Managing the coast

Summary: The Wash Shoreline Management Plan 2 Gibraltar Point to Old Hunstanton

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Concrete defences at Heacham

What is a Shoreline Management Plan?

A Shoreline Management Plan (SMP) identifies the best ways to manage flood and erosion risk for a particular stretch of coastline, taking into account the developed, historic and natural environment. The Plan looks at technical elements such as flood defences and coastal processes over the next 100 years, divided into the short, medium and long-term.

The first generation of SMPs were published in 1996/7 and were a major step forward in assessing how coastal processes may impact on the coast in the future.

The Plan describes the short-term (up to 2025), the medium-term (2026 – 2055) and the long-term (2056 - 2105). In the main document these are referred to as epochs 1, 2 and 3 respectively. The Plan is periodically reviewed as our vision for the medium and long term is based on our current knowledge and understanding.

The SMP was guided by a set of principles agreed by all partners involved. These principles, such as Communities and Agriculture, define a set of basic values from which the SMP aims to find the best achievable balance. The following partners who have an interest and responsibility around the shoreline were involved in the Plan's development:

- East Lindsey District Council
- Boston Borough Council
- South Holland District Council
- Lincolnshire County Council
- Norfolk County Council
- Natural England
- English Heritage
- Water Management Alliance
- National Farmers' Union
- Royal Society for the Protection of Birds
- Wash Estuary Strategy Group and The Wash and North Norfolk Coast European Marine Site

This partnership approach is important because there are strong links between shoreline management, coastal land use and the coastal environment.

The main SMP document and appendices will be available electronically on the East Anglia Coastal Group (EACG) and partner local authority websites. It will also be available in hard-copy at local libraries and council offices.

Further information about The Wash SMP can also be obtained by e-mailing: washsmp@environment-agency.gov.uk or by calling the Environment Agency's National Customer Contact Centre on 08708 506 506 Monday to Friday 8am to 6pm.

Development of the Plan

The schedule for the development of this Shoreline Management Plan is outlined in the table below.

Shoreline Management	Stage Details	Plan Timing
Prepare draft plan	• Scoping • Assessments to support policy development • Policy development	March 2007 to September 2009
Public consultation	• Consult with all people and organisations who have an interest	October 2009 to January 2010
Shoreline Management Plan	• Review and incorporate consultation responses • Prepare action plan • Produce Shoreline Management Plan • Adoption	January to October 2010
Plan dissemination		November 2010
Monitor and review		Ongoing

Public consultation

The Wash SMP was available for public consultation from Monday 12 October 2009 to Friday 15 January 2010 as advertised in local and national press and through local authority newsletters. A consultation draft of this summary document was produced so that everyone with an interest in the Plan could easily see which policies were proposed for each part of The Wash coast. More than 200 copies of the summary document were sent out to various partners and to consultees who had expressed an interest in The Plan. Copies of the full draft Plan, the summary document and fact sheets were published and made available for viewings at all local authority offices and main libraries across the area. Eight public events were held in King's Lynn, Hunstanton, Boston, Long Sutton, Friskney, Spalding, Old Leake and Wainfleet. We received a number of formal responses through the public consultation. Appendix B of the SMP contains a summary of these comments and how we have responded to them.

Relationship with other Plans

The SMP has taken into account the compatibility of its policy's with neighbouring Plans. These Plans include the Humber Estuary Coastal Authorities Group SMP 2, the Old Hunstanton to Kelling Hard SMP2, and the Catchment Flood Management Plans which assess the management of flood risk from rivers.

Future developments

The SMP is based on the current legal and policy framework. The Plan recognises that society may change its priorities in the future, resulting in changes in legislation and government policy. In addition, an Action Plan has been developed out of the SMP, which will set in motion a programme of monitoring and study to enhance technical knowledge and understanding. Therefore these policies will need to be tested through future SMP reviews.

