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Pagham to East Head Coastal Defence Strategy Consultation Report

**Appendix A
Consultation Material
A01**

September 2008

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Environment Agency

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Document History

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**Draft Pagham to East Head Coastal Defence Strategy
Summary Document**

Environment Agency in
partnership with



planning for the future



Pagham to East Head
draft coastal defence strategy

Summary document

Strategic Overview of the coast

In April 2008, the Environment Agency became responsible for overseeing the management of all coastal flood and erosion risk in England.

Under the new arrangements the Environment Agency now:

- takes the lead for managing all coastal flooding risk in England;
- ensures that proper and sustainable long-term Shoreline Management Plans are in place for our coastline, and approves them on behalf of Defra;
- allocates all flood and coastal erosion risk management capital funding.

Local authorities will still do much of the operational work on coastal erosion, but under the Environment Agency's coastal overview.

Coastal management strategies including this *Pagham to East Head draft coastal defence strategy* will continue to be developed in partnership by local authorities and the Environment Agency.

The Environment Agency, coastal groups and local authorities are working hard to ensure that we deliver this new way of working in a true partnership approach.

Published by:

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introduction

The Environment Agency and Chichester and Arun District Councils have worked in partnership to produce the *Pagham to East Head draft coastal defence strategy*. We have produced this document to summarise our draft strategy findings and recommendations.

Flooding and erosion are real risks facing people and their property on the coastline between Pagham and East Head. If there were no sea defences today, more than 300 houses and businesses in low lying areas could flood each year. With rising sea levels, this number could rise to more than 2,200 in the next 100 years. If the existing defences were not maintained, erosion

could cause almost 1,500 properties to be lost to the sea over the next 100 years. Subject to funding being available, our recommendations can manage the risk of flooding and erosion to communities and the environment over the next 100 years.

We are recommending that the vast majority of properties should be protected to their current standard or better. Our full draft strategy gives details of the risks faced and our proposed management options.

Our work makes clear that securing funding for building and maintaining defences is a serious and pressing issue for this area. The amount of

funding available from central government to provide defences is limited and there is strong competition for these funds from elsewhere around the country. If funding cannot be found, plans will be needed for people to adapt to the changes that will inevitably occur.

This is a draft strategy and no final decisions have been made yet. Your input is important to ensure that we can consider your opinions in producing the final strategy. We welcome your comments and will make use of any new information when we make our final decisions in late 2008. You can find out how to send us your comments on page 23.

What is a coastal defence strategy?

Coastal defence strategies fit into a three-tiered framework of flood and erosion risk management as established by the Department for Environment, Food and Rural Affairs (Defra).

- Shoreline Management Plans (SMPs) – set out high level management policies for 100 years across wide areas of coastline.
- Coastal defence strategies – define how to deliver SMP policy for smaller areas.
- Schemes – implement work on the ground.

Why have a coastal defence strategy?

Recent flooding at Medmerry and erosion at Selsey West Beach have raised public concern over coastal protection in this area. There is an understandable desire to see immediate action. The coastal defence strategy needs to be completed to ensure investment of public funds can be justified and that money is spent where it will give the most benefit. A strategy for 100 years is needed to:

- assess the risk of flooding and erosion to people, land, properties and the environment both now and

in future with predicted sea level rise;

- look at ways of managing these risks and recommend options for the area;
- plan for the implementation of schemes including securing funding where possible and highlighting the issue where national funding is unlikely.

Strategies will be reviewed regularly during their lifetime to take account of any changes that happen over time.





Pagham and the Manhood Peninsula

The Pagham to East Head draft coastal defence strategy covers the West Sussex coastline between Pagham Beach and West Wittering (see map, Figure 1 on pages 12-13). It covers the main centres of population around Pagham, Selsey and the Witterings. In addition to the approximate 20,000 permanent residents living in the strategy area, many thousands of people visit the area each year, including holidaymakers at local caravan parks.

Over the past 150 years man has made various changes to this coastline. There have also been natural changes from flood events and erosion. For example 19th Century historical records at Pagham show that the harbour entrance was closed and the land reclaimed for agriculture. A storm event early in the 20th Century changed this by breaking defences and re-opening the harbour to the sea.

Before the large concrete defences were built at Selsey in

the 1950s, erosion rates were among the fastest in the UK. Significant changes have also been experienced at East Head at the entrance to Chichester Harbour. Here the spit has changed position in response to the effect of waves and sea currents and the availability of material moved by the sea and blown by the wind.

The area is also home to a number of sites important for nature conservation. Chichester Harbour and Pagham Harbour are part of a network of

internationally important sites that have legal protection to make sure they are conserved. A section of Selsey's East Beach and the beach between Bracklesham and Medmerry Cliffs are designated nationally as Sites of Special Scientific Interest (SSSI) important for geological interest. The land where the Broad Rife loops inland at Bracklesham Bay is also designated as a SSSI for its plant and bird life and is run as a nature reserve by the RSPB.



Who is involved in coastal management?

The Environment Agency and Arun and Chichester District Councils are the operating authorities managing coastal flood and erosion risk for this coastline. We are responsible for producing the coastal defence strategy in accordance with government policy and appraisal guidance. There is generally no legal duty to build and maintain coastal defences. We have permissive powers that allow us to protect both people and property where economically, technically and environmentally viable, and where affordable within national budgets.

Government guidance states that the statutory environmental bodies must be involved in developing the strategy. We are working with Natural England, which is responsible for recreational issues, landscapes and protection of wildlife, to identify how management options

could potentially impact on designated sites in the area. We are also involving English Heritage, which has responsibility for protection of the historic environment, to identify any archaeological interest in the area. Views from both of these organisations have been taken into account within the draft strategy.

Building on community driven efforts to address climate change adaptation, we have worked to engage local residents in discussions about flood and erosion risk, sea level rise, sustainability and funding options. We will continue to work with community groups over the coming years to manage risks during the implementation of the strategy.

What previous work has been done?

A strategy for Pagham to East Head was completed in 2001, but did not gain approval from

the Government. In 2005 in response to changes to appraisal guidance, a technical report was prepared and identified indicative preferred options for sub-divisions of the coastline, known as frontages.

Between November 2006 and March 2007 we held an initial consultation with the local community and key groups to discuss the indicative preferred options and raise awareness of the funding issues. Through meetings, exhibitions and workshops we encouraged people to share their views with us on these initial findings and any local ideas for alternatives, including possible funding sources. We received almost 2,000 responses, which we have used in developing the draft strategy. In the frontage proposals that follow, we have summarised the consultation responses for each frontage area.



How will coastal works be paid for?

Our draft strategy recommendations can manage flood and erosion risk in the long term but depend on the availability of funding to implement them. Our strategy does not propose detailed schemes or guarantee funding. We recognise that availability of money is likely to limit our ability to deliver works, some of which are urgently needed. In this document, we set out our strategic recommendations and highlight frontages that are unlikely to attract Government funding for schemes within the next few years.

Many people who responded to our initial consultation last year expected that central government should meet the costs of coastal defence works. Government spending on flood and erosion risk management has more than doubled over the last ten years rising from £312 million in 1999 to £800 million by 2011. Despite these

large spending increases funds still have to be prioritised to get the maximum benefit for the money spent. The method for calculating such benefits for schemes has changed recently but we do not expect this to greatly alter the funding situation here.

Last summer's flooding in Hull and Gloucestershire highlights the fact that many areas of the country require funding to address flood risk (both coastal and inland). If the local preference remains with central government funding, then it has to be noted that this could involve a long wait, with increasing risk over time, particularly for some areas in this strategy where works are urgently needed.

During the initial consultation alternative funding sources were suggested, including local levies, council tax increases and private funding.

These funding sources could provide a solution in isolation or more likely if pooled together, but only if works are coordinated in such a way that they do not increase flood and erosion risk to others. Given the urgent and pressing need for coastal management works on the peninsula, we hope this coastal defence strategy will prompt local residents and organisations to work with the operating authorities to collectively explore these and other funding options.

