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Blyth Estuary Flood Risk Management Strategy: Environmental Report Non Technical Summary

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Non Technical Summary

What is this document?

We are the Environment Agency and are responsible for managing the flood risk arising from rivers and the sea in England and Wales. There are several areas on the Suffolk Coast that are becoming increasingly susceptible to flooding. Rather than promote individual projects in isolation we wish to fully consider all related issues and develop long term and sustainable management of flood risk.

The Blyth Estuary Flood Risk Management Strategy sets out our plan for the management of flood risk for people, property and the environment in the Blyth estuary over the next 100 years. This strategy does not cover the coastal defences at Southwold and Walberswick.

Strategic Environmental Assessment

This Environmental Report summarises the Strategic Environmental Assessment (SEA) process carried out for the Blyth Estuary Flood Risk Management Strategy (the Blyth Estuary Strategy). A SEA is not mandatory for flood risk management strategies. However, it is our policy to apply SEA to such strategies, and, as far as possible, follow SEA statutory requirements.

Any works that are recommended by our strategy may be the subject of more detailed Environmental Impact Assessment (EIA) at a later stage.

SEA is a systematic way of appraising the potential environmental consequences of plans or strategies, before they are confirmed and adopted. By doing this we aim to identify ways to prevent, reduce, or offset any significant adverse effects on the environment when we implement that strategy. Table 1 summarises the structure and content of this Environmental Report.

The consultation period for the draft Blyth Estuary Strategy and the Environmental Report is 28th September 2007 to 4th January 2008. Comments received during this period

will be taken into account in the preparation of the final strategy and a document will be produced to explain how any comments have been considered.

Table 1. SEA Structure

Summary of Environmental Report Structure and Content.
<p>Section 1: Introduction</p> <p>We describe the role and purpose of SEA in the development of the Blyth Estuary Strategy. We set out the area we have studied and the key issues we have identified.</p>
<p>Section 2: Appraisal Process</p> <p>We describe the SEA process and its stages of development. We show how we have considered the SEA Regulations and relevant guidance in developing objectives to test strategy options and we show how we have consulted others to do this.</p>
<p>Section 3: Relevant Plans and Strategies</p> <p>We present a summary of the other plans and strategies that we and other bodies have made with respect to our area of study. We describe the potential influence our strategy may have on these plans, or vice versa.</p>
<p>Section 4: Key Issues Opportunities and Constraints</p> <p>We describe the environment of our study area and key issues, opportunities and constraints that may arise with respect to our strategy.</p>
<p>Section 5: Consultation</p> <p>We provide a summary of how and when we have consulted and the comments that others have made as we have done this.</p>
<p>Section 6: Assessment and Evaluation of Environmental Effects</p> <p>We have considered what the potential environmental effects are of a number of options for managing flood risk using our environmental objectives. We have identified a draft strategy and carried out an appraisal of its environmental effects.</p>
<p>Section 7: Monitoring Plan</p> <p>We describe how we plan to monitor the implementation of the strategy and the associated environmental implications.</p>
<p>Appendices</p> <p>We present our detailed analysis of the environmental effects of the options we considered. We present additional information to supplement the main sections of the report.</p>

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What area are we considering for the Blyth Estuary Strategy?

The Blyth Estuary is on the east coast of Suffolk and discharges to the North Sea at Southwold. Our study area is made up of the tidal floodplain of the Blyth Estuary from Blyford, Wenhampton and Wangford to the mouth of the estuary between Southwold and Walberswick. We have also considered sections of coast to the north and south. Land within the floodplain of the Blyth Estuary has, through history, been reclaimed from areas of mudflat and saltmarsh for farming and through the creation of the Blyth Navigation. At one point the River Blyth was canalised between Wenhampton, to the west, and mouth of the river at Southwold. However, after the closure of the Navigation, some of the banks of the river fell into disrepair leading to their breach and the formation of wide expanses of mudflat between Blythburgh and Reydon Marshes. This has given the present day estuary a distinctive shape, with many areas of low lying land (some below sea level) still protected by narrow and deteriorating earth flood embankments.