Project area overview

The Wash Shoreline Management Plan area is in the east of England. It includes the tidal estuaries of the rivers Witham, Welland, Nene and Great Ouse. It extends along the east coast from the River Steeping at Gibraltar Point (Lincolnshire), into The Wash itself and to the cliffs at Old Hunstanton (west Norfolk). It stretches over approximately 110 kilometres of coastline.

From Gibraltar Point to north west King's Lynn the shoreline is characterised by a sea bank that divides salt marsh and mud flat from extensive low-lying agricultural land. Most of the agricultural land has been reclaimed from the sea over past centuries, and contains almost 50% of England's grade one and 10% grade two land. It supports a regionally and nationally valuable agriculture industry.

The Wash is a very unique environment, and the landscape is very distinctive. The salt marsh and mud flats provide important habitats for wildlife and act as an important natural sea defence; they also contribute to the economy of the area by supporting the fisheries industry and shoreline-related tourism. People come to the area for wildlife-related tourism mainly wildfowling and bird-watching (for example at the RSPB reserves at Freiston, Frampton and Snettisham). The south-eastern corner is also part of the Norfolk Coast Area of Outstanding Natural Beauty.

Snettisham

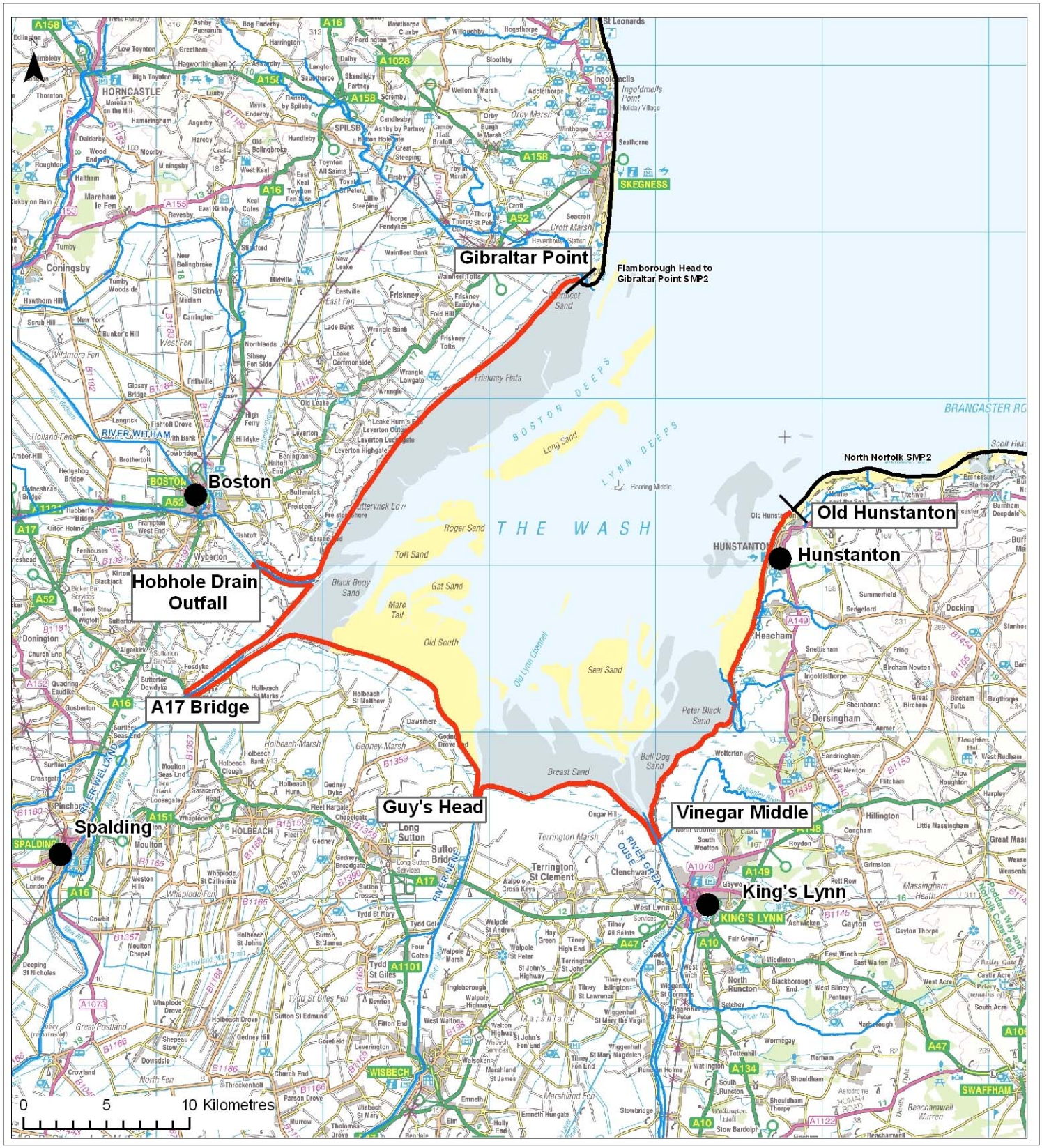


Figure 1. Overview of The Wash project area

On the eastern shoreline of The Wash, high ground is only a few miles inland and the sea defence is a shingle ridge backed by a sea bank. Land use is less dominated by agriculture and more by tourism. In Hunstanton the land rises into cliffs, part of which are protected by a promenade and sea wall. The remainder are unprotected. Particularly relevant for shoreline management is the conservation area and historically important listed buildings (the lighthouse and St. Edmunds chapel) on top of Hunstanton cliffs. These cliffs are also important for their geological interest.