If funding cannot be found and strategy options cannot be implemented and as the condition of the existing defences worsens, maintaining what is left of these defences will eventually no longer be possible. In this scenario, plans would need to be developed detailing how affected residents could cope with this situation, however undesirable.



Options

For each frontage we have assessed flood and erosion risk management options, using government technical, economic, social and environmental criteria. For each option we have considered:

- how it would address flood and erosion risk to people and properties;
- whether it is going to work for the short term and equally importantly, the medium and long term given the effect of sea level rise;
- the cost of the option and the value of damage avoided by providing defences;
- how it would be built or maintained (if it is a structure);
- how it could impact on people who live, work in and visit the area;
- the effect it could have on the natural environment.

We have considered four main types of option within the draft strategy as shown in the table below.

Management option	Description
No active intervention	Let nature take its course – no work will be carried out to maintain or repair defences, allowing them to deteriorate over time.
Active intervention to hold the line – with maintain, sustain or improve sub-option	<p>Maintain – defences are maintained at their current levels, but as sea levels rise flood risk increases over time.</p> <p>Sustain – defences are raised and strengthened as sea levels rise keeping the level of flood risk the same as it is now.</p> <p>Improve – defences are improved to increase the standard of protection over time, beyond the requirements of rising sea levels.</p>
Managed realignment	Improve coastal stability by moving coastal defences to a more sustainable location further inland, allowing controlled flooding to occur.
Adaptive management	Managing complex coastal areas by monitoring changes and acting on them in a planned but flexible way, increasing our understanding over time.

Frontage proposals

A common response received during the initial consultation was that the coastline should be seen as one frontage and defended as such. Government guidance does not allow us to combine all the frontages because we must divide up defences based on the assets such as houses or land that they

protect. We have taken account of people’s wishes in developing the draft strategy by joining some of the frontages together. For example, we have combined the three frontages around Selsey, giving them a single management option.

Our draft strategy recommendations reflect latest

government guidance and incorporate public feedback that has informed the technical work we have done over the past year.

The table below shows the options for each of the six resulting main frontages between Pagham and East Head.

Frontage	Indicative preferred option as presented in our initial consultation document	Popular preference voiced from initial consultation responses	Our recommended options in the draft strategy May 2008
Pagham Beach	Hold the line (sustain)	Hold the line over the full 100 years	<ul style="list-style-type: none"> • Two frontages to be seen as one • Adaptive management
Pagham Harbour and Church Norton	Hold the line (maintain) and review after 20 years		
Selsey East Beach	Hold the line (maintain)	<ul style="list-style-type: none"> • Three frontages to be seen as one • Hold the line (sustain or improve) 	<ul style="list-style-type: none"> • Three frontages to be seen as one • Hold the line (sustain)
Selsey Bill	No active intervention		
Selsey West Beach	Hold the line (maintain)		
Medmerry	Managed realignment	Hold the line	Managed realignment
East Wittering	Hold the line (maintain)	Hold the line (sustain)	Hold the line (sustain)
Cakeham	Hold the line (maintain)	Hold the line (sustain)	Hold the line (sustain) or minor realignment
West Wittering and East Head	Managed realignment	Hold the line	Adaptive management plus improved flood defences at West Wittering

The following pages describe each frontage in turn and set out:

- a summary of feedback received during the initial consultation;
- the flood and erosion risk affecting the frontage;
- a brief explanation of the recommended management option;
- further information about any pressing funding issues specific to the frontage.

Pagham

Pagham Beach, Pagham Harbour and Church Norton have been combined into one frontage. This allows us to manage flood and erosion risk more effectively across the area.

During the initial consultation many respondents voiced support for ‘Hold the line’, preferring to see this option for Pagham Harbour covering the strategy’s whole 100-year time span. There were concerns over the recent build-up of shingle at the entrance to the harbour. Feedback also shows that local

people view Pagham Harbour as an important habitat that should be preserved.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20 and full 100 years of the strategy and the likelihood of securing national funding.

In developing the draft strategy we have considered the unique features of the Pagham and Church Norton

frontages. The Pagham Harbour system is complex with high levels of interaction between various processes. The result is that the long term development of this frontage is difficult to accurately predict. Given the level of uncertainty in this rapidly changing system, a flexible response is needed that can manage flood and erosion risk, as well as the internationally designated nature conservation site. For this reason we recommend Adaptive management.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	397	451	724	1592
Cost of recommended option over next 20 years (100 years)	Indicative costs £7m (£35m)			
Benefit cost ratio	Possibly around 5 depending on management plan			
Likelihood to secure central government funding	Uncertain			

Our recommendation: Adaptive management

We propose that a management group is established to develop and implement an Adaptive management plan. We would expect this group to include the Environment Agency, District Councils, West Sussex County Council, Natural England and key stakeholders such as local landowners and parish councils. This plan would provide a framework for flexible decision-making over the next 100 years, seek to address funding issues and

communicate with local residents.

Specific actions for the Pagham Adaptive management plan would include:

- maintaining Pagham Harbour as an inter-tidal system at least for the next 20 years, by keeping the harbour entrance open;
- defining the management needs for the area’s internationally important habitats;

- developing a short term solution to the erosion of Pagham Beach caused by the thinning of the Pagham spit, believed to be caused by accumulation at Church Norton spit;
- investigating opportunities for recycling material from the adjacent Aldwick Bay frontage;
- considering the need for new inner harbour flood defences to protect against rising sea levels.

Selsey

Feedback from the initial consultation called on the project team to treat Selsey as a single community with the three associated frontages combined. Consistently there was strong support for ‘Hold the line’ at East and West Beaches, and there was no support for ‘No active intervention’ at Selsey Bill. We have now combined the Selsey frontages in the draft strategy.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20 and full 100 years of the strategy and the likelihood of securing national funding.

The realities of this flood and erosion risk were seen in March last year when a small length of sea wall at West

Beach failed. Although Chichester District Council carried out emergency works, defences here remain vulnerable and the Council is seeking funds to complete repairs that would secure this section of wall for at least the next ten years. At East Beach, storms last winter exposed the poor condition of groynes that will need to be replaced in ten years.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	564	672	1139	2035
Cost of recommended option over next 20 years (100 years)	£31m (£111m)			
Benefit cost ratio	3.3			
Likelihood to secure central government funding	Unlikely			

Our recommendation: Hold the existing defence line - sustain

The groynes and sea wall defences would need to be raised to account for the risks from rising sea levels over the next 100 years.