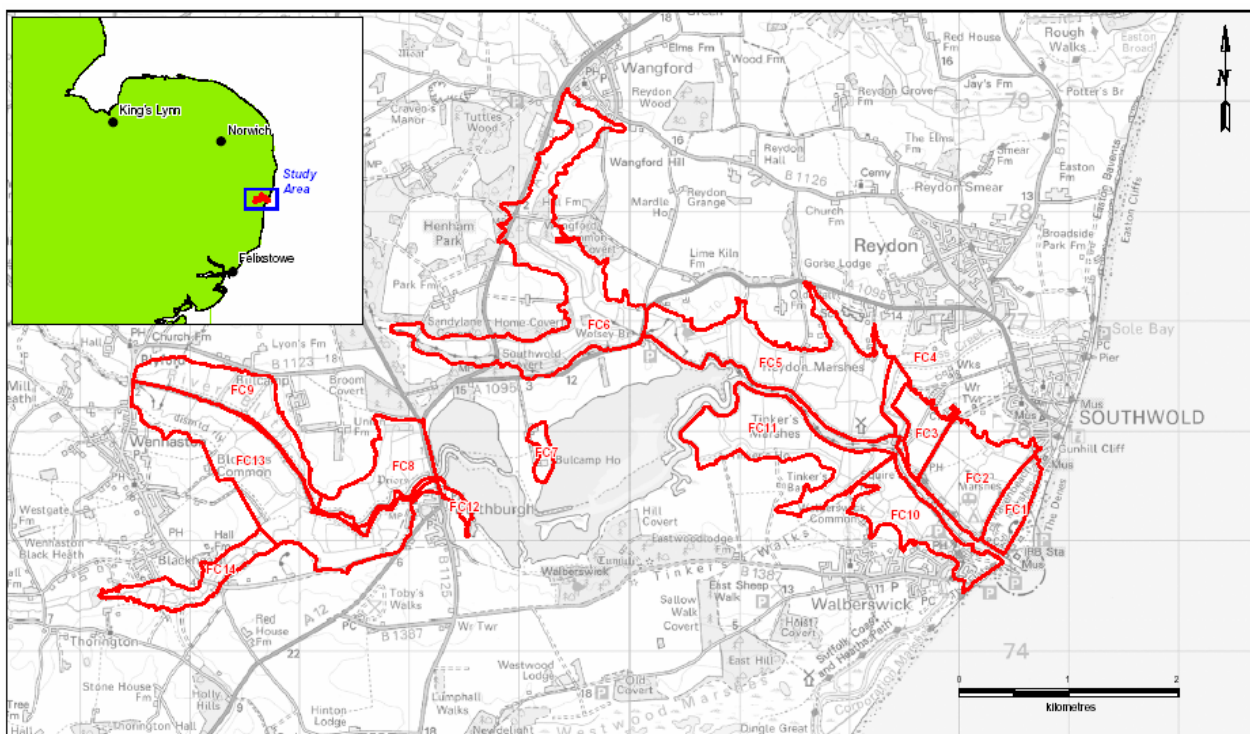


Figure 1: The Blyth Estuary Study Area

What do we need to consider when we develop a Flood Risk Management Strategy

In carrying out our flood risk management duties we are directed by the policies and guidance of the Department for Environment Food and Rural Affairs (Defra). Our powers are permissive, meaning we are able to carry out work to provide or maintain flood defences for the benefit of people, property and the environment but we do not have a duty to do so.

We have developed a draft Blyth Estuary Strategy in line with the guidance Defra provides on strategic planning. By doing this we aim to provide a strategy that considers the benefits of sustainable management of flood risk, not just the management of isolated stretches of flood defences, but the estuary and adjacent land as a whole. To do this we must assess the technical, economic and environmental implications of a range of potential flood risk management options. Our strategy must also consider the policies set out by higher level flood risk management plans. Because this is an estuary, where freshwater meets the sea, we have

to take on board the policies set by the Lowestoft to Harwich Shoreline Management Plan and the developing Catchment Flood Management Plan for East Suffolk.

To understand the study area we have collected a wide range of baseline data on both the human and natural environment of the Blyth Estuary in order to identify the key issues, constraints and opportunities. We have reviewed a range of other plans, strategies and initiatives that are being used to plan for the future and may be concerned with the estuary. We have also used data from our own records, local council data searches and information from other governmental and non-governmental organisations, as well as consulting local experts and the public to better understand the environment of the Blyth Estuary.

As part of the SEA, we have consulted with the public and organisations and authorities that may be concerned with the environmental effects of implementing our strategy. Initial consultations commenced in June 2003. We consulted on the Strategy at each stage of its development. As well as distributing consultation documents, we also held public exhibitions in June 2003, February 2004, November 2004 and September 2005 at Southwold Pier, Southwold. Throughout the project we have also maintained a specific website (www.suffolkestuaries.co.uk) which allows electronic access to all published documents and also the opportunity to provide online feedback.