Seal trips leave from Hunstanton and there is a network of footpaths that run along the shoreline, mainly on top of the sea banks. In addition, seaside and resort tourism provides the main industry for Snettisham, Heacham and Hunstanton. At these locations there are large camping and caravanning areas, holiday centres, holiday homes and tourist facilities.

The coastal processes in the area are complex. An understanding of these processes and features play an important role in developing the Plan.

Salt marsh and mud flat:

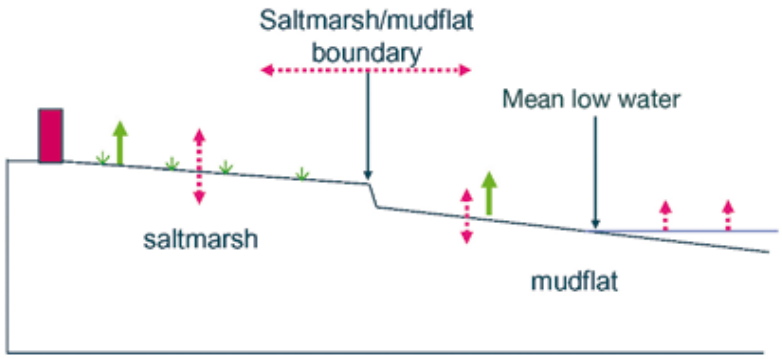
The intertidal area in The Wash has been accumulating sediment for the last 2000 years, and is home to a rich variety of animals and plants. The salt marsh is naturally growing and the mud flat is slowly rising due to sediment depositing. However, the seaward growth of salt marsh comes at the expense of the mud flat area. In the future, sea level rise could mean that the current growth of the salt marsh and mud flat could stop. Intertidal habitat would start to shrink, due to it being 'squeezed' between the rising sea level and the sea banks.

Shingle ridge:

A natural bank of heaped shingle lies parallel to the shore between Wolferton Creek and South Hunstanton. The ridge is built up by shingle that is washed up onto the shore during storms. If left to develop naturally, shingle ridges have a tendency to 'roll back' in a landward direction due to the force of the waves and wind. This process is further enhanced by sea level rise.

There are saline lagoons directly behind the shingle ridge near Shepherd's Port, Snettisham. These are a refuge for internationally important birds. This environment is protected by a range of national and international designations.

Figure 2. Key coastal processes and features



The Plan

The overall plan for shoreline management of The Wash is to take a 'no regret' approach in the face of very uncertain future development and to set out a clear programme of monitoring, study and collaboration to support long-term decisions.

