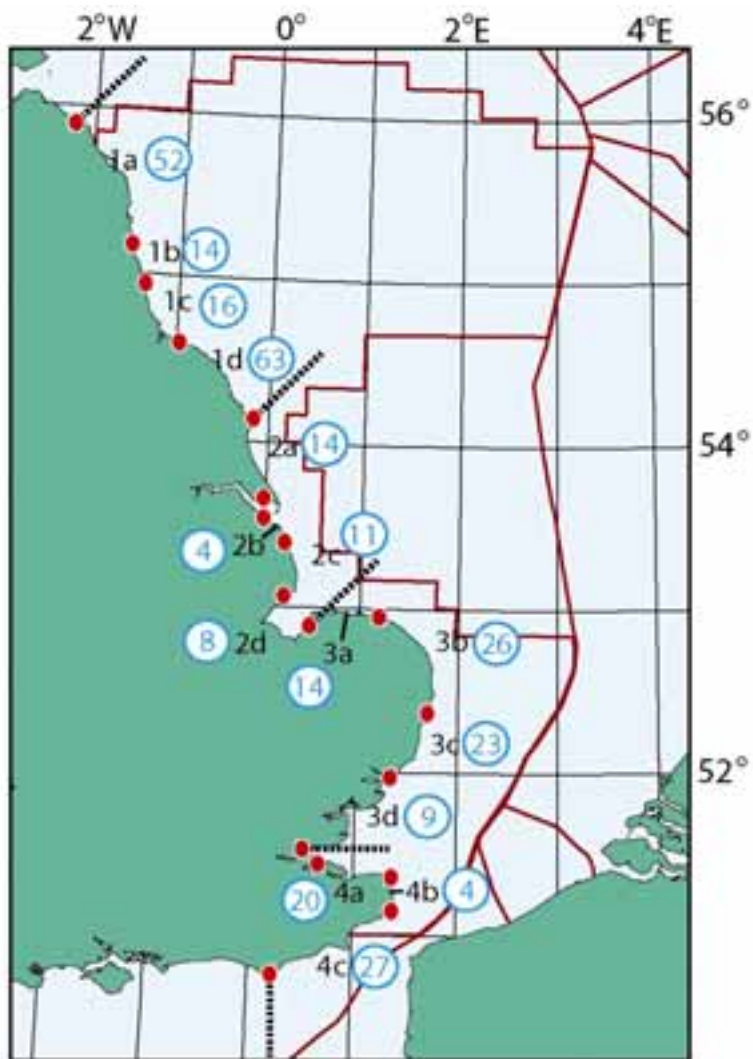




COASTAL INITIATIVES AND MANAGEMENT PLANS IN THE SEA 3 AREA



August 2002

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1 INTRODUCTION

The SEA 3 coastline displays a mosaic of different habitat types including sections of vertical cliff, soft eroding cliffs and slumps, extensive mudflats and sandflats, shingle beaches and saltmarsh. These habitats and their relative importance with regard to conservation of habitats and species are described in the Conservation Sites in the SEA 3 Area report. Numerous dynamic processes both natural and man-made affect the SEA 3 coastline and many of the human influences, which potentially impact upon the SEA 3 environment, are described within the Human Activities in the SEA 3 Area report.

The first part of this report will attempt to describe the SEA 3 environment in terms of the physical processes that shape the coast and the main issues which arise as a result of natural and man-made disturbances. The second part, will broadly examine the coastal fora and initiatives which seek to manage these issues.

Much of the descriptive information of the SEA 3 coast and the issues that affect it has come from the JNCC Coastal Directory series.

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2 SEA 3 COASTAL DESCRIPTION AND ISSUES

2.1 Scottish Borders – North Yorkshire

The Scottish Borders coastline is almost entirely cliffed as far as the English border, reaching heights of nearly 200m between Fast Castle Head and St. Abb's Head. The headlands of Fast Castle, Souter and St. Abb's are subject to greater wave exposure than much of the adjacent coast. Offshore waters support a rich variety of benthic flora and fauna.

From the Tweed to the Tyne, steep cliffs and rocky islands – Holy Island, the Farne Islands and Coquet Island – are interspersed with sweeping sandy bays, such as Druridge Bay and Alnmouth Bay. Between Holy Island and the mainland lies a large area of intertidal mud and sand. South of the Tyne, the coastline consists of slumping cliffs of boulder clay or vertical cliffs of limestone, interrupted in Co. Durham by precipitous wooded gorges (denes) as well as the estuaries of the Tyne, Wear and Tees.

2.1.1 Coastal issues

Much of the coastal land in the region, especially in Northumberland, is now in intensive agricultural use, including both arable and livestock farming. In many areas the former has reduced cliff-top vegetation to a narrow fringe at the edge of the cliff, whilst the latter has caused nutrient enrichment at a number of sites, particularly sand dunes. Here the vegetation has become less diverse as a result of overgrazing.

Artificial sea defences protect much of the coast of the three main estuaries in the region, and the beaches of cliffed sections elsewhere have been built up by colliery waste dumping, particularly along the Durham coast and at Lynemouth in Northumberland. This has to some extent protected the cliffs from erosion. However, off Tyne & Wear and along the Co. Durham and Cleveland coasts, pollution, particularly from dumped colliery waste, has long impoverished the marine and shoreline environment.

The main risk of flooding in the region lies within the Tees Estuary, where much of the industrial development has taken place on claimed land within the confines of the old estuary. South of the Tees there are no major estuaries within the region and the flooding risk is minimal.

2.2 North Yorkshire – Suffolk

The sheer chalk cliffs of Flamborough Head form one of the outstanding coastal landforms of the region. To the south, the relatively unstable drift deposits of the Holderness coast suffer strong erosion by waves and local currents, which render this area the fastest eroding coast in Europe, retreating by more than a metre a year on average. At the southern end of this stretch of coast Spurn Head forms a shingle spit 5km long at the mouth of the Humber Estuary.

The most important marine areas lie around the Humber estuary, The Wash and North Norfolk coast, and offshore there are rich marine habitats associated with the chalk cliffs and reefs of Flamborough Head.

At 30,000ha, the Humber Estuary is one of the largest coastal plain estuaries in Britain and has a number of rivers, in particular the Ouse and the Trent, draining into it. Its catchment covers about one-fifth of England and includes major conurbations such as Nottingham, Sheffield and Leeds.

The Wash, at 66,500ha is the largest estuary in Great Britain. As with the Humber it has been extensively enclosed, with at least 47,000ha of tidal land being claimed since Roman times. The Wash contains extensive intertidal sandflats and mudflats and the area also represents the largest continuous area of saltmarsh in Great Britain. However, the extent of saltmarsh has been greatly altered, as enclosure for agriculture has led to a progressive loss of upper saltmarsh and transitions to swamp and tidal woodland.

Between Hunstanton and Weybourne along the North Norfolk shore lies the finest barrier beach system in Britain, including Scolt Head Island and Blakeney Point. The system consists of dune-capped shingle ridges, with recurved spits protecting a well-developed tract of intertidal mud and saltmarsh. Further east along the Norfolk coast the drift deposits form unstable cliffs, with degraded cliff-faces resulting from landslip or mudflow, as between Sheringham and Mundesley.

Between Caister-on-Sea and Great Yarmouth, the Denes are a tract of sandy shingle, forming a broad accretionary barrier protecting the Broadland embayment. Intertidal mudflats form the flanks of Breydon Water behind Great Yarmouth.

