

# Blyth flood risk management

Blyth Estuary Strategy

Preferred option consultation  
September 2005

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# Introduction and background

We are responsible for managing the flood risk arising from rivers and the sea, in many areas. There are several areas in Suffolk that are becoming increasingly susceptible to flooding. We are funding long-term strategies to manage the flood risk for three of the Suffolk Estuaries: the Blyth, the Alde and Ore and the Deben. These are collectively known as the “Suffolk Estuarine Strategies”.

These flood risk management strategies are being developed on an estuary-by-estuary basis starting with the Blyth, followed by the Deben, and the Alde and Ore. The Blyth Estuary Strategy study area extends from the Harbour mouth to the tidal limit upstream at Blyford Bridge at Wenhaston (see Map 1).

Sea levels are expected to rise over the next 100 years. Some areas of vulnerable land behind the current flood defences are already lower than the normal high water in the estuary. We need to ensure that the response to

changes in the risk of flooding is appropriate and sustainable.

The production of a flood risk management strategy will enable us to manage the potential impacts that future change will bring and also allow opportunities to be identified.

This consultation document sets out the Preferred Option for the Blyth Estuary Strategy.



Map 1 – The Blyth Estuary



# What are the aims and objectives of this consultation document?

This consultation document aims to:

- Outline the framework within which our decisions have to be made;
- Describe the Preferred Option for the Strategy and how it will be implemented; and
- Show how we have chosen the Preferred Option from the shortlisted options;
- Seek your views and concerns.

## How are flood risk management strategies prioritised for funding?

Any flood risk management strategy would have to compete for funding with schemes for other towns and cities across England in order to receive a share of a limited Defra budget.

This is done by calculating the Strategy's 'priority score' which is a standard mechanism by which Government prioritises assets for funding of capital and maintenance works.

The outcome for the Strategy depends on how its priority score compares to the current Government threshold.

If it is lower, then the Strategy is either deferred or could be funded by the 'Local Levy'.

If it is higher, then the Strategy goes onto to the Project Approval stage.

However, if the Strategy is deemed to be required to fulfil statutory duties under national legislation, such as the Habitats Regulations, then the Strategy must go ahead.

# The process so far

A consultation document was issued in October 2004, The Blyth Estuary: Options Shortlisting Consultation Document, which outlined the shortlisted flood risk management options being considered for the Blyth Estuary.

Following this, we received comments from a range of consultees which were fed into our appraisal of those options. We carried out a detailed environmental, economic and technical appraisal considering local issues to determine the Preferred Option. In carrying out this appraisal we used national tests set by the

Government. These tests are further discussed in the following sections.

After this final consultation stage, we will submit the proposal to Defra (Department for the Environment, Food and Rural Affairs) for approval.

