise.

5.1.2 Opportunities

A number of opportunities which favour natural processes and dynamic behaviour of coastal habitats were identified. At Easton Broad and at the Westwood / Dingle marshes, the current SMP policy is for managed re-alignment, with the shingle banks being re-profiled when breaches occur. The longer term, more sustainable approach to the management of these sites would be for more extensive re-alignment, or for no active intervention, as at Benacre and Covehithe, to allow the shingle ridges to evolve and roll back, allowing saline and brackish habitats to. This is also the case along the Minsmere frontage, which is currently less susceptible to breaching and where a managed re-alignment policy may be more applicable.

At Dunwich Cliffs, the current policy is for no active intervention. A continuation of this policy would allow the evolution and exposure of the cliff. This opportunity also reflects the importance of eroding soft cliff coastlines in providing sediment to other areas along the coast, in this case, to the Westwood / Dingle frontage. Designated heathland habitats would continue to be lost from the cliff top as a result of this policy, but as the erosion of these cliffs is an entirely natural process, reflecting natural change; compensatory habitat would not be required under legislation.

At Aldeburgh Beach / North Warren, vegetated shingle habitats of the open coast are backed by grazing marsh / upper saltmarsh communities within the North Warren RSPB Reserve. The current policy is to hold the line and repair the shingle ridge where breaches occur. Implementation of a managed re-alignment option for this area would allow the unconstrained evolution of the shingle communities and the more natural development of transitions to upper saltmarsh and freshwater / brackish habitats.

On the Alde-Ore Estuary, the land at Slaughden maintains the current form of the estuary and prevents the formation of a new estuary mouth. It also prevents the natural evolution and roll back of the Orfordness shingle spit. Allowing a breach at Slaughden would allow the natural evolution of the Orfordness shingle spit and when combined with a policy of managed re-alignment within the estuary, could also lead to the development of a more ecologically sustainable estuary form.

Further south at the mouth of the Alde-Ore estuary, between Shingle Street and East Lane, Bawdsey, extensive areas of shingle vegetation are backed by flood defences and agricultural land. There is the potential here for no active intervention or managed re-alignment to allow these shingle habitats to roll back, providing transitions from vegetated shingle and saline lagoon to brackish lagoon and grazing marsh habitats.

The vast majority of managed re-alignment options are to be found in the estuaries and involve the breaching of flood banks that protect land that is largely in agricultural use. Within the Blyth, Alde-Ore, and Deben estuaries, there are many potential opportunities

for managed re-alignment to create intertidal habitat. However, as these are not directly within the coastal zone, they will not be discussed in further detail.

At Benacre Ness, saline lagoons are currently present, but are likely to disappear as the ness continues its move northwards. A hold the existing defence line option here could be used to maintain the saline lagoon in situ. However, it is important that action to conserve this habitat type does so in recognition of how this ness is a component of a particularly dynamic coastal environment. The ness is a mobile shingle feature which is responding to the rapid recession of the adjacent coastline and the long-term direction of sediment transport and an important location for studying the geomorphology of the East Anglian coastline. The objective of the biodiversity opportunity in this location should therefore be to promote an SMP policy, such as no active intervention, that best facilitates its geomorphological interest by non-interference. This interest includes habitats such as saline lagoons that are, by definition, dynamic and ephemeral.

Many of the biodiversity opportunities identified would occur at the expense of terrestrial and freshwater habitats of significant importance along the coast. For example, at Easton Broad, and Westwood / Dingle marshes, a policy of no active intervention would allow the evolution of freshwater reedbed and grazing marsh habitat into brackish and saline habitats as the fronting shingle banks roll backwards. The loss of these habitats of European importance would however require compensation sites to be established elsewhere.

Other sites were identified as presenting strong freshwater biodiversity opportunities, but the evolution of these sites in relation to sea level rise is less clear due to their proximity to the coast. The Kessingland Levels may be able to support valuable transitions from freshwater to saline influenced habitats in the short to medium term, developing full estuary characteristics in the longer term. Although in relatively close proximity to the coast, the Sudbourne marshes (Alde-Ore Estuary) were also identified as an area where there is the potential to create freshwater habitat.

Conservation organisations manage a considerable area of the Suffolk coastal fringe and are already exploring habitat creation opportunities. While SMP policies can go some way towards achieving environmental enhancement, without recognising the linkages between the SMP and other studies and planning policies, ultimately, the opportunities will not become realised.

6 HUMAN AND BUILT ENVIRONMENT CHARACTERISTICS

The Suffolk coastline has a unique and dynamic nature, underpinned by the diversity of interests found along the coast, which range from large areas of undeveloped wilderness to areas of national significance, such as the port of Felixstowe. In order to provide an assessment of the character of this coastline, this assessment shall undertake to describe the Suffolk coast in a series of discrete units.

6.1 Lowestoft - Gunton to Pakefield Hall

6.1.1 General description

Lowestoft (population around 60 000) is the most easterly town in the UK, lying between the eastern edge of The Broads (which enjoys the same status as a National Park) and the North Sea. It is divided by Lake Lothing and the harbour. There are residential and business areas on both banks of Lake Lothing, while the main shopping area is to be found on the north bank. Lowestoft station is centrally located and provides services to Norwich, Ipswich and London (via Ipswich). Over the past few years, Lowestoft has undergone something of a facelift, with approximately £45 million being spent on the re-development of the town and the construction of a new relief road. Commercially, the area supports extensive mooring and quay areas, both commercial and recreational and includes the fish dock and several marinas. Critical land-based infrastructure includes the A12 road, which crosses Lake Lothing at the Lowestoft Bascule Bridge and the railway, which crosses Lake Lothing adjacent to the A117 road bridge. Despite the new relief road further inland, the main road to the back of the sea front and the crossing at the Bascule Bridge are still heavily used and lie very much within the coastal zone. In addition, there is an international telecom cable landing site at Pakefield.

The town is also well renowned for its beaches, three of which are the holders of Quality Standards Blue Flag, while Corton naturist beach is located in the northern suburbs of the town. The Esplanade runs along back of the South Beach and combines various indoor and outdoor attractions and facilities. The seafront has two piers, Claremont Pier and South Pier, which is so called as it is on the south side of both the harbour and the river mouth. Claremont Pier is an integral part of the attraction of the promenade and Esplanade, while South Pier is more closely associated with the harbour, although it does form an important end feature to the whole southern sea front. Other nearby tourist attractions includes Pontin's holiday camp at Pakefield, Lowestoft Maritime Museum and the Euroscope (to the north of the harbour).

In the 1665, the Battle of Lowestoft (Second Dutch War) was fought between British and Dutch forces, while the town was used as a navigation point by German bombers during WWII. Lowestoft has also been subject to periodic flooding, the most severe being in January 1953, when the present day north Denes wall was outflanked by a North Sea swell driven by low pressure and a high tide caused overtopping of the defences and deluged most of the central town and beach area.

To the south of Lowestoft lies the village of Pakefield (population around 6,900). In common with many other coastal settlements, Pakefield has a history of coastal erosion, with a number of development sites lost to the North Sea during the 19th Century. However at present, coastal deposition is ensuring that the village remains

protected. Pakefield forms a different but important element of the Lowestoft characteristic area.

6.1.2 Land use

The main land use feature of this area is the urban area of Lowestoft. Lowestoft is the largest urban centre in Waveney District and according to the Interim Waveney Local Plan 2004 (WDC, 2004) is one of the most sustainable locations for new development in the district. Lowestoft has however suffered from an economic decline and currently has unemployment levels above the national average and 'more social problems than any other town in Suffolk' (WDC, 2004). In response to this, the Council has focussed much of their regeneration efforts on promoting a renaissance in Lowestoft. The central feature of such regeneration has been to focus on building on the strengths of existing areas and promoting mixed use development. Key areas to support such a renaissance have been identified as the South Lowestoft area especially waterside areas such as the harbour and Lake Lothing. Allocations for employment and mixed uses have therefore been allocated in South Quay and throughout the eastern areas of the town. The central theme of future land use planning in this area (and the main thrust of district wide initiatives) is therefore concentrated on building on the strengths of Lowestoft to support regeneration and growth. In this respect, the waterside resources of Lowestoft, commercial, industrial, recreational and tourism related, are critical to the sustainable development of the District. Waterside land in Lowestoft is therefore of great importance to the District as a whole.

6.1.3 Key values

Lowestoft is an important regional centre and tourist destination. Within a strongly managed environment, the key values vary along the shoreline from the highly developed commercially important area to the north and around the harbour, through the high value amenity frontage of South Beach of significant importance to the local tourism economy through its "Blue Flag" status, to the less formal Pakefield beach, with each section adding value to the overall character. The historic and extensive residential areas in south Lowestoft are dependent also on effective management of the beach and defences. In terms of historic assets at risk from flooding within this unit, one listed building and one historic park and gardens are located within Flood Zone 2.

In particular, the economic regeneration of the harbour and those areas behind the Esplanade and residential areas to the south of the pier, is heavily reliant upon appropriate management of the beach and promenade of South Beach. Additionally, the associated economic support derived from the harbour and the area immediately to the north means that shoreline management has to take account of overall and interrelated impacts on each of these areas. Further to this, Pakefield has a distinct character and value which provides a transition to a more natural coastline to the south.

6.2 Kessingland and Covehithe - Kessingland to Easton Broad

6.2.1 General description

This stretch of coastline is predominantly agricultural, with several features of conservation interest. Pakefield Hall is now owned and operated by Pontin's Holiday

Parks Ltd. and lies to the north of Kessingland (population around 4,000), which is itself four miles south of Lowestoft. Once rumoured to be the richest village in England, the former fishing village now owes much of its popularity to the tourist industry. The area is popular with conservation enthusiasts and the Africa Alive attraction (to the south of Kessingland) was voted top Suffolk family attraction in 2003. Kessingland is also of interest for archaeologists, as palaeolithic and neolithic implements have been found here and the remains of an ancient forest lies buried on the seabed.

The area around the Kessingland levels is low-lying and consists of shingle beaches with secondary sea defence bunds built to reduce salt water inundation during times of tidal surge. The Hundred River runs through this zone and has an automatic pumping station to control water levels and maintain the fresh water balance. Directly behind the beach, grazing marshes flank the Hundred River, with the Suffolk Coast and Heaths path bisecting this. This area of coastline is eroding at a relatively high rate, with the area of erosion extending to the north as Benacre Ness has moved northwards. This change in erosion pattern at Benacre Ness is well illustrated where the pits created by gravel extraction are rapidly disappearing into the sea.

Further south are the villages of Benacre (population around 60), which is set well back from the shoreline and Covehithe (population around 28), which lies within 400 metres of the eroding cliffs. Both lie in the Suffolk Coasts and Heaths Area of Outstanding Natural Beauty (AONB). Covehithe was highly prosperous in the Middle Ages through the trading of wool and cloth until its port was lost to coastal erosion. Erosion also caused the coastline at Covehithe to retreat by approximately 500 metres between the 1830s and 2001, with predictions indicating that the ruins of St. Andrews church are likely to fall into the sea by approximately 2050. An indication of this is that Benacre Broad, which is now adjacent to the coast, was much further inland in the 1700's and has lost much of its original area. The coastal frontage is mainly divided between areas of cliff and low-lying broads, with Covehithe Broad and Easton Broad having been significantly reduced in extent through erosion.

The Suffolk heritage coast commences to the south of Kessingland, while the coastal path runs along the frontage at Kessingland, diverting inland behind each of the broads to re-emerge at the coast at Southwold. The main A12 road link runs inland of Kessingland, crossing the Hundred River upstream of the Kessingland Levels at Latymere Dam and then, remaining well back from the shoreline, down to Southwold. The B1127 runs from the A12 down to Reydon, crossing the upstream area of the Easton Broad at Potters Bridge, with only minor roads tending to run from these two north/south routes out towards specific villages and properties. The whole area is therefore accessed from the hinterland with no main coastal route which significantly adds to the relative remoteness of the area.