2.2.1 Coastal issues

Much of this coastal region is relatively sparsely populated and predominantly agricultural. The city and port of Hull and the surrounding area represent the only major coastal infrastructure development. Major industry on enclosed tidal land mirrors some of the development in the metropolitan counties of Tyne and Wear and on Teeside.

Throughout the region there are extensive sea walls, banks, groynes and other structures, and their continued maintenance is becoming more and more expensive. This is particularly important as relative sea level in the region is known to be rising at a rate of 2-4mm per year (Cambridge Environmental Research Consultants 1992; cited by Barnes *et al.* 1995). Since a large part of the Fens lies below the +5m contour, the risk of flooding is thought to be greater there than for any other area in Great Britain.

Most often coastal works have been not for infrastructure development but to prevent cliff erosion or inundation of formerly tidal land enclosed for human use. The most notable example is the progressive enclosure of saltmarshes around The Wash. Much of the claimed land is in agricultural use, mostly intensive arable farming, and is some of the most productive land in Great Britain.

Coastal defences protect relatively little of the cliff base along the Holderness coast and natural coastal erosion is prevalent. The high natural rates of erosion have historically posed a threat to agriculture and settlements in the region. Protection of the cliff foot is only likely to be allowed in future adjacent to large settlements and important industrial installations. Groynes are present for lengthy stretches of the Norfolk cliffs and these have altered patterns of sediment transport and deposition along the Norfolk coast over the past century.

2.3 Suffolk - Kent

The cliffs of Suffolk are predominantly of poorly-consolidated glacial material. They are relatively low (<20m), with non-vertical faces subject to relatively rapid erosion and retreat. The only hard-rock cliffs in the region are the famous vertical chalk cliffs around Dover.

Many of the Suffolk cliffs are interspersed with estuaries and lagoons, many of the lagoons being nationally important, particularly those set within or behind shingle bars or barrier beaches. Several lagoons now have little or no saltwater ingress and extensive reedbeds have developed, as for example at Walberswick, one of the largest reedbeds in Britain.

A complex of estuaries cut through the southern Suffolk and Essex coast and together with the Thames Estuary, represent a significant 10% of Great Britain's estuarine resource. Saltmarshes are found within all the estuaries of the region, with the largest individual expanse being on the Dengie Peninsula.

In Essex, sandy shingle occurs at Colne Point and Shoeburyness, with shell gravel fronting the mid-Essex saltmarshes in between. Shell gravel is also found on the North Kent coast. The south-east coast of Kent has extensive fringing shingle beaches, and Dungeness, possibly the largest shingle cusped foreland in Europe, contains over 42% by area of Britain's shingle.

2.3.1 Coastal issues

South Essex and North Kent are some of the most heavily populated parts of the UK with the major industries of the region being mostly situated around the Thames Estuary. However, the region also includes substantial areas of undeveloped coastline.

In the region relative sea level is rising at a more rapid rate than anywhere else in the UK; this fact, the ongoing erosion of coastal habitats and the threat of flooding by tidal surges are major considerations for coastal zone management and have resulted in the construction of extensive sea defence and coast protection works.

Many of the soft Suffolk cliffs have been artificially stabilised by a variety of coastal protection structures, which often obscure important geological and palaeoenvironmental features, prevent natural movement of the cliffs and change the nature of the plant communities that grow there.

Essex and Kent has more than 50% of its length fronted by some form of artificial sea defence or coastal protection structure. Schemes involving beach-feeding with sand and the building of groynes, as well as an upsurge of interest in 'soft' engineering solutions such as managed retreat and saltmarsh creation schemes, are all in operation. The Thames Barrier and its associated tidal defences comprise the most expensive and significant sea defence project in the region, designed to protect London even from storms of a severity that is expected only once every 1,000 years.

The coastal hinterland is mostly in intensive agriculture and comprises some of the most productive and intensively cultivated land in Great Britain. Much coastal land was created by the enclosure of former intertidal areas. Saltmarshes in the region have been greatly altered over many years, as enclosure for agriculture has led to the progressive loss of upper saltmarsh communities and landward transitions. Unlike those in the Wash where accretion is the norm, saltmarshes in both Essex and Kent are known to be eroding over a wide area, and between 1973 and 1986 some sites have lost between 10% and 44% of the original area of marsh. Elsewhere in the region, some areas of coastal wet grassland have reverted to intertidal habitats, as collapsed sea walls have been left unrepaired.

2.4 Climate change and sea level rise

Information regarding climate change and sea level rise has come from the recently published *Climate Change Scenarios for the United Kingdom 2002* produced by DEFRA in conjunction with the UK Climate Impacts Programme, the Tyndall Centre for Climate Change Research and the Met Office Hadley Centre. The emission scenarios used in the report have come from the Intergovernmental Panel on Climate Change Special Report on Emissions Scenarios (IPCC SRES) and have been used to predict future climate change and sea level rise around the UK up to the year 2080.

The report predicts that sea level rise will vary regionally around the UK as a result of natural land movements and regional variations in the rate of climate-induced sea-level rise.

The main reason for regional land movements in the UK is the on-going readjustment of the land to the de-glaciation that followed the last ice age. In consequence, much of southern Britain is sinking and much of northern Britain is rising relative to the sea. This means that the relative, or net, change in average sea level around the UK coastline will vary, even if the climate-induced change in sea level were the same everywhere (Table 2.1).

Table 2.1 - SEA 3 regional differences in land movements and predicted sea-level change			
SEA 3 region	Regional isostatic uplift (+ve) or subsidence (-ve) (mm/yr)	Net sea-level change 2080s (cm) relative to 1961-90	
		Low emissions scenario	High emissions scenario
SE Scotland	+0.8	0	60
NE England	+0.3	6	66
Yorkshire	-0.5	15	75
East Midlands	-1.0	20	80
Eastern England	-1.2	22	82
London	-1.5	26	86
SE England	-0.9	19	79

The century-scale rise in average sea level may threaten some low-lying unprotected coastal areas, yet it is the extremes of sea level – storm surges and large waves – that may cause most damage. The report predicts that extreme sea levels will be experienced more frequently and for some south east locations, extreme sea levels could occur between 10 and 20 times more frequently by the 2080s.

However, caution must be exercised in interpreting the significance of the predictions mentioned above. The regional climate model used in the DEFRA report is driven by a global model and any errors in the global model simulations will be reflected in the regional model results. Also, as with any model there is a degree of uncertainty and Box 2.1 indicates the relative confidence level the report attributes to the relevant predictions.

Box 2.1 - Confidence levels for predicted scenarios		
Variable	Predicted scenario	Relative confidence level
Global-average sea level	Will continue to rise for several centuries, and probably longer.	High
	Will increase by the 2080s by between 9 and 69cm.	Medium
UK sea level change	Continuation of historic trends in vertical land movements will introduce significant regional differences in relative sea level rise around the UK.	High
Extreme sea levels	Will be similar to the global average.	Low
	For some coastal locations and some scenarios, storm surge return periods by the 2080s will reduce by an order of magnitude.	Medium
	Changes in storminess, sea level and land movement mean that storm surge heights will increase by the greatest amount off southeast England.	Low

Rising sea levels may have a number of consequences of particular relevance to the SEA 3 coast:

- Low-lying land at greater risk of inundation
- Increased likelihood of storm surges overtopping sea defences and causing flooding
- May change sedimentation patterns in estuaries and inlets which may mean more dredging required in some harbours and ports
- May exacerbate 'coastal squeeze' in areas with hard flood defences. This occurs when sea level rises along a shore protected by a hard barrier such as a sea defence or rocky cliff. If there is an intertidal area of mud or marshes, they will be effectively squeezed out of existence as sea level rises and meets the barrier
- May lead to eradication of some species that are unable to adapt, for example, it may be impossible for the onshore migration of saltmarsh plant species

Sources of information

Barne, J.H., Robson, C.F., Kaznowska, S.S., Doody, J.P., & Davidson, N.C., eds. 1995. *Coasts and seas of the United Kingdom*. Peterborough, Joint Nature Conservation Committee.