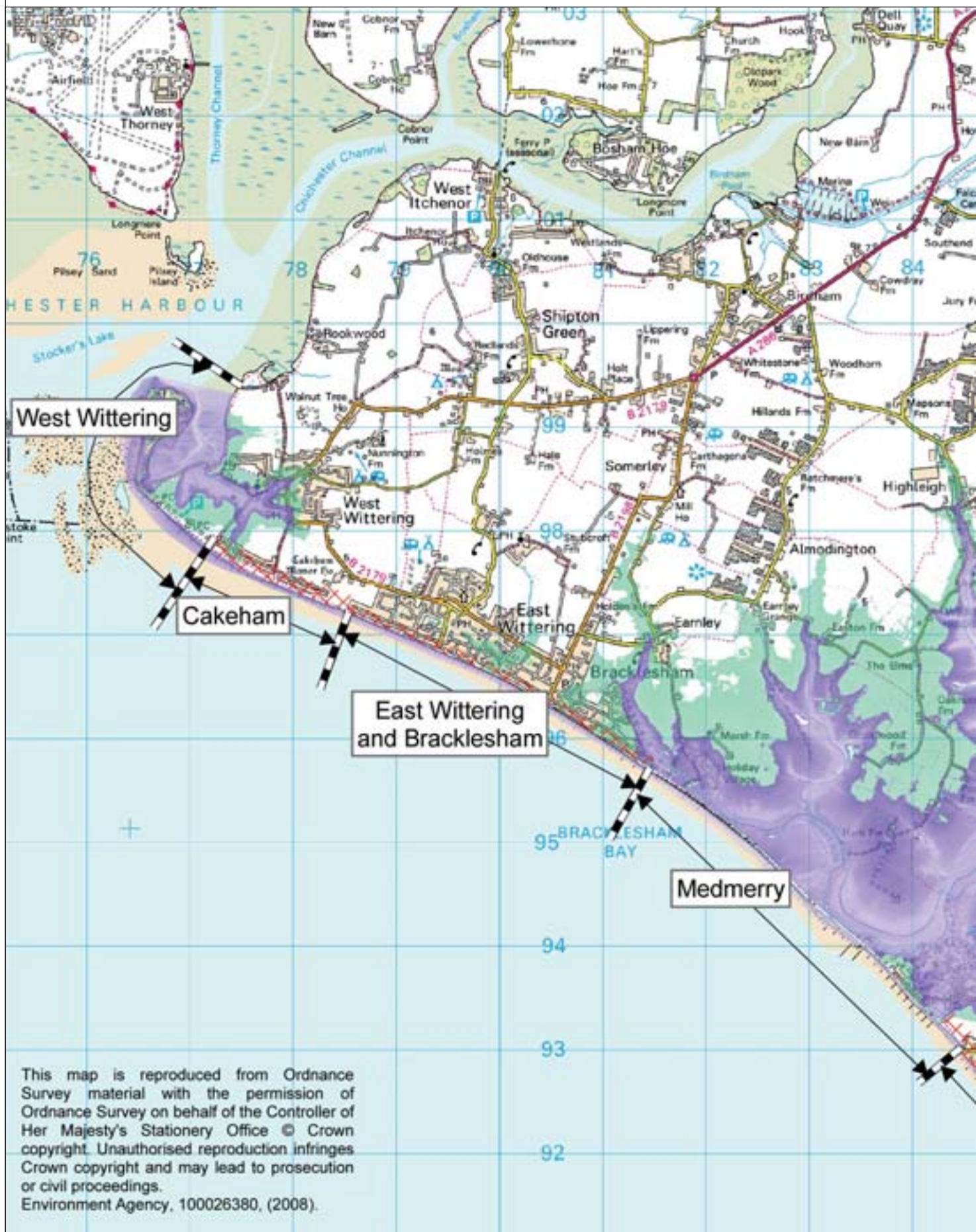
The most important issue for Selsey is its current low priority status for national funding. Funding from local,

public and other sources will therefore need to be explored to implement a scheme at West Beach. If this proves unsuccessful, Chichester District Council will need to develop plans involving potentially affected householders that describe what will be done as the

defences fail. Plans to pay for future schemes at East Beach and the Bill will also be needed where national funds are unlikely. While funding is sought, maintenance of defences should continue until their deterioration makes this no longer possible.

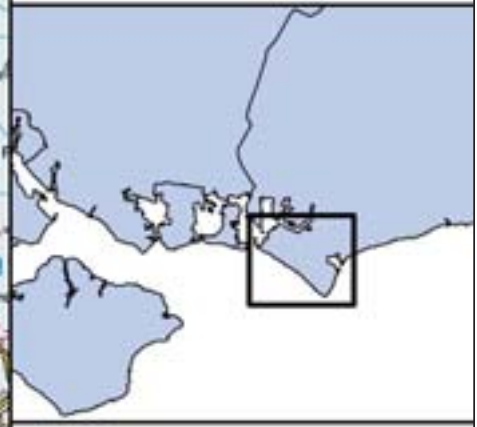


Figure1: Flood and erosion risk map





Location map



- Flood risk area 2008*
- Flood risk area 2108**
- Erosion risk area***

* Land below 1 in 200 (0.5%) annual probability water level - this level takes no account of coastal defences either existing or proposed.

** As above, but with sea level rise at 1m over 100 year appraisal period.

*** Land that will be eroded when existing defences come to the end of their useful life.

Pagham Beach,
Pagham Harbour
and Church Norton



Medmerry

Managing flood risk west of Selsey is crucial to the future of the town and the peninsula's low-lying villages and holiday parks. Without defences, large areas of land would flood on each tide, Selsey's only road link would be severed and the wastewater treatment works could be flooded. However the current shingle bank defence is

vulnerable and provides a low standard of protection. The bank is regularly breached and this has caused damage to caravans and properties.

During the initial consultation many people called for 'Hold the line'. Reasons for this included concerns over changes to the coastline and

possible effects on the local economy, holiday sites and tourism. People suggested a number of alternative options for managing the frontage including using offshore reefs or sea walls made from rock, concrete or other materials. These options have been included in our assessments.





As sea levels rise, holding the line with the shingle bank will cost more and the risk of breaches and flooding will increase. The shingle bank will not provide an effective defence over the 100 years of the strategy.

The coastline could be held with rock or concrete defences either along the present line of the beach or as breakwaters just offshore. The

cost of these options would be much greater than managed realignment to provide similar levels of protection.

Managed realignment has been assessed as an alternative option to holding the coastline where it is now. New defences would be built inland to provide improved protection to low-lying properties, the road link and

the essential services for Selsey. Given costs and benefits, the realignment option is likely to secure national funding.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20 and full 100 years of the strategy and the likelihood of securing national funding.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	359	394	479	951
Cost of recommended option over next 20 years (100 years)	£10m + [£6m for habitat creation] (£20m + [£6m])			
Benefit cost ratio	5 + protecting access to Selsey			
Likelihood to secure central government funding	Likely			

Our recommendation: Managed realignment

Managed realignment here would include new inland defences. Their placement and size would depend on a variety of issues. These include consideration of:

- long term protection for the road and essential utilities serving Selsey;
- the area of realignment has to be large enough to allow the tide to keep the new inlet open to the sea;
- the natural shape and height of ground in the area. The higher the existing ground, the smaller the inland banks would need to be;
- existing land drainage;
- protection of properties at Ham and Earnley;
- the need for new coastal salt marsh and mud flat habitats to be created to replace losses across the Solent. Medmerry has been identified as an important

area that could be used for creating habitat to replace losses resulting from schemes to manage flood and erosion risk at other sites in the Solent such as Portsmouth. The need for new habitat has the potential to influence the size of realignment and provide payment for the land needed;

- the need to work with people and organisations who could potentially be affected through the changes to land;
- other key proposals. Bunn Leisure are investigating potential ways to improve coastal defences for their sites. We are happy to consider such proposals in order to manage flood risk and preserve the benefits to the local economy. We will need to understand how such plans could work with our recommendations, ensure they are environmentally acceptable and do not increase flood

risk elsewhere;

- public footpaths, rights of way and existing heritage and nature conservation sites and species;
- possibility of using innovative designs or materials such as recycled aggregate for construction.

The map on the facing page shows indicative lines for inland flood defences taking into account the factors listed. More detailed work will be needed to define where and how these defences should be constructed. We will work with landowners to define new defence lines and where possible to create new tidal habitat.

We believe that this option will manage flood risk to the west of Selsey and low lying communities providing improved protection for the next 100 years.