For coastal flood and erosion management, shoreline management is translated into one of four policies;

- **Hold the line (HtL)** – this involves holding the defence on its existing alignment.
- **Advance the line (AtL)** – this involves building new defences seaward of the existing defence line. If relevant, use of this policy is limited to those stretches of coastline where significant land reclamation is considered.
- **Managed realignment (MR**) – this involves allowing the shoreline to move seaward or landward, with associated management to limit the effect on land use and the environment.
- **No active intervention (NAI)** – this involves no investment in coastal defences or operations.

The SMP process has looked at each of these policy options and assessed their feasibility. Each policy option has positive and negative impacts, which has made the final choice of shoreline management very challenging for the partners. The policy options themselves do not imply any particular standard of protection to be provided. They could be implemented by maintaining or changing the standard of protection. In most areas this is a decision that is taken beyond the scope of the SMP, in a strategy study or scheme. For most of The Wash SMP however, this is such a vital element of shoreline management that the partner authorities have agreed to make that decision within the SMP itself.

Policy Development Zones

The Plan has been divided into four units called Policy Development Zones, where there are common issues to be faced.

They are largely independent of each other in terms of shoreline management, but we have taken account of their relationship to each other. For example, between all Policy Development Zones there is a natural exchange of sediment between the offshore banks, mud flats, salt marsh and beaches.

Policy Development Zone 1: from River Steeping at Gibraltar Point to Wolferton Creek.
Policy Development Zone 2: from Wolferton Creek to south Hunstanton (where the land begins to rise).
Policy Development Zone 3: Hunstanton Town.
Policy Development Zone 4: Hunstanton Cliffs.

Each zone plays an important part in developing this Plan. The following sections explain each in detail.

Policy Development Zone 1

Gibraltar Point to Wolferton Creek

Based on established settlements, habitation and land use around The Wash, we should continue to defend against tidal flooding. The risk is greater than for the other Policy Development Zones in this Plan and for other SMPs around the country. It is beyond the scope of this Plan to determine a required standard of protection, but it can make decisions about the relative level of flood risk in the face of climate change. For this Policy Development Zone therefore, one of the critical decisions is whether to sustain the existing activity level (accepting gradual increase of risk), increase the activity level to sustain the existing level of risk, or aim to reduce flood risk. Sea level rise and potential future loss of foreshore width and height would increase pressure on the defences. Loss of foreshore would also affect the integrity of the habitats in The Wash.

If the foreshore was lost, holding the existing alignment would preserve valuable agricultural land, but it would lead to loss of important habitats and species and require large and expensive defence structures. The alternative is to carry out limited localised realignment of the defences . which would potentially require giving up some agricultural land, alterations to drainage infrastructure and new flood defences. This would create new intertidal habitat and provide a more sustainable flood defence. On the other hand it is possible that even with rising sea levels, there would be no loss of foreshore. In this case the integrity of the defence would remain and there would be no requirement to realign the defence. This would preserve valuable agricultural land without losing important habitats and species. The SMP needs to determine the right balance between these factors.

Privately managed sea banks

Where a privately managed front-line sea bank is backed by a similar earth embankment maintained and supported by the Environment Agency, the intention of the SMP relates to the defence system which is made up of the two lines of sea defence. For the privately managed frontline, this means in practice that the intention is to allow the current private owners to continue holding the line in the short-term (with appropriate consents), which is their current procedure. For the medium and long-term the SMP's intention is conditional on how the foreshore develops.

Salt Marsh at Freiston

Summary

Our intention for this Policy Development Zone is to sustain the current level of flood risk for the communities and their hinterland, with an increase of management as required in the face of climate change.

In the short-term, the policy option is to hold the existing sea bank alignments. In the medium and long-term, ideally the existing alignments should continue to be held. However there is a chance that climate change will cause a significant loss of salt marsh and mud flat in front of the seabanks. If this occurs, localised landward realignment should be considered as an alternative to holding the line.