Climate Change Scenarios for the United Kingdom. April 2002. DEFRA

Environmental Facts and Figures – Sea Levels. Environment Agency website.

http://www.environment-agency.gov.uk/yourenv/eff/natural_forces/sealevels/?version=1

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3 COASTAL INITIATIVES AND MANAGEMENT PLANS

The preceding section of this report described many of the important issues which currently affect or may affect the SEA 3 coastal environment in the future. In order to minimise the detrimental effect of many of these real and predicted changes, a range of coastal initiatives and management strategies have been established. This section shall broadly review the major management plans and co-ordinating authorities of relevance to SEA 3.

3.1 Coastal fora

Coastal fora are voluntary partnership groups comprising members from a range of organisations, including industry, commerce, local government, recreation and conservation bodies, as well as interested individuals.

Within the SEA 3 area there are a range of partnerships involved in the co-ordinated management of much of the coastal zone (Table 3.1). Whilst non-statutory in nature, these groups rely on statutory bodies voluntarily adopting and aligning their own policy with the management strategies of the fora.

Table 3.1 - Coastal fora in SEA 3 region

Scottish Coastal Forum	
Members:	Association of Scottish Shellfish Growers, British Ports Association, Confederation of British Industry, CoastNET, COSLA, The Crown Estate, Highlands and Islands Enterprise, Maritime and Coastguard Agency, Scottish Enterprise, SEPA, Scottish Fishermen's Association, Scottish Natural Heritage, Scottish Quality Salmon, Sport Scotland, National Trust for Scotland, RSPB, Scottish Environment LINK, Scottish Tourist Board, The Scottish Executive.
Remit/Management Strategy:	Encourage the formation of local coastal fora providing point of co-ordination as well as acting as a central point for their views and concerns. Encourage debate on coastal issues at national level. Seek opportunities for better co-ordination of national frameworks and policies. Gather information about approaches to coastal management and disseminate good practice to local fora.
Forth Estuary Forum	
Members:	RSPB, Historic Scotland, Forth Ports PLC, Crown Estate, Arthur Marketing and Publications, City of Edinburgh Council, Falkirk Council, SEPA, East of Scotland Water, Fife Council, Royal Yachting Association, Scottish Natural Heritage, West Lothian Council, Babcock Facilities Management.
Remit/Management Strategy:	Sustainable resource management. Environmental protection and enhancement. Integrated management. Education and personal responsibility.
St. Abbs and Eyemouth Voluntary Marine Reserve	
Members:	Number of local and national interest groups.
Remit/Management Strategy:	Conserve the biodiversity of the coastal waters. Raise awareness of the marine environment through education Promote responsible recreational use alongside a sustainable fishery
Turning the Tide (Co. Durham coastline)	
Members:	Durham County Council, District of Easington, The National Trust, One NorthEast, The Countryside Agency, Northumbrian Water Group, English

Table 3.1 - Coastal fora in SEA 3 region

Remit/Management Strategy:	Nature, European Regional Development Fund, The Wildlife Trusts, Groundwork East Durham, Northern Arts, Port of Seaham. Improving and monitoring beaches. Removal of colliery spoil from coastal areas. Nature conservation and landscape enhancement. Coastal recreation facilities and improved public access.
Norfolk Coast Partnership (Norfolk Coast Area of Outstanding Natural Beauty)	
Members:	Countryside Agency, Norfolk County Council, North Norfolk District Council, King's Lynn and West Norfolk Borough Council, Norfolk Wildlife Trust, National Trust, RSPB, English Nature, Environment Agency, Country Landowners Association, National Farmers Union, East of England Tourist Board, DEFRA, local representative for Sports and Recreation, East of England Development Agency, parish council representatives, Great Yarmouth Borough Council.
Remit/Management Strategy:	Conserve and enhance the natural beauty of the Norfolk Coast Area of Outstanding Natural Beauty. Facilitate and enhance the public's enjoyment, understanding and appreciation of the area. Promote sustainable forms of social and economic development.
Thames Estuary Partnership	
Members:	Anglian Water, Cleanaway, Cory Environmental, English Nature, Environment Agency, Essex County Council, Greater London Authority, Kent County Council, Kent and Essex Sea Fisheries Committee, Medway Council, National Farmers Union, Port of London Authority, RSPB, Southend Marine Activities Centre, Thames Archaeology Steering Committee, Thames Explorer Trust, Thames Water, Thurrock Council, University College London.
Remit/Management Strategy:	Provides an umbrella body to assist with the co-ordination of action and projects across the wide range of organisations and sectors involved on the estuary.
Medway and Swale Estuary Partnership	
Members:	Canterbury City Council, English Nature, Environment Agency, Lower Medway Internal Drainage Board, Kent County Council, Kent Wildfowling and Conservation Association, Kent and Essex Sea Fisheries Committee, Medway Council, Medway Ports, Medway Yachting Association, Rochester Oyster and Floating Fisheries, RSPB, South East England Tourist Board, Sport England, Swale Borough Council, Thamesport, University of Greenwich.
Remit/Management Strategy:	Promote a positive relationship between local communities, commerce, agriculture, recreation and conservation. Acknowledge and manage to mutual benefit the competing demands placed upon the estuary. Consider issues of key local importance not addressed in other plans and strategies. Encourage the exchange of information between interested organisations. Bridge the gap between the scientific and technical community, and end users.

Sources of information

Scottish Coastal Forum website

<http://www.scotland.gov.uk/environment/coastalforum/background.asp>

Forth Estuary Forum website

<http://www.forthestuaryforum.co.uk/>

St. Abbs and Eyemouth Voluntary Marine Reserve

<http://www.divescoutscroft.freeserve.co.uk/marineres/marine.htm>

Turning the Tide website

<http://www.turning-the-tide.org.uk/>

Norfolk Coast Partnership

<http://www.norfolkcoastaonb.org.uk>

Thames Estuary Partnership website

<http://www.thamesweb.com>

Medway and Swale Estuary Partnership website

<http://www.angeldesign.demon.co.uk>

3.2 European marine site management schemes

Within the SEA 3 area there are a number of areas classified as European Marine sites (Table 3.2). These are marine sites, which contain areas protected by both cSAC and SPA designations, and are of particular relevance to developments within coastal waters of SEA 3. The designation of offshore cSACs and SPAs in the future (see Section 6 – Potential Offshore Conservation Sites in the Conservation Sites in the SEA 3 Area report), may lead to the classification of European marine sites within the offshore marine environment.