What are the Key Environmental Issues?

Human beings, land use and recreation

The majority of the land within the floodplain is given over to pasture land under active drainage for cattle. The town of Southwold and the villages of Walberswick, Blythburgh, Wangford, and Reydon all lie close to the edge of the estuary floodplain. The properties that border the flood risk zone are found on the fringes of these urban areas. There are 125 residential and commercial properties that presently lie within an area that has 0.3% chance of flooding in any one year (also known as the 1 in 300 year flood risk area). This includes properties presently in front of the defences, e.g. at Southwold Harbour.

The present flood defences within the Blyth Estuary have been built to a level that will not be overtopped during events that have between a 5% and 20% chance of happening in any one year and provide some degree of flood protection to approximately 40 of the 125 properties within the flood risk area. The majority of these properties are found along Ferry Road Southwold, to the north of the harbour and estuary mouth. A large proportion of the dwellings at risk are thought to be second homes or holidays lets.

The resident population in the flood risk area is estimated to be in the region of 170 people. Over half (greater than 50%) of this population are thought to be over 60 years old, a significantly higher proportion than the regional average of 27%. Over 90% of the population in the flood risk area claim to have good or fairly good health, whilst between 19% and 27% suffer from a long term limiting illness, compared with regional averages of 90% and 20% respectively (ONS, 2001).

The harbour provides a launching point for the RNLI lifeboat and provides public and private moorings for 110 vessels along the northern and southern banks of the Blyth near the estuary mouth. The moorings are fixed to jetties which are dependent on the flood embankments for access to the boats moored on the southern shore. The harbour mouth is maintained by two heavily engineered concrete harbour arms which extend out into the sea. These structures and a harbour quay are maintained by the Harbour Authority (Waveney District Council) for navigation. The Southwold Harbour Act places a duty on the local harbour authority to maintain facilities on the Blyth as a haven port.

Tourism contributes significantly to the local economy. Many visitors are attracted to the area through interests in sailing, fishing activities at the working harbour and nature conservation. Tourists utilise hotels, bed and breakfast and holiday lets in Southwold and Walberswick, whilst many also use the camping and caravan site close to the northern bank of the harbour. The open landscape of the Suffolk coast can be easily accessed by an extensive footpath network that in many cases follows the line of flood banks around the estuary. A Bailey bridge sits ½ km upstream of the harbour and acts as a pedestrian link between the north and south banks of the river. A local ferry service powered by oar or outboard motor serves as the only other pedestrian link between Walberswick and Southwold.

Nature conservation and landscape

The Blyth Estuary is an important site for wildlife, being designated at national and international levels for its flora and fauna. The mudflats and saltmarsh of the intertidal area and adjacent freshwater marshes and reedbeds support internationally protected populations of wildfowl and waders and make up a component of the Minsmere to Walberswick Special Protection Area (SPA) and Ramsar site. The majority of the area is also designated at a national level as part of the Suffolk Coast National Nature Reserve (NNR) and as part of the national network of Sites of Special Scientific Interest (SSSI). The presence of protected and rare species such as hog's fennel, river water dropwort, water vole, and otter also add to the biodiversity of the Blyth whilst its habitats and species are the subject of a number of UK and Suffolk Biodiversity Action Plans (BAPs).

The natural beauty of the Blyth Estuary's mix of saltmarsh, mudflat, reedbed and grazing marsh is recognised in its inclusion within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB), whilst the intertidal coastal area is recognised as part of the Heritage Coast. The designation of the Blyth landscape reflects the high value given to the landscape and natural environment by local residents and visitors alike.

Water quality and resources

Key groundwater abstractions within the study area provide a source of drinking water that helps to supply Southwold. In addition there are several small-scale groundwater and surface water abstraction points that provide water for farming. National and European Law requires that the quality of the water within the estuary and along the coast is kept in good condition. This allows the continuing use of area for recreation (including "Blue Flag" bathing at the Southwold beach) and fishing interests as well as providing a clean environment for flora and fauna.

Archaeology and cultural heritage

The historical use of the estuary and the coast over the past 2000 years and beyond make the Blyth Estuary rich in archaeology and cultural heritage. Although no Scheduled Monuments lie within the floodplain, two sites of national importance have been recorded to the west of the A12 by Suffolk County Council. These sites are the remains of the 14th century Hospital and Priory of Black Friars at Blythburgh; and Bulcamp Forest, the suspected burial site for Anna, King of East Angles. In addition, there are sites and buildings of regional and local importance located throughout the study area. Many of these are associated with the historic navigation or reclamation of the land, such as the Grade II listed Blackshore wind pump at Reydon Marshes.