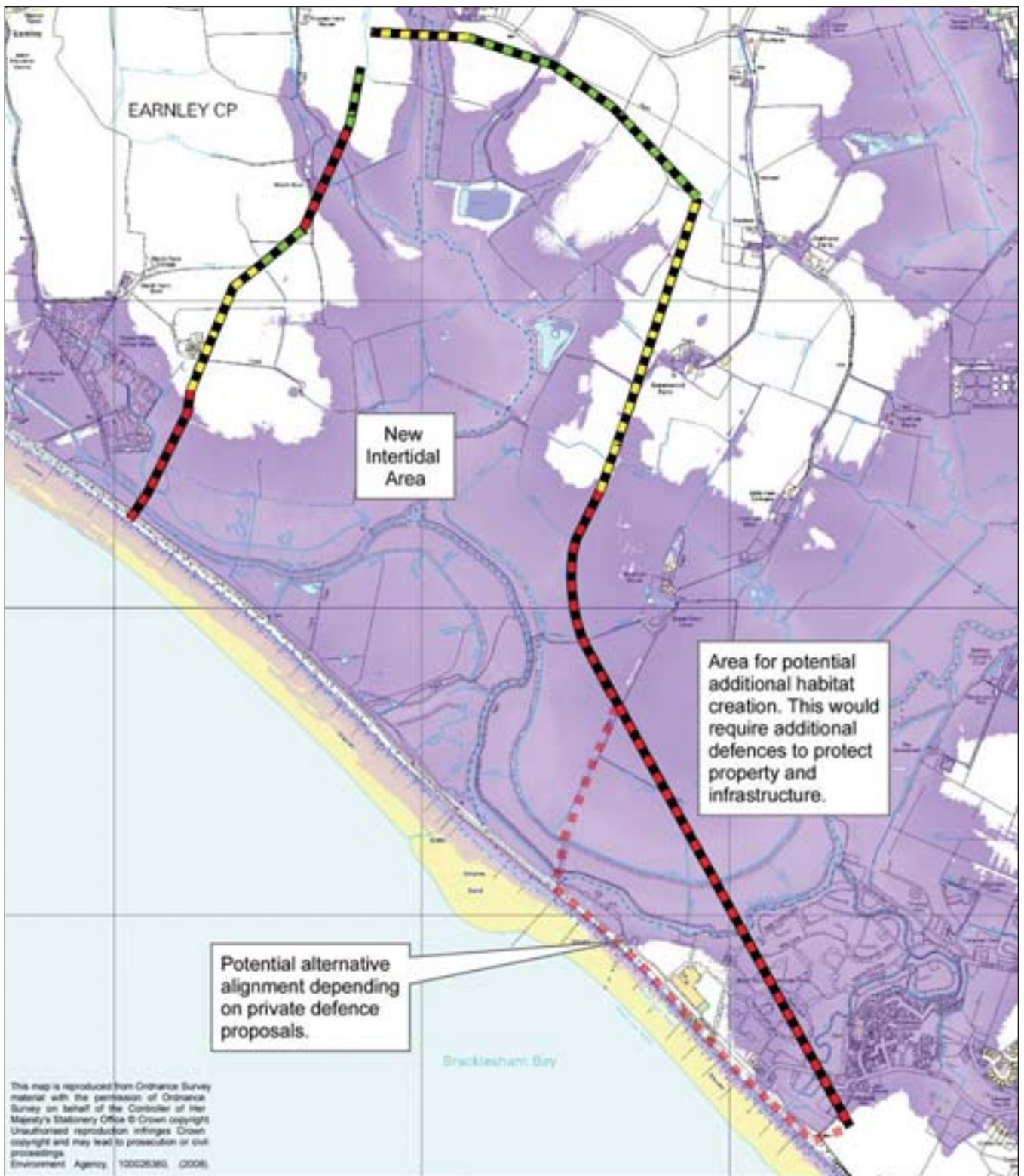






Figure 2 - Potential embankment locations at Medmerry

Notes:

1. All lines indicative only. The final alignment of the inland defences will be determined taking into account the issues defined on the opposite page.

Legend

-  Potential lines of embankments to be built in short-term
-  Potential lines of embankments to be built in 20-50 years time
-  Potential lines of embankments to be built in 50-100 years time
- Flood risk area in 2008**
-  Land Below 3.6m AOD - 1 in 200 (0.05%) annual chance in 2008

0 250 500 1,000 Meters



East Wittering and Bracklesham

Feedback from the initial consultation supported the indicative preferred option for ‘Hold the line’ but wanted a sustain approach for this frontage. Many respondents wanted improvements to defences in order to adapt to climate change over the 100 years. There were also concerns that proposals for neighbouring frontages would have an impact on the coastline at Bracklesham and East Wittering.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20

and full 100 years of the strategy and the likelihood of securing national funding.

Existing defences at Bracklesham and East Wittering are in poor condition. Chichester District Council designed a scheme to renew defences in 2004, but has been unable to obtain national funding to implement it. The eastern part of the frontage currently benefits from shingle drift from the neighbouring Medmerry frontage, which helps to lessen the impact of the poor state of the structures on the beach. Further west the situation is more urgent with a risk of defences failing in the near future.

In addition to addressing the pressing issues at East Wittering and Bracklesham, we have assessed options for managing flood and erosion risk with rising sea levels in the medium and long term. One issue we have considered is the effect of our recommended management change at the neighbouring Medmerry frontage. This proposed change is likely to reduce the amount of shingle available to drift along the coastline over time and we have allowed for this in developing our recommended ‘Hold the line’ option for East Wittering and Bracklesham.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	59	78	118	529
Cost of recommended option over next 20 years (100 years)	£19m (£80m)			
Benefit cost ratio	1.9			
Likelihood to secure central government funding	Unlikely			

Our recommendation: Hold the existing defence line - sustain

Defences would be raised over time to account for the risks from rising sea levels over the next 100 years.

The national funding priority is very low for this frontage. There is very little chance within the foreseeable future of securing national funding for a scheme to renew the defences. Funding from public and private sources will need to be explored.

If this proves unsuccessful, Chichester District Council will need to develop plans involving potentially affected householders that describe what will be done as the defences fail. While funding is sought to undertake works to renew defences maintenance should continue until their deterioration makes this no longer possible.





Cakeham

As at East Wittering, feedback from the initial consultation showed that respondents supported a ‘Hold the line’ approach for this frontage.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20

and full 100 years of the strategy and the likelihood of securing national funding.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	0	1	15	54
Cost of recommended option over next 20 years (100 years)	£3m (£25m)			
Benefit cost ratio	1.8			
Likelihood to secure central government funding	Unlikely			

Our recommendation: Hold the existing defence line - sustain

Defences would be raised over time to account for the risks from rising sea levels over the next 100 years.

The Cakeham frontage is in fair condition with no major works expected to be needed for the next 20 years apart from ongoing maintenance. The amount of shingle drifting along the coast is uncertain beyond

the first 20 years of the strategy. In the medium to long term (approximately 20-80 years) it may be better to move defences slightly landward at Cakeham to provide a more smooth coastal alignment. No properties would be affected by this minor realignment.

Although no major work is required in the short term over

the next 20 years, priority for national funding for works needed after this time is likely to be low. Maintenance of the existing defences should continue while this remains possible.

The long term changes at East Head will also need to be considered in managing this frontage.

West Wittering and East Head

Over half of all responses to the initial consultation related to East Head. The main concern was that the indicative preferred option of ‘Managed realignment’ could have a massive impact on the wider harbour and the economy of the community potentially affected.

The table below summarises our assessment of property numbers at risk of flooding and erosion over time. We show costs over the first 20 and full 100 years of the strategy and the likelihood of securing national funding.

East Head is a natural feature that has changed over time responding to variable supplies of sand and shingle and the actions of the sea and wind. It is an important amenity feature that has an influence over the wider harbour. The feature has both national and international nature conservation designations and historically there has not been agreement over how to manage it.

The processes operating around East Head are complex. To get a better understanding of these issues and the approaches needed to manage them, the East Head Working Group was formed. This group

consists of Cakeham Manor Estate Ltd, Chichester District Council, Chichester Harbour Conservancy, the Environment Agency, the National Trust, Natural England, West Wittering Estate plc and West Wittering Parish Council.

The group has been developing a management plan to address flood and erosion risk and the wider environment including amenity, recreation and navigation. Given the complexities at East Head and the uncertainty over its future development, our recommended approach developed together with the working group is for Adaptive management.

Year	2008	2028	2058	2108
Numbers of properties at risk from flooding or erosion if defences are not maintained	57	63	86	171
Cost of recommended option over next 20 years (100 years)	£2m (£9m) (East Head) + 1m (£2m) (West Wittering)			
Benefit cost ratio	4.1 (West Wittering on its own 17)			
Likelihood to secure central government funding	Unlikely for Adaptive management but likely for flood bunds at West Wittering			

Our recommendation: Adaptive management at East Head plus improved flood defences for West Wittering

The flood risk affecting West Wittering village will increase as sea levels rise irrespective of what happens at East Head. To manage this risk we recommend construction of new flood defences close to the village, either in the form of flood bunds adjacent to the existing road or by raising the level of the roads.