The EC Habitats Directive has a number of key requirements for the management of European marine sites:

- Management of the sites should contribute to maintaining or achieving favourable conservation status of their natural habitats and species
- Steps must be taken to avoid the deterioration or disturbance of the habitats and species for which the site has been designated
- Activities, plans or projects, whether inside or outside the site, which are likely to have a significant effect upon the site features, must be subject to an assessment
- Monitoring must be undertaken to assess the conservation status of the site interest features and to assess the effectiveness of management
- Management of the site must take into account the economic, social, cultural and recreational needs of the local people

In Britain, the Habitats Regulations interpret the Habitats and Birds Directives into British Law. These regulations make special provision for European marine sites, charging all statutory bodies with jurisdiction in the marine area with a duty to protect SACs and SPAs. Bodies such as the Environment Agency, local authorities, English Nature, harbour authorities and Sea Fisheries Committees must, in carrying out their everyday functions, work to ensure that the conservation features of marine sites are protected, and they also have a responsibility to participate in the development of management schemes for these sites (Table 3.2).

Table 3.2 – European marine site management schemes in SEA 3

Berwickshire and North Northumberland Coast European Marine Site	
Members:	Scottish Natural Heritage, UK Marine SAC Project, Northumberland County Council, EU Life Programme, English Nature
Remit/Management Strategy:	Conserving key interest features of the European marine site whilst taking into account local cultural, economic, social and recreational requirements. A management scheme has been produced for the site
Flamborough Head European Marine Site	
Members:	Bridlington Harbour Commissioners, East Riding of Yorkshire Council, English Nature, Environment Agency, North Landing Harbour Commissioners, North Eastern Sea Fisheries Committee, North Yorkshire County Council, Scarborough Borough Council, Trinity House Lighthouse Service, Yorkshire Water Services Ltd
Remit/Management Strategy:	Ensure that human activities are undertaken in ways which do not conflict with the nature conservation interests of the site, and where possible, in ways which support them Integrate the sustainable management of the site wherever possible with both existing and future plans and initiatives, to avoid duplication of effort Management scheme produced in 2000.
Wash and North Norfolk Coast European Marine Site	
Members:	Boston Borough Council, Chairpersons from the advisory groups, the Crown Estate, East Lindsey District Council, Eastern Sea Fisheries Joint Committee, English Nature, Environment Agency, Fenland District Council, Internal Drainage Boards, King's Lynn Conservancy Board, King's Lynn and West Norfolk Borough Council, Lincolnshire County Council, DEFRA, MOD, Norfolk Coast Partnership, Norfolk County Council, North Norfolk Common Right Holders, North Norfolk District Council, Port of Boston, South Holland District Council, Wash Estuary Strategy Group, Wells Harbour Commissioners
Remit/Management Strategy:	Ensure management measures are sufficient to meet the conservation goals of the site and highlight any gaps where additional management may be required. Management scheme produced and implemented in 2001
Essex Estuaries Initiative	
Members:	Colchester Borough Council, English Nature, Tendring Borough Council, Environment Agency, Essex County Council, Maldon District Council.
Remit/Management Strategy:	Promotes the responsible use and management of the coastal region in the locale of the Essex Estuaries European Marine Site. A management scheme is to be published soon

Sources of information

Fortune F & Quigley M (2001). Managing the Berwickshire and North Northumberland Coast European Marine Site

Evans K (2000) Flamborough Head European Marine Site Management Scheme

Mortimer D (2001). Wash and North Norfolk Coast European Marine Site Management Scheme

Essex Estuaries Initiative

<http://www.essexestuaries.org.uk/>

3.3 Shoreline management plans (SMPs)

In 1995, the former Ministry of Agriculture, Fisheries and Food (MAFF) and the Welsh Office published guidance on the preparation of Shoreline management plans (SMPs) for discrete lengths of coastline.

SMPs set out a strategy for long-term (next 50 years) sustainable coastal defence within coastal sediment cells (Box 3.1 and Table 3.3; Figure 3.1), taking account of natural coastal processes and human and other environmental influences and needs.

Box 3.1 - SMP coastal sediment cells

Sediment cells and sub-cells

Sediment is moved around the coast by waves and currents in a series of linked systems (sediment transport cells) which comprise an arrangement of:

- Sediment source areas (e.g. eroding cliffs, rivers, sea bed)
- Areas where sediment is moved by coastal processes
- Sediment stores or sinks (e.g. beaches, estuaries or offshore sinks)

Along a particular stretch of coast there may be a series of such cells. Major cells, many with sub-cells have been suggested for the coast (see Figure 3.1 and Table 3.3 for cells of relevance to SEA 3). These sub-cells represent a practical subdivision of the coastline into lengths that follow sediment cell principles while enabling suitably sized groups to be formed to consider coastal defence issues at a strategic level.

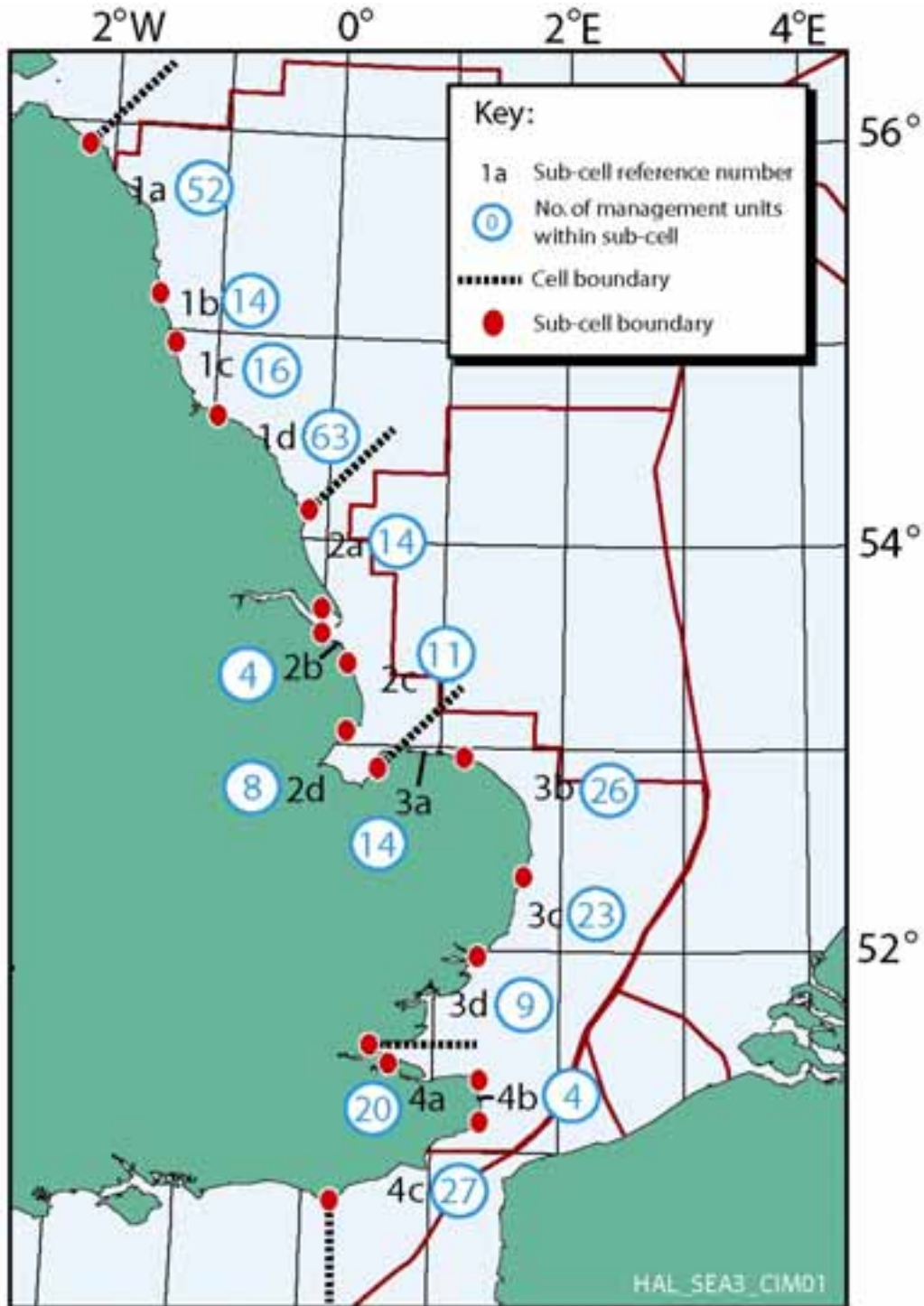
Sediment cells and sub-cells can be further subdivided into:

Coastal process units and management units

A coastal process unit (CPU) is a length of coastline in which the physical processes are relatively independent from processes operating in adjacent coastal process units. For management purposes, these units provide the framework for considering the potential wider impacts of policies in a particular management unit(s) on the adjacent shoreline.

A management unit is a length of shoreline with coherent characteristics in terms of coastal processes and assets at risk that can be managed efficiently. A CPU may be made up of one or more management units.

Figure 3.1 – SEA 3 sediment cells, sub-cells and management units



SMPs are prepared by coastal defence authorities (the Environment Agency, English Nature and maritime local authorities) acting individually or as part of coastal groups (see Table 3.3 for coastal groups of relevance to SEA 3).

Table 3.3 - SMP sediment sub-cells and coastal groups of relevance to SEA 3		
Sub-cell	Location and coastal group	Member organisations
1a	St. Abb's Head to The Tyne <i>Northumbrian Coastal Group</i>	Alnwick District Council, Berwick-Upon-Tweed Borough Council, Blyth Valley Borough Council, Castle Morpeth Borough Council, English Nature, Environment Agency Anglian Region, North Tyneside Metropolitan Borough Council, <i>Wansbeck District Council</i> .
1b	The Tyne to Seaham Harbour <i>North Eastern Coastal Group</i>	Easington District Council, Hartlepool Borough Council, East Riding of Yorkshire Council, English Nature, Environment Agency Anglian Region, Redcar and Cleveland Borough Council, Scarborough Borough Council, South Tyneside Metropolitan Borough Council, <i>Sunderland City Council</i> , Wansbeck District Council.
1c	Seaham Harbour to Saltburn <i>North Eastern Coastal Group</i>	Lead authority - <i>Hartlepool Borough Council</i>
1d	Saltburn to Flamborough Head <i>North Eastern Coastal Group</i>	Lead authority - <i>Scarborough Borough Council</i>
2a	Flamborough Head to Sunk Island <i>Humber Estuary Coastal Authorities Group</i>	East Lindsey District Council, <i>East Riding of Yorkshire Council</i> , English Nature, Environment Agency Anglian Region, North East Lincolnshire Council.
2b	Immingham to Donna Nook <i>Humber Estuary Coastal Authorities Group</i>	Lead authority - <i>East Riding of Yorkshire Council</i>
2c	Donna Nook to Gibraltar Point <i>Humber Estuary Coastal Authorities Group</i>	Lead authority - <i>Environment Agency</i>
2d	Gibraltar Point to Snettisham <i>Anglian Coastal Authorities Group</i>	Colchester Borough Council, English Nature, <i>Environment Agency Anglian Region</i> , Great Yarmouth Borough Council, King's Lynn and West Norfolk Borough Council, Maldon District Council, DEFRA, North Norfolk District Council, Rochford District Council, Southend-on-Sea Borough Council, Suffolk Coastal District Council, Tendring District Council, Waveney District Council
3a	Snettisham to Sheringham <i>Anglian Coastal Authorities Group</i>	Lead authority - <i>Environment Agency</i>
3b	Sheringham to Lowestoft <i>Anglian Coastal Authorities Group</i>	Lead authority - <i>North Norfolk District Council</i>
3c	Lowestoft to Harwich <i>Anglian Coastal Authorities Group</i>	Lead authority - <i>Suffolk Coastal District Council</i>

Table 3.3 - SMP sediment sub-cells and coastal groups of relevance to SEA 3		
Sub-cell	Location and coastal group	Member organisations
3d	Harwich to Canvey Island <i>Anglian Coastal Authorities Group</i>	Lead authority - <i>Tendring District Council</i>
4a	Isle of Grain to North Foreland <i>South East Coastal Group</i>	Canterbury City Council, Dover District Council, Rochester-Upon-Medway City Council, Swale Borough Council, Thanet District Council, Environment Agency
4b	North Foreland to Dover Harbour <i>South East Coastal Group</i>	
4c	Dover Harbour to Beachy Head	Dover District Council, Eastbourne Borough Council, Environment Agency (Southern Region), Hastings Borough Council, Rother District Council, Shepway District Council, Wealden District Council.

Note: Lead authorities in creation and implementation of SMPs denoted by *italics*.

These coastal groups oversee the implementation of SMPs, monitor progress and initiate reviews and revisions of the SMP. Through these groups, SMPs set objectives for the future management of the shoreline based on predictions of the likely future evolution of the coast and knowledge of coastal processes within the sediment cells.

These management objectives involve assessment of a range of strategic coastal defence options and identification of a preferred approach for sections of coast (management units) within the plan area. The generic options for such sections of coast are described in Box 3.2.

Box 3.2 - Shoreline management policies
- Hold the existing defence line by maintaining or changing the standard of protection (e.g. beach recharge, construction of offshore breakwaters etc).
- Advance the existing defence line by constructing new defences seaward of the original defences.
- Managed realignment by identifying a new line of defence and, where appropriate constructing new defences landward of the original defences.
- Limited intervention by working with natural processes to reduce risks while allowing natural coastal change (e.g. dune management, early warning systems for cliff instability etc).
- No active intervention, where there is no investment in coastal defence assets or operations i.e. no shoreline management activity.

DEFRA have identified five key issues that need to be addressed in the appraisal of shoreline management policies. These are:

- Coastal processes, including the historic and future evolution of the coastline, existing coastal data and studies
- Coastal defences, including the purpose and ownership of defences, the condition, performance and residual life of existing defences, and other factors such as the availability of beach recharge to meet present and future needs

- Current and future land use, including current and future development proposals, agricultural and forestry issues, ports and harbour operations, aggregate and other dredging operations, recreation and tourism
- Historic and archaeological features recorded in Sites and Monuments Records and areas of high archaeological potential, including maritime archaeological features, scheduled monuments, listed buildings, registered battlefields
- Natural environment, including the implications of The Conservation (Natural Habitats & c.) Regulations 1994 and biodiversity targets on shoreline management, landscape interests

First generation SMPs have been completed around the coastline of England and Wales. Many operating authorities have adopted the recommendations of their plan as a basis for the production of individual strategic plans, monitoring programmes and studies for all or parts of their coastline and, where proven by strategic plans to be necessary and sustainable, the implementation of appropriate schemes. A second tranche of SMPs are currently in preparation.

Details of the SMP management policies adopted for management units within the sub-cell of relevance to SEA 3 are presented in Table 3.4. The management unit policies may be for the entire unit or part of (in the case of sub-cells where the number of management unit policies is greater than the number of management units listed), and details of the time-scales for adoption of the policies are also included.