6.2.2 Land Use

Kessingland is a small coastal settlement separated from Lowestoft by a rural coastal strip designated as Strategic Gap and Open Break under policy ENV5 of the Interim Local Plan. The provision of the designated gap will ensure that the Kessingland does not become absorbed into the wider urban area of Lowestoft to the north. Kessingland itself is a distinctly different settlement from Lowestoft and the Interim Local Plan describes it as being 'a separate community (from Lowestoft) with its own character' (WDC, 2004). In land use planning terms, Kessingland is surrounded to the north,

south and east by a range of environmental designations which are intended to protect the foreshore and hinterland environments from urban encroachment. To the west lies an extensive area of agricultural land. Kessingland is dependent on Lowestoft for employment, but has its own limited commercial base which is focussed on tourism and use of the foreshore. The settlement is however listed under Policy LP1 of the Interim Local Plan as being a centre which is capable of providing sustainable development and growth – a sustainable village. This initiative is supported by Policy CS3(e) of the Suffolk Structure Plan (SCC, 2001) with the intent being to provide growth in settlements that have some capacity to absorb growth without the release of greenfield sites. Kessingland is therefore important as an urban area in ensuring that growth within the district proceeds in a sustainable manner. Despite its links with Lowestoft, Kessingland has its own policy base for regeneration, as the area is listed as a Suffolk Rural Priority Area. Regeneration will remain focussed on building on existing strengths of areas. In this instance, this would be likely to focus on the foreshore area in terms of coastally dependent commercial uses and also tourism and recreation. A stated objective of the Interim Local Plan relating to Kessingland is to ‘safeguard and support the existing tourism industry by encouraging the redevelopment of existing facilities and the development of new facilities where appropriate’ (WDC, 2004). Kessingland is therefore seen as an important component of the District’s economic future.

Much of the Kessingland coastal development is set back a short distance from the crest of the cliffed shoreline. Only at Kessingland Beach, to the south of the main village, is there direct access to the shore, with a narrow strip development of housing and a road giving access to the holiday and caravan parks extending through to Kessingland Levels. The area south of Kessingland, including Covehithe is dominated by environmental policy designations which reflect its rural character.

6.2.3 Key values

Although in detail the area may be seen as the two distinct areas of Kessingland village and the Covehithe length of eroding cliffs and broads, there is direct linkage both in terms of management and overall character. The dominant theme is maintaining the varied but natural character of the area, within which there is a requirement to sustain tourism, existing facilities, coastal use and communities. The regeneration of Kessingland is a key component of this, as are the strengths of agriculture and the local community infrastructure. This combination of principal values is summarised as:

- Kessingland as a coastal town and tourist destination;
- Transport link from Kessingland to Lowestoft (A12);
- Strategic gap which delineates Kessingland from Lowestoft;
- Recreational use of the foreshore area;
- The agricultural economy;
- Community infrastructure; and
- Cultural heritage (In terms of historic assets at risk from flooding within this unit, 62 listed buildings, 6 SAMs and one historic park and gardens are located within Flood Zone 2).

All of which are within a broader environmental value of the natural coast represented by:

- A highly dynamic and rapidly changing natural coastline;

- A wide range of interdependent coastal brackish and freshwater habitats in the marshes and lagoons to the south of Kessingland; and
- The significant archaeological, geological and landscape features of the coast.

6.3 Southwold and the Blyth Valley - Easton Bavents to Dunwich Cliffs

6.3.1 General description

Southwold (population around 1,500) is an important tourist destination in Suffolk, both as a destination in its own right and as a hub for visitors to the countryside and villages in central Suffolk. The town is bounded by the North Sea to the east, by the River Blyth and Southwold harbour to the south and by Buss Creek to the north. In effect, the town is essentially an island, with only one road (A1095) in and out of the town. Development and the protection of Buss Creek have tended to draw Southwold closer to the neighbouring village of Reydon. Southwold was mentioned in the Domesday Book as an important fishing port and received a town charter from Henry VII in 1489. Over the following centuries a shingle bar built up across the harbour mouth, which prevented the town from becoming a major port.

The harbour lies to the south of the town on the River Blyth and extends from the river mouth to approximately one mile upstream, serving both fishing and small pleasure boats. A foot ferry still runs between Southwold and Walberswick, although its central function is as a tourist attraction, being part of the circular route taking in the town, the village and estuary. Additionally, there is an RNLI station near the entrance to the harbour and a yacht club at Blackshore. The harbour is an integral part of the attraction to the town, as it is a functioning harbour and a maintained haven of refuge. In 1659, a fire devastated most of the town and severely damaged St. Edmunds church, whose original structure dated from the 12th century. However, this event was not totally detrimental, as the fire created a number of open spaces ('greens') within the town which were never rebuilt.

Southwold Pier, which once functioned as a steamboat stop to London, had a major refurbishment in 2001 and is now an important tourist attraction. Southwold is also the home of the renowned Adnams brewery, which was rebuilt in 1890, having been in the same location since 1660.

The town's lighthouse, constructed in 1887, stands as a landmark in the centre of the town and replaced three earlier structures which were under serious threat from coastal erosion. On Gun Hill Green above the beach, six eighteen-pounder cannon commemorate the Battle of Sole Bay. This was an inconclusive battle in 1672 between the combined British and French fleets and the Dutch fleet which was fought adjacent to the town. During WWII, the cannons on Gun Hill ensured that Southwold gained the status of "fortified town"; however, despite the fact that these cannon were filled with concrete and therefore unable to fire, the town became the target of many Nazi bombing raids.

The town beach is a combination of sand and shingle, which had its protection upgraded in 2005/6 with a new coastal management scheme including beach nourishment, new traditional timber groynes on the south side of the pier and rock

groynes to the north. The significant value of the Blue Flag beach was recognised in the economic assessment undertaken in justifying these works.

Walberswick, which lies to the south of Southwold, was once a thriving port. However, nowadays the village is a bustling tourist attraction in the summer months, with a very high proportion (thought to be as much as half) of the properties being holiday homes. Further to the south lies the village of Dunwich, which was historically a large port, although coastal erosion caused much of it to be lost between the 13th and 16th centuries.

Today, Dunwich contains the ruins of a church and a friary, both of which are of national heritage importance. Small commercial fishing boats launch off the beach, although the fishing industry has declined in recent years. It is also thought that the Roman 'Stone Street' runs from Dunwich to Caistor St. Edmund near Norwich, indicating its historical significance.

The area between Walberswick and Dunwich is ecologically important but also provides a natural setting for the two villages. It has been identified as important for walking and painting, activities that reflect the character of the villages and form a major part of their tourist attraction.

The land around the estuary is important for agriculture, with fresh water abstraction allowing farming of the higher land around the estuary. There is also important water abstraction infrastructure and the concomitant aquifer which is reliant on the maintenance of defences. A golf course lies on the northern bank of the estuary close to Southwold, which adds to the diversity of attractions in the area. The A12 crosses the Blyth further up the estuary at Blythburgh, forming a partial barrier across the coastal flood plain.

6.3.2 Land Use

The settlements of Reydon and Southwold (within Waveney District Council) and Walberswick and Dunwich (within Suffolk Coastal District Council) lie within this SMP policy unit.

Policy LP1 within the settlement strategy of the Interim Local Plan (WDC, 2004) also applies to Reydon and Southwold, which are seen as areas which can absorb sustainable growth and are therefore critically important to the growth of the district. Southwold is a buoyant tourism centre which attracts visitors from the UK and abroad. Additionally, the tourism base is underpinned by the famous Adnams brewery which is a major employer in Reydon and Southwold and is a contributory factor in attracting tourists. Reydon also supports an industrial base at Fountain Way, which is covered by the Council's policy on maintaining existing economic areas – Policy E2. The land use planning issues in these areas therefore relate to ensuring that sustainable growth is possible and that the key features of the town which support tourism (its historic core, harbour, brewery and waterside facilities) are protected. The environmental policy designations for the coastal strip and open space support this. Southwold is also recognised as being an area with high levels of confidence in the local economy. Accordingly, the Interim Local Plan (WDC, 2004) has provided objectives for the area to encourage new retail and leisure facilities within the town.

The significance of Southwold to the local economy is recognised by Waveney District Council throughout the Interim Local Plan. The proposed Local Transport Action Plan for Southwold intends to ensure that the town is provided by a transport network sufficient to serve its tourism requirements.

Crossing the border into Suffolk Coastal District Council lies Southwold's neighbouring settlement of Walberswick. Walberswick provides a similar function to Southwold in land use planning terms, providing a buoyant tourism economy supported by the cultural values, built form and coastal location of the settlement. Policy AP66 of the Suffolk Coastal Local Plan – First Alteration: SCLP (SCDC, 2001) provides guidance on the intended planning approach to tourism areas. Walberswick and also Dunwich to the south are both specified in Policy AP66 as being key tourism areas which, in addition to the estuaries within this area, are intensively used during peak periods. The Council's response with regard to this policy is to ensure that the landscape and conservation values which support this activity are protected from new development. This recognises that Walberswick and Dunwich are important to the local economy, but that the foundations of the tourist industry need absolute protection.

6.3.3 Key values

The overall values in this area are made up of a complexity of interrelated and interlinked issues, leading to potential conflicts but also opportunity for mutual benefit between individual sectors of interest. Underlying these individual elements are the internationally and nationally important aspects of the area:

- The Southwold / Walberswick / Dunwich area as a nationally valued destination for heritage and tourism (in terms of historic assets at risk from flooding within this unit, 71 listed buildings, 6 SAMs and one historic park and gardens are located within Flood Zone 2);
- The national and international importance of the wide range of interdependent coastal, brackish and freshwater habitat in the cliffs, marshes, mudflats, lagoons and beaches of the coast and estuary; and
- The important characteristic landscape.

Within these broader values, specific values are seen in:

- Southwold and Walberswick as coastal towns and tourist destinations, integral with the historic and functional aspects of the harbour and associated tourism activities and attractions within the broader area;
- Dunwich as a heritage centre and tourist destination;
- Recreational use of the harbour and foreshore area including the Blue Flag beach at Southwold;
- Geological interest and habitat of the cliffs (to the north of Southwold and south of Dunwich);
- The semi-natural and natural landscape; and
- Environmentally valuable areas of Dingle and Westwood Marshes.

6.4 Minsmere – Dunwich Cliff to Thorpeness

6.4.1 General description

The only settlement along the coast is Sizewell (population around 300), although to the north and somewhat associated with this area is the village of Dunwich. Individual properties are present along the crest of Sizewell cliff to the south of the area and there is a caravan park and buildings associated with Dunwich Heath National Trust area.

To the north of Sizewell village is the power station, which is set back from the immediately active section of the shore, with outfall and inlet platforms situated within the nearshore zone. To the north of this is the internationally recognised RSPB site at Minsmere, which is a large expanse of freshwater habitat and marshes extending back from the coast some 2.5km within the valley of the Minsmere River. The shingle sand beach extends along the whole length of the coast in this area, acting as a flood bank for the lagoons and freshwater courses in the marshlands. The marshes drain through Minsmere sluice, which cuts across the beach and partially acts as a groyne. The Suffolk Coast and Heaths path maintains access both along the coastline and to the designated areas.

The village of Sizewell, whilst in the shadow of the nuclear power station, does attract a significant number of tourists. The shingle beach is accessible along the whole zone, even in areas directly in front of the power station. Sizewell power station is a big industrial site, with two nuclear plants, one of which is in the process of being decommissioned. Mitigation measures for Sizewell B included the regeneration of waste land into Sizewell Belts. Dunwich Heath similarly attracts a significant number of visitors, with the supporting infrastructure and properties lying typically some 70 metres from the actively eroding cliff line.

To the south of the Sizewell area are a series of individual properties which are typically set back some 30 to 70 metres from the cliff line. To the southern end of the frontage is Thorpe Ness, a wider accumulation of sediment attached to the shore but also extending out within the nearshore zone. Beyond the Ness is the village of Thorpeness itself.

6.4.2 Land Use

This area is provided with a range of policies which seek to protect the quality of the natural coastal environment. Lying within this outstanding landscape are the coastal town of Leiston (approximately 2.5km from the shoreline) and the village of Thorpeness to the south of the area, which is noted for its tourism interest. Additionally, Sizewell power station is located centrally within this area. Leiston is a designated 'town' within the SCLP (SCDC, 2001) and is therefore considered to be an urban area with a capacity to absorb housing based growth.

6.4.3 Key Values

The core value of the area is its natural environment, although clearly the presence of the power station has to be recognised. Areas such as Dunwich Heath rely on the overall natural setting and the properties along the cliff top similarly benefit from

this natural character of the coast. Sizewell village is locally important but also acts as a way point and access to the shore and coastal path. The elements of the key values of the area may therefore be set out as:

- The relatively natural coastal habitat and landscape including the different aspects of the shingle beaches, marshes and wet grassland and heathland;
- The national and international importance of the biological and geological interests of the coastline and hinterland;
- The nuclear power station at Sizewell; and
- Recreational use of the coastal area including the coastal path and access and facilities offered by Sizewell.