At East Head Adaptive management must be aimed at preserving the environmental, amenity and socio-economic value of the feature including

the management of effects on the wider harbour. We recommend that the East Head Working Group continues to develop a management plan that will include:

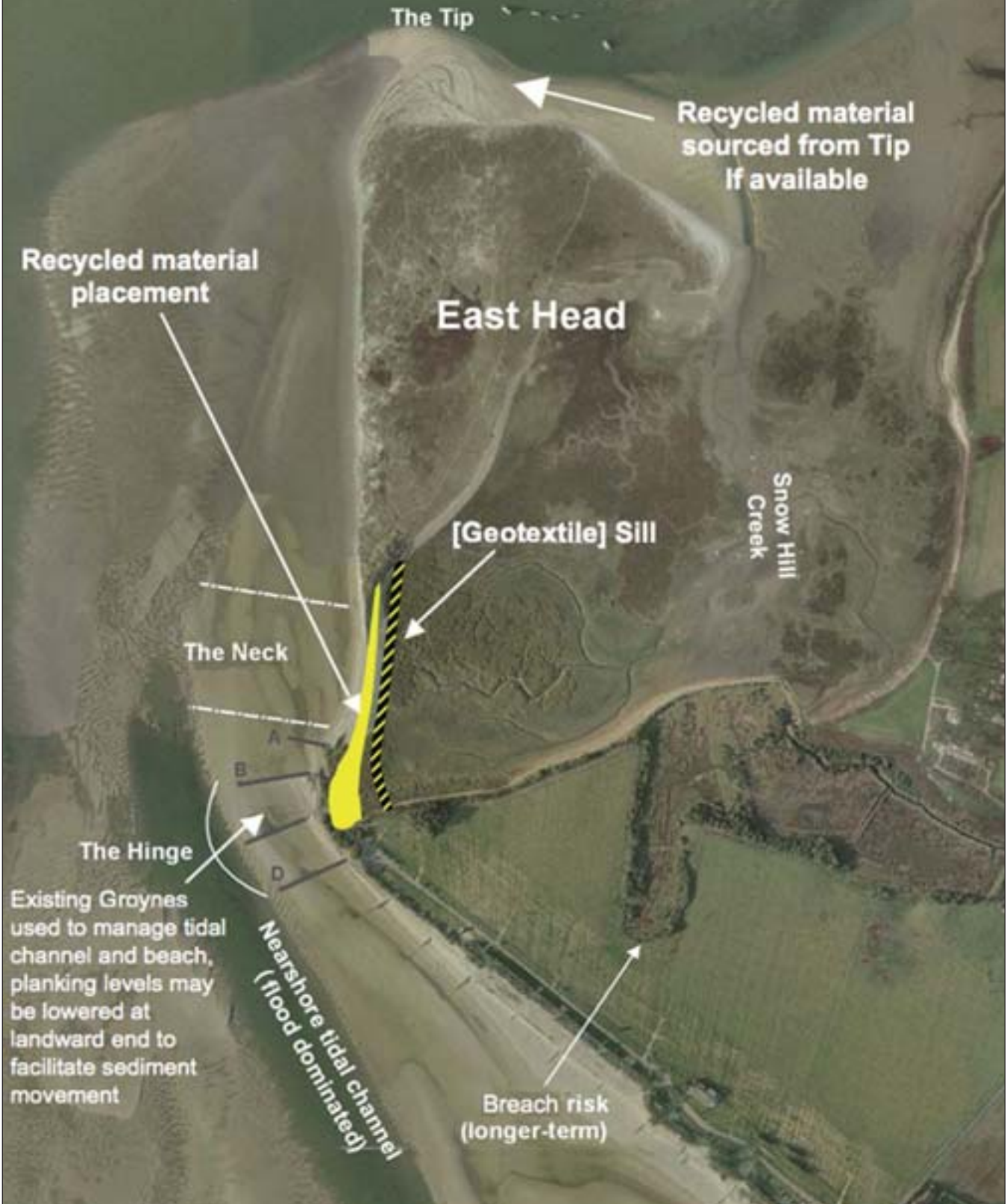
- long term monitoring to identify evolving issues and to measure success of management activities;
- recycling material from the tip for placement at the hinge and the neck;
- creation of a breach

prevention sill landward of the hinge and the neck;

- management of the existing defences at and around the hinge.

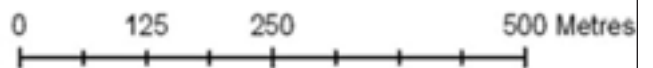
Adaptive management of East Head is unlikely to attract national funding and is likely to require local financial support. We hope that this funding issue will be explored by the East Head Working Group. Flood banks at West Wittering are more likely to gain national funding.

Figure 3. Illustrative plan of initial Adaptive Management proposals for East Head



East Head Spit

Image courtesy of Channel Coastal Observatory
November 2005



Where can I find out more?

This document has been designed for public consultation to inform people of the key issues and explain the recommendations set out in the draft strategy. If you know of someone who you think should see this document, please refer them to our website for an electronic copy www.environment-agency.gov.uk/yourenv/consultations

If you do not have access to a computer additional hard copies are available at local libraries or you can write to us at the address on the next page or call us on 08708 506 506.

This document summarises our draft strategy studies and recommendations. Our full draft strategy gives details of all options considered and current and future flood and erosion risks. Copies are available to view at the offices of Arun and Chichester District Councils, the Environment Agency offices at Chichester and Worthing and Selsey Library. It can also be seen on our website or by contacting us using the details above. Due to the size of the document, where requests for hard copies are received, we would prefer to distribute relevant sections only and reserve the right to make an administrative charge for a full copy.

We have completed a *Strategic Environmental Assessment* of our draft strategy, which is recorded in an *Environmental Report*. You can view copies of this report on our website and at Arun and Chichester District Council offices, the Environment Agency offices in Worthing and Chichester and Selsey Library.

As part of the consultation on the draft strategy we are holding exhibitions at three locations across the peninsula. We encourage everyone to attend and talk with members of the project team about our recommendations. If you would like to come and talk to us about our work, we will be in:

- Pagham - Thursday 19 June, 1pm to 8pm at St Ninians Church Hall, Pagham
- Selsey - Friday 20 June and Wednesday 6 August, 1pm to 8pm at Selsey Town Hall
- West Wittering - Friday 4 July, 1pm to 8pm at West Wittering Cricket Pavilion

Have your say

This is a draft strategy and no final decisions have been made. We want to hear from you to help us to identify anything we may have missed in the preparation of this draft strategy. Please share with us your views of our recommended management options and any concerns you may have regarding strategy funding and implementation by **29 August 2008**.

Please send your comments to us:

By email:

pehcds@environment-agency.gov.uk

Or by writing to:

Pagham to East Head Draft Strategy Consultation 2008

Environment Agency

Guildbourne House

Chatsworth Road,

Worthing

West Sussex BN11 1LD

Please let us have your comments by 29 August 2008. We will consider all of the responses before making our final strategy decisions later this year.

We will keep you informed of our progress and share the outcomes of this consultation with you, for example through press releases and communications with community representatives. You can also find up to date information at our website: www.environment-agency.gov.uk/yourenv/consultations



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FAQs as placed on Consultation Website

Frequently Asked Questions – Pagham to East Head draft coastal defence strategy

Managing the coast:

1. What is a coastal defence strategy?

A coastal defence strategy, also termed a flood and erosion risk management strategy, identifies the risks from coastal flood and coastal erosion within a specific area (in this case the Pagham to East Head coastal frontage) over a 100 year time period and sets out how to manage these risks.

We have to plan and justify our flood and erosion risk management works as we are using public money. To help us make the right choices, we undertake strategies – these are long term (100 years) to make sure we understand the future implications of what we do now. Strategies also make sure that we look at the potential wider effects of our works – for example, what they could mean for flood risk in other areas and what they could mean for people and wildlife.

Coastal defence strategies fit into a three-tiered framework of flood and erosion risk management as established by the Department for Environment, Food and Rural Affairs (Defra):

- Shoreline Management Plans (SMPs) – set out high level management policies for 100 years across wide areas of coastline.
- Coastal defence strategies – define how to deliver SMP policy for smaller areas.
- Schemes – implement work on the ground.