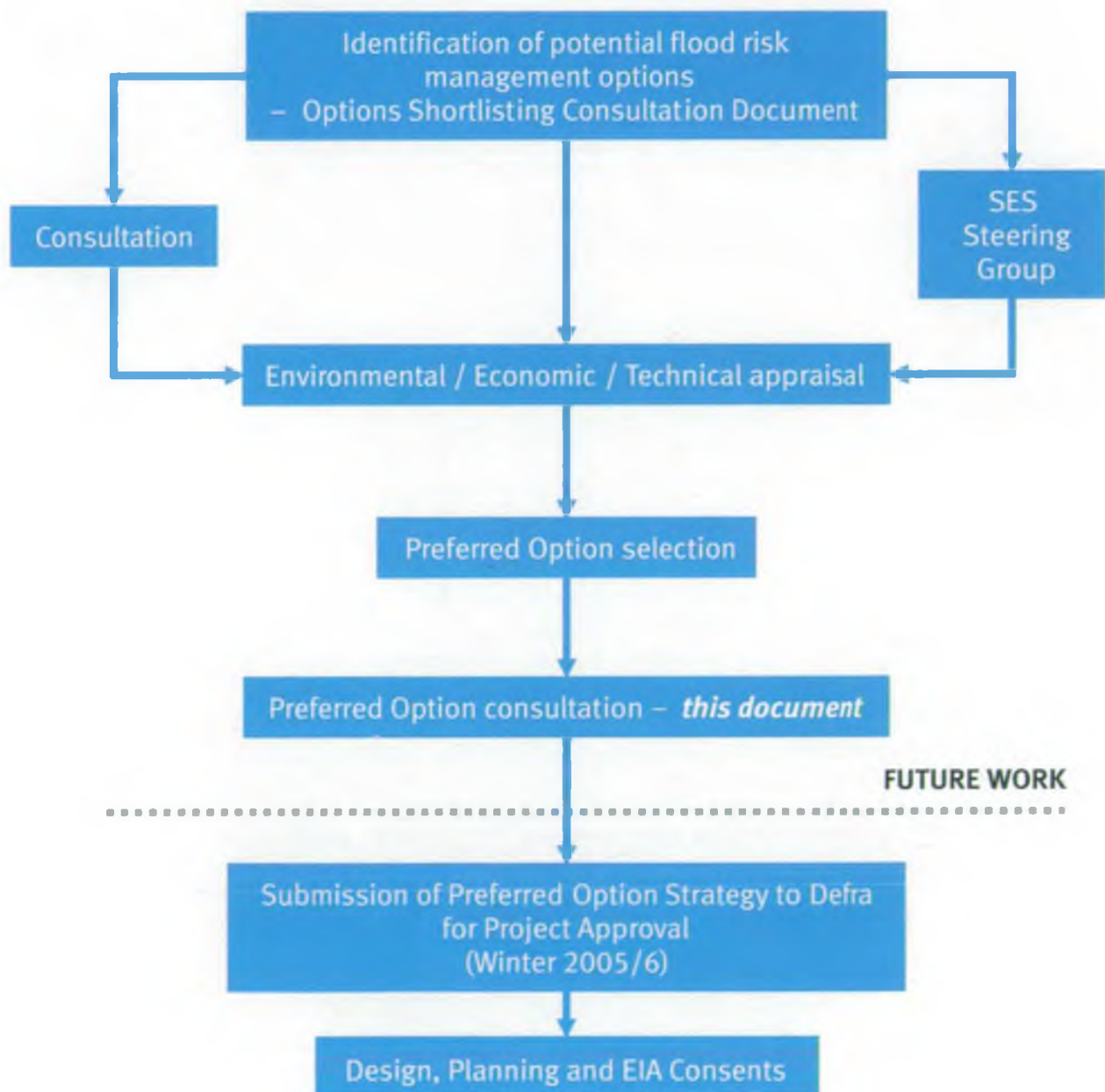


Figure 1 – The Strategy process to date

# How did we choose the Preferred Option?

We chose the Preferred Option for the Strategy by looking in detail at the estuary and the way any changes, including the natural changes that are already occurring, would affect the estuary.

We looked in detail at the environmental, social and economic effects of each shortlisted option, and at the consultation feedback on these options. The criteria we used are listed below. The 'No Active Intervention' option was used as the baseline case that we measured all the other options against for economics, whilst we used the existing situation to assess the environmental and social effects.

More detailed information on these assessments can be viewed on the website at [www.suffolkestuaries.co.uk/Blyth/PreferredOption](http://www.suffolkestuaries.co.uk/Blyth/PreferredOption) or a paper copy is available from the contacts on page 21.

## Technical

Changes in one part of the estuary may affect the whole estuary. We therefore used a computer model to predict the likely changes caused by each of the options. We only selected options for our shortlist that either worked with natural processes, or did not affect them. We also looked at how natural change, including sea level rise, would affect the estuary if we didn't change how it was managed.

## Economic

We used the central Government method to assess the value of land and property. This estimated the economic benefits of each option, and the cost of constructing and maintaining each option over the next 100 years. We compared the costs and benefits of each option against the baseline scenario of 'No Active Intervention'.