6.5 Aldeburgh – Thorpeness to North Weir Point

6.5.1 General description

At the northern extent of the area is Thorpeness, a small rural village of about 400 people in winter but with a summer population of over 1,600 people. The village was originally a small fishing hamlet until it was bought by a Scottish barrister in 1910, who developed Thorpeness into a private fantasy holiday village, with many buildings being built in mock-Jacobean and Tudor styles. The town remained as a mostly privately-owned village until 1972, when many of the houses, the golf course and country club were sold to pay death duties.

To the south of Thorpeness is the strip development of Thorpeness Haven, built along the crest of the shingle ridge running to the south to Aldeburgh. This ridge continues a further 1.5km, acting as a barrier to low lying marshes to the rear. The main coastal road linking Thorpeness and Aldeburgh runs along the back of the natural ridge.

Aldeburgh is the main town of this area and was a leading port in the 16th century with a flourishing ship-building industry. Sir Francis Drake's ships Greyhound and Pelican (later renamed Golden Hind) were both built at Aldeburgh. When the mouth of the River Alde moved south and became more constrained, larger ships could not be accommodated and the area went into decline. Aldeburgh survived principally as a fishing village until the nineteenth century, when it became popular as a seaside resort. Limited numbers of fishing boats still launch off the beach at Aldeburgh for the small scale commercial fishing operation which still exists. However, this use of the steep shingle beach adds to the overall character of the town.

The Aldeburgh Moot Hall, which is over 400 years old, is a timber-framed building which has been used for council meetings since its construction. Aldeburgh is also famous for its fish and chip shop. Upstream on the Alde at the limit of the tidal influence within the estuary is the Snape Maltings. This is the venue for the Aldeburgh Festival, which is held every June and was founded by Benjamin Britten, Eric Crozier, and Peter Pears in 1948. Britten and Pears are buried in the churchyard of St Peter and St Paul's Church in Aldeburgh. The beach at Aldeburgh was awarded the Blue flag rural beach award in 2005 and on this beach, a short distance north of the town centre, stands a sculpture known as the "The Scallop", which is dedicated to Benjamin Britten who used to walk along the beach in the afternoons. The sculpture is meant to be enjoyed both visually and tactilely and people are encouraged to sit on it and watch the sea.

Aldeburgh also has a unique quatrefoil Martello Tower, untypical of the others found to the south. Just south of the beach at Aldeburgh is Orford Ness, a popular sea fishing spot, which can be reached by a track leading from Aldeburgh. The village of Slaughden, which lay to the south of Aldeburgh, has now succumbed to coastal erosion, as has the Martello Tower at Slaughden.

Orfordness spit lies to the south of Aldeburgh and continues for 15km. There is a sense of remoteness about the area which complements Aldeburgh's historical character. A large proportion of the Ness and the fresh water marshes behind the shingle bank are now owned by the National Trust, which runs a limited number of walking trips to this remote area.

The most significant turning point in the history of the Ness was the arrival of part of the Central Flying School's Experimental Flying Section in 1915. This event ushered in a 70 year period of intense military experimentation, which as well as leaving a variety of physical traces has given the place what has been described as 'the mystique of secrecy'. At the height of the cold war, the Atomic Weapons Research Establishment and Royal Aircraft Establishment used Orford Ness for developmental work on the atomic bomb. The 'pagodas' which remain have become a well-known landmark on this part of the coast. Orford Ness was one of many large cold war experimental sites involved with the research and development of the British atomic bomb and is perhaps the most architecturally dramatic of all of these sites. Another relic of the cold war period is the huge, grey, steel structure which once housed a top secret Anglo-American radar project, code-named 'Cobra Mist', which now functions as a BBC World Service transmitting station.

Orfordness lighthouse is situated at the most south-easterly point of Orford Ness, at a notoriously dangerous area for shipping. The first lighthouse was built at Orford Ness after a great storm in October 1627, when 32 ships were wrecked off the Ness and many lives were lost. The present lighthouse dates from 1792. The town of Orford lies inland on the River Ore and has a harbour and yacht club. Two other yacht clubs are located at Orford Haven and near Slaughden Quay (to the north) and there is also a castle at Orford which dates back to 1165. Much of the estuary is now used for sailing and recreational use, including pleasure boat trips. Access to the open coast is through North Weir point, where there are massive continuously shifting shingle banks. Much of the flood plain of the Alde / Ore estuary is reclaimed and lies behind extensive flood defences. This provides an important agricultural base to the area in its own right but abstraction and storage of freshwater upon the lower marshes also allows use of the higher land around the estuary.

Havergate Island, owned by RSPB, now covers 267 acres and lies between Orford beach and the mainland. To the northwest, it is bounded by the Lower Gull and The Gull channels (part of the Ore), and to the southeast by The Narrows (part of the Alde). Havergate mostly lies below sea level but it is drained by a series of channels and is protected by dykes. It is a marshy nature reserve run by the RSPB, with large populations of avocets and terns. Originally the island was two gravel banks which later joined.

6.5.2 Land Use

This area has a range of policies which seek to protect the quality of the natural coastal environment. Thorpeness is a tourist based settlement which is provided the same policy coverage as Walberswick. The factors which provide Thorpeness' tourism industry – its coastal features and landscape, will therefore be provided full protection under policy AP66.

Aldeburgh is identified as a town within the SCLP (SCDC, 2001) and is therefore an area that can expect to see sustainable levels of future growth. Aldeburgh is seen as a settlement with a key role to play in the future development of the district, especially in its role of offering new infill development in a rural coastal location. A suite of policies (AP124-132) forms the framework for this growth, whilst still protecting the character of the town. The town is surrounded by policy to protect the coastal and estuarine areas around Aldeburgh and the Blyth area.

Orfordness benefits from a specific policy within the SCLP that seeks to ensure that the remote character of this area is protected from development (Policy AP 163 Deben Peninsular): Orfordness and Havergate Island specifies that development will be resisted due to the need to protect the ecological, geological and landscape importance of the area. This 'catch-all' policy recognises the inherent social and environmental values of the area, which is of benefit to the district, without making a significant contribution to the local economy.

6.5.3 Key values

The area demonstrates the need to balance the three integrated values of culture, ecology and economics. The strong cultural core is provided by Aldeburgh, Thorpeness, Snape, Orford and even Orford Ness. These strong traditional characteristics provide a core to sustaining communities and encouraging future development, which is underpinned by a wide amenity base from sailing to walking, beach use and by the strong tourism, agricultural and (more limited) fishing industries. Equally important locally and regionally as well as with respect to the broader national value is the natural environment, from which the above values derive significant additional value. This combination of values is expressed below:

- Thorpeness as a coastal villages and tourist destination;
- The North Warren RSPB reserve;
- Aldeburgh as a coastal town, artistic community and tourist destination;
- Recreational use of the coastal area including the sailing activity to the south of Aldeburgh and generally within the estuary;
- The remote nature and 'wilderness' experience afforded by Orfordness;
- Geological value of the area;
- Heritage values of the military installations on Orfordness; and
- The national and international importance of the biological and geological diversity of the coastline and estuaries, including vegetated shingle beaches, one of the largest shingle spits in the country and the estuarine areas of the rivers Ore, Alde and Butley.

6.6 Deben Peninsula and Valley – Shingle Street to Cobbold's Point

6.6.1 General description

Shingle Street, which is in the north of this area, is a small coastal hamlet at the mouth of Orford Ness, between Orford and Bawdsey. This part of the coast is also known as Hollesley Bay, with a HM Young Offender Institution (Hollesley Bay Colony) being located nearby. Shingle Street was originally a home for fishermen and river pilots for the River Ore. Many of the original buildings date from this period, but several buildings were destroyed during WWII, including the hamlet's pub.

During WWII, many strange happenings were reported to have taken place at Shingle Street, which include a supposed failed German Invasion. The village is sited on the back crest of a shingle ridge which runs down to and protects much of the low lying area behind. It is a strip development extending nearly 1km in length from the car park and Beacon Cottage at the mouth of the Ore to the first of a string of Martello Towers at the southern end of the village. Access to the village is along one narrow road; even so, the village is a well recognised visitor location both for the unusual nature of the village, the impressive bank system at the mouth of the estuary and the beach and surrounding countryside. There is also currently a coastguard station at Shingle Street.

Hollesley Bay runs a further 3km through to the rising land of Bawdsey Cliffs at East Lane. The designated area of the shingle bank over Hollesley Bay acts as the primary defence to an extensive area of farmland behind. However, there is also a set back flood defence bank behind this shingle bank. At the southern end of the bay, East Lane is now a defended headland, which lies slightly to the north of a significant change in the alignment of the coast. The headland was created initially in defence of WWII fortifications, which contrasts with the older Napoleonic fortifications evidenced by the fourth of the Martello Towers along this section. The flood area to the rear of the bay extends to the outskirts of Bawdsey and Alderton villages, which lie some 1–1.5km in land. The flooding experienced during the storm surge of 1953 inundated parts of the Deben, cutting the only road between Bawdsey and Bawdsey Manor.

Bawdsey Manor was built in 1886 and enlarged in 1895 as the principal residence for Sir William Cuthbert Quilter. It was requisitioned by the Devonshire Regiment during WWI and was eventually purchased by the Air Ministry in 1936 for the establishment of a new research station for the development of radio direction finding (radar). Bawdsey Manor continued as an RAF base throughout the cold war, with Bloodhound missiles being sited on the cliffs until this force ceased operations in 1990. The station was finally closed in 1991. There is now a sailing school and the northern landing stage of the Felixstowe ferry on this side of the river. The ferry forms the start of the coastal pathway and provides a popular link from Felixstowe to the Deben peninsula.

Across the river is Felixstowe Ferry, which boasts a church, two pubs, the Ferry Cafe, a boat yard, sailing club, fishermen's cottages, two Martello towers, a gallery and a golf course. The hamlet is divided either side of a flood defence embankment, with a substantial part remaining unprotected. Most of the properties in this area have been built on short brick stilts, which have been periodically replaced and raised. Much of the character of this part of the hamlet indeed comes from this feeling of living on the edge in addition to its wide variety of activities and interests.

Immediately upstream of the Felixstowe Ferry entrance, the estuary is quite broad with a considerable number of moorings. Recreational sailing and boat use are an important activity across the estuary as a whole. Further upstream, the river flows between embankments which protect extensive farmland, before becoming constrained by natural high ground. The channel passes several riverfront pubs including those at Ramsholt and Waldringfield before reaching Woodbridge. At Woodbridge, part of the town is defended from flooding and there are numerous boat related businesses, including a marina.

The most southerly town along the frontage is Felixstowe, which has been continuously settled since before the Norman conquest, eventually becoming a linchpin in England's defence, as proved when in 1667 Dutch soldiers landed and failed to capture "Landguard Fort" (Area 7). From Cobbolds Point to Felixstowe Ferry (North Felixstowe) there is a walkway and path, although it is necessary to walk inland and to rejoin the coastal path at Jacobs Ladder, where the path then runs before beach huts and the golf course through to Felixstowe Ferry.

The frontage has been defended by a field of closely spaced groynes retaining a limited width of beach in front of different sections of sea wall. Even so (or potentially because of the compartmentalisation of the beach) the frontage is very popular with great demand for beach huts in the area.

At Cobbolds Point the coastal protection work now prevents pedestrian access along the beach, although at low tide from this walkway it is possible to glimpse the seaweed-covered remains of a Roman fort in the water about 50m from the coast.

6.6.2 Land Use

Apart from Felixstowe in the south, settlements in this area are Felixstowe Ferry, Bawdsey, Alderton and Shingle Street. The Deben peninsula benefits from a range of policies within the SCLP, but the majority of these relate to non-coastal sites. Bawdsey is a settlement where development will be confined to the settlement boundary (under policy AP 27 SCLP (SCDC, 2001)) and so can only expect limited growth. Shingle Street is an area recognised for its unique location and appearance. The primary planning policy base for this area relates to environmental protection for the coastal and estuarine landscape and ecology. Policies relating to Felixstowe are provided under the following area.