2. Who has overall policy responsibility for flood and coastal erosion risk management in England?

The Department for Environment, Food and Rural Affairs (Defra) has overall policy responsibility for flood and coastal erosion risk management in England. Operating authorities, such as the Environment Agency (for flooding) and District Councils (for erosion) manage the coastline in accordance with this policy.

There is no right to flood or erosion protection, except in very limited circumstances. The Environment Agency and the District Councils have permissive powers to construct coastal defences to protect people and property where these are economically justified.

For the Pagham to East Head coastal defence strategy we are working in partnership to complete the strategy and produce the best options within the policy criteria for flood and erosion risk management.

3. What does ‘permissive powers’ mean?

The term ‘permissive powers’ means that we may choose to intervene in the public interest, where we believe works would be beneficial and/or economically viable, but we have no legal duty to do so. This recognises that we have finite resources and must prioritise how we use them.

4. In the document planning for the future, the term “benefit cost ratio” (BCR) is used often. What does this mean?

When we need to decide on how we manage coastal flood risk and erosion in the future, we have to compare a number of options.

We do that by comparing how much each option would cost over the next 100 years (including initial build and ongoing maintenance), against the benefits (again measured in monetary value) that we would achieve. So for example, how many properties, or services like sewage works or electricity substations we would protect.

We add up all the benefits, we divide this by the costs, and that gives us our ‘benefit:cost’ ratio. So the bigger the ratio the better.

5. What is the strategic coastal overview?

In April 2008 the Environment Agency became responsible for overseeing the management of all coastal flood and erosion risk in England

Under the new arrangements the Environment Agency now:

- takes the lead for managing all coastal flooding risk in England;
- ensures that proper and sustainable long-term Shoreline Management Plans are in place for our coastline, and approves them on behalf of Defra;
- allocates all flood and coastal erosion risk management capital funding.

Local Authorities will still do much of the operational work on coastal erosion, but under the Environment Agency’s coastal overview.

Coastal management strategies including the Pagham to East Head draft coastal defence strategy will continue to be developed in partnership by local authorities and the Environment Agency.

The Environment Agency, coastal groups and local authorities are working hard to ensure that we deliver this new way of working in a true partnership approach. More information on the Strategic Overview can be found on the Department for Environment, Food and Rural Affairs website (www.defra.gov.uk).

6. Climate change – is it really happening?

We face a real challenge along our coastline as climate change increases the risk of flooding and coastal erosion. These impacts are well documented and include sea level rise and the potential increase in intensity, severity and frequency of coastal storms.

We have used guidance from the Department for Environment, Food and Rural Affairs (Defra) on sea level rise allowances in our Pagham to East Head draft coastal defence strategy. This guidance is based on evidence of climate change effects to date and modelling to predict the future. There are

uncertainties about what will happen in the future and the sea level rise allowances are amended as new information becomes available.

Current predictions for the South East of England estimate a rise in sea levels of 4mm per year that will build to 15mm per year by 2085. This equates to almost 1 metre over the 100-year life of the Pagham to East Head coastal defence strategy.

7. Why can't you hold the current line of the coast everywhere?

In coming up with our recommended management options we have had to take account of existing coastal processes, potential affects of rising sea levels and the need to adapt to climate change. We must follow assessment criteria set out by the Department for Environment, Food and Rural Affairs (Defra), who provide central government funding for flood and coastal defences. National funds are limited and we need to ensure that the recommended options for managing flood and coastal erosion are economically, environmentally and technically sustainable over 100 years.

8. What do you mean by environmental designations?

Environmental designations are sites that are protected under legislation for their conservation interest. The EC Habitats Directive (implemented in the UK by the Conservation Regulations 1994) has led to the designation of Special Areas of Conservation, Special Protection Areas and Ramsar sites, which are internationally important for their unique habitats and/or bird populations.

Nationally important sites include Sites of Special Scientific Interest, which are designated under the Countryside and Rights of Way (CROW) Act 2000.

In developing the Pagham to East Head draft coastal defence strategy we have had to consider how to maintain and enhance the nature conservation interest of the many internationally and nationally designated sites in the area. These issues are addressed in detail within the Strategic Environmental Assessment that accompanies this strategy.

9. What is Natural England's role in developing the strategy?

Natural England are a statutory government body. They advise the Government on nature conservation issues and as such, we will need to gain their agreement for the Pagham to East Head coastal defence strategy. They specifically advise on appropriate management of internationally and nationally designated sites. In this strategy area there are many environmental designations and issues arising from natural coastal processes. We have sought advice from Natural England on how best to address these issues and will continue to do so as we finalise the strategy.

Funding:

10. How much money is available to protect Pagham and the Manhood Peninsula?

The Pagham to East Head draft coastal defence strategy sets out how to manage flood and erosion risk in the long term but does not propose detailed

schemes or guarantee availability of funding to implement them. The draft strategy provides an indication of the likelihood that central government funds could be secured for each of the recommended management options. We feel national funds are likely for the Medmerry and West Wittering schemes but are less confident in securing national funds for Pagham, Selsey, East Wittering and Bracklesham, Cakeham and East Head. Given the urgent and pressing need for coastal management works on the peninsula, we hope the draft strategy will prompt local residents and organisations to work with the operating authorities to collectively explore local funding options.

11. Why won't the Government provide the funds to protect peoples' properties and homes?

All proposed coastal defence schemes have to compete nationally for central government funding. Government spending on flood and erosion risk has more than doubled over the last ten years rising from £312 million in 1999 to £800 million by 2011. Despite these large spending increases funds still have to be prioritised to get the maximum benefit for the money spent.

The Pagham to East Head draft coastal defence strategy does not propose detailed schemes or guarantee funding. We recognise that availability of money is likely to limit our ability to deliver works, some of which is urgently needed. We are hoping to work with local residents and organisations to explore alternative funding sources, such as local levies, council tax increases, private funding or a combination thereof.

Strategy consultation:

12. Why are we consulting?

We consulted the local community on our Technical Report between November 2006 and March 2007. The feedback we received then has helped us to develop the draft strategy you see today. This strategy is not yet finalised and for three months we are consulting on our recommendations to get your views and address your queries. We are particularly interested in any new information that comes to light during the consultation prior to finalising the strategy. Your input is important to ensure that we consider your opinions in producing the final Pagham to East Head coastal defence strategy.

13. What happens after the consultation?

After the public consultation closes on 29th August 2008, we will review all of the responses as we finalise the strategy. We will share the outcomes of this consultation and our strategy progress with you, for example through press releases and communications with local community representatives.

We hope to make a decision on the final strategy by the end of the year and have all the necessary approvals by Spring 2009. At that time the operating authorities will begin to develop schemes to implement the strategy, subject to available funding.

14. How can I find out more?

Please read the *Planning for the future: Pagham to East Head draft coastal defence strategy summary document* to learn more about our recommended management options. It is available for download at our website:

www.environment-agency.gov.uk/yourenv/consultations

You can also pick up a copy at Arun or Chichester District Council offices, Selsey Library and the Environment Agency offices in Chichester and Worthing, or you can request a copy by calling 08708 506 506.

In addition to reading the strategy summary document, we encourage you to attend one of our exhibitions where members of the project team will be on hand to talk with you about the strategy recommendations. The exhibitions will be held on:

- Thursday 19 June, 1pm to 8pm at St Ninian's Church Hall, Pagham
- Friday 20 June, 1pm to 8pm at Selsey Town Hall
- Friday 4 July, 1pm to 8pm at West Wittering Cricket Pavilion
- Wednesday 6 August, 1pm to 8pm at Selsey Town Hall

Throughout the three-month consultation period, please continue to visit our website to find out the latest information on the strategy and to read the latest version of our regularly updated list of Frequently Asked Questions.

Please contact us on the project email address with any questions:
pehcds@environment-agency.gov.uk

15. How long is the consultation period? How do we register our comments?

The consultation period lasts for three months, between 29 May 2008 and 29 August 2008. Please send us your comments on the recommended management options and any concerns you may have regarding strategy funding and implementation.

