

planning for the future



Cuckmere estuary
draft flood risk management strategy

Consultation document

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introduction

We have produced a draft flood risk management strategy for the Cuckmere estuary in East Sussex. This sets out our recommendation for the way we will manage flood risk in the area in the future. **Our recommendation for the Cuckmere estuary is to stop maintaining the flood defences and allow the area to go back to being a tidal estuary.** We have taken the potential wider effects of this into account – our recommendation will not increase flood risk elsewhere in the Cuckmere River catchment.

The draft strategy has been developed by doing various studies. What you are reading now sets out the key information from this work. It describes the options we have considered and explains why we have recommended withdrawal of maintenance works as our draft strategy.

We want to share our findings with you and seek your views. We have done a lot of work to come up with our recommendation but this is not yet finalised. We welcome your comments and will consider these before we make our final decisions in early 2008. You can find out how to send us your comments on page 15.

What is a flood risk management strategy?

Flood risk is the chance that an area will be flooded with water (in this case from the sea or from the river) and the consequences of this if it occurred. There are various ways to manage flood risk. For example:

- using flood plain fields to store water in times of flood can reduce risk in built up areas;
- flood defence structures such as sea walls can reduce the chance that flooding will occur;
- warning people in advance when a flood is going to happen can reduce its consequences because people are given time to move themselves and their belongings to safety;
- not carrying out new development in areas at risk also reduces the consequences of flooding.

A flood risk management strategy looks at what the levels of flood risk are in an area and examines the best ways of managing it.

the Cuckmere estuary

When we talk about the Cuckmere estuary, we mean the Cuckmere River and the low lying land of its flood plain between the A259 (at Exceat Bridge) and the sea.

The Cuckmere River used to be free to meander through its tidal floodplain. It is reported that as early as the 1300s, embankments were built to stop this from happening and allow the land to be used for farming. The river has not flowed through the winding meanders since the straight channel was constructed in the 1840s.

Today, the straight channel has earth banks along it, reinforced with stone blocks in some places, and timber walls at the mouth where it meets the sea. There are shingle beaches either side of the river mouth. The west beach is not stable so groynes help control the movement of the shingle here. The earth banks, timber walls and beach reduce the chance of the river or sea water getting into the area.

The river and flood plain are used for farming and recreational activities (like walking, cycling and canoeing). The area is part of a very important landscape, along with the Seven Sisters cliffs, which is enjoyed by thousands of visitors every year and is home to a wide variety of wildlife. In recognition of this, it is part or all of a Site of Special Scientific Interest (SSSI), a Heritage Coast, Local Nature Reserve (LNR), the Seven Sisters Country Park and the South Downs Area of Outstanding Natural Beauty (AONB). The South Downs is also a proposed National Park.