## Environmental

Early on in the study, we developed a range of objectives for the estuary, based on legislation, regional and local plans and consultation on the local requirements for the estuary. These objectives cover a range of issues including risk to life, land use, protected habitats, water quality and resources, navigation and recreational use.

We identified whether each shortlisted option met each of these objectives in the short and long term. We also looked at each option and whether we could reduce any of the undesirable effects, and what consequence that would have.

## Timing

The effects of natural changes in the estuary, in particular recent and predicted sea level rise, on the existing flood defences have been used in the assessment of each option. This helps us to work out the best time to make changes to the current way the estuary is managed. To work with natural change as much as we can, the strategy for managing the estuary over the next 100 years might involve starting with one option, then as the rate of change increases, managing the transition to another option.

We also looked at how natural change, including sea level rise, would affect the estuary if we did not change how it was managed.



# Responses to the shortlisted options

Consultation is a key aspect in the development of a flood risk management strategy.

The comments received during consultation on the proposed options were considered as part of the option selection process. A summary is provided below.

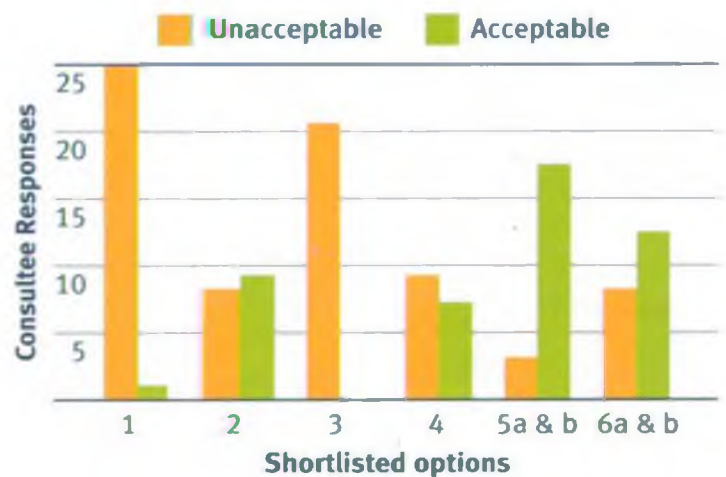
Over 150 consultees have registered an interest in the Blyth Strategy. Overall the consultation process was found to be providing a clear insight into the development of strategies and the consultees found it easy to comment on the study.

The consultation process has uncovered two key issues. These are the protection of farmland and freshwater abstractions and improvements to wildlife by increasing the area of tidal flooding over some currently protected areas.

The graph to the right shows how the options were ranked in acceptability by the consultee responses.

'No Active Intervention' applied throughout the estuary was considered unacceptable due to the amount of

land and properties that would be under threat of flooding and the effect that this could have on the recreational use of the estuary, such as public footpaths, sailing and canoeing.



# What were the shortlisted options for the Blyth?

The table below shows the shortlisted options for the Blyth Estuary that were identified and discussed in detail in the previous consultation document 'The Blyth Estuary – Options Shortlisting Consultation Document, October 2004'.

**Table 1 – Summary of shortlisted options**

Shortlisted Options	
Option 1	No Active Intervention throughout the Estuary
Option 2	Hold the Line throughout the Estuary
Option 3	No Active Intervention/Managed Realignment Upstream of the Harbour Mouth + Hold the Line of the Harbour Mouth
Option 4	No Active Intervention/Managed Realignment at Robinson Marshes + Hold the Line elsewhere
Option 5a	Advance the Line by Narrowing the Estuary at the Bailey Bridge + Hold the Line elsewhere
Option 5b	Advance the Line by Making the Estuary Shallower at the Bailey Bridge + Hold the Line elsewhere
Option 6a	Advance the Line by Narrowing the Estuary at the Bailey Bridge + No Active Intervention/Managed Realignment at Tinkers Marsh + Hold the Line elsewhere
Option 6b	Advance the Line by Making the Estuary Shallower at the Bailey Bridge + No Active Intervention/Managed Realignment at Tinkers Marsh + Hold the Line elsewhere

(N.B. Colour coding in Table 1 above, and Figure 2 on the opposite page, indicates the generic flood risk management options described in the Blyth Estuary Strategy – Options Consultation document, February 2004.)