The SMP identifies that more knowledge is needed to confirm the likelihood of foreshore erosion. There is significant uncertainty about the medium and long-term rate of sea level rise, the increase of storminess, the supply of sediment, the response of the intertidal area to these changes and the role of the flood defences in all this. A decision to either hold the line or realign would have very large consequences on both sides of the current defence line and this would be difficult to reverse. The future needs of society for agricultural land, habitats and other land uses are also uncertain.

It would not be appropriate to make a fixed choice from one of the available policy options for the medium and long-term at this stage. Therefore, the medium and long-term policies are conditional on the results of ongoing monitoring and research stemming from the SMP Action Plan. If future monitoring and research shows that sediment no longer accumulates, causing a loss of the foreshore and impacting upon the flood defences and habitats, then realigning parts of the land will be considered as an option.

If we have a possible future of erosion, a Hold the line policy is likely to lead to a legal requirement (through the Habitats Regulations) to compensate for the loss of intertidal habitats, and a need to review defence stability and performance. In practice this will be addressed through targeted localised managed realignments within Policy Development Zone 1. This will provide a more effective and sustainable sea defence solution by creating a wider foreshore as well as helping to conserve the natural environment.

Summary of policies for Policy Development Zone 1

Policy Development Zone	Short-Term (present day – 2025)	Medium-Term (2025 – 2055)	Long-Term (2055 – 2105)
Gibraltar Point to Wolferton Creek	Hold the line	Hold the line/Managed realignment	Hold the line/Managed realignment

Policy Development Zone 2

Wolferton Creek to South Hunstanton

The SMP process identified that the situation here is very complex and sensitive. The existing situation is undesirable because there is a significant risk to life. During parts of the year, a large number of people in holiday homes and caravan parks stay directly behind a shingle ridge defence, which has a relatively low standard of protection. In the future, it will be difficult to sustain this standard which needs continuous maintenance. Thus far, the costs and the environmental impacts of this approach have been acceptable. However, both are expected to increase in the future, making it difficult to hold the shingle ridge as a flood defence in the long-term. In addition, it is uncertain whether retreating to the existing seabank is a realistic option. This requires more detailed study.

The holiday homes and caravan parks are very important for the local and regional economy. To some extent, adaptation may be an option. This could include considering the possibility of relocating some of these facilities away from the hazard. However, this may reduce their value for tourism and will certainly require time. Other interests could also be affected such as agricultural land use and historic assets. In addition there are important habitats on both sides of the shingle ridge. The shingle ridge protects the saline lagoons, which are an important and rare habitat. However keeping it in its current alignment may also constrain long-term development of the intertidal area. It is difficult to apply the standard policy options to this complicated situation. Developing a long-term solution requires more knowledge and a longer, more integrated decision-making process than this Plan can provide. In this case, the role of the SMP should support this integrated decision making process, with full involvement of all partner organisations and the local community.

Caravan park at Heacham

Summary

The overall intention for this Policy Development Zone is to develop a sustainable long-term solution by establishing a process of co-operation between the partner organisations, local people and businesses. Through regular meetings this partnership has begun to explore the potential for adaptation and other aspects of the solution.

The long-term solution should meet the following criteria:

- Risk to life has to be acceptable. This requires an appropriate combination of defence standard, distance of dwellings from the flood defence and emergency management arrangements.
- Sufficient time for adaptation for the local people and businesses that could be affected should be considered.
- The solution should support Hunstanton in its role as a tourist resort and regional commercial centre. This also includes taking the opportunities that a change in shoreline management may provide.
- The environmental impacts of any changes in shoreline management and the associated changes in land use should be legally compliant. This not only relates to the direct impact on the intertidal area seaward of the shingle ridge, but also the longshore impact on Snettisham Scalp. This also has an impact on the saline lagoons in the southern half of this Policy Development Zone. A change in shoreline management may also provide opportunities for habitat improvements.
- Any solution to this problem should be realistically fundable, which is likely to require external contributions. On the basis of the pre-consultation key stakeholder meeting on 24 August 2009, there are strong indications that the caravan site owners and residents would be willing to make significant funding contributions to achieve holding defences at their current position over the short-term. This relates to both the concrete flood defence (promenade) at South Hunstanton, and the shingle ridge and sea bank combination to the south.