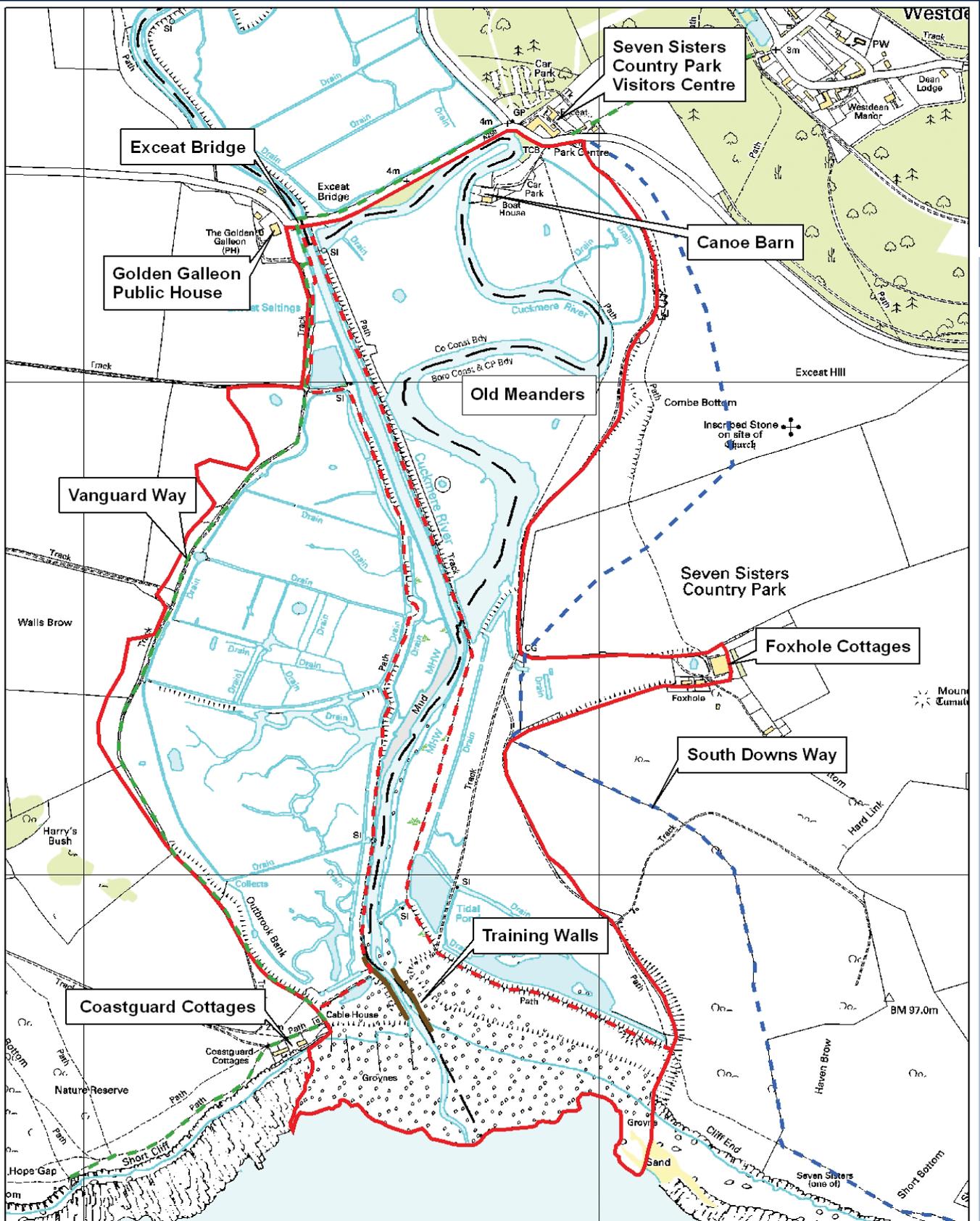
People walking in the area



The flood plain fields



Aerial view of the Cuckmere estuary



Legend

- - - Existing Flood Banks
- - - Vanguard Way
- - - South Downs Way
- █ Strategy Area
- █ Training Walls

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managing flood risk in the Cuckmere estuary

Twice a year, we move shingle from where it collects at the river mouth back on to the west beach. This work is done to prevent blockages at the mouth and to hold the west beach in its current location. This costs between £30,000 and £50,000 per year. When required, we have also maintained the earth banks, timber walls and beach groynes, for example when holes needed to be patched up.

Public funds from our national flood risk management budget are spent doing this work and we do it using powers given to us in law. These powers are permissive. This means we are not obliged to do work but we can choose to do so.

We need to make sure that what we do and how we use money to manage flood risk is appropriate and justified now and in the future. Our flood risk management strategy for the Cuckmere estuary considers what the flood risk will be here for the next 100 years under planning and spending guidance from government.



Blockwork on the Cuckmere River

The Cuckmere estuary has experienced change in the past, for example the meanders were cut off by the straight channel in the 1840s. We know that the area will continue to change over the next 100 years. With climate change, sea levels are predicted to rise by at least a metre over this time, and more severe storms will further threaten the flood defences. Because of the changes we are facing, the existing flood defences will not be effective in the future. Water levels at some high tides already reach the top of them in places. We would need to undertake larger and more costly works to address this.

There will be other changes as well. The plants and animals that live at the river edge could be lost. We need to give them room to move as sea levels rise but at the moment the earth banks prevent this.