Traffic and infrastructure

The regionally important A12 road, a former trunk road, which provides a main route from Felixstowe and Ipswich to Lowestoft passes across the floodplain at Blythburgh, Southwold Covert and to the east of Henham Park. The A12 provides a regional route of access to the centres of Southwold, Wangford, Walberswick and Reydon. The A1095 provides access to

Southwold and Reydon from the A12, and runs close to the floodplain at Bulcamp before crossing the Wolsey Creek. Flooding of these roads can cause significant disruption, as has been experienced on the A12 at Blythburgh in recent years.

Future change

Flood risk to properties might change in the future when the present flood embankments reach the end of their useful life, breach and erode away. Our assessments on the change in flood risk under this scenario have shown that for some properties, the flood risk may increase and for other properties the flood risk may decrease. The 40 properties afforded some protection by the existing embankments within the flood risk area would no longer directly benefit from these flood defences. However, we anticipate that the failure of defences that protect large areas of pastureland in the middle estuary would, in the short term, reduce water levels and potentially reduce the risk of flooding to some properties in the flood risk area over the next few decades. Changes in tidal velocities and erosion would however bring potential problems to properties situated in front of the present flood defences.

The effect of climate change and rising sea levels is likely to have far reaching effects on flood risk, human activities and safety, recreation, and the distribution of freshwater and marine habitats and species. Global sea levels are predicted to rise (Defra require us to make allowances in our strategies and projects for a 1metre rise in sea level in Eastern England over the next 100 years) and more extreme weather such as drought, heavy rainfall, high tidal levels and storm surges are predicted to occur. Within the UK the increase in sea level rise will increase the height and energy of waves at the coast. Increased storms and rainfall, made worse by sea level rise and additional wave energy will significantly increase the overall risk of flooding and erosion. The implications of climate change will require a strategic approach to flood risk management now to manage future change.

What options did we consider for the strategy?

We identified a number of options to manage the risk of flooding to people, property and the environment. Our aim was to consider all possible options from the outset, even though some appeared to have short-comings. Further analysis of the way the estuary behaves and consideration of key technical and environmental issues enabled us to produce a shortlist of 8 Strategic Options that we could assess in more detail either on their own, or in combination with other options and over different timescales. These options are:

1. No Active Intervention throughout the Blyth Estuary: Under this option we would stop all of our maintenance, repair and renewal work on the flood defences throughout the Blyth Estuary. We would act to manage the risks associated with a withdrawal of maintenance from existing flood defences. We would give a reasonable period of notice to affected landowners of our intention to withdraw maintenance.

2. Do Minimum throughout the Blyth Estuary: Under this option we would continue maintenance of all the defences for the remainder of their useful lives. When the defences begin to fail maintenance will be withdrawn. No new flood defences would be built.

3. Hold the Line throughout the Blyth Estuary: Under this option we would continue to maintain the existing line of defence throughout the estuary until it began to fail. We would replace failing defences with new defences that provide the same standard of protection and built to our health and safety requirements. With time, and the predicted rise in sea level, these defences would overtop more frequently and the land behind would become more likely to experience flooding. These replacement defences would eventually fail in the long term.

4. Hold the man made structures at the mouth of the estuary with No Active Intervention elsewhere: Under this option we would take over maintenance of the present harbour arm structures at the mouth of the estuary until they failed. We would then replace the harbour arms with structures which will create the necessary conditions to manage flood risk within the estuary and along the coast. Elsewhere in the estuary we would adopt a policy of No Active Intervention.

5: No Active Intervention at Robinson's Marsh Embankment and Hold the Line elsewhere: Under this option we would withdraw maintenance from the flood embankment that protects Robinson's Marsh. Elsewhere in the estuary we would hold the line of defence as described in Option 3.

6. Advance the Line of flood defence by making the estuary shallower and or narrower close to the Bailey Bridge and Hold the Line Elsewhere: Under this option we would do work to restrict the flow of water in and out of the estuary by making the channel close to the Bailey bridge narrower and or shallower. Elsewhere we would hold the line of defence as described in Option 3.