Table 3.4 - Details of SMP management units and policies in SEA 3					
Sub-cell location	Length (km)	No. of MUs	Management unit policies		
			“Do nothing”	“Hold the line”	“Managed retreat”
St. Abb's Head to The Tyne	150	52	27	25	0
The Tyne to Seaham Harbour	25	14	5	9	0
Seaham Harbour to Saltburn	46	16	7	9	0
Saltburn to Flamborough Head	91	63	33	19	11
Flamborough Head to Donna Nook (2a and b)	121	18	11	13	1
Donna Nook to Gibraltar Point	50	11	1	10	0
Gibraltar Point to Snettisham	80	8	0	8	Longer term – “Managed retreat”
Snettisham to Sheringham	65	14	6 Short term (2)	13 Short term (5)	8 Longer term (7)
Sheringham to Lowestoft	72	28	7	16	5
Lowestoft to Harwich	80	23	3	18	5
Harwich to Canvey Island	440	9	1	3 Medium term (10yrs) (7)	Longer term – combination of “Hold the line” and “Managed retreat”
Isle of Grain to Dover Harbour (4a and b)	105	28	6	21	1
Dover Harbour to Beachy Head	105	27	7	20	Longer term opportunities for realignment (13)

Scarborough Borough Council published an SMP in September 1997, the conclusions of which provide an example of a section of a relevant SMP.

3.3.1 Sub-cell 1D - Saltburn to Flamborough Head

The Saltburn to Flamborough Head coastline has been divided into 31 coastal process units (CPU's), which are further divided into 63 management units. This report shall summarise one of these coastal process units (No. 31) which has been subdivided into five management units (Box 3.3).

Box 3.3 – Summary of King Rock to Flamborough Head (CPU No. 31)	
Management units:	31A - King Rock to Crowe's Shoot, 31B – Crowe's Shoot to North Cliff, 31C – North Cliff to High Holme, 31D – High Holme to Cooness Nook, 31E – Cooness Nook to Flamborough Head.
Coastal processes and geomorphology:	Tall, near vertical cliffs. Low susceptibility of coast to erosion from wave action.
Coastal defences:	Coastline undefended with very few properties.
Natural environment:	High environmental value of Flamborough Headland - number of conservation designations (SSSI, SPA, cSAC, RSPB reserve, Sensitive Marine Area and Heritage Coast).
Human and built environment:	Number of sites of archaeological importance. Headland supports important commercial fisheries for whitefish. Area provides opportunities for outdoor recreational activities.
Planning:	Two local planning authorities – Scarborough and East Riding of Yorkshire Council - operate within the unit.
Landuse:	Unit largely under grassland and arable agricultural management regimes.
Key issues:	Footpath maintenance. Visitor management and litter problems. Environmental enhancement of the North Marine Estate area. Designation of the few accessible beaches as Public Bathing Beaches. Preservation of the unique environmental quality of the Headland. Protection of a viable and sustainable fishing stock.
Preliminary benefit analysis:	Value of coastal defence works low given slow rates of erosion and limited number of properties or potentially threatened assets.
Preferred coastal defence option:	Do nothing for all management units within CPU 31.

Sources of information

Shoreline Management Plans – A guide for coastal defence authorities. June 2001. DEFRA

Planning Policy Guidance note 25: Development and Flood Risk. DTLR

<http://www.planning.dtlr.gov.uk/ppg25/appendc.htm>

Sources of information

Shoreline Management Plans. Terry Oakes Associates website

<http://www.terryoakes.com/coastal/shoreline.htm>

Shoreline Management Plans

St. Abb's Head to the River Tyne SMP 1998 – summary. Wansbeck District Council

The Tyne to Seaham Harbour SMP 1998 – summary. City of Sunderland

Seaham Harbour to Saltburn SMP 1999 – summary. Hartlepool Borough Council

Saltburn to Flamborough Head SMP 1997 – summary. Scarborough Borough Council

Flamborough Head to Donna Nook (2a and b) SMP 1998 – summary. East Riding of Yorkshire Council

Donna Nook to Gibraltar Point SMP - summary. Environment Agency

Gibraltar Point to Snettisham SMP – summary. Environment Agency

Snettisham to Sheringham SMP – summary. Environment Agency

Sheringham to Lowestoft SMP – summary. Environment Agency
 Lowestoft to Harwich SMP - summary. Environment Agency
 Harwich to Canvey Island – summary. Environment Agency
 Isle of Grain to Dover Harbour (4a and b) SMP 1996 – summary. Environment Agency
 Dover Harbour to Beachy Head SMP 1996. Shepway District Council website:
<http://www.shepway.gov.uk/index/council/coastline/frame.htm>

3.4 Estuary management plans

Estuary Management Plans (EMPs) are prepared by a project team, whose aim is to bring together all those with an interest in an estuary to reach a consensus on the sustainable use of that estuary. The triggering factor in their development was the importance of nature conservation in estuaries. English Nature has funded their initial development, together with local authorities and other interested parties. All the major estuaries in England have been covered.

Harbour management plans are similar in co-ordinating different interests within harbours and seeking to agree and implement management policies to promote sustainable use for conservation, recreation and economic activity.

Sources of information

Planning Policy Guidance Note 25: Development and Flood Risk. DTLR
<http://www.planning.dtlr.gov.uk/ppg25/appendc.htm>

3.5 Coastal habitat management plans (CHaMPs)

Coastal Habitat Management Plans (CHaMPs) are intended to provide a framework for managing European and Ramsar sites that are located on or adjacent to dynamic coastlines. They apply where the conservation of all the existing interests in situ is not possible due to natural or quasi-natural changes to shorelines.

The two primary functions of CHaMPs are to act as an accounting system to record and predict losses and gains to habitats, and to set the direction for habitat conservation measures to address net losses. This will ensure that damage to Natura 2000 sites from the coastal defence response to natural changes to the coast is avoided or compensated for.

English Nature, the Environment Agency and the Centre for Coastal and Marine Sciences have received funding from the European Union's LIFE Nature fund for a project ("Living with the Sea") to develop the CHaMP initiative. Through the project a framework and best practice model for CHaMPs will be developed and the project will lead to the preparation of seven pilot plans in eastern and southern England.

The project was initiated in December 1999 and is due to finish in December 2003; seven pilot CHaMPs were to be completed during 2000/2001 and the framework and best practice model will be published in 2003.

3.5.1 Scope of CHaMPs

Each CHaMP will cover a site complex which will normally consist of either a single coastal SAC or SPA, or more commonly a complex of overlapping or contiguous coastal SACs and/or SPAs and Ramsar sites. However, in order to encompass areas where replacement habitats can be created and sustained, CHaMPs will also often have to take in areas immediately adjacent to those currently designated as European or other international sites.

It is estimated that CHaMPs will provide a framework for managing site complexes over a long-term period, 30-100 years depending on the type of coastline involved.

It is intended that the recommendations of CHaMPs will be fed directly into the relevant Shoreline Management Plans thus ensuring future SMPs and flood and coastal defence strategies will comply with the Habitats and Birds Directive.

3.5.2 CHaMPs within the SEA 3 area

The “Living with the Sea” Project is supporting two flood defence schemes on the North Norfolk coast that involve defence realignment on SAC and SPA sites at Brancaster and Cley/Salthouse (Box 3.4). Both sites highlight the challenge of habitat loss through coastal squeeze and the need to create new habitat where losses are unavoidable.