Of course, people are affected by these climate changes too and by the things that we may choose to do to manage the increased flood risk. The beauty of the area could be damaged if we choose to build bigger flood defences.



Timber training wall at the river mouth

How does the Environment Agency flood risk management strategy fit with previous proposals for the area and the Cuckmere Estuary Partnership?

As we have described on page 3, a flood risk management strategy looks at what the levels of flood risk are in an area and examines the ways of managing it. The strategy considers technical, economic, social and environmental issues related to flooding and flood defences. It:

- identifies the problems and key issues related to flood risk;
- provides a long term approach to the future management of flood risk;
- proposes a shorter term plan to enable achievement of longer term aims;
- ensures good decision-making and best use of public money.

The work we currently do in the estuary may not be the best use of funds or the best for the environment. Our strategy compares the effects of the work we do now with alternatives over a 100 year period.

Our strategy work also makes sure that we understand the possible wider effects of what we do in one location on other locations in the catchment, for example areas north of Exceat Bridge. We consider these links in all of our planning, including in Catchment Flood Management Plans and Shoreline Management Plans. There is more information on these plans on page 8.



Damage to coastal defences caused by a storm in October 1999

Consideration of the future of the Cuckmere estuary is not new. Some studies began in the late 1990s. In 2001, English Nature (now Natural England), the National Trust, the Sussex Downs Conservation Board (now South Downs Joint Committee) and the Environment Agency formed the Cuckmere Estuary Partnership. East Sussex County Council are also now a member of the Partnership. The principal aim of the Partnership is to allow the landscape of the estuary to evolve with natural processes.

In 2001, the Partnership issued the *Back to Nature* booklet. This set out proposals to breach the flood defences and restore the estuary, initially on the western side of the river and then approximately 10 years later on the eastern side. However, in 2003, it was clear that this phased approach would not work and that it was necessary to consider the future management of the whole area.

To consider flood risk management for the whole area and fulfil our planning and funding requirements, we began our Cuckmere estuary flood risk management strategy work in 2004 and now report our findings. The Environment Agency undertakes this strategy work but the outcomes will be very important for future work of the Partnership as flood risk management is a major factor determining the future of the area.

The principal aim of the Cuckmere Estuary Partnership remains the same - to allow the estuary to evolve with natural processes. Partner organisations will provide their own comments on this draft flood risk management strategy and their views will not necessarily be the same as our own. If you would like further information, please contact the Partnership Officer at Seven Sisters Country Park, Exceat, Seaford, East Sussex, BN25 4AD, telephone 01323 874302.

how we have developed our strategy

The overall aim of our flood risk management strategy is to look at ways of managing flood risk in the Cuckmere estuary now and in the future and recommend the most appropriate option.

We have developed the strategy by assessing various options and these are listed below. To make our recommendation, we have done the following:

Step one

We identified what is at risk of flooding.

Downstream of Exceat Bridge, the fields, access ways including public footpaths, canoe barn and adjacent car park are at risk of flooding. Parts or all of this land is nationally important for landscape and wildlife.

Upstream of Exceat Bridge, eight properties in Alfriston and Westdean are at risk of flooding mainly from water coming down the Cuckmere River. This risk can be made worse by tidal conditions or blocking of the river mouth.

High level flood risk management policies for the whole Cuckmere River catchment are set out in our *Cuckmere and Sussex Havens Catchment Flood Management Plan*¹. This also includes an action plan that lists the further studies that will be done. The areas upstream of Exceat Bridge are on this list. The management of flood risk here is not determined by our estuary strategy. However the effects of anything that we recommend for the estuary on flood risk upstream are taken into account.

The potential effects of our estuary strategy on the coast are also taken into account. High level policies for the coast are set out in the *Beachy Head to Selsey Bill Shoreline Management Plan* and we have made sure that our estuary strategy is consistent with this.

Step two

We then identified the flood risk management options available to us. We assessed each option from technical, economic, social and environmental points of view.

For each option, we considered:

- the effect it would have on people who live, work in and visit the area;
- the effect on wildlife, the landscape and cultural heritage;
- how it would be built or maintained (if it is a structure);
- how effective it would be in the future including against climate change impacts;
- whether it works with or against natural processes;
- whether it is affordable.