7. Advance the Line of flood Defence by making the estuary shallower and or narrower close to the Bailey Bridge and No Active Intervention at Tinker's Marshes: Under this option we would withdraw maintenance from the flood embankments along the Tinker's Marshes frontage of the estuary, in addition to the works described in Option 6.

8. Hold the northern line of defence, No Active Intervention at Tinker's Marshes and No Active Intervention elsewhere in the estuary in the Medium Term: Under this option we would maintain the northern line of defence in the estuary downstream of the A1095. We would replace these defences when they are nearing the end of their useful life.

How did we assess the environmental effects of the options and our draft strategy?

We established an environmental baseline from our review of existing information about the Blyth Estuary and, through consultation on our Scoping Report, we identified and confirmed the environmental features likely to be significantly affected by flood risk management. Using this information we developed a list of environmental objectives that have been used to assess our shortlist of options. The objectives are expressed in the form of indicators and targets which allows us to test whether the options meet the objectives. The environmental objectives are:

1. To reduce flood risk to human life and communities
2. To protect water resources
3. To comply with all statutory obligations arising from national and international nature conservation designations and related legislation
4. To protect farmland
5. To maintain and enhance landscape character and features
6. To maintain and enhance opportunities for recreation and tourism
7. To conserve features of archaeological, historical and engineering importance
8. To minimise the impacts on the local economy

We considered how each of our options might change the movement of water in the estuary and how that might affect each component or receptor in the environment. By considering the scale of the change and the sensitivity of the environment to that change we have been able to test whether the options meet the Environment Objectives. To ensure that we understood the potential long term effects of the options we considered the impacts of each option within the 0-20 year, and 21-100 year time periods. We compared the options by considering the number and type of objectives that each option was able to satisfy.

We have also undertaken detailed technical and economic assessments of the options in line with Defra guidance.

Our technical assessment showed that:

- Hold the line in the medium to long term will be very challenging due to the effects of climate change requiring more heavily engineered structures. Despite this flood risk will continue to increase.
- No active intervention in the short term will lead to large increases in the amount of water that is able to flow in and out of the estuary leading to widening of the existing channels in the lower estuary and the eventual failure of the harbour structures at the mouth.
- The preferred management option from a technical viewpoint would be to manage the way in which the estuary changes over the short, medium and long term. Option 8 would work with natural processes to control the volume of water entering and leaving the estuary to minimise the risk of an uncontrolled change in the Blyth Estuary.

Our economic assessment showed that:

- No Active intervention would be likely to lead to flood damages in the region of £85M over the 100 year period.
- Holding the line of defence will cost £42.7M, with the majority of defences requiring replacement within 20 years. However there would still be £20.8M of damage and we would be defending large areas of land with a much lower value than the cost of defending them.
- Due to the high demand for public money to defend areas where there are much larger numbers of people and property at flood risk, we would be unlikely to be able to fund major repair or replacement of the existing flood defences.

What is our draft strategy and why have we chosen it?

Our overall assessment of the present management of flood risk has shown we will be unable to manage future risk through maintenance of the present line of flood defences in the estuary. In our assessment of options we identified that Option 8 would help us to manage the way the tides within the estuary behave; and helps to meet most of our environmental objectives. This option would require a significant amount of investment throughout the short, medium and long term.

Due to the present condition of these defences, the uncertainty associated with future climate change and due to very high demand for flood risk management funding throughout the UK, we are unable to implement Option 8. Furthermore due to funding constraints we cannot replace any of the flood banks around the estuary when they reach the end of their life.

Our draft strategy to manage the flood risk to people and property within and adjacent to the Blyth Estuary will therefore focus on allowing those exposed to increasing risk due to sea level rise and the deteriorating condition of the existing defences to adapt to this risk. As part of this strategy we will:

- Maintain the defences either side of the harbour, downstream of the Bailey bridge (but not the Harbour walls which are the responsibility of the Harbour Authority) for the remainder of their useful life, which we estimate will be about 20 years. If any of these walls are subject to major breaches or significant deterioration within that period due to a major flood event, we will have to consider whether continued maintenance is justified.
- Continue to maintain the Reydon Marshes bank for the remainder of its useful life. This flood bank is nearing the end of its life, is built on very poor foundations and is now in very poor condition. We will seek to maintain the bank for the next five years, but it may become irreparable in that time. In the mean time we will be working with Suffolk County Council and others to investigate alternative ways of managing flood risk in this area.
- We will look at options for strengthening Buss Creek to help protect Town Marshes.
- Withdraw maintenance from flood banks and defences in the rest of the estuary.
- Above the A12 the defences on both banks have already failed. We do not plan to rebuild or repair these banks. Opportunities for habitat creation are being explored in this area.
- Investigate localized flood protection measures for isolated properties or groups of properties on the floodplain margins.