6.6.3 Key values

The area at the mouth of the Deben, including the North Felixstowe frontage, is an important amenity to the town of Felixstowe and a gateway to the more natural coastal environment to the north. Its significance goes beyond the local area, acting as an important tourist attraction for the region but also reflecting in Felixstowe Ferry an intrinsic value in terms of its unique combination of facilities, heritage and community. The same basic qualities are recognised in Shingle Street, combining a spirit of living within a fundamentally natural location with strong community values.

The area between has a strong link to rural agricultural activity, supporting local communities. Overall the area has a range of coastal heritage features such as the Martello Towers and the more recent links to the military defence of the nation. The

heritage, community and recreational attributes are all set within a broader context of important ecological and geological value. These overall values are reflected in specific features:

- The strong recreational value of Felixstowe Ferry, represented by sailing and water sports, the golf course, the start of the coastal path and the foot ferry itself;
- The strong community identity of Felixstowe Ferry, Shingle Street and other villages within the area;
- The tourism and recreational features of the North Felixstowe seafront;
- The heritage value of the Martello Towers, the East Lane military defences and the historic use of Bawdsey Manor;
- The underpinning strength of agricultural activities, both within the Deben and along the coastal area;
- The national and international importance of the biological and geological diversity of the Deben Estuary; and
- Coastal and estuarine habitat, in addition to natural and semi-natural environment.

6.7 Felixstowe – Cobbold's Point to Landguard

6.7.1 General description

This section of Felixstowe has a strong association with its coastal frontage. During the late Victorian period, Felixstowe became a fashionable resort, which was initiated by the opening of Felixstowe railway station, the pier and a visit by the then German imperial family. In 1953, 38 people died when a storm surge hit the town. The recent planning permission for the expansion of the Port and the Felixstowe Futures work reflect the aspirations of the Town to both regenerate itself and expand its economic and social role.

The frontage is centred on the pier at the apex of the bay, while to the north the frontage has a narrow promenade and road, with rising land behind. Along this length is the Spa Pavilion and associated formally laid out gardens. Other key features of this frontage include several restaurants and hotels. To the south of the pier, the land behind the promenade is lower lying, with a leisure centre, extensive housing and caravan sites. This low lying land runs through to the docks. Further to the south, there are areas of open ground and car parking, with Manor Terrace properties and facilities.

During WWII, the majority of the pier, which at the time was one of the longest in the country, complete with its own train, was intentionally demolished by the Royal Engineers to negate its use as a landing point for enemy troops in the event of an invasion. However, unfortunately, after the war the damage was never repaired and the pier never regained its original length. Nowadays, major tourism development has taken place around the landward end of the pier to enhance the area.

Felixstowe has a pebbly to sandy Blue Flag beach, which has suffered from erosion in recent years. The beach is an integral aspect of the sea front and its maintenance forms an important feature of the present strategy plan for coastal defence. To the lower lying southern end of the built frontage, the existing flood defence barrier has been constructed to the rear of the promenade to improve both the visual association of the frontage with the shore and to allow ease of access. Further south, the flood defence wall runs along the shingle crest before returning inland to close with the bank behind

Landguard Common, providing flood defence to the residential property and the port. Landguard Common itself is a nature reserve with a bird observatory located at Landguard Fort.

Landguard Fort was built in 1718 near the site of 1540s fortifications on Landguard Point to protect the port of Harwich. It was later given support by the building of Harwich Redoubt in the early 19th century and was enlarged and strengthened in the 1870s as part of Lord Palmerstone's programme to protect the major sea ports. Historically this fort has secured its place in history as the site of the last opposed invasion of England in 1667 and the location of the first land battle of the Royal Marines. In common with the other parts of this coastline, there are also a number of Martello towers.

The town became a major port in 1886 and now ranks as the largest container port in the United Kingdom, dealing with approximately 35% of the UK's container cargo. In addition to this, Felixstowe is Europe's fourth busiest port, after Rotterdam, Hamburg and Antwerp and ranked 20th in the world (in terms of trade through) in 2002, being capable of handling over 3.7 million containers per year. As well as containerised traffic, the port also has a RO-RO terminal.

6.7.2 Land Use

Along with Lowestoft, Felixstowe is one of the primary economic anchors of this region. The port operations of Felixstowe, coupled with the role of Felixstowe as a regional centre, are critically important to the regional and national economy. The recent planning permission for expansion of the Port and the Felixstowe Futures work reflect the aspirations of the town to both regenerate itself and expand its economic and social role.

6.7.3 Key values

Felixstowe is a regionally and nationally important economic centre and tourist destination, with recognised Blue Flag standards. This general value emphasises the integrated approach which will be needed when managing the coastal strip. The recent planning permission for the expansion of the port and the Felixstowe Futures work reflect the aspirations of the town to both regenerate itself and expand its economic and social role. The aspects to be considered include: regeneration; the development opportunities of the port and local commerce; reducing flood risk to core residential areas; enhancing the tourism opportunity; and maintaining and enhancing the limited areas of open land and the natural ecological function of such areas. Many of these are built upon the heritage interest of the area. The values of the area are very much those of looking forward to what can be achieved rather than purely maintaining what exists within the area. The key values for coastal management are:

- Enhancing the defence function of the shoreline;
- Protecting the nationally important asset of the Port of Felixstowe;
- The importance of an accessible and sustainable beach, supported by core facilities and vibrant coastal zone, supporting in turn essential tourism and employment;
- The historical heritage;
- The limited but important natural areas; and
- The national importance of the biological and geological diversity of the Landguard Common SSSI.

6.8 Local Development Frameworks (LDF) and pertinence to the SMPII process

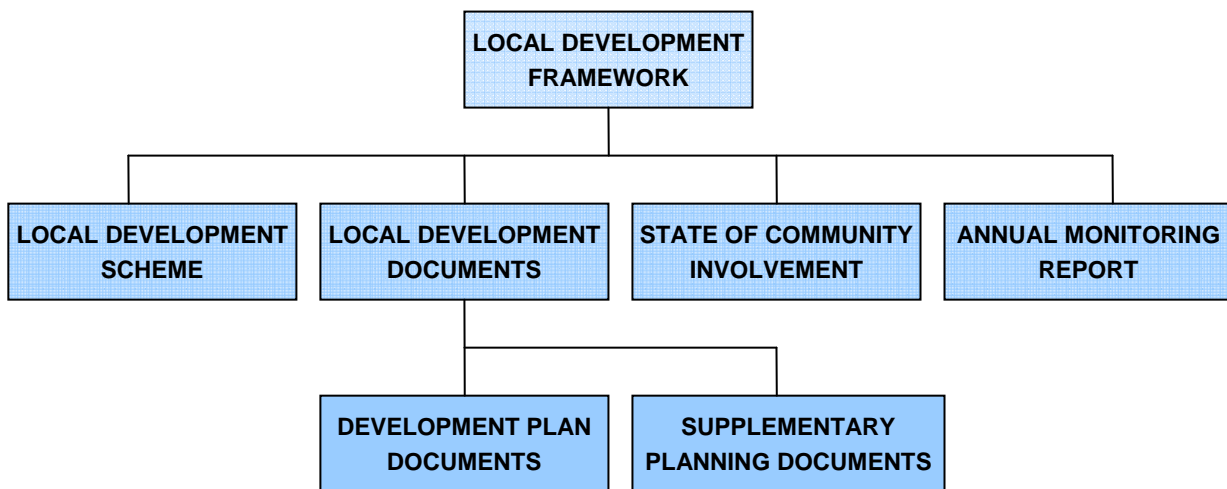
The Suffolk SMPII area covers two Suffolk County Council districts, Waveney, which lies to the north and encompasses Lowestoft and Southwold, and Suffolk Coastal, which covers the study area to the south of the River Blyth. Under the Planning and Compulsory Purchase Act 2004, district authorities are obliged to review the existing District Local Plan, which will take the form of the Local Development Framework (LDF). Until it is in place the Local Plan (LP) will remain the statutory planning document.

The Planning and Compulsory Purchase Act 2004 introduced a new “two-tiered” plan system, which comprises:

- Regional Spatial Strategies (RSS), which are prepared by the regional planning bodies and set out a broad spatial planning strategy for how a region should look in 15 to 20 years time and possibly longer; and
- Local Development Framework (LDF) which is a suite of local developments prepared by district councils, unitary authorities and national park authorities that outline the spatial planning strategy for the local area.

The LDF is therefore essentially a ‘folder’ which will hold a number of ‘documents’, containing policies, proposals and actions that will affect the future of a district. Also included in this is the Local Development Scheme, which sets out the timetable for producing each document; the Statement of Community Involvement, which explains how the community and stakeholders will be involved in the preparation of the LDF and the Annual Monitoring Report, which assesses how effective the policies and proposals of the Local Development Framework have been. In particular, two development plan documents are of pertinence to the SMPII process, these being the Core Strategy & Development Control Policy, which sets out the vision, objectives and spatial strategy of the district as well as containing a suite of policies to be used in the determination of planning applications and the Site Specific Allocations & Policy, which contains policies which apply to specific sites, locations or areas as opposed to being district wide. Overall, these fit into the LDF as shown in **Figure 5.1**.

Figure 5.1 Documents which form the Local Development Framework



The SMPII process must therefore take into consideration these frameworks, especially in the context of how they may have the potential to affect or alter shoreline management practises.

6.9 Waveney District Council

The Waveney District Council (WDC) Core Strategy was published in January 2008 and is the first of a number of documents that will form the Waveney Local Development Framework. It is currently at a consultation stage, but has been appraised by this study as it is to form WDC's overall strategic approach to future development, where it should take place and the key factors that need to be taken into account when considering proposals for development.

6.9.1 Overall Waveney District Council Strategy

Waveney is identified as a priority area for regeneration, with there being scope for the provision of at least 5,800 (290 per annum) additional dwellings over the period 2001 – 2021. Most of this new development (such as housing, employment, retail, services and facilities) will occur in the main town of Lowestoft, followed by the market towns (Beccles with Worlingham, Bungay, Halesworth and Southwold with Reydon). An indicative target for net growth in jobs for the period 2001 – 2021 is 5,000 for Waveney District. The focus for development will be on previously developed land within the built-up areas, with more than 50% of housing and 60% of employment expected to be delivered on brownfield (previously developed) sites. An integral part of the strategy will be to protect and enhance local distinctiveness and the green infrastructure of the District, such as open space and biodiversity.

The strategy for the coast is to adopt an integrated approach to the regeneration of coastal towns and communities covering economic, social and environmental issues. There is recognition of the important role of market towns and larger villages in providing employment and services to their rural hinterlands.

6.9.2 Policy CS01 - Spatial Strategy

Lowestoft (including Carlton Colville and Oulton)

Lowestoft will be a focus for regeneration, particularly around Lake Lothing and the Outer Harbour area. There will be public access to the water frontage and public spaces. The connection between the north and south of the town will be improved and measures taken to protect against the risk of flooding will be improved. The town will accommodate approximately 70 – 80% of the housing growth for the District and 70 – 80% of the additional 5,000 jobs. Most retail growth will take place in Lowestoft, through the expansion of the town centre towards the Lake Lothing and Outer Harbour water frontage.

The port is planned to have top-quality freight handling and distribution facilities, fabrication, services and facilities for the offshore industry. Of particular importance will be the development of a renewable energy cluster of businesses and growth of the knowledge economy (CS08).

Market towns

The market towns of Beccles (with Worlingham), Halesworth, Bungay and Southwold (with Reydon) will accommodate approximately 20% of the additional jobs and 15 – 25% of the district's housing growth, with most of this residential development being accommodated on brownfield sites in Beccles and Halesworth. All the market towns will experience further employment development on both brownfield and greenfield (previously undeveloped) sites. As the largest market town, Beccles will provide the focus for the most retail development after Lowestoft. An increase in public transport and demand responsive transport, particularly between the market towns, larger villages and more remote rural areas will continue to be promoted to improve rural accessibility to services and facilities.

Larger Villages

A small amount of new housing, employment and services and facilities development will be focused on a number of designated larger villages (Barnby / North Cove, Kessingland, Blundeston, Wangford, Corton, Wrentham and Holton) with up to 5% of the housing growth being focused in these villages. The majority of development will take place on brownfield sites within the villages but some development may be needed peripheral greenfield sites. Outside these locations, development will be regarded as being in the open countryside where the objective is to preserve the countryside for its own sake.