# The Preferred Option

From the detailed economic, technical and environmental assessment the long term Preferred Option for the Strategy for the Blyth Estuary is to ‘Hold the Line of the Northern Defences downstream of the A12 road bridge’. This Strategy combines elements of Shortlisted Options 4 and 6.

The figure below illustrates the process following on from the Shortlisting Options stage and shows how the ‘Preferred Option for the Strategy’ decision was reached.

The issues that determined the ‘Preferred Option for the Strategy’ are over the page.



Figure 2 – Selection process for the Preferred Option for the Strategy

## Estuary processes issues

### ■ Hold the Northern Harbour Arm

The Northern Harbour Arm is important in holding the northern bank of defences in the Blyth Estuary in place. Loss of this harbour arm would cause the estuary mouth to widen to a more natural 'trumpet' shape. The impacts of this have been studied. The major effects are likely to be rapid, uncontrolled breaches of the existing defences and rapid erosion of Town Marsh and the harbour area, followed by erosion and failure of the remaining northern banks further upstream.

The Northern Harbour Arm acts as a groyne structure that stops the beach at 'The Denes' from washing away along the coast. Without this harbour arm in place, it is likely that the protected part of Southwold would become a headland, and that the existing coastline from Southwold through Walberswick, Dunwich, Minsmere and possibly Sizewell would retreat to reform a stable bay shape. The extent of such consequences on the coast has not been established as part of this study.

### ■ Hold the Line at Reydon Marshes

The detailed technical assessment also highlighted that management of the estuary processes and the predictability of estuary behaviour depends on being able to prevent Reydon Marshes defences from breaching. Reydon Marshes is a large area of land several metres lower than sea level. Flooding of this area at every tide would lead to a doubling of water flow in and out of the estuary. The movement of such a large volume of water would quickly erode all defences downstream of the breach and destabilise the harbour mouth.



Photo 1 – Reydon Marshes

### ■ Benefits of Managed Realignment

Managed realignment of Tinkers Marsh and Robinson Marshes will enable us to better manage the estuary processes and flood risk. By allowing some or all of these areas to be flooded by the tides and managing this process, we can significantly reduce extreme water levels within the estuary and take the pressure off other stretches of flood defence, particularly at Reydon Marshes.

## Environmental issue

### ■ Tinkers Marsh

Tinkers Marsh is a freshwater grazing marsh of European importance for nature conservation, which according to current policy means that it needs to be defended *in-situ*. However, in this situation, defending the freshwater marsh in the face of increasing sea levels and estuary pressures is unsustainable. Under EU and UK law, if the freshwater habitat at Tinkers Marsh is lost there will be a need to create alternative (compensatory) freshwater habitat somewhere else close by. Ideally, compensatory habitat would be identified and in place before the defences at Tinkers Marsh could be breached.



Photo 2 – Tinkers Marsh

The detailed technical assessment also highlighted that management of the estuary processes and the predictability of estuary behaviour depends on being able to prevent Reydon Marshes defences from breaching.

Managed realignment at Tinkers Marsh and Robinsons Marshes will be carried out at a later stage once more urgent works to bolster the defences at Reydon Marshes have been completed.

## Economic issues

### ■ No Active Intervention upstream of the A12 road bridge

The results of the detailed economic assessment showed that there is little economic benefit in undertaking defence works along the estuary upstream of the A12 at Blythburgh, as this area has no impact on the estuary processes. The majority of this land is pasture. It is therefore proposed that upstream of the A12 road bridge a policy of 'No Active Intervention' is implemented. However, there may be opportunities in this area for potential partnerships with national, regional or local bodies to enhance the natural environment. The A12 will continue to be protected through construction of an embankment.