Future Developments

The short-term period up to around 2025 is the minimum time needed to enable potential land use adaptation. It is essential that the current efforts to manage risk to life are sustained. The costs and the environmental impacts of a hold the line policy are considered acceptable, but this should be confirmed by the review of the Hunstanton to Snettisham Sea Defence Strategy which will be completed in 2012. This review may identify a need for external contributions to achieve the short-term policy. It is possible that a process of land use adaptation could start before 2025. For the medium and long-term, the solution should continue to be developed through a partnership approach with all relevant people, businesses and organisations. The best solution is likely to be a mixture of flood defences (using existing defences, upgrading old defences or constructing new defences), incident management and land use changes.

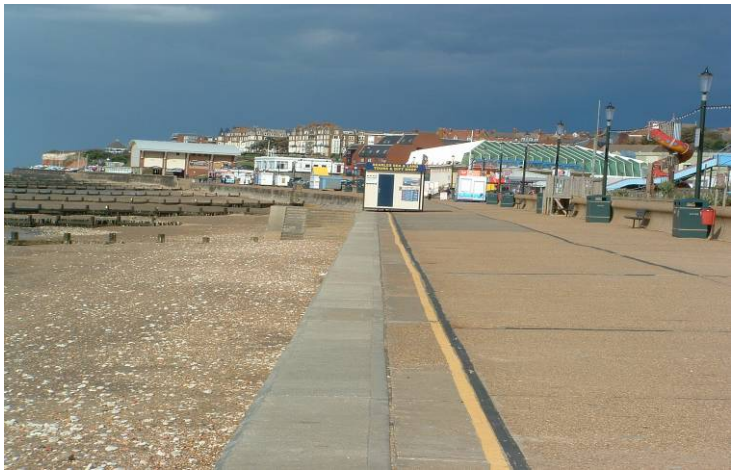
Summary of policies for Policy Development Zone 2

Policy Development Zone	Short-Term (present day – 2025)	Medium-Term (2025 – 2055)	Long-Term (2055 – 2105)
Wolferton Creek to South Hunstanton	Hold the line	Hold the line/Managed realignment/ No active intervention	Hold the line/Managed realignment/ No active intervention

Policy Development Zone 3

Hunstanton Town

The shoreline in this Policy Development Zone is entirely managed, with the higher ground protected from coastal erosion by a promenade and sea wall. Beach levels are maintained by timber groynes on the beach which trap sand. Continued protection against erosion of the Hunstanton seafront is needed to support the town's role as a regional centre and tourist destination. A judgement based assessment for this SMP suggested that the associated benefits for Hunstanton and the region are likely to outweigh the cost of continued defence, which is likely to increase as a result of climate change



Hunstanton town

Summary

The overall intention for this Policy Development Zone is to sustain the viability of Hunstanton Town as a tourist resort and regional commercial centre. This requires sustaining the promenade and the seafront. Therefore, our intention is to hold the shoreline defences where they are now.

The SMP has identified the need to continue to monitor coastal processes. If further monitoring shows that in the longer term Hunstanton may develop into an unsustainable headland, then the Plan should be reviewed.

Summary of policies for Policy Development Zone 3

Policy Development Zone	Short-Term (present day – 2025)	Medium-Term (2025 – 2055)	Long-Term (2055 – 2105)
Hunstanton Town	Hold the line	Hold the line	Hold the line

Policy Development Zone 4

Hunstanton Cliffs

The cliffs are not currently defended. Their ongoing erosion is likely to be a source of sediment for Hunstanton Town and further south, and provides an important geological interest and landscape feature. On the other hand, erosion is likely to threaten the lighthouse, important historic features and the recreational use of the cliff top in the short-term, and may start to threaten the B1161 (cliff top road) and houses in the long-term. The SMP needs to find the right balance between these factors.