Box 3.4 - Flood defence schemes supported by the “Living with the Sea” project	
Site:	Cley-Salthouse
Description:	Shingle ridge which fronts a number of important habitats (grazing marsh, reed beds and saline lagoons)
Designations:	SPA, Ramsar site and marine SAC
Issues:	Defences vulnerable to damage during periods of high tide and strong winds. Amount of suitable material on foreshore has decreased. Shingle ridge no longer supports vegetation and features for which it was designated.
Proposed scheme:	Construction of secondary defence in the form of a clay embankment on a retired line, approximately 3.5 m above the existing marsh level with a 3 m wide crest. 300,000 m ³ of clay required will come from the site, creating new areas of open water and reed beds as compensation for losses to the SPA.
Status:	Scheme on course to complete by winter 2002

Box 3.4 - Flood defence schemes supported by the “Living with the Sea” project

Site:	Brancaster West Marsh
Description:	40ha of high conservation value freshwater grazing marsh
Designations:	SSSI, cSAC and SPA
Issues:	Natural sand dunes have been heavily armoured with stone-filled gabions but extensive winter storm damage now means defence system no longer operating effectively.
Proposed scheme:	Protected sand dune system to be modified to allow natural processes to operate. Partial realignment favoured, constructing a new clay bank 300 m landward would allow 7.5ha of grazing marsh to regenerate into salt marsh and form part of the new defence. Some enhancement of the remaining freshwater features is incorporated to compensate for the siting of the new flood bank.
Status:	Programme taken much longer to finalise and consequently, the works will fall outside the present “Living with the Sea” Project timetable.

Six of the seven pilot CHaMPS are within the SEA 3 area and general information about them is presented in Box 3.5.

Box 3.5 - Status of pilot CHaMPS in SEA 3

CHaMP:	North Norfolk Coast
Description:	Covers the area from The Wash to Cley-Salthouse.
Sites included:	Saltfleetby-Theddlethorpe Dunes cSAC, Gibraltar Point SPA, The Wash and North Norfolk Coast cSAC, The Wash SPA, North Norfolk Coast SPA.
Habitats:	Mudflats, saltmarsh, vegetated shingle ridge, sand dune, reed bed, grazing marsh and saline lagoon.
Status:	Work due to start in May 2002
CHaMP:	Winterton Dunes
Description:	Covers the area of dunes from Winterton to Horsey.
Sites included:	Winterton-Horsey Dunes cSAC, SSSI, NNR
Habitats:	Sand dune
Status:	Work due to start in May 2002
CHaMP:	Suffolk Coast and Estuaries
Description:	Covers the area from Lowestoft to Walton-on-the-Naze
Sites included:	Benacre to Easton Bavents Lagoons cSAC, Benacre to Easton Bavents SPA, Minsmere to Walberswick Heaths and Marshes SPA, Alde-Ore Estuary SPA, Orfordness to Shingle Street cSAC, Alde-Ore and Butley Estuaries cSAC, Deben Estuary SPA, Stour and Orwell Estuaries SPA
Habitats:	Mudflats, saltmarsh, vegetated shingle ridge, sand dune, reed bed, grazing marsh and saline lagoon.
Status:	Project on schedule, CHaMP likely to be completed by May 2002
CHaMP:	Essex Coast and Estuaries
Description:	Covers the coastal area from Hamford Water to Benfleet.
Sites included:	Hamford Water SPA, Colne Estuary SPA, Old Hall Marshes SPA, Blackwater Estuary Marshes SPA, Dengie SPA, River Crouch Marshes SPA, Foulness SPA, Essex Estuaries cSAC, Benfleet and Southend Marshes SPA.
Habitats:	Mudflats, saltmarsh and grazing marsh.
Status:	Project has experienced delays but final CHaMP expected soon.
CHaMP:	North Kent Coast and Estuaries
Description:	Covers the coastal area from the Thames Estuary to Sandwich Bay
Sites included:	Thames Estuary and Marshes SPA, Medway Estuary and Marshes SPA and The Swale SPA.
Habitats:	Mudflats, saltmarsh and grazing marsh.

Box 3.5 - Status of pilot CHaMPs in SEA 3

Status:	Final CHaMP expected end of August 2002.
CHaMP:	Dungeness and Pett Levels
Description:	Covers the area from just north of Dungeness, round to Hastings.
Sites included:	Dungeness cSAC, Dungeness to Pett Level SPA.
Habitats:	Vegetated shingle ridge and saline lagoon.
Status:	CHaMP now complete.

The report *Coastal Habitat Management Plans: An Interim Guide to Content and Structure* published a provisional list of site complexes that are likely to require a CHaMP in England, those within the SEA 3 area are shown in Table 3.4.

Table 3.4 - Provisional list of SEA 3 sites that are likely to require a ChaMP

Site complex	Name of sites in complex
Humber	Humber Flats, Marshes and Coast SPA/Ramsar, Humber Estuary pSAC
Wash and North Norfolk	Gibraltar Point SPA/Ramsar, The Wash SPA/Ramsar, The Wash and North Norfolk cSAC, North Norfolk Coast SPA/Ramsar, North Norfolk Coast and Gibraltar Point Dunes cSAC
Winterton and North Dunes	Winterton-Horsey Dunes cSAC, Great Yarmouth North Dunes SPA
Suffolk Coast and Estuaries	Benacre to Easton Bavents Lagoons cSAC, Benacre to Easton Bavents SPA, Minsmere to Walberswick SPA/Ramsar, Minsmere to Walberswick Heath and Marshes cSAC, Orfordness to Havergate SPA/Ramsar, Orfordness to Shingle Street cSAC, Alde-Ore Estuary SPA/Ramsar, Deben Estuary SPA/Ramsar, Stour and Orwell Estuaries SPA/Ramsar.
Essex Coast	Essex Estuaries cSAC, Hamford Water SPA/Ramsar, Colne Estuary SPA/Ramsar, Blackwater Estuary Marshes SPA/Ramsar, Dengie SPA/Ramsar, Crouch and Roach Estuaries SPA/Ramsar, Foulness SPA/Ramsar, Benfleet and Southend Marshes SPA/Ramsar.
North Kent Estuaries and Marshes	Thames Estuary and Marshes SPA/Ramsar, Medway Estuary and Marshes SPA/Ramsar, The Swale SPA/Ramsar.
Sandwich Bay and Thanet	Thanet Coast and Sandwich Bay SPA/Ramsar, Thanet Coast cSAC, Sandwich Bay cSAC.
Dungeness and Pett Levels	Dungeness cSAC, Dungeness and Pett Level SPA/Ramsar

Sources of information

Coastal Habitat Management Plans: An Interim Guide to Content and Structure. Living with the Sea. English Nature, EU life Nature Programme, Environment Agency, Centre for Coastal and Marine Sciences.

Living with the Sea: Future coastlines for people and wildlife. English Nature, EU life Nature Programme, Environment Agency, Centre for Coastal and Marine Sciences.

Living with the Sea: Project details website

http://www.english-nature.org.uk/livingwiththesea/project_details/schemes1.asp

Living with the Sea: News letter

<http://www.english-nature.org.uk/livingwiththesea/news/default.asp>

3.6 Biodiversity action plans

In June 1992, 159 governments at the Earth Summit, Rio de Janeiro, signed the Convention of Biological Diversity. The Convention entered into force in December 1993 and was the first treaty to provide a legal framework for biodiversity conservation. It called for the creation and enforcement of national strategies and action plans to conserve, protect and enhance biological diversity.