Photo 3 – A12 road bridge

### ■ Where else to Hold the Line?

We looked at isolated sites within the estuary which do not affect the estuary processes. The sites identified were the area to the south of the A12 road bridge, and Bulcamp House. Our assessment showed that both of these small areas should have defences held due to the value of the property within them – the Preferred Option for the Strategy is therefore Hold the Line in these areas.

## Timing issues

### ■ When to implement the Strategy?

We have looked at the best time to implement the various elements of Options 4 and 6. The "Advance the

Line" element of option 6 makes the estuary narrower and/or shallower at the Bailey Bridge and helps to slow down the damaging processes that currently affect the flood defences upstream of this point. Doing this first will give us more time to plan and to repair or rebuild the defences of the northern line. This will also prove more cost effective than starting to repair and rebuild all of the northern line defences at once and will allow us to focus on the areas where more urgent works are required.

Managed realignment at Tinkers Marsh and Robinsons Marshes will be carried out at a later stage once more urgent works to bolster the defences at Reydon Marshes have been completed. At the implementation stage of the strategy we will look into possible ways to realign the defences at Robinsons Marshes whilst still maintaining the most effective level of defence for the properties at Walberswick.

### ■ The long term Strategy

In the long term, holding the existing line of defence will become very difficult if, as predicted, the rate of sea level rise increases dramatically. Under this scenario there will be a lot of natural pressure on the harbour mouth to widen, after which it will become impossible to hold the line inside much of the estuary. If this were to happen then it is likely that after 50 to 70 years, managed realignment will have to occur on the northern side of the estuary, although the harbour mouth will still be constrained by a northern harbour arm structure, to protect Southwold.

The Strategy Plan will have been updated several times by this stage, so we will have considered all the actual changes in sea level rise and the other processes by the time any further realignment takes place.

## Other recommendations

Our studies have focused on managing the flood risk for the Blyth Estuary as a whole. At present there are isolated properties such as Blackshore Cottages which are not protected by flood defences and will not be in future under the Preferred Option. However, the strategy will make recommendations for further studies into flood protection and flood proofing of these individual properties.

# What does this mean for the Blyth Estuary

Figure 3 – 20 year scenario



In 20 years time

Figure 4 – 100 year scenario



In 100 years time

The present day situation for the Blyth Estuary is shown on Figure 5 on Page 12

# What are the implications of the Preferred Option?

In order to achieve the Preferred Option for the Blyth Estuary certain areas of the Blyth Estuary will change over the next 100 years.

A summary of the implications due to these changes is given below:

## Narrowing and/or making the estuary shallower at Bailey Bridge

- Reduced water speeds downstream of the Bailey Bridge but navigation may be prevented upstream due to reduced water depths
- Some loss of inter-tidal habitat

## Realignment of Tinkers Marsh

- Loss of European designated freshwater habitat
- Gain in intertidal habitat
- Loss of the existing public footpath on the bank

## 'No Active Intervention' upstream of A12 road bridge

- Gain in intertidal habitat
- Likely changes to existing land uses
- Loss of the existing public footpaths
- Potential loss of agricultural surface and ground water abstraction points

## Realignment of Robinson Marshes

- Loss of the existing public footpath along the bank
- Loss of moorings along this section of the estuary bank
- Gain in intertidal habitat

We will work with affected landowners to help them consider their options and help realise opportunities from possible land use changes.

## How will we manage the negative effects of these implications?

Where possible we will seek to reduce the negative implications of the Preferred Option.

Ongoing consultation with English Nature and other interested wildlife organisations will ensure that a Preferred Strategy will allow a sustainable and natural evolution of the estuary to maintain its interest for wildlife.