¹ If you would like to see or obtain a copy of the Catchment Flood Management Plan or Shoreline Management Plan, please contact us – our details are on page 15.

options

The different options for managing flood risk that we looked at are:

Option 1: do nothing

There are two variations of this option. Both would result in water from the river and sea getting into the floodplain area. The area would become an estuary system including intertidal saltmarsh and mudflat. The meanders may remain as features of the estuary system. The canoe barn and adjacent car park and some access ways and paths would be within the flooded area.

Option 1a: immediate do nothing

All flood risk management activities would be stopped immediately.

Option 1b: withdrawal of maintenance

We would first give two years notice to all interested parties of our intention to stop our flood risk management activities. Until the two years have passed, we would carry on undertaking works as we do at the moment. Once this period is over, the existing defences would deteriorate, allowing an estuary system to develop. We would carefully monitor the area as changes took place and provide advice on what was happening to the people affected.

We would continue to move shingle away from the mouth of the river to prevent blockages until the estuary system had developed sufficiently for blockages not to happen anymore. We estimate that this would take up to 15 years to happen.

Option 2: hold the existing defences

There are two variations of this option:

Option 2a: maintain the existing defences

The defences would be maintained at their current height, by carrying on works as we do at the moment. However over time, due to sea level rise and increased storms, flood risk will increase and this will not be sufficient to prevent flooding of the area. Therefore, the area will become an estuary system as described for both variations of option 1 above.

Option 2b: sustain the existing defences

We would make the defences bigger to cope with increasing flood risk. This would entail raising and widening the river structures and putting in more structures, for example rock revetment, on the west beach. Substantial engineering works would be required. The fields of the floodplain would remain, however the meanders would gradually change. Because they do not receive flow from the river, they are filling up with silt and unless this was removed they could ultimately be lost.



The cut off meanders of the Cuckmere River

options (continued)

Option 3: change the location of the existing defences – managed realignment

We looked at two variations of this option (see illustration). Both would result in areas being allowed to flood by taking down parts of the existing defences. The flooded areas would then become part of an estuary system. It is likely that the estuary system would develop more quickly than in options 1a and 1b.

Option 3a: realignment over part of the flood plain (Cells B and C)

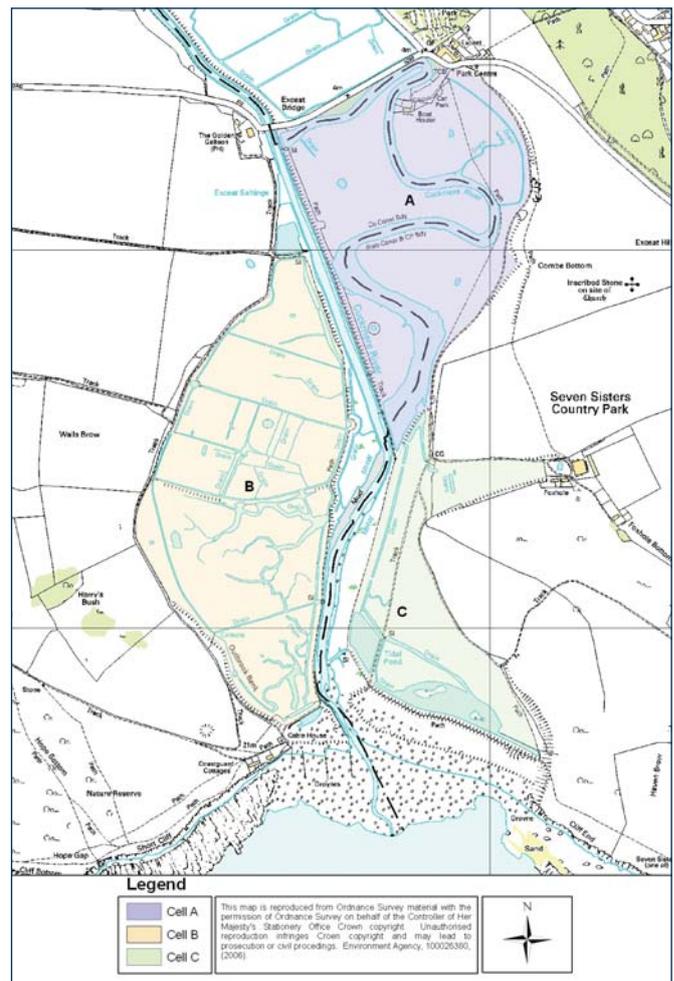
The flood defences would be breached at a number of locations to allow water into Cells B and C. The existing flood defences around Cell A would still be maintained and some new sections would be built. The meanders would remain separate in the floodplain and would continue to silt up gradually over time.