Summary

The overall intention for this Policy Development Zone is to continue to allow the cliffs to erode naturally and provide sediment to help maintain the beaches to the south, up to the point where the erosion starts to threaten cliff top properties and the B1161. Future monitoring will help to determine the rate of erosion, as the intention is to prevent further cliff erosion to sustain the properties and the road.

The continuation of no active intervention in the short and medium-term sustains the role of the cliffs as a source of sediment and its geological importance. However, it is likely to threaten the lighthouse, other historic assets and recreational use on the cliff top. A better understanding of the technical, economic and environmental viability is needed to confirm the long-term intention to protect the properties and the road against erosion.

The SMP has identified the need to carry out an integrated strategy study for the frontage of Old Hunstanton to Wolferton Creek (Policy Development Zones 4, 3 and 2). This will make clear how the erosion of the cliffs acts as a source of sediment for Policy Development Zones 3 and 2. The monitoring, consultation and studies improve knowledge of the long-term processes and will support the Action Plan and subsequent SMP reviews. In this Policy Development Zone consideration was given to the adjoining Old Hunstanton to Kelling Hard SMP.

Summary of policies for Policy Development Zone 4

Policy Development Zone	Short-Term (present day – 2025)	Medium-Term (2025 – 2055)	Long-Term (2055 – 2105)
Hunstanton Cliffs	No active intervention	No active intervention	No active intervention/ Hold the line

What happens next?

The full details of the Action Plan can be found in the main SMP document.

The Action Plan sets out what all partner organisations should do to implement the SMP. These actions can only be achieved through the continued collaboration of all partners. The SMP highlights both a number of important uncertainties and a need to improve our understanding of coastal processes to support firmer policy decisions in the next generation of SMPs and beyond. The Action Plan details the work required, their level of priority and timelines.

Actions for Policy Development Zone 1

A specific element of the Action Plan concerns the monitoring and study required to reduce uncertainty about future foreshore development in Policy Development Zone 1, determining the actions for the medium and long-term. The SMP highlights the need to continue maintenance of defences and the training walls, and outlines a demand for the formulation of System Asset Management Plans to achieve the Hold the Line policy in the short-term. The Action Plan recommends that the partnership liaises with private landowners at locations where the frontline earth embankment is private (and is backed by an Environment Agency managed earth embankment) to enable the defence to be maintained in the short-term. In addition, a high level study to clarify the importance of agricultural land for food security in relation to habitat requirements is suggested. It recommends the continuation of studies provide greater understanding of the flood defence function of the intertidal areas, the sustainability of the earth embankments and of any effects on habitats.

Actions for Policy Development Zone 2

The Action Plan highlights the need to continue management of the defences and recommends a collaborative approach in developing a strategy for the management of the defences in the short to medium-term. It also suggests that the timing, location and extent of any changes to the defences should balance all the socio-economic, environmental and historic environment constraints and opportunities. Continued monitoring of the entire Policy Development Zone 2 frontage, incorporating any changes in land use planning is advised.

Actions for Policy Development Zone 3

Continual monitoring and management of the defences is required in Policy Development Zone 3. The condition of the Hunstanton Town defences needs to be assessed and the results fed into the Action Plan. The SMP recommends a study to confirm the economic viability of maintaining the coastal defences at Hunstanton. This study should include an assessment of the wider benefits of the defences to Hunstanton's seafront and gain an understanding of the impacts on listed buildings and conservation areas. The Action Plan also recommends the upgrading and updating of the Rapid Coastal Zone Assessment (RCZA) for Norfolk.

Actions for Policy Development Zone 4

The SMP highlights the need for a study to determine the feasibility of defending the Hunstanton Cliffs in the long-term. This should look into the technical possibilities, in terms of options available and effects on coastal processes, as well as the impacts on Policy Development Zones 2 and 3. The study should also highlight the economic and environmental impacts on the geological designation, as well as the amenities and historic environment assets on top of the cliffs.

Glossary

Adaptation:
The process of becoming adjusted to new conditions, in a way that makes individuals, communities or systems better suited to their environment. Adaptation implies that there may be some actual change in the way a feature, such as a habitat or a community, functions.