We will work with affected landowners to help them consider their options and help realise opportunities from possible land use changes.

We will liaise closely with the appropriate organisations and bodies like the Suffolk Local Access Forum and estuary user groups. This will ensure that where possible, alternative and sustainable forms of public access, can be provided to counter the loss of unsustainable public footpaths and moorings located along or adjacent to present flood embankments.

# How will we implement the Preferred Option?

The defences of Tinkers and Reydon Marshes are in a poor condition and under extreme stress. The immediate short term concern is to prevent Reydon Marshes defences from breaching and impacting on other defences, particularly at the Harbour Mouth.

Figure 5 below shows how the long term Preferred Option for the Strategy will be implemented through a series of measures undertaken at various stages over the next 100 years. These measures are explained further on the facing page.

**Figure 5 –  
Implementation  
measures for the  
Blyth Estuary  
Preferred Option**





# The stages of the Preferred Option

This Strategy to manage the Blyth Estuary will cost an estimated £47 million over the next 100 years.

## Immediate short term (0 – 5 years)

A detailed plan will be developed for the first 5 years of work, which will include all planned construction, maintenance and monitoring, including the development of any specialised habitats which we may need as a result of changes in the management of the estuary. We will plan and consult on, the appearance of works, how long it will take, how we propose to get to the work sites, what the effects will be on the estuary, as well as effects on the estuary communities and users.

1. Build a 'sill'<sup>1</sup> at the Bailey Bridge to relieve pressure on Reydon Marshes defences and also defences at Tinkers Marsh therefore increasing their effective lifespan.
2. Strengthening/rebuilding of Reydon Marshes flood defence wall and building of a flood embankment at the A12 road bridge to protect the road.
3. Tinkers Marsh is a European designated conservation area for its freshwater grazing marsh. Current policy states that it should be protected *in-situ* unless compensatory habitat can be identified. Compensatory freshwater habitat could be created in one of several places – upstream of the A12 road bridge, within Reydon Marshes or outside of the strategy study area.

## Short to medium term (5 – 20 years)

4. Realignment of Tinkers Marsh. Defending the freshwater grazing marsh is not sustainable in the long term. Realignment of these defences also relieves pressure on the Reydon Marshes defences and mitigates for sea level rise impacts on the estuary. After 20 years the sill could then potentially be removed as it would have reached the end of its effective lifespan.

## Medium term (20 – 50 years)

5. Realignment of Robinson Marshes to further reduce water flows and levels in the estuary. Walberswick will be protected by the realigned defence line at Robinson Marshes.
6. Replace the Northern Harbour Arm with a rock groyne to sustain the beach at 'The Denes'.

## Long term (50 years plus)

7. The southern side of the estuary will widen to a more natural shape.

We will plan and consult on, the appearance of works, how we propose to get to the work sites, how long it will take, what the effects will be on the estuary, as well as effects on estuary users and communities.

<sup>1</sup> A sill is a structure that makes the estuary shallower and/or narrower to manage water speeds and flows.

# What is happening now?

At this stage we would like your feedback on the proposed options. In particular, we would like to know your views on the long term Preferred Option for the Strategy and the short to medium term measures that will be implemented to achieve this. Please use the form provided.

Comments received will be taken into consideration before the final proposal is submitted for planning and environmental approvals, as outlined in Table 2 below.