6.9.3 Policy CS03 – Flooding and Coastal Erosion

Sustainable design and in particular the provision of sustainable drainage systems will be an important consideration in the determination of all appropriate development. Development that is pertained to increase the risk of flooding or coastal erosion will not be permitted and all appropriate developments will require a Flood Risk Assessment (FRA).

Proposals should similarly avoid areas at risk from coastal erosion and ensure they are compatible with the appropriate Shoreline Management Plan and those proposals for development close to cliff edges or existing coastal defences will be required to undertake a risk assessment.

6.9.4 Policy CS05 - Lake Lothing and Outer Harbour Area Action Plan, Lowestoft

As a strategic employment site, this area is expected to provide at least 1,000 additional jobs. However, the financial viability of development in this location is problematic and housing and other higher value uses have an important role to play in enabling employment development and regenerating the heart of Lowestoft. Innovative ways of funding and delivering the Area Action Plan will be sought, in particular to achieve long held ambitions for a third crossing of Lake Lothing, as a means of improving connections between communities.

One of the challenges in securing regeneration of the area will be to achieve an acceptable level of flood risk through the implementation of defence measures. Addressing the flood risk issues in this locality will also have benefits for a wider area of Lowestoft.

6.9.5 Policy CS06 - Community based Regeneration

New allocations of employment land will be in or adjacent to Lowestoft and the market towns, in accordance with the settlement hierarchy. Based on an analysis of employment development over the past 5 years and possible future allocations, it is anticipated that 60% of future employment development will take place on previously developed land. The focus will be on developing sites within the towns first, followed by extensions to existing employment areas. In both cases the preference will be to develop previously developed land before greenfield. The last resort will be new greenfield employment sites on the edge of the built-up areas. There should be good access to the transport network and public transport.

6.9.6 Policy CS07 – Employment

Provision will be made to meet the East of England Plan job growth target of 5,000 additional jobs in Waveney over the period 2001 – 2021. Existing employment land will be protected and subject to the take-up of existing planning permissions, additional land will be allocated, especially in Lowestoft, Beccles, Bungay and Halesworth. Areas identified for employment related infrastructure development are presented in **Table 5.1**.

Table 5.1 Areas identified for employment related infrastructure development

Area	Development
Lowestoft	The Lake Lothing and outer harbour area will be identified and developed as a strategic employment site in support of port development, regeneration and economic diversification.
Bungay	A site of up to 5 ha will be identified for a mix of small and medium sized units (B1, B2 and B8) but in particular for light industrial (B1). New allocations and proposals for redevelopment will be in or adjacent to Lowestoft and the market towns, in accordance with the settlement hierarchy. The focus will be on developing sites within the towns, followed by extensions to existing employment

Area	Development
	areas.
Rural areas	Outside the towns, proposals to diversify the rural economy will be encouraged, particularly where they are located in or adjacent to the larger villages. The development should be of a scale and character appropriate to the location and there should be good access to the transport network and public transport.
Agriculture	Farm diversification proposals will be supported where they can make a long-term contribution to sustaining the agricultural enterprise as a whole and where the proposal is consistent with its rural location.

6.9.7 Policy CS08 – Renewable Energy Cluster

A renewable energy cluster and ‘power park’ of approximately 8 ha will be promoted in the Lake Lothing and harbour area of central Lowestoft, being primarily focused on expanding the existing development around Ness Point and the outer harbour area. Lowestoft is ideally located to capitalise on the predicted increase in offshore wind turbines in the North Sea, in order to meet UK Government targets for offshore wind energy production. This should be focused on the Ness Point, harbour and Lake Lothing areas of Lowestoft and should include the creation of a ‘power park’, based around existing renewable energy developments in the Ness Point / Wilde Street area.

6.9.8 Policy CS09 – Knowledge Economy

Land will be identified in the Site Specific Allocations and the Lake Lothing Area Action Plan Documents to meet the future needs of the emerging knowledge economy. This will include educational facilities and their associated uses such as student accommodation. Priority will be given to brownfield sites with good access by public transport, walking and cycling, either in central (town centre or edge of centre) locations or well connected to existing educational / research establishments.

6.9.9 Policy CS10 – Retail, Leisure and Office Development

In the region of 21,000m² of new (comparison) retail floor space plus associated leisure development will be located in the Lake Lothing area in an extension to Lowestoft town centre. The sites will be allocated in the Lake Lothing Area Action Plan.

6.9.10 Policy CS11 – Housing

Provision will be made for 5,800 dwellings over the period 2001 – 2021. In addition, to ensure at least a 15 year supply of housing from the adoption of this Core Strategy, provision will be made for a further 960 dwellings over the epoch 2021 – 2025. The distribution of housing will be broadly in accordance with the proportions indicated in **Table 5.2**.

Table 5.2 Planned dwellings in the Waveney District Council area.

Number of dwellings planned (approx.)	Location
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5,000	Lowestoft (including Carlton Colville and Oulton)
1,500	Beccles (including Worlingham), Bungay, Halesworth, and Southwold / Reydon. Beccles and Halesworth will take a larger share of this growth based on their brownfield opportunities.
300	Larger villages. In these villages, only small-scale development, commensurate with their scale and character will be allowed.
250	Unallocated windfall sites (between 2017 – 2025).

6.9.11 Policy CS13 – Tourism

A more diverse and high quality tourism offer will be encouraged that seeks to lengthen the tourism season, increase the number of visits, provide job opportunities and sustain the tourism economy. However, this growth should not be at the expense of the natural and cultural assets on which it is based. Existing tourism uses will be protected. Redevelopment of existing sites will be encouraged where it increases the range and / or quality of tourist facilities and accommodation.

New tourist accommodation and attractions should be developed in locations that offer good connectivity with other tourist destinations and amenities, particularly by public transport, walking and cycling. New tourism development will normally be located in or close to Lowestoft and the market towns, the larger village coastal resorts of Corton and Kessingland and other villages where local services, facilities and public transport reduce the need to travel by car. Outside of these locations new-build development will not normally be acceptable. The focus will be on the conversion of existing buildings and development that contributes to farm diversification.

6.9.12 Policy CS14 – Culture

The District Council and its partners will protect and promote cultural facilities, activity and opportunity for leisure, including art, theatres, museums, libraries, built and natural heritage, sport and leisure, and open. A sequential approach to the location of new development will be applied with priority given to accessible sites in or close to Lowestoft and the Market Towns.

6.10 Suffolk Coastal District Council

The Suffolk Coastal District Council's (SCDC) LDF is currently going through the process of options consultation and is therefore not at as an advanced state as the WDC LDF. WDC is currently considering comments received from the Core Strategy Issues and Options consultation and is preparing a preferred option for each of the issues in the Core Strategy Preferred Options document, which will set out the anticipated social, economic and environmental impacts of pursuing the preferred options as well as the predicted impacts of alternative options. While this process is being undertaken, the current Local Plan will contain 'saved policies' that will be used for the purposes of development control. Supplementary Planning Guidance, adopted by SCDC and currently in operation, will continue to be used as material considerations in the determination of planning applications (SCDC, 2008). With respect to this, this study has appraised the following documents to allow the widest possible understanding of SCDC's spatial planning intent:

- David Lock Associates *et al.* (2006). Local Strategy for Felixstowe Peninsula: Final Report;
- David Lock Associates (2007). Felixstowe Seafront and Town Centre Master Plan;
- Suffolk Coastal District Council (2001). Suffolk Coastal Local Plan (incorporating the First Alteration); and
- Suffolk Coastal District Council (2007). Local Development Framework: Part II: the Core Strategies and Options: Consultation document.

This appraisal has considered the manner in which these documents and especially the ‘visions for 2021’ presented in the Core Strategies and Options consultation document have the potential to be influenced by SMPII policy. Therefore, only those ‘visions’ or locations with particular pertinence to the SMPII process are included in this review.

6.10.1 Overview of Suffolk Coastal District Council Planning Policy

Overview

It is in towns where most development, particularly of a large scale, is more appropriately located. The coastal towns, potentially affecting the SMP, identified in the Suffolk Structure Plan and confirmed in this Local Plan are:

- Aldeburgh;
- Felixstowe; and
- Leiston.

Major centres of tourism include Aldeburgh, Felixstowe and the coast, together with attractions such as Orford Castle. These are all located in the eastern part of the District close to the coast. In some parts of the District to the east of the A12, primarily in some of the smaller coastal settlements but also coastal locations such as Minsmere and Dunwich Heath, there is a conflict between the needs of tourism and the need to protect and enhance the qualities in the natural and built environments that attract tourism. It is therefore necessary to reconcile the growth of tourism with environmental and social need in those areas

6.10.2 Aldeburgh

The following are derived from the ‘vision for 2021’ and which may be directly influenced by SMPII policy:

- Retains its role as a tourist centre, offering a range of accommodation and visitor attractions; and
- Is protected from the risk of flooding to an appropriate level.

6.10.3 Woodbridge

The following are derived from the ‘vision for 2021’ and which may be directly influenced by SMPII policy:

- Has enhanced and thereby strengthened the links between the town centre, Market Hill and the riverside; and

- Enjoys a vibrant riverside environment that incorporates a range of uses. Residential uses in this area will have been resisted to ensure employment uses and its tourism and amenity offers are not jeopardised.

6.10.4 East Lane, Bawdsey

SCDC will support and encourage initiatives to accommodate a small-scale interpretative centre based on the unique collection of military defences at East Lane, Bawdsey. Any proposals will need to make adequate provision for a suitably screened and landscaped car park and the creation of appropriate footpaths.

6.10.5 Felixstowe Peninsula South (Felixstowe, Trimley St Martin and Trimley St Mary)

The following are derived from the 'vision for 2021' and which may be directly influenced by SMPII policy:

- Has developed its tourism role in terms of services, facilities and accommodation, which builds on the qualities and facilities offered by the town of Felixstowe, creating strong links between the seafront and town centre areas and the qualities of the surrounding natural environment; and
- Is well defended from risk of flooding and coastal erosion.

Other proposed developments of pertinence to the SMPII process include:

Port

Other than developments required to implement the provisions of the Felixstowe Dock and Railway Act, 1988 and its associated legal agreements, any development or third port access routes will be opposed. The possibility of a new access road to the quays is considered.

Parker Avenue

If not required for new road access to the quayside, land to the rear of premises on Parker Avenue is identified as a General Employment Area to which Policy AP51 will apply.

Car Parking at Felixstowe Ferry

A suitably screened, surfaced and landscaped public car park will be provided with access from Ferry Road. The District Council will support measures to reduce the visual and physical impact of car parking on the Common, particularly within the vicinity of the Ferry Church, Harbour Villas, and Ferry Boat Inn by appropriate earth banking and landscaping, to create small greens.

Sea Road Frontages

The frontage of Sea Road is considered to make an important contribution to the health and vitality of the resort. Therefore, recreation / leisure / tourist activities, self-catering /

serviced accommodation and retailing are deemed the most appropriate uses and will therefore be encouraged.

South Seafront

This area is basically that bounded by Orford Road, Langer Road, Manor Road, Manor Terrace and the seawall. The area is low lying and may be liable to shallow flooding. The major use would be a seafront park, which could be a significant attraction. A space to accommodate a permanent market could be a complementary use.

Caravan Site at Manor Terrace

Whilst recognising the contribution which the site makes to the supply of accommodation in Felixstowe for tourists, the District Council would encourage redevelopment of the land currently used for static and touring caravans at Manor Terrace for chalets, if carried out to a high standard of design and subject to access and infrastructure criteria.

The Trimleys

The District Council will protect the open character of the land which separates the physical limits of Felixstowe from those of Trimley St Mary, and the physical limits of Trimley St Mary (including a small part of the parish of Trimley St Martin) from those of Trimley St Martin.

Following the Seafront and Town Centre Masterplan, suggestions of building a leisure path along the seafront in Felixstowe emerged. The path would widen the public access and extend the length of the seafront in the town, providing a more pleasurable and attractive pedestrian area. Other improvements to the seafront proposed within this report included pier improvements, works on sea defences, cycle paths, a winter garden, cafes, improved public amenities and street furniture. The main areas for the improvements are Undercliff Road West, Sea Road, Convalescent Hill, Wolsey Gardens, Bent Hill, Orwell Road, Crescent Road and Hamilton Road. Other key projects included for evaluation in the master plan include:

- Bent Hill – a road improvement scheme, with the objective of making the route more ‘user friendly’, by creating shared space between traffic and pedestrians. This scheme will be the responsibility of SCC to implement and is subject to funding from the Local Transport Plan;
- South Seafront Regeneration – this scheme involves the property development company Bloor Homes and will create a new visitor attraction at the Martello tower and gardens. This scheme cannot go ahead until the coastal defence works have been completed; and
- Landguard Visitor Centre – this scheme will be implemented using funds created from the Felixstowe Port South Reconfiguration project. The scheme will not be implemented until the second stage of the reconfiguration project is underway.