Sections of some paths would be raised out of the flooded area and other paths would be relocated. Works to remove shingle from the river mouth would continue, as the estuary system would not be large enough to keep the mouth clear itself.

Option 3b: realignment over Cells A, B and C

The flood defences would be breached at a number of locations to allow water into Cells A, B and C. A new bank would be built at the north of Cell A to provide protection for the canoe barn and adjacent car park. The meanders would be almost entirely within the flooded area and would become part of the estuary system.

Sections of some paths would be raised out of the flooded area and other paths would be relocated.



Managed realignment options

our recommendation

Our recommended flood risk management strategy is **option 1b – withdrawal of maintenance**. There is more information on what this means on the next page. It does not mean that we are just walking away from the area.

We believe that this option is justified and appropriate for the Cuckmere estuary. It is an approach that works with natural processes and avoids construction of larger flood defences in the area. It allows the area to change and adapt to sea level rise, intertidal habitats will come back and it will become an important place for estuary wildlife.

We recommend option 1b as this would enable us to work with the area while it changes rather than option 1a where all our actions would be stopped immediately. We believe option 1b is the best way of managing change over the coming decades with the resources we have.

We have studied the Cuckmere estuary in detail to understand what is happening now and what would happen in the future under our recommended option. Information on some key aspects of this work is set out in the following table:



Saltmarsh on the Cuckmere River

Study	Description
Historical trend analysis	A study of past changes to the shape of the Cuckmere estuary
Wave transformation modelling	This uses offshore wave information to produce information about the waves coming inshore to the estuary
Modelling of beach sediment movement at the coast	A study of the movement of sediment, including shingle, along the shore and cross-shore
Regime modelling	An assessment of the shape of the estuary now and in response to different tidal prisms (volumes of water going in and out)
Inlet stability analysis	A study of the behaviour of the river mouth under different tidal prism conditions
Strategic Environmental Assessment	This predicts the positive and negative effects of the draft strategy on the environment and is recorded in an Environmental Report

what would happen?

The Cuckmere estuary is used by thousands of people every year and we understand that you will want to know more about what our recommendation means for the future. We would not immediately stop all of our flood risk management work - what we would do is set out below. By doing things in this way, there would be no increase in flood risk to areas upstream of Exceat Bridge.

Under option 1b – withdrawal of maintenance, in the short term (within the first 20 years):

- We would provide advance notice to all affected parties that in two years we would cease to maintain the existing flood defences and stop managing the beach once the estuary system had developed.
- During this two year period, we would continue to undertake works as we do currently. However, we would not carry out major repairs to the flood defences if they were damaged in a severe storm event.
- After the two years have passed, the only works we would continue to do would be clearing the river mouth of shingle until the estuary system is big enough for this not to be required any more (we estimate that this would take up to 15 years).
- The area would start to change. Inter-tidal habitat in the form of saltmarsh and mudflats would replace the present grazing fields.
- We would monitor changes in the area, focusing on specific aspects that could be affected such as Exceat Bridge, sections of public footpath and other access routes. We would work closely with those responsible for the area, including advising them of our monitoring results and the steps that they may need to take. Responsibility for taking any of these steps would rest with the owners or other responsible organisations.
- We would continue to keep the visiting public informed about the changes happening to the site.

Long-term measures (20 to 100 years)

- We would cease all of our flood risk management works.
- The estuary system would continue to develop. It would be subject to natural processes and would be able to respond to climate change effects such as sea level rise.