By email:
pehcds@environment-agency.gov.uk

Or by writing to:
Pagham to East Head Draft Consultation Strategy Consultation 2008
Environment Agency
Guildbourne House
Chatsworth Road
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West Sussex
BN11 1LD

Frontage specific questions:

16. What is Adaptive Management as recommended for the East Head and Pagham frontages?

Adaptive management is a way of managing complex coastal areas by monitoring changes and acting on them in a planned but flexible way, increasing our understanding over time.

At both the East Head and Pagham frontages there are complex coastal processes at work as well as a high level of uncertainty over what will happen at these frontages over time. As a result we are recommending Adaptive management.

Please read the *Planning for the future: Pagham to East Head draft coastal defence strategy summary document* for more detail as to what adaptive management could involve at both of these frontages.

17. Why is the cost/benefit for Selsey so low?

The main risk to Selsey is through erosion rather than flooding. The benefits are affected by the amount of property at risk. Because the number of properties at risk in Selsey is relatively small in the near future but the defences needed are costly, Selsey does not gain a high ratio.

18. How will habitat be created as part of any managed realignment at Medmerry?

If we decide to create new habitat at Medmerry we would seek to agree any purchase or leasing arrangements with landowners. We would then determine the extent of the habitat creation area in order to work with coastal processes, and determine how the site will be managed. Inland defences would then be built and a controlled breach allowed to occur. The habitat would be monitored over time to ensure the habitat is developing properly and management practices adapted where necessary.

19. How will the RSPB Site (Site of Special Scientific Interest) be affected by managed realignment at Medmerry?

Managed realignment would result in the majority of the site changing from a grazing marsh habitat to intertidal saltmarsh and mudflat habitat. Some marginal areas would be retained as grazing marsh. The flora and fauna of the site are therefore likely to change over time. Both types of habitat are UK Biodiversity Action Plan 'priority habitats', which means both habitat types are considered important in a national context in terms of nature conservation. Although the types of flora and fauna will change over time it is not considered that this will result in any net detrimental effect. In addition, a saltmarsh habitat will be more in harmony with natural coastal processes in the area and therefore more sustainable in the long-term.

20. How will drainage be affected by managed realignment?

There are complex drainage issues at Medmerry. We have recently completed a study that concluded that any drainage impacts caused by a managed realignment could be managed. We will make sure that any

proposed scheme for the Medmerry frontage does not compromise the drainage in this area.

The Medmerry outfall is one element of the drainage system and is in need of replacement. We would look to replace it as part of any proposed scheme.

21. How do the proposed private defences at Bunn Leisure fit into the coastal defence strategy?

Bunn Leisure are investigating potential ways to improve coastal defences for their sites. We are happy to consider such proposals in order to manage flood risk and preserve the benefits these sites bring to the local community. We will need to understand how such plans could work with our recommendations, ensure they are environmentally acceptable and do not increase flood risk elsewhere. We are working closely with Bunn Leisure to ensure the development of their scheme would fit in with a recommended option for the final strategy.

22. Under your recommended option for Medmerry, what would happen within the indicative area of managed realignment to agricultural land?

Land seaward of the new flood defences would form new intertidal habitat. On the margins, it would not be covered in water straight away, but the lower parts would be covered by water on most tides. New salt marsh plants would grow and contribute to reducing risk from wave action.

23. Under your recommended option for Medmerry, where would the new defences be located?

The line of new defences seen on page 17 of the summary document is indicative only. The final alignment of inland defences will be decided at the scheme stage through consideration of a range of issues including:

- long term protection for the road and essential utilities serving Selsey;
- the area of realignment has to be large enough to allow the tide to keep the new inlet open to the sea;
- the natural shape and height of ground in the area. The higher the existing ground, the smaller the inland banks would need to be;
- existing land drainage;
- protection of properties at Ham and Earnley;
- habitat needs across the wider Solent area.

24. Who will be responsible for maintenance at Medmerry if a managed realignment scheme is implemented and for how long?

If a managed realignment scheme is completed at Medmerry, the need for maintenance of new inland defences would be driven by the need for ongoing protection. We recognise in the draft strategy the importance of such defences to protect low lying communities and the town of Selsey. Our intention is for new defences to be in place for 100 years to manage the risk of coastal flooding. While our permissive powers mean that we are unable to guarantee this, the reasons for maintaining the new defences will not go away.

Additional questions:

25. What is your role in the Going Dutch 2 conference?

The project team is not organising this event. Going Dutch 2 is a community-organised event proposed by the Manhood Peninsula Partnership (MPP) to ask Dutch officers from the water management and planning sectors to assess the draft coastal defence strategy. Taking place from Sunday 22 June to Tuesday 24 June, the event will culminate in a report that will be submitted to the project team as a formal consultation response.

As members of the Manhood Peninsula Partnership, both Chichester District Council and the Environment Agency have agreed to assist the Partnership with funding to cover facilitation and expenses only. The Dutch officers will not be paid for their time during the visit.

The project team is involved only as expert witnesses to answer questions about the draft strategy during the Monday afternoon work session. Members of the project team will also attend the Tuesday public meeting when the Dutch officers will present their findings to the community.

Please contact the secretariat to the Manhood Peninsula Partnership for more details of the event: Emma Livett, 01243 785 166.

26. What is the Strategic Environmental Assessment?

We have produced a Strategic Environmental Assessment (SEA) to accompany the Pagham to East Head draft coastal defence strategy. The SEA outlines the potential environmental impacts that could be caused by the recommended management options in the strategy. These include impacts on people, habitats and species, cultural heritage and landscape. These assessments are high-level and will be developed more during the detailed planning and design of schemes.

The full SEA report is available for comment during the three-month consultation running from 29 May 2008 to 29 August 2008. You can download the report from our website
www.environment-agency.gov.uk/yourenv/consultations

You can also view copies of the report at the offices of Arun or Chichester District Council, the Environment Agency offices in Worthing and Chichester and Selsey Library. Please send us your comments

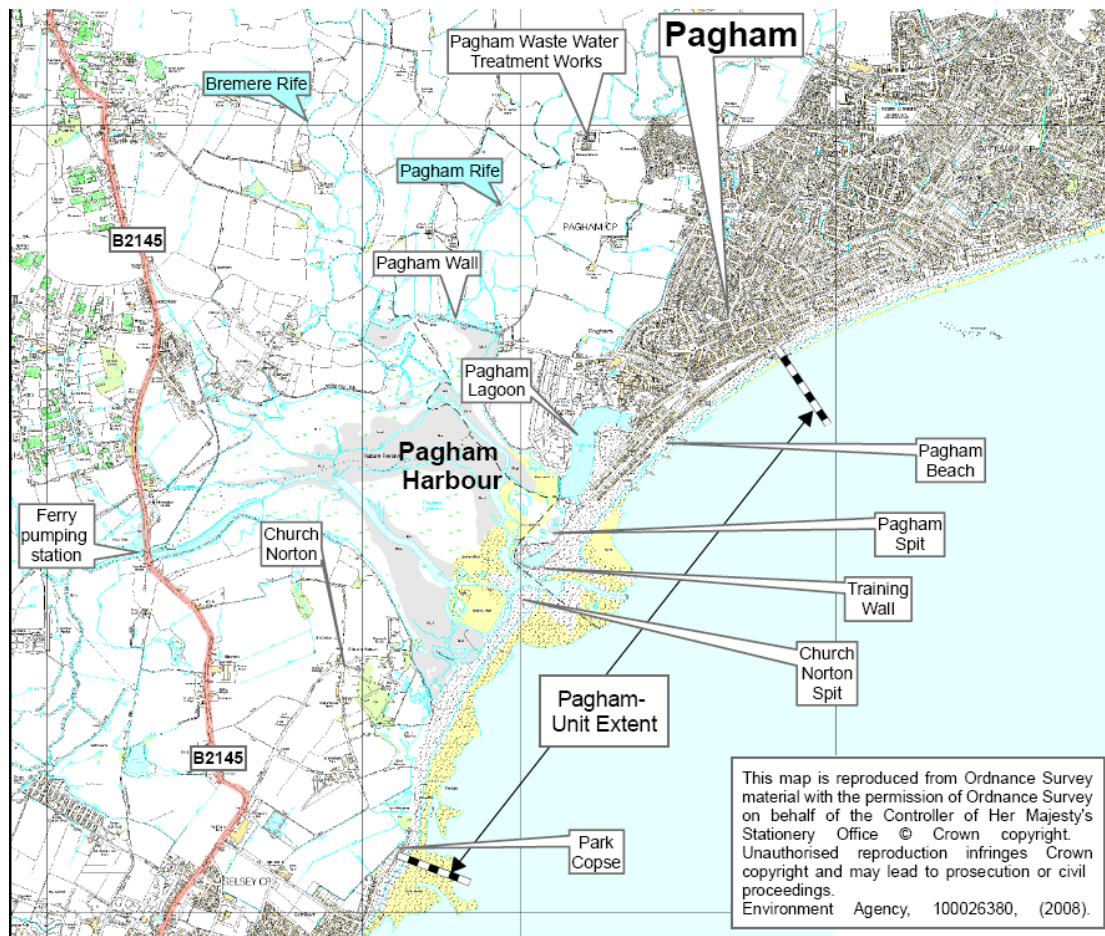
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Or by writing to:
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Environment Agency
Guildbourne House
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**Additional FAQs for Pagham
as placed on Consultation Website**