Agricultural land classification:
Classification of the quality of agricultural land as a grade from one (best quality) to five (poorest quality).

Benefits (related to issue):
The service that a feature provides. In other words, why people value or use a feature. For example, a nature reserve, as well as helping to preserve biodiversity and meet national legislation, may also provide a recreation outlet much like a sports centre provides a recreation function.

Catchment Flood Management Plans:
Catchment Flood Management Plans give an overview of the flood risk across each river catchment. They recommend ways of managing those risks now and over the next 50-100 years.

Climate change:
Long-term change in the patterns of average weather. Its relevance to shoreline management relates to its effect on sea levels, current patterns and storminess.

Coastal squeeze:
The reduction in habitat area that can arise if the natural landward migration of a habitat due to sea level rise is prevented by the fixing of the high water mark, for example a sea wall.

Conservation area:
Local authorities have the power to designate in any area of 'special architectural or historic interest' whose character or appearance is worth protecting or enhancing.

Designated sites:
A designation is a name and/or acronym which explains the status of an area in terms of conservation or protection. The protection and management of these areas will help to ensure that they remain in good health into the future.

Enhance:
The value of feature increases

Erosion:
A feature or system that has a tendency to decrease in size (either in a horizontal or vertical direction) as a result of material being removed from the feature/system. Removal of material can occur by weathering, solution, corrosion or transportation. In the case of salt marshes and mud flat the main process is transportation.

External contributions:
A contribution is a financial provision that helps share the costs of carrying out Environment Agency planned flood and coastal risk management projects. Contributions can be from private, public or voluntary organisations or communities who will benefit the most from our work. Any contribution will need to be in line with the Flood and Coastal Risk Management External Contributions Policy.

Feature:
Something tangible that provides a service to society in one form or another or, more simply, benefits certain aspects of society by its very existence. Usually this will be in a specific place and relevant to the SMP.

Foreshore:
Zone between the high water and low water marks.

Groyne:
Shore protection structure built perpendicular to the shore and designed to trap sediment.

Hinterland:
Generally, area landward of the shoreline. For The Wash SMP this term is used to identify the area landward of the established settlements.

Historic environment:
All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed flora.

Integrated:
An approach that tries to take all issues and interests into account. In taking this approach, managing one issue adds value to the way another is dealt with.

Intertidal zone:
Also known as the foreshore or littoral zone. The area that is exposed at low water and underwater at high tide.

Land use adaptation:
As with 'Adaptation', but refers specifically to the process of changing how a defined area of land is used. The principles listed above for 'Adaptation' still need to be recognised in the case of land use adaptation.

Longshore movement/drift:
The transport of beach material along the coast.

Maintain:
The value of a feature is not allowed to deteriorate.

Mud flat:
Low-lying muddy land that is covered at high tide and exposed at low tide.

Offshore zone:
Extends from the low water mark to a water depth of about 15 metres (49 feet) and is permanently covered with water.

Objective:
A desired state to be achieved in the future. An objective is set, through consultation with key parties, to encourage the resolution of an issue or range of issues.

Policy:
In this context, "policy" refers to the generic shoreline management options (No active intervention, hold the existing line of defence, Managed realignment and advance the existing line of defence).

Rapid Coastal Zone Assessment:
Survey of the historic assets on the coast that were started by English Heritage to improve knowledge and understanding.

Sustain:
Refers to some function of a feature. A feature may change, but the function is not allowed to fail.

System Asset Management Plans:
System Asset Management Plans are one of four work streams critical to the delivery of the asset management IT solution.

Tidal flood risk:
The risk of flooding associated with the normal and extreme tidal cycles. Flood risk is measured as the probability of flooding (for example at location X there is a 1 in 100, or 1%, chance of flooding in any given year) multiplied by the impact or consequences that will result if the flood occurs.

Training Walls:
An artificial embankment or wall for directing the course of a stream. It is built along the bank of a river or estuary parallel to the direction of flow to direct and confine the flow.

Water Framework Directive:
A European directive aimed at the management of water bodies and their condition.