**Table 2 - Key stages of the programme**

Stage in Programme	Consultation Opportunity	Timescale
Introduction to the Blyth Estuary Strategy	Initial consultation with the local community, landowners, statutory authorities and other parties	COMPLETED
Initial appraisal of options for the Blyth Estuary	Presentation of the various General Flood Management Options in the form of a public consultation document. Consultation with organisations and individuals who expressed an interest in response to the previous consultation	COMPLETED
Shortlisting of Options for the Blyth Estuary	Presentation of the Shortlisting of Estuary Options in the form of a public consultation document and public exhibition. Consultation with organisations and individuals who expressed an interest in response to the previous consultation document.	COMPLETED
Appraisal of Preferred Option for the Strategy for the Blyth Estuary	Presentation of the Preferred Option for the Strategy in the form of a public consultation document and public exhibition. Consultation with organisations and individuals who expressed an interest in response to the previous consultation document.	Summer 2005 current round of consultation
Publication of Blyth Estuary Strategy	Advertisement in local newspapers. Report available for public comment.	Autumn 2005
Approval of Blyth Estuary Strategy	Period for review of strategy by statutory consultees and approval sought from Defra.	From Winter 2005/06
Blyth Estuary Strategy implementation	Implementation of the Blyth Estuary Strategy, review findings and recommendations.	Following approvals

More detailed information on the Preferred Option for the Strategy, the Strategy process and information presented in previous documents for the Blyth Estuary, as well as information on the Deben and Alde and Ore strategies can be found on the SES website [www.suffolkestuaries.co.uk](http://www.suffolkestuaries.co.uk). You can also add your comments or ask queries online.

A paper copy of this detailed information is available from the contacts on page 21 if you do not have access to the internet.

# Consultees and consultation groups

The following groups will be contacted during the present and future consultations, as well as the general public:

Anglian Water plc.	Environment Agency	Suffolk County Anglers Association
Anglian Wildfowlers Association	Essex and Suffolk Water Company	Suffolk County Council
Blyford Parish Council	Maritime and Coastguard Agency	Suffolk Preservation Society
Blythburgh Parish Council	NFU, National Farmers Union	Suffolk Underwater Studies Group
Blyth Forum	National Grid	Suffolk Wildlife Trust
British Association for Shooting and Conservation	National Monuments Record Centre	Transco
British Canoe Union	National Trust	Walberswick Common Lands Charity
British Telecom	Norfolk and Suffolk Anglers Association	Walberswick Parish Council
British Trust for Ornithology	Ramblers Associations	Wangford and Henham Parish Council
CEFAS, Centre for Environment, Fisheries and Aquaculture Science	RDS, Rural Development Service	Waveney District Council
Country Land and Business Association	River Blyth Navigation Committee	Waveney (Southwold) Harbour Authority
Countryside Agency	RNLI, Royal National Lifeboat Institution	Wenhaston with Mells Hamlet Parish Council
Crown Estate	RYA, Royal Yachting Association	Wildfowl and Wetlands Trust
Defra, Department of the Environment, Food and Rural Affairs	RSPB, Royal Society for the Protection of Birds	
Department for Transport	Southwold Golf Club	As well as,
East Anglia Fisherman's Association	Southwold Harbour Users group	Internal Drainage Boards
Eastern Sea Fisheries	Southwold Parish Council	Local conservancy bodies
East Suffolk Water Ski Club	Southwold Sailing Club	Local landowners and businesses
English Heritage	Southwold Town Council	Local clubs
English Nature	Suffolk Coastal District Council	Voluntary and special interest groups
	Suffolk Coasts and Heaths Management Unit	

**There are two consultation groups that work with us:**

## **The Suffolk Estuarine Strategies Consultation Group (SES)**

This consultation group provides guidance on the requirements of UK law, local government policy, planning issues and initiatives in the region applicable to the Blyth, Alde and Ore and Deben Estuaries. It also provides comment on project objectives for the strategies. The group is made up of representatives of the District and County Councils, English Heritage, English Nature, the National Farmers Union, Royal Yachting Association and the Suffolk Coast and Heaths Management Unit.

## **The Blyth Estuary Strategy Consultation Group**

This consultation group provides guidance and information about local issues. It provides comment on local objectives to be considered in the development of the strategy. The group represents key members from the local community including; Suffolk Coasts and Heaths Unit, the Environment Agency, The National Trust and English Nature, local Parish Councils, The River Blyth Navigation Group, Waveney Harbour Authority, and many other groups and individuals with sailing, business and farming interests.