7 COASTAL CONSTRAINTS

The purpose of this document is to inform the later stages of the SMP II and build a holistic picture of the Suffolk coast, incorporating the intrinsic character of the coastline. Through this process, a rounded understanding of the functional aspects of the coast can be appreciated and can therefore inform future policy development. This section of the document essentially contains a summary of socio-economic and environmental constraints on coastal policy development and is largely arranged spatially.

There are obviously further constraints on this coastline; all Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites are covered by the provisions of the Conservation (Natural Habitats &c.) Regulations (1994) (the Habitat Regulations), which is the highest level of statutory protection within the UK. As described in **Section 2.1**, there are stringent requirements that any 'plan or project' not directly connected with or necessary for the management of these sites can only proceed if it is demonstrated by the competent authority for consenting the plan or project that it will not adversely affect the ecological or functional integrity of the site. SMPs come under the definition of 'plan or project', and must therefore pass this test, via an 'appropriate assessment'.

The inherently dynamic nature of coastal environments and the potential of flood risk management structures and practices to both constrain and create habitat ensures that SMP policy has a highly significant bearing on both natural habitats and designated sites. In circumstances whereby SMP policy may have an adverse impact on European designated sites, compensatory measures must be secured to ensure that the overall coherence of the Natura 2000 network (SPAs and SACs) is maintained. This study has therefore identified potential sites for mitigatory habitat creation, based upon previous work and including Guthrie & Cottle (2002) and Royal Haskoning (2004).

Further constraints on SMP policy include potential flood zones, with the 1 in 1000 flood zone being highlighted on **Figure 7.1 – 7.9**, which present an overview of the Suffolk SMP II area, highlighting the constraints detailed in **Table 7.1** and include those sites designated under the Habitat Regulations.

Table 7.1 Spatially distributed constraints on the Suffolk SMP II coastline

Constraint	Description of constraint
1	<ul style="list-style-type: none"> Critical land-based infrastructure within Lowestoft includes the A12 road, which crosses Lake Lothing at the Bascule Bridge. Despite the new relief road further inland, the main road to the back of the sea front and the crossing at the Bascule Bridge are still heavily used and lie very much within the coastal zone. ➤ Ensure critical infrastructure is maintained.
2	<ul style="list-style-type: none"> Lowestoft is intended to be a focus for regeneration, particularly around Lake Lothing and the Outer Harbour area. The connection between the north and south of the town will be improved and measures taken to protect against the risk of flooding will be improved. One of the challenges in securing regeneration of the area will be to achieve an acceptable level of flood risk through the implementation of defence measures. ➤ Ensure Lowestoft is provided with appropriate flood risk management structures.
3	<ul style="list-style-type: none"> The Lake Lothing and outer harbour area will be developed as a strategic employment site in support of port development, regeneration and economic diversification. ➤ Ensure Lake Lothing and outer harbour area is provided with appropriate flood risk

Constraint	Description of constraint
	management structures.
4	<ul style="list-style-type: none"> The Ness Point, harbour and Lake Lothing areas of Lowestoft are planned to be included within the creation of a 'power park', based around existing renewable energy developments in the Ness Point / Wilde Street area. <ul style="list-style-type: none"> ➤ Ensure that Ness Point, Lake Lothing and the outer harbour area is provided with appropriate flood risk management structures.
5	<ul style="list-style-type: none"> A 21 000m² new retail development with provisions for an associated leisure development will be located in the Lake Lothing area, in an extension to Lowestoft town centre. <ul style="list-style-type: none"> ➤ Ensure Lake Lothing is provided with appropriate flood risk management structures.
6	<ul style="list-style-type: none"> Provision has been made for 5 800 dwellings in Lowestoft (including Carlton Colville and Oulton) over the period 2001 – 2021. <ul style="list-style-type: none"> ➤ Ensure Lowestoft is provided with appropriate flood risk management structures.
7	<ul style="list-style-type: none"> The main A12 road link runs inland of Kessingland, crossing the Hundred River upstream of the Kessingland Levels at Latymere Dam and then, remaining well back from the shoreline, continues down to Southwold. The B1127 runs from the A12 down to Reydon, crossing the upstream area of the Easton Broad at Potters Bridge, with only minor roads tending to run from these two north / south routes out towards specific villages and properties. <ul style="list-style-type: none"> ➤ Ensure critical infrastructure is maintained.
8	<ul style="list-style-type: none"> A policy of no active intervention at Benacre Ness would allow the ness to continue to move under natural processes. As the ness moves past Kessingland Levels, this may provide an opportunity for intertidal habitats and transitions to freshwater habitats to develop in the river valley. <ul style="list-style-type: none"> ➤ Develop policy of no active intervention for Benacre Ness.
9	<ul style="list-style-type: none"> Benacre Ness and the Kessingland Levels are considered to be suitable for potential habitat creation. The former provides an extensive area of shingle habitat in which new saline lagoons could be excavated (Guthrie & Cottle, 2002). However, coastal sediment mobility will mean that any created features are largely temporally transitional. Kessingland levels could provide a significant opportunity for recreation of freshwater reedbed and associated habitats and potentially saline lagoons, although appropriate development of this habitat would take a number of years. Saline input to the levels would have to be managed and as such it may not be possible to recreate the specific value of the existing saline lagoons along this frontage (Guthrie & Cottle, 2002). <ul style="list-style-type: none"> ➤ Develop management policy with respect to allowing habitat creation at Benacre Ness and the Kessingland levels.
10	<ul style="list-style-type: none"> At Benacre and Covehithe Broads, a policy of no active intervention would allow the occurrence of dynamic behaviour in the adjacent coastal habitats <ul style="list-style-type: none"> ➤ Develop policy of no active intervention at Benacre and Covehithe Broads.
11	<ul style="list-style-type: none"> At Easton Broad, a policy of do nothing would allow the shingle ridge to evolve and roll back, enabling the development of saline and brackish habitats. Compensatory freshwater habitats would be required to be created in more sustainable locations. <ul style="list-style-type: none"> ➤ Develop policy of do nothing at Easton Broad.
12	<ul style="list-style-type: none"> Continuing erosion, coupled with an increasing attrition of material to shingle ridges would result in a reduction and potential complete loss of the designated saline lagoons, which are an interest feature of the Benacre to Easton Lagoons SAC. Saline water enters the lagoons through overtopping of the barriers during high tides. Natural processes will eventually lead to the loss of these features, although as this is a natural process, compensatory habitat will not be required. However, JNCC (2008j) have recommended that potential management actions to reduce the

Constraint	Description of constraint
	<p>rate of erosion should be addressed through the SMP process, where sustainable.</p> <p>➤ Reduce rate of erosion to saline lagoons and confining barriers, if sustainable.</p>
13	<ul style="list-style-type: none"> Implementation of a managed re-alignment policy at Buss Creek could create intertidal habitat by opening the creek to tidal action. The current policy is hold the line <p>➤ Develop policy of managed realignment at Buss Creek.</p>
14	<ul style="list-style-type: none"> In effect, Southwold is an island, with only one road (A1095) in and out of the town. This route is therefore of key importance to the community. <p>➤ Ensure A1095 is provided with appropriate protection.</p>
15	<ul style="list-style-type: none"> The Southwold town beach is a combination of sand and shingle. The protection was upgraded in 2005/6 with a new coastal management scheme being implemented, including beach nourishment, new traditional timber groynes on the south side of the pier and rock groynes to the north. The significant value of the beach was recognised in the economic assessment undertaken in justifying these works. <p>➤ Develop management policy to allow maintenance of Southwold town beach.</p>
16	<ul style="list-style-type: none"> Sea level rise will lead to more frequent saltwater inundation of the Benacre to Easton Bavents SPA, which whilst being beneficial for some habitats will lead to loss of others (JNCC, 2008o). Sea level rise is causing erosion of the lagoons through the landward movement of the confining shingle barrier (JNCC, 2008o). If unchecked, natural processes are likely over time to lead to the loss of these features with the area of reedbed being reduced (JNCC, 2008o). New lagoons have been created further back from the coast and it is recommended (JNCC, 2008o) that management actions to decrease the rate of erosion should be addressed through the SMP process. <p>➤ Reduce rate of erosion, if sustainable.</p>
17	<ul style="list-style-type: none"> The coastline around the Minsmere-Walberswick SPA area is currently being pushed back by natural processes, with it being recommended that this is addressed in the SMP process (JNCC, 2008q). Alternative sites for reedbed creation are being sought to help offset the possible future natural losses. <p>➤ Reduce rate of erosion, if sustainable and promote options for (reedbed) habitat creation.</p>
18	<ul style="list-style-type: none"> Of approximately 100 units assessed at the Minsmere-Walberswick Heaths and Marshes SSSI, over 50 were in unfavourable condition, although the majority of these sites (around 36) were in an unfavourable recovering condition. Factors attributable to the unfavourable declining condition are coastal squeeze, water pollution and agriculture/run off, under-grazing and public disturbance. Inappropriate coastal management can be attributed as the cause for 7 of the units in unfavourable declining condition (units 9, 84, 85, 86, 87, 104 and 105) (Natural England, 2008l). <p>➤ Address inappropriate coastal management to return those units in unfavourable declining to at least unfavourable recovering condition.</p>
19	<ul style="list-style-type: none"> The land around the Blyth estuary is important for agriculture, with fresh water abstraction allowing farming of the higher land around the estuary. There is also important water abstraction infrastructure and an associated aquifer which is reliant on the maintenance of defences. <p>➤ Continue to maintain structures to defend water abstraction infrastructure and associated aquifer.</p>
20	<ul style="list-style-type: none"> The A12 crosses the Blyth further up the estuary at Blythburgh, forming a partial barrier across the coastal flood plain. <p>➤ Maintain transport linkage while promoting floodplain functionality.</p>
21	<ul style="list-style-type: none"> Land use issues in Southwold relate to ensuring that sustainable development growth is enabled and the key features of the town which support tourism (its historic core, harbour,

Constraint	Description of constraint
	<p>brewery and waterside facilities) are protected.</p> <p>➤ Ensure Southwold is provided with appropriate flood risk management structures.</p>
22	<ul style="list-style-type: none"> Tinkers Marsh is viewed as a potential site for managed realignment, with the opportunity of not just creating additional intertidal area but also providing saline to heathland / terrestrial transitional habitat (Guthrie & Cottle, 2002). However, Tinker's Marsh is an area of designated SPA and Ramsar wetland habitat and thus realignment would effectively lead to the loss of the existing ecological interest of this area. ➤ Develop management policy with respect to allowing habitat creation at Tinker's Marsh.
23	<ul style="list-style-type: none"> It is considered that the most sustainable option for the coastline adjacent to the Blyth Estuary would be to allow dynamic processes to operate along the open coast, while providing a retired defence to landward to maintain much of the reedbed and wetland complex of Westwood Marshes (Guthrie & Cottle, 2002). ➤ Provide a retired defence to landward to maintain reedbed and wetland complex of Westwood Marshes while allowing natural coastal processes to continue.
24	<ul style="list-style-type: none"> The implementation of a no active intervention policy would allow the shingle ridges at Dingle marsh to evolve and roll back, enabling the development of saline and brackish habitats. Compensatory freshwater habitats could then be created in more sustainable locations. ➤ Implement a no active intervention policy at Dingle marsh.
25	<ul style="list-style-type: none"> Continued coastal defence work on the coastline between the Denes and Dunwich has the potential to damage SAC, SPA and Ramsar interests. A significant loss of ecological interest could occur over the long term, due to failure of the fronting shingle ridge and tidal inundation of freshwater and brackish wetland habitats to landward. Realignment or uncontrolled failure of defences within the Blyth estuary would result in significant change to existing designated ecological interests (Guthrie & Cottle, 2002). ➤ Consider realignment or do nothing approach to Blyth Estuary defences to allow natural processes to occur. Coastal management should be sympathetic to European designated sites.
26	<ul style="list-style-type: none"> Robinson's Marsh (opposite Southwold Harbour) could provide an opportunity for the creation of intertidal habitat through realignment of the existing defence line. The area currently comprises river valley floodplain, semi-improved to improved grassland habitat and some areas of marshland. Management of this floodplain could provide additional wet grassland and wetland habitats (e.g. reedbed, open water) which over time could potentially become of greater ecological interest and importance than at present (currently a CWS) (Guthrie & Cottle, 2002). ➤ Develop management policy with respect to allowing habitat creation at Robinson's Marsh.
27	<ul style="list-style-type: none"> Implement a policy of no active intervention at Dunwich Cliffs to allow the continued exposure of coastal cliff and promote the dynamic behaviour of coastal habitats. If no works were taken to strengthen the existing, retired defence then potentially non-intervention may result in the formation of a new estuary system / embayment at the Minsmere Levels due to breach and breakdown of the shingle barrier (Guthrie & Cottle, 2002). ➤ Implement no active intervention policy at Dunwich Cliffs to maintain supply of sediment to Minsmere frontage and allow natural evolution of Minsmere levels.
28	<ul style="list-style-type: none"> Implement policy of managed re-alignment to allow a greater degree of mobility of intertidal and shingle habitats at Minsmere and Walberswick. ➤ Implement policy of managed re-alignment at Minsmere and Walberswick.
29	<ul style="list-style-type: none"> At Minsmere and Walberswick, consideration should be given in the longer term to undertaking large-scale habitat creation to replace terrestrial and freshwater features away from the immediate coastline (Guthrie & Cottle, 2002). Under current coastal processes, the