The Environmental Report describes the likely effects on the environment of implementing the strategy, and forms part of the consultation on the draft strategy.

Environmental Effects, Mitigation and Monitoring

Implementing the strategy will have wide-ranging effects for the environment, both adverse and beneficial, in the estuary over the short, medium and long term. The significant effects are summarised below.

Summary Description of Significant Effects of the Draft Strategy
<p>Beneficial</p> <ul style="list-style-type: none"> • Maintenance of defences downstream of the Bailey bridge will maintain the present risk of flooding in the short term by extending the life of defences in the lower estuary and reducing the likelihood of failure during storms over the next 10 to 20 years. • Failure of flood defences upstream of the Bailey bridge may reduce flood risk for some properties within the study area in the short term and will buffer the effects of predicted sea level rise associated with flooding into the future. • Access to the majority of the existing Public Rights of Way around Southwold and Walberswick including the Suffolk Coastal Path via the Bailey bridge will be accessible in the short term. • Access to public and private moorings and the existing harbour facilities will be maintained in the short term • Flooding of reclaimed land will lead to a net increase in saltmarsh and intertidal habitat, which are important landscape and nature conservation features of the Suffolk Coast AONB and Minsmere to Walberswick SPA and SSSI. • Allowing the estuary mouth to widen over the medium to long term will help maintain suitable water speeds at the harbour mouth for navigation in response to increases in sea levels and flooding of reclaimed land. • In the long term, there is likely to be a positive impact on fish and shellfish stocks due to the increased estuary size.
<p>Adverse</p> <ul style="list-style-type: none"> • The failure of flood defences protecting reclaimed land over the short and medium term may result in increased risk for some properties presently afforded a degree of protection by the existing flood embankments. • Tidal inundation of Reydon Marshes may increase the risk of saline intrusion to a groundwater source protection zone that is a source of drinking water for Southwold. • The failure of tidal defences will result in tidal inundation, converting Ramsar, SPA and SSSI freshwater grazing marsh and reedbeds to mudflats and saltmarsh in the short and medium term leading to the potential loss of habitat that supports populations of bittern, marsh harrier and bearded tit. • Increase in flows through the harbour will damage the northern harbour arm and impact on navigation and harbour use in the short to medium term and has the potential to cause changes to long shore drift and increased erosion of sediment in the long term. • Erosion of flood embankments and flooding of reclaimed land in the upper and middle estuary will lead to a loss of access to Public Rights of Way in the short and medium term. • In the medium term, tidal inundation of Town Marshes will lead to the loss of access to the harbour via York Road. In the longer term flooding of Havenbeach Marshes will lead to further reduced access to the harbour via Ferry Road, which will be subject to intermittent and increasing flooding in the medium and long term. • The failure of the Reydon Marshes embankment and Wolsey Creek sluice in the short term will lead to an increase in flood risk and erosion problems for short sections of the A12 (at Blythburgh, Southwold Covert and east of Henham Park) and the A1095 (at Wolsey Bridge). • Significant increases in water speeds through the harbour due to the failure of the defences at Reydon Marshes in the short term will make navigation more difficult, potentially affecting the Walberswick to Southwold Ferry service. The increase in erosion will cause a loss of access to existing moorings in the medium to long term and undermine the harbour wall, potentially affecting waterfront local industry. • Flooding of reclaimed land will result in potential damage to nationally important archaeological sites and listed buildings.

Short term, 0-20 Years; Medium term, 21-50 years; and, Long Term, 51-100 years.

More detail on the assessment of environmental effects is found in Section 6 of the Environmental Report.

We will seek to avoid or lessen the significant effects of the strategy at the earliest opportunity, either through our own actions or through liaison with the statutory bodies, groups or individuals who are responsible for the maintenance of the assets that do not fall under our remit.

A Monitoring Plan has been developed to monitor the significant impacts, mitigation measures and opportunities identified by the assessment. The findings of the monitoring plan will be reviewed and incorporated into the periodic review of the strategy and SEA.

The SEA Environmental Report provides environmental information to support the draft strategy. We will consult and take onboard comments provided during the draft strategy consultation period. A post adoption statement will demonstrate how we have considered comments and will be published following adoption of the final strategy.

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