Habitat next to the Cuckmere River

why we are not recommending the other options

Option 2: hold the existing defences (both variations)

Our studies show that the processes taking place in the estuary together with sea level rise and increased storminess mean that there is increasing pressure on the existing flood defence structures and the beaches. Larger engineering works will be required over time to keep these in place and keeping them in place under increasing pressure means that there is more risk of catastrophic failure.

Engineering works can have negative impacts on people and wildlife and use up natural resources. They are also costly. The whole life cost (what we would need to spend building and maintaining the structures over 100 years) for option 2b – sustain the existing defences to cope with sea level rise – is approximately £18 million.

Both variations of option 2 do not meet the minimum criteria set by Government at the present time for spending public flood risk management money and we cannot recommend them. There are other places that meet the minimum criteria, but we still cannot obtain funding from the national budget because competition for it is fierce and we have to spend the available money where it would achieve the most benefit. For example, flood defence schemes in Lewes, where people's homes and businesses were badly affected by flooding in 2000, cannot be funded from this budget at present.

Option 3: change the location of the existing defences – managed realignment (both variations)

From our Strategic Environmental Assessment work, we consider that option 3 is best for people and the environment. However, as with option 2, option 3 is costly and does not meet the minimum criteria for spending public flood risk management money.

Working together and finding other funding to implement option 3

We cannot undertake option 3 through our flood risk management strategy, but we do recognise the benefits for people and the environment that adopting this approach could bring. These benefits include new paths and facilities and the new estuary wildlife habitats developing faster.

We would therefore continue to work as part of the Cuckmere Estuary Partnership to identify sources of funding for managed realignment activities. Information on the Partnership, including contact details is set out on page 7.

where can I find out more?

This document informs you of progress with our draft flood risk management strategy so far, the options we have considered and our recommended option. This document is available electronically on our website www.environment-agency.gov.uk/yourenv/consultations/ or additional hard copies can be provided on request. You can email or write to us at the addresses on the next page, or call us on 08708 506506.

We have done a Strategic Environmental Assessment of our draft strategy which is recorded in an Environmental Report. Copies of this are available to see at our offices in Worthing and Pevensey, and at Seaford library and at the Seven Sisters Country Park Visitors Centre.



View across the floodplain with saltmarsh in the foreground

A display about our draft strategy is set up at the Seven Sisters Country Park Visitors Centre until 10 December 2007 and copies of this consultation document are available there. The location of the Visitors Centre is shown on the map on page 4. If you would like to come and talk to the project team about the work, we will be there on:

- Saturday 29 September 11am to 5pm
- Thursday 15 November 4pm to 8pm
- Saturday 17 November 11am to 5pm

Alternatively, you can see the exhibition and talk to the project team at:

- Alfriston War Memorial Hall
The Tye
Alfriston
Polegate
East Sussex
BN26 5TL
on Tuesday 9 October 4pm to 8pm
- Seaford Little Theatre
4 Steyne Road
Seaford
East Sussex
BN25 1HA
on Saturday 20 October 11am to 5pm

how can I register my views on the draft strategy?

This is a draft strategy and no final decisions have been made yet. We are aware that what we are recommending will result in a significant change to the area and that some people will be in favour of this and others will not. Whilst the available funding is unlikely to allow radical change to our final flood risk management strategy at this stage, we would nevertheless welcome your comments on the proposals. In particular, we are keen to understand any concerns or any questions you may have so that we can seek to answer them where possible.

Please send your comments or questions to us:

by email:

cuckmere.estuary@environment-agency.gov.uk

or by writing to:

Environment Agency
Saxon House
Little High Street
Worthing
West Sussex
BN11 1DH

Please provide your comments to us by 10 December 2007. We will consider all of these before making our final strategy decisions in early 2008. We will keep you informed of our progress and share the outcomes of this consultation with you, for example through parish newsletters and local newspapers.



More existing saltmarsh on the Cuckmere River

We welcome your comments and questions about our draft flood risk management strategy for the Cuckmere estuary. Please let us have these by 10 December 2007.

**Would you like to find out more about us,
or about your environment?**

Then call us on

08708 506 506 (Mon-Fri 8-6)

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enquiries@environment-agency.gov.uk

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