Constraint	Description of constraint
	<p>internationally important features of this unit cannot be retained fully, either by intervention or by allowing the natural systems of the coast to continue.</p> <p>➤ Develop management policy with respect to allowing habitat creation at Minsmere and Walberswick.</p>
30	<ul style="list-style-type: none"> To the north of Sizewell village is the power station, which is set back from the immediately active section of the shore and with outfall and inlet platforms situated within the nearshore zone. This will require the maintenance of current defence structures. ➤ Ensure Sizewell nuclear power station remains defended, while allowing for construction of new station if required.
31	<ul style="list-style-type: none"> Suffolk Coastal District Council planning policy states that Aldeburgh should retain its role as a tourist centre, offering a range of accommodation and visitor attractions and that it should be protected from the risk of flooding to an appropriate level. ➤ Ensure Aldeburgh is provided with appropriate flood risk management structures.
32	<ul style="list-style-type: none"> The implementation of a managed re-alignment or no active intervention policy at North Warren and Aldeburgh Beach would promote dynamic coastal habitat behaviour. ➤ Implement a managed re-alignment or no active intervention policy at North Warren and Aldeburgh Beach.
33	<ul style="list-style-type: none"> The main coastal road linking Thorpeness and Aldeburgh runs to the rear of a natural ridge, which acts as a barrier to the low lying marshes to the rear. This ridge is therefore of local importance. ➤ Ensure critical infrastructure is maintained.
34	<ul style="list-style-type: none"> Past canalisation and erosion together with sea-level rise has resulted in the loss of much of the saltmarsh at the Alde-Ore and Butley SAC (JNCC, 2008h). There are plans for managed coastal retreat which in the long-term will result in the creation of saltmarsh (JNCC, 2008h). ➤ Develop management policy with respect to allowing habitat creation within Alde-Ore and Butley SAC.
35	<ul style="list-style-type: none"> The Alde-Ore estuary SPA is vulnerable to sea-level rise and coastal squeeze (JNCC, 2008n). SMP policy will need to take into account risks to the site from flooding and of flood control alleviation measures (JNCC, 2008n). ➤ Address coastal squeeze.
36	<ul style="list-style-type: none"> Coastal squeeze is the most common factor for the unfavourable condition of units at the Alde-Ore SSSI, with the exception of unit 13 where inappropriate coastal management was cited as the cause (Natural England, 2008b). ➤ Address coastal squeeze.
37	<ul style="list-style-type: none"> The most critical area of stress within the Alde / Ore estuary is around the Aldeburgh bends. Due to increased flows through this area, there is a significant loss of saltmarsh fringe and potential for further loss in the area of Cob Island and along the High Street (East Iken Marsh) frontage. Under realistic sea level change scenarios, maintenance of all defences will become increasingly difficult and increased flow pressure will be likely to increase the loss of fringe habitat. ➤ Consider realignment of defences to allow intertidal habitat creation.
38	<ul style="list-style-type: none"> A policy of managed re-alignment or no active intervention at Slaughden would allow the shingle spit of Orfordness to evolve and roll back and enable the formation of a more sustainable estuary form. ➤ Implement policy of managed re-alignment or no active intervention at Slaughden.
39	<ul style="list-style-type: none"> Guthrie and Cottle (2002) proposed that the line and integrity of the estuary defences to Kings and Lantern Marshes (Orfordness) should be maintained but no attempt made to raise their level, in effecting lowering the defence level as sea level rise occurs. This would allow,

Constraint	Description of constraint
	<p>gradually, more frequent tidal inundation from extreme events over the next 50 years. It is almost inevitable that there will be change to Orfordness – in order to prevent significant disruption to the rest of the estuary system and allow a more natural transition to a new ecological state / equilibrium, this change should be managed (Guthrie & Cottle, 2002).</p> <p>➤ Maintain integrity of defences, while allowing natural coastal processes to occur.</p>
40	<ul style="list-style-type: none"> Policy AP 163 (Deben Peninsular: Orfordness and Havergate Island) specifies that development will be resisted due to the need to protect the ecological, geological and landscape importance of the area. This 'catch-all' policy recognises the inherent social and environmental values of the area, which is of benefit to the district, without making a significant contribution to the local economy. <p>➤ Maintain remote nature of Orfordness and Havergate Island.</p>
41	<ul style="list-style-type: none"> An opportunity exists at Shingle Street, East Lane and the Bawdsey hinterland to allow the shingle ridges to evolve and roll back, enabling the development of saline, brackish and transitional habitats and transitions. This would require the implementation of a no active intervention or managed realignment policy. <p>➤ Implement either no active intervention or managed realignment policy at Shingle Street, East Lane and Bawdsey hinterland.</p>
42	<ul style="list-style-type: none"> The flood area to the rear of Hollesley Bay extends to the outskirts of Bawdsey and Alderton villages, which are situated some 1 - 1.5km in land. The flooding experienced during the storm surge of 1953 inundated parts of the Deben, cutting the only road between Bawdsey and Bawdsey Manor. <p>➤ Ensure infrastructural link between Bawdsey and Bawdsey Manor maintained.</p>
43	<ul style="list-style-type: none"> Of the 22 management units assessed at the Deben Estuary SSSI, 15 were in unfavourable condition with flood risk management structures or practices not being implicated as the causes (Natural England, 2008g). The main cause was coastal squeeze, which can be addressed through the SMP process. <p>➤ Address coastal squeeze.</p>
44	<ul style="list-style-type: none"> The beach at Felixstowe is an integral aspect of the sea front and its maintenance forms an important feature of the present strategy plan for coastal defence. To the lower lying southern end of the built frontage, the existing flood defence barrier has been constructed to the rear of the promenade to improve both the visual association of the frontage with the shore and to allow ease of access. <p>➤ Maintain beach.</p>
45	<ul style="list-style-type: none"> Suffolk Coastal District Council Planning Policy states that the Felixstowe peninsula south area (Felixstowe, Trimley St Martin and Trimley St Mary) will develop its tourism role in terms of services, facilities and accommodation, building on the qualities and facilities offered by the town of Felixstowe, creating strong links between the seafront and town centre areas and the qualities of the surrounding natural environment and will continue to be defended from the risk of flooding and coastal erosion. <p>➤ Ensure Felixstowe south continues to be defended from flooding and coastal erosion.</p>
46	<ul style="list-style-type: none"> Of the 10 units assessed at the Stour Estuary SSSI, 7 were in unfavourable condition although flood risk management structures or practices were not implicated as causative factors (Natural England, 2008s). The main causes were attributable to coastal squeeze with possible contributions from recreational disturbance, water quality factors, and maintenance dredging. <p>➤ Address coastal squeeze.</p>
47	<ul style="list-style-type: none"> Of the 23 units assessed at the Orwell SSSI, 8 were in unfavourable condition, although flood risk management structures or practices were not implicated as causative factors. Main causes were attributed as being coastal squeeze, which can be addressed through the SMP process

Constraint	Description of constraint
	<p>and water pollution from agriculture / run off (Natural England, 2008m).</p> <p>➤ Address coastal squeeze.</p>



- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

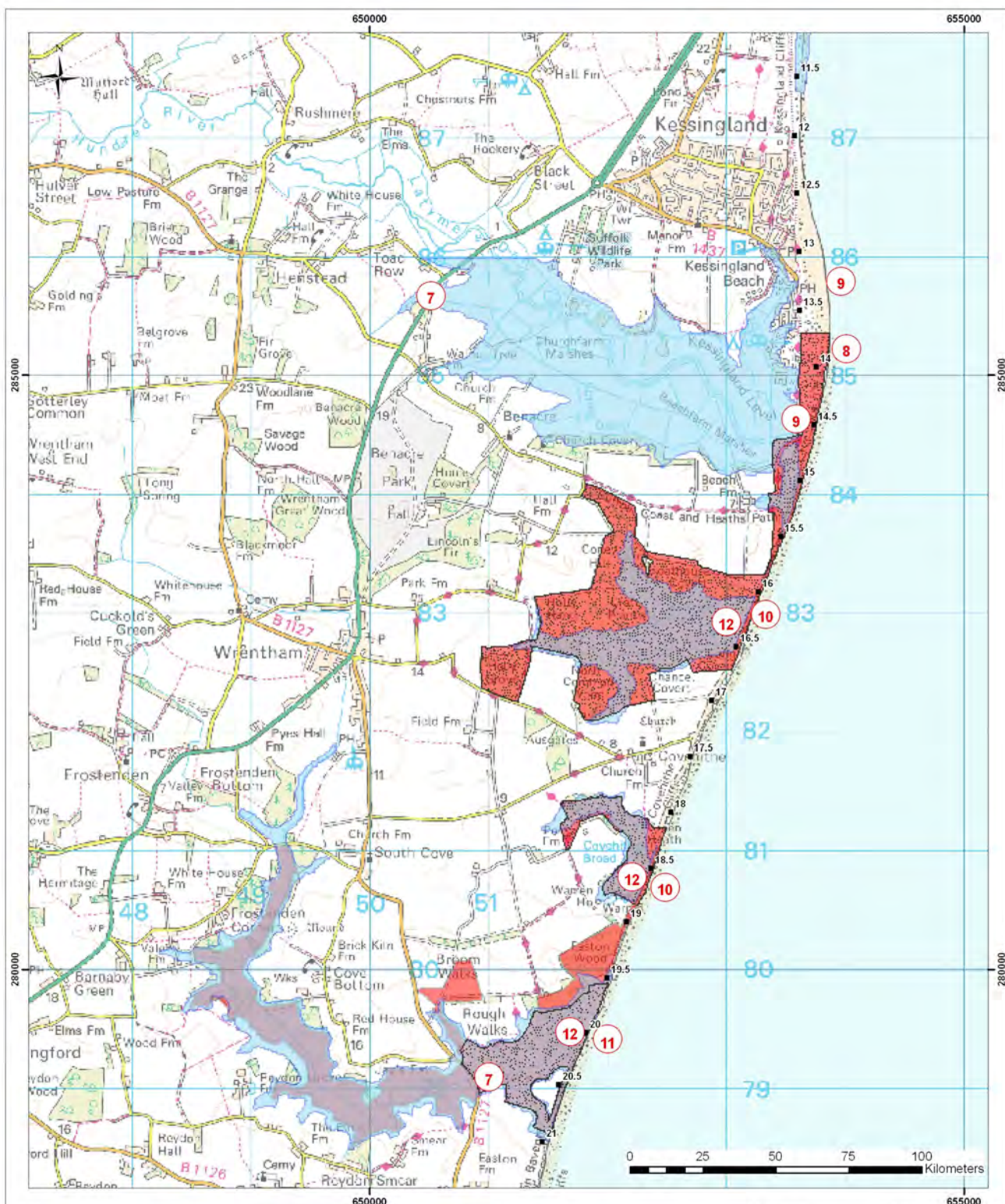
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- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