Frequently Asked Questions – Pagham

1) What areas of coastline are covered in the Pagham Harbour frontage and who is responsible for them?



Section 6 of the draft Pagham to East Head Coastal Defence Strategy outlines the extent of the Pagham frontage. On the open coast, this unit of the strategy extends from the northern end of Park Copse at Selsey to the Parish boundary near the eastern end of East Front Road at Pagham as shown on the map above.

Responsibility for setting and implementing policies for managing flood and erosion risk on the coast and inside Pagham Harbour is split between the three strategy partners::

- Arun District Council manages the risks at Pagham Beach on the open coast in front of East Front Road and West Front Road, Pagham;
- the Environment Agency manages the risks within the harbour and the spits around its entrance on the open coast;
- Chichester District Council manages the risks from Park Copse for a quarter of a mile to just past the last groyne at the start of the Church Norton spit on the open coast.

2) Why were these particular boundaries chosen for the Pagham Harbour frontage?

We had previously treated this area as three separate frontages: Pagham Beach Pagham Harbour and Church Norton. We have joined these together in the draft strategy because actions on any part of this unit can affect the risks of flooding and erosion to the whole of the coastline and inside Pagham Harbour. Therefore we have integrated this into one single unit.

3) What does the 'adaptive management' option mean at Pagham Harbour and how might it be carried out?

We have defined Adaptive management as managing complex coastal areas by monitoring changes and acting on them in a planned but flexible way, increasing our understanding over time. At Pagham, we recommend that a group is set up to agree an Adaptive Management Plan as soon as practically possible. This group would be set up by Arun District Council and could include representatives from the three Strategy partners, West Sussex County Council, Parish Councils, Natural England and major land owners.

The Adaptive Management Plan would define a range of possible actions (such as moving shingle or repairing existing defences) and what would prompt them to be done. Risks of flooding and erosion will be considered alongside the Harbour's nationally and internationally important conservation interests.

The management plan will need to consider (but not be restricted to) the following:

- a) studies and further analysis – to improve the understanding of the area;
- b) monitoring and analysis – to identify any changes in risks and understand the effectiveness of the management activities undertaken;
- c) emergency protocols – to enable works to manage risks if required at short notice, potentially in reaction to storm events.
- d) possible management activities. These may include
 - i) beach management activities – the recycling or placement of shingle to maintain beach levels in areas at risk;
 - ii) maintaining an entrance to Pagham Harbour – measures to maintain the harbour as a tidal system with the flow coming in and out. This may require the creation of a new channel if the existing one closes.
 - iii) inner Harbour defences – consideration of new or improved flood defences to manage flood risk inside the harbour as sea levels rise over time.

5) What other flood and erosion risk projects are going on nearby and how do they link to the draft strategy?

The Environment Agency and Arun District Council are working together to produce the River Arun to Pagham flood and erosion risk management strategy. This neighbouring strategy area extends from the east of Pagham to the River Arun at Littlehampton. The draft strategy recommendations are due for public consultation in late 2008. The Pagham Coastal defence Issues Study, commissioned by Arun District Council is also ongoing (see specific FAQ on this study).

What is the “Pagham Coastal Defence Issues Study”

The Pagham Harbour area is a complex inter tidal system that is changing frequently, therefore it is hard to quantify. Recently, the shingle spits at the mouth of Pagham Harbour have grown in size considerably and have caused concerns over flood and erosion risks to people at Pagham Beach. Arun District Council have commissioned a study to better understand the potential risks posed by these changes and identify the best way to manage them.

A report is due by the end of August 2008 with draft recommendations. The final report is due at the end of November 2008. The report will define what should be done at Pagham Beach and the entrance to Pagham Harbour. The recommendations will be taken on as part of the adaptive management approach by the proposed group who will work towards implementing them at the end of summer 2009.

How will the results of the study be communicated?

The outcomes of the study will be communicated via a newsletter that will be distributed widely through community representatives in the area including Pagham Parish Council.

5b) Why is Arun District Council developing an emergency plan for Pagham Beach?

Pagham Beach is in a coastal location and is exposed to tidal flood and erosion risks. We can reduce these risks by management actions but cannot remove them completely.

The Local Emergency Plan (LEP) has been developed by Arun District Council with the emergency services to deal with a significant flood event that could result from a breach in defences or flooding in the area. The District Council is doing this to fulfil responsibilities to ensure that effective plans are in place to manage emergencies and support and care for communities if they happen. The emergency plan does not mean that we expect a breach to happen this winter. However it ensures that preparations are put in place by the District Council and emergency services in case such a breach does occur.

How do the Local Emergency Plan and Pagham Coastal Defence Issues Study relate to the consultation on the draft Pagham to East Head Coastal Defence Strategy?

The Pagham Coastal Defence Issues Study and the Local Emergency Plan are being coordinated by Arun District Council in response to the coastal erosion problems that have made houses and people at Pagham Beach vulnerable. The plan and study are being coordinated by Arun District Council separately from developing the Coastal Defence Strategy and cover the area at Pagham Beach and its urgent problems in more detail than the strategy can.

Both are in line with the adaptive management approach that is recommended in the draft strategy.

6) Why is there fencing on Church Norton Spit?

Pagham Harbour is internationally designated because of its importance for nature conservation. Breeding little terns at Pagham are a feature of this Special Protection Area. The fencing at Church Norton Spit is temporary and has been erected specifically to protect little terns whilst they are nesting on the shingle.

The sole purpose of the fencing is to protect the tern nests from being accidentally trampled or disturbed by beach users. The fencing should not prevent any shingle being moved outside of this year's little tern breeding season and does not inhibit access along the beach to the end of the spit.

The Local Nature Reserve erected the fencing to fulfil their obligations to conserve this special area. Once the young terns and other ground-nesting shorebirds have left their nest and fledged, the area will be reopened to the public and the notices will be removed. This should take place by the end of August.

6b) Could nature conservation designations prevent essential flood risk management work at Church Norton spit?

There should not be a conflict between the nesting terns and flood risk management at Church Norton Spit if it is considered carefully.

Natural England, the Government's advisor on nature conservation, has a statutory (legal) duty to ensure that any effect on the special conservation interests are taken into account when plans or projects are proposed. Each proposal will be considered individually and on its own merits.

Natural England is involved in the steering group for the Pagham Coastal Defence Issues Study and will guide Arun District Council and the adaptive management advisory group on nature conservation issues throughout the process.

We can not pre-empt what the issues study will conclude. However, if it does conclude that a replenishment of the beach at West Front Road using shingle from the end of the spit is needed, Natural England believes that a solution could be found. This would involve removing shingle from the recently deposited sections of the spit and would not have a significant impact on the nesting little terns.