3.6.1 UK biodiversity action plan (UKBAP)

In response to the Convention, the UK Government and partners created the UKBAP, a compendium of 436 biodiversity action plans – 391 species action plans and 45 habitat action plans. The selection of priority species and habitats is based on a detailed appraisal of the current status of critical species and habitats in the UK, together with the threats to their survival. Grouped species action plans have been produced where a range of common policies and actions are required for a number of similar species.

Local Biodiversity Action Plans (LBAPs) are seen as the most effective means of ensuring that the national biodiversity strategy is translated into effective action at local level. The primary purpose of these LBAPs is to focus resources by means of local partnerships to implement conservation action for the priority species and habitats and locally important wildlife and sites.

Most of the local government regions within the SEA 3 area have, or are in the process of publishing Local Biodiversity Action Plans (Box 3.5). The LBAPs highlight those habitats and species which are important at a local and national level, and give information about their status, current threats and action to be taken. For the purpose of this report, species and habitats of direct relevance to SEA 3 have simply been listed, further details being available from the UKBAP website (<http://www.ukbap.org.uk>).

Box 3.5 - Local biodiversity action plans of relevance to SEA 3	
The Borders BAP	
Local/UK species:	Undecided.
Local/UK habitats:	Marine, Offshore sea bed, Open coast, Oceanic seas, Coastal sand dunes, Maritime cliff and slopes.
Action plan status:	In draft
Working for Wildlife – Northumberland BAP	
Local/UK species:	None identified
Local/UK habitats:	Coastal sand dunes.
Action plan status:	Published April 2000
Box 3.5 - Local biodiversity action plans of relevance to SEA 3	
Tees Valley BAP	
Local/UK species:	Covers Redcar and Cleveland, Middlesbrough, Stockton on Tees, Hartlepool None of relevance
Local/UK habitats:	25 Habitats, none specified.
Action plan status:	-
Action for Wildlife – The Durham BAP	
	(Covers Durham County, Darlington, Gateshead, Sunderland, South Tyneside)
Local/UK species:	Curlew, Coastal lichens (generic plan), Golden plover, Hen harrier, Roseate Tern, Basking Shark, Common Skate, Grouped plan for commercial marine fish, Grouped plan for baleen whales, Grouped plan for small dolphins, Grouped plan for toothed whales, Harbour Porpoise.

Local/UK habitats:	Coastal gills, Coastal grasslands, Kelp beds, Strandline, Wrecks and reefs, Inshore sublittoral sediment, littoral rock, Coastal saltmarsh, Coastal sand dunes, Coastal vegetated shingle, Maritime cliff and slopes, Mudflats, Reedbeds, Sublittoral sand and gravels.
Action plan status:	Published January 1999
Local/UK species:	Redshank.
Local/UK habitats:	Coastline (general), Humber Estuary, Coastal sand dunes, Mudflats, Reedbeds, Saline lagoons
Action plan status:	Published 1998
Lincolnshire BAP	
Local/UK species:	None of relevance
Local/UK habitats:	Coastal and floodplain grazing marsh, Coastal saltmarsh, Coastal sand dunes, Reedbeds, Saline lagoons.
Action plan status:	Published May 2000
Norfolk BAP	
Local/UK species:	Bittern, Harbour Porpoise, Desmoulin's whorl snail, Starlet Sea Anemone
Local/UK habitats:	Coastal and floodplain grazing marsh, Reedbeds, Saline lagoons, Seagrass beds
Action plan status:	In progress
Suffolk BAP	
Local/UK species:	Bittern, Harbour Porpoise, Desmoulin's whorl snail, Starlet Sea Anemone
Local/UK habitats:	Coastal and floodplain grazing marsh, Coastal vegetated shingle, Maritime cliff and slopes, Reedbeds, Saline lagoons, Seagrass beds
Action plan status:	2 nd tranche of plans in preparation
Essex BAP	
Local/UK species:	Bittern, Harbour Porpoise.
Local/UK habitats:	Coastal and floodplain grazing marsh, Reedbeds, Saline lagoons, Seagrass beds
Action plan status:	Published March 1999

Box 3.5 - Local biodiversity action plans of relevance to SEA 3

Kent BAP

Local/UK species: None of relevance

Local/UK habitats: Intertidal mud and sand, Marine habitats, Coastal and floodplain grazing marsh, Coastal saltmarsh, Coastal sand dunes, Coastal vegetated shingle, Maritime cliffs and slopes, Reedbeds.

Action plan status: Published Nov 1997

Sources of information

UK Biodiversity Group website

<http://www.ukbap.org.uk/Plans/index.htm>

JNCC Biodiversity Fact Sheets

<http://www.jncc.gov.uk/ukbg/fs1.htm>

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St. Abb's Head to the River Tyne SMP 1998 – summary. Wansbeck District Council

St. Abbs and Eyemouth Voluntary Marine Reserve

<http://www.divescoutscroft.freereserve.co.uk/marineres/marine.htm>

Thames Estuary Partnership website

<http://www.thamesweb.com>

The Tyne to Seaham Harbour SMP 1998 – summary. City of Sunderland

Turning the Tide website

<http://www.turning-the-tide.org.uk/>

UK Biodiversity Group website

<http://www.ukbap.org.uk/Plans/index.htm>

APPENDIX 1: GLOSSARY AND ABBREVIATIONS

Term	Definition
Accretion	The accumulation of sediment by the action of natural forces
BAP	Biodiversity Action Plan
Biodiversity Action Plan	Provides information about the status, current threats and action to be taken to conserve a variety of habitats and species
ChaMP	Coastal Habitat Management Plan
Coastal Habitat Management Plan	A document that provides a framework for managing European and Ramsar sites that are located on or adjacent to dynamic coastlines
Coastal Process Unit	A sub-section of coastline defined for management purposes that possesses coherent characteristics, in terms of natural coastal processes, which are sufficiently independent of adjacent stretches of shoreline
Coastal processes	Collective term covering the action of natural forces on the shoreline and adjoining seabed
CPU	Coastal Process Unit
CSAC	Candidate Special Area of Conservation – conservation site proposed for designation by national government under the EU Habitat and Species Directive
DEFRA	Department for Environment, Food and Rural Affairs
EC	European Community
Geomorphology	The study of land forms and land forming processes
IPCC SRES	Intergovernmental Panel on Climate Change Special Report on Emissions Scenarios
JNCC	Joint Nature Conservation Committee
Km	Kilometre
LBAP	Local Biodiversity Action Plan
M	Metre
Management Unit	A length of coastline with coherent characteristics in terms of natural coastal processes and land use that requires a specific coastal defence option for the future which is coherent with the overall strategic requirements for a management area
Mm	Millimetre
MU	Management Unit
SEA	Strategic Environmental Assessment
Sediment cell	A length of coastline and its associated nearshore area, within which the movement of sand and shingle is largely self-contained
Shoreline Management Plan	A document that sets out a strategy for coastal defence for a specified length of coast, taking account of natural coastal processes and human and environmental influences and needs
SMP	Shoreline Management Plan
Soft defences	Mobile/responsive defence measures which consist of sand or shingle which may be natural or constructed, and may include control structures
SPA	Special Protection Area – conservation site designated by national government under the EU Wild Birds Directive
Strategic Environmental Assessment	An appraisal process through which environmental protection and sustainable development is considered in decisions on policy, plans and programmes
UK	United Kingdom
UKBAP	United Kingdom Biodiversity Action Plan