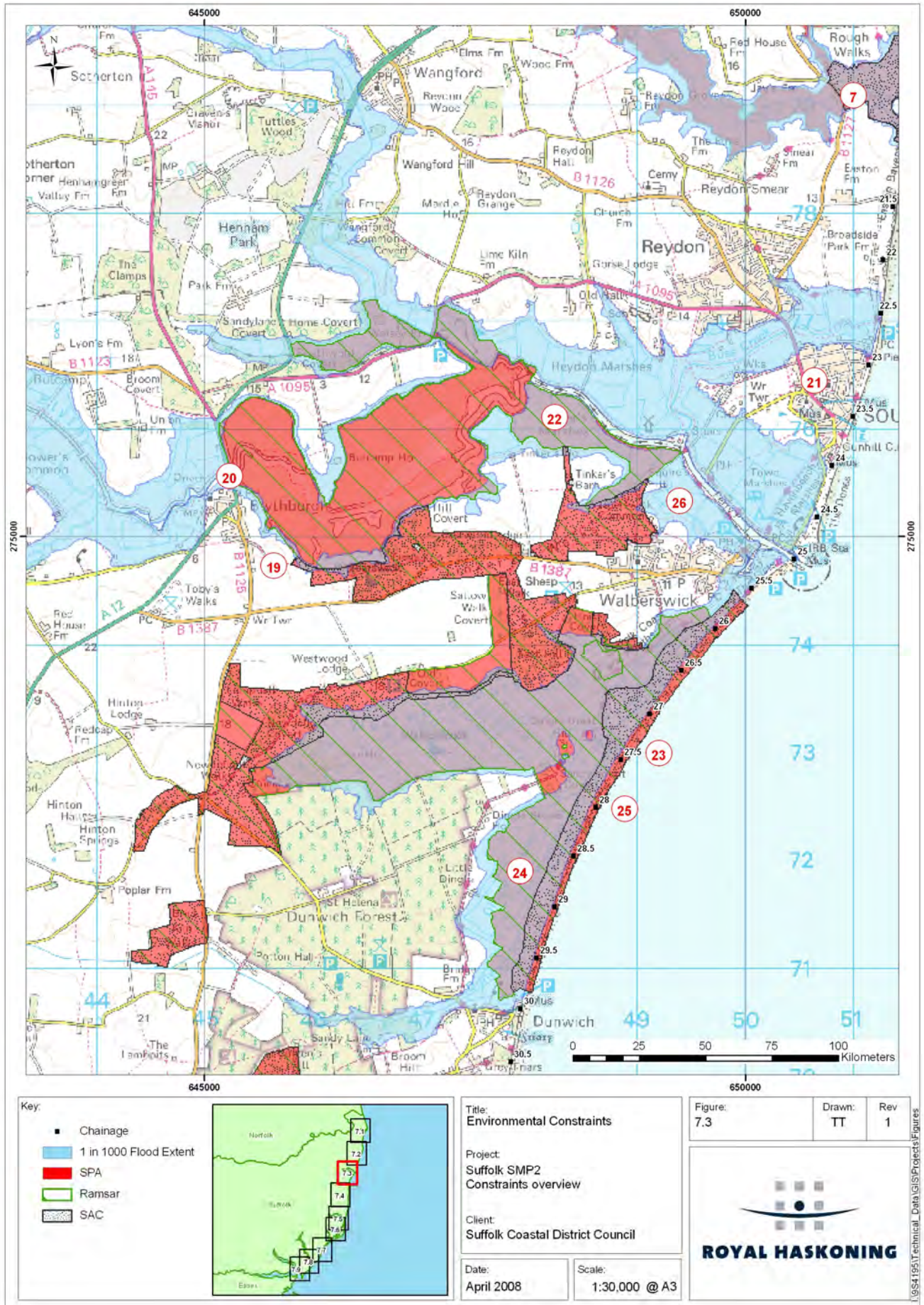
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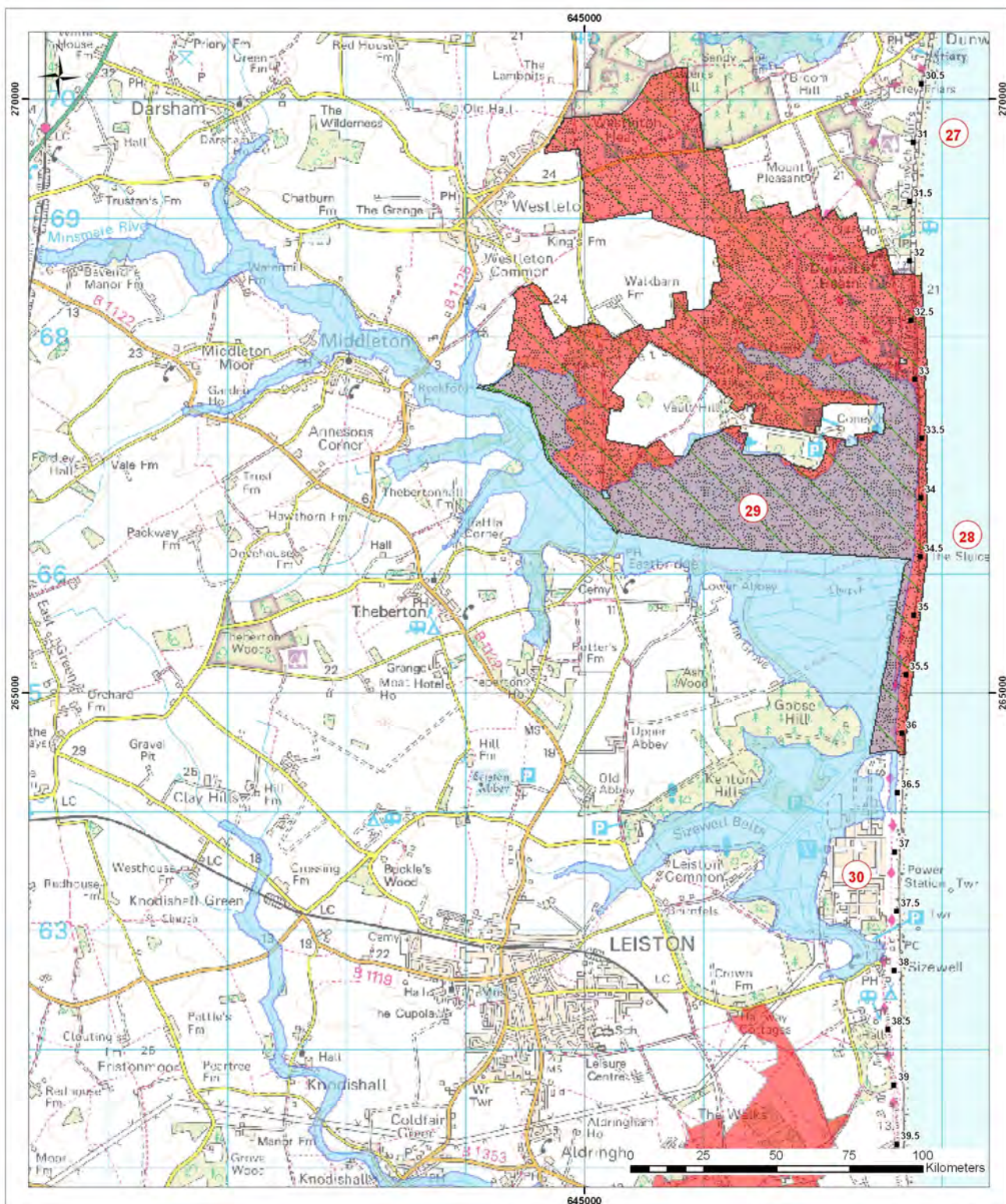
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Key:

- Chainage
- 1 in 1000 Flood Extent
- SPA
- Ramsar
- SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

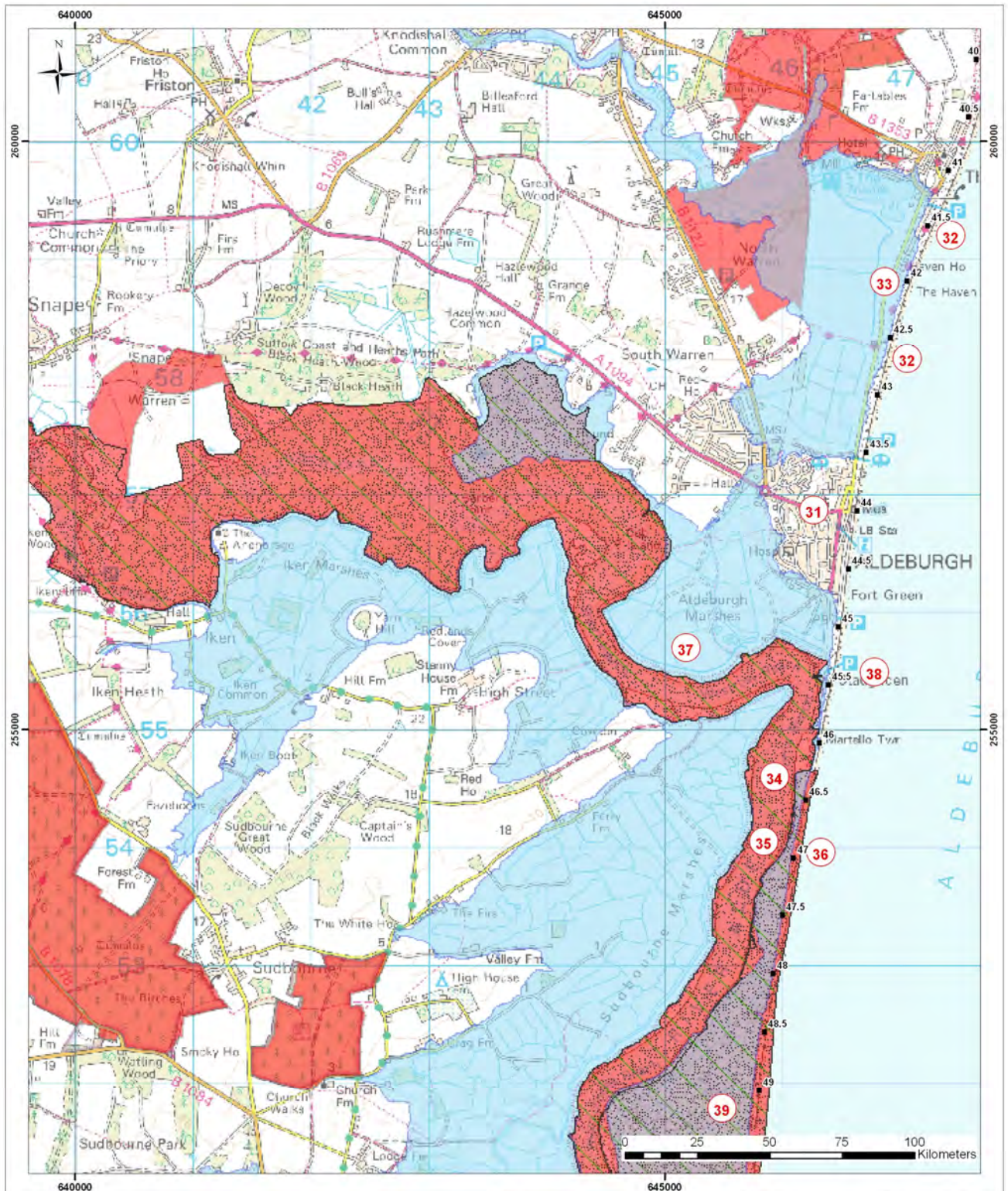
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- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:30,000 @ A3

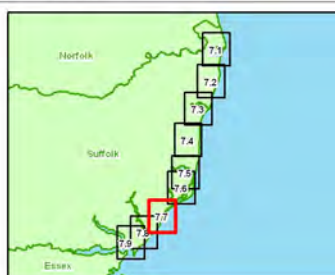
Figure:
7.5

Drawn:
TT

Rev
1



- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:30,000 @ A3

Figure:
7.7

Drawn:
TT

Rev
1



- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:30,000 @ A3

Figure:
7.8

Drawn:
TT

Rev
1



- Key:
- Chainage
 - 1 in 1000 Flood Extent
 - SPA
 - Ramsar
 - SAC



Title:
Environmental Constraints

Project:
Suffolk SMP2
Constraints overview

Client:
Suffolk Coastal District Council

Date:
April 2008

Scale:
1:30,000 @ A3

Figure:
7.9

Drawn:
TT

Rev
1



8

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