

supporting communities

**coastalfutures**

through coastal change

# Don't bank on it

the economics of managed realignment



# Climate change and flood protection

## Our coast is one of the most dynamic landscapes in the UK.

It is enjoyed by thousands of people and is vital for a range of human activities and wildlife. But it is changing: the sea level is rising as the land sinks, and its rise is now accelerating due to climate change. We also expect bigger, more frequent storms to occur. This will increase the risk of flooding.

Sea level rise also results in some intertidal habitat being lost. As with other declines in the environment, this loss affects people. Intertidal habitat forms our first line of flood protection. Without this protection, the costs of coastal flood management will increase

still further, and homes and businesses will become increasingly vulnerable. Many of our existing sea defence banks were built 50 years ago and will struggle to cope, so maintaining them will become more difficult and expensive.

Past coastal disasters provide a reminder of the dangers of flooding. The 1953 floods on the east coast of England were the result of exceptional weather conditions causing a storm surge during a spring tide. Over 300 people lost their lives, 100,000 hectares of land in eastern England was flooded and the damage in today's money would cost £5 billion.

In 2005, Hurricane Katrina brought a devastating storm surge onto the Gulf Coast of the USA. The damage to New Orleans from Katrina's storm surge reflects the greater risk of relying solely on engineered defences. On a smaller scale, the same principles apply to the North Sea coastline. These examples are reminders within our lifetime of the effects of coastal flooding.

▶ In 1953, the sea ripped through Norfolk's sea defences, completely flooding coastal villages.



▲ The burning of fossil fuels has greatly increased the levels of carbon dioxide in our atmosphere, changing the global climate.



▲ Intertidal habitat is the area of land between the low and high tide lines that is covered by the sea at high tide and exposed to the air at low tide.



## Climate change is happening

Sea levels on the east coast of England have risen by 2 cm over the last 10 years, and are expected to rise much more in future. For example, over the next 50 years, we expect the sea level around the Humber Estuary to rise by about a third of a metre. Current flood defences will need additional maintenance to manage this increased volume and pressure of water, therefore the cost to taxpayers is likely to increase.

With this in mind, strategies are being developed by the Environment Agency to ensure that people and wildlife thrive on the coast, now and well into the future. Managed realignment is one option that offers sustainable solutions in some places – moving banks inland so that it becomes easier to protect people from flooding, and also providing open spaces that people can continue to enjoy and where coastal wildlife can thrive.

◀ Humber Estuary

# The economics of managed realignment

In the UK, many coastal communities are heavily dependent on flood risk management. Homes, property and other infrastructure on low-lying land surrounding the Humber Estuary is protected by over 235 kms of flood banks. The current cost of maintaining or replacing these banks ranges from thousands to millions of pounds per km. As sea levels rise, the important intertidal habitat that is in front of these hard flood banks will be lost. These habitats provide natural protection from storms and flooding by absorbing the forces of wind and wave action<sup>1</sup>. The importance of these habitats as a natural flood defence is widely recognised, and they are protected by law under the EU Habitats Directive.

Climate change is accelerating the rate at which the sea is rising and therefore could also accelerate the costs of providing flood protection. Finding the most sustainable ways of providing flood risk management will make better use of millions of pounds of public money. Managed realignment – allowing the coastline to recede to a new line of flood banks further inland – can be the most sustainable solution. Doing so creates new intertidal habitat that is needed to comply with the law, but also benefits people by providing a better standard of flood protection, now and into the future.

<sup>1</sup> Eftec (2005) 'The Economic, Social and Ecological Value of Ecosystems'. Report to Defra.

◀ Rising sea levels are causing coastal flooding to occur with greater force, overwhelming existing sea defences.



Andy Hay (rsbh-images.com)

To make the most of investments in flood risk management, 'hard' flood banks need to provide benefits for decades, so long-term thinking is essential. Over long timescales and wide areas, managed realignment can make flood risk management more sustainable:

- People and property behind realigned flood banks receive improved standards of protection
- The financial cost of building and maintaining flood banks is reduced in the long run
- Damage to the environment is reversed

Detailed work for the Coastal Futures project has reviewed the economics of existing managed realignment schemes in the UK<sup>2</sup>. It found that managed realignment clearly has the potential to offer sustainable flood defences and to reduce flood management costs in the areas to which it is suited. The benefit to local communities is a higher standard of protection, for less cost, allowing the government funding for flood risk management to go further and provide benefits to more people.

Whether managed realignment is better than other flood risk management options is highly site-specific. However, successful existing schemes demonstrate that managed realignment can often make economic sense, providing the most sustainable flood protection option.

<sup>2</sup> R Tinch (2006) 'Economics of Managed Realignment in the UK'. Available through the Coastal Futures website.

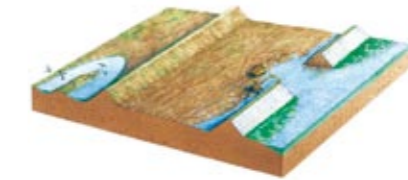
## The process of managed realignment



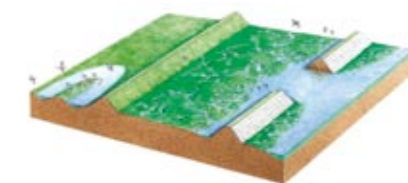
Existing 'hard' flood defences.



If no high ground is present inland, a new flood bank is built behind the existing one. The land is managed to ensure the right habitat is created.



The old defence is breached, allowing the tide to move in and out.



As the tide moves in and out, mud is deposited and intertidal habitat is created between the banks. This soaks up wave energy.

# Benefits for local communities

Realignment schemes can attract wider improvements to the environment that benefit the local community. The vast majority of funding in England and Wales for new flood protection, flood warnings and maintaining existing defences, comes from the government, via Defra. Other funding can also be brought in to make changes that improve the things people appreciate in the rural landscape: creating new tranquil green spaces; improving access for recreation; and helping wildlife. The table summarises potential sources of funding available to meet local community requirements, and improve public amenity at managed realignment sites (for the full funding grid, visit [www.coastalfutures.org.uk/resources.html](http://www.coastalfutures.org.uk/resources.html)).



Courtesy of the RSPB

▲ Managed realignment will create areas that are suitable for a wide range of recreation activities.

FUNDING BODY	DESCRIPTION
<b>EUROPEAN UNION</b>	
<ol style="list-style-type: none"> <li>Structural Funds</li> <li>Rural Development Funds</li> </ol>	<ul style="list-style-type: none"> <li>Awaiting new 2007 schemes. In the past, funded up to 50% of project cost.</li> <li>Environmental Stewardship habitat creation payments available unless site is compensatory habitat.</li> </ul>
<b>NATIONAL LOTTERY</b>	
<b>Heritage Lottery Fund:</b> <ol style="list-style-type: none"> <li>Main grants programme</li> <li>Your Heritage programme</li> </ol>	<ul style="list-style-type: none"> <li>Will support projects that provide new opportunities for people to access, enjoy and learn about their natural heritage.</li> </ul>
<b>Big Lottery Fund:</b> <ol style="list-style-type: none"> <li>Reaching Communities programme: England</li> <li>Awards for All programme</li> </ol>	<ul style="list-style-type: none"> <li>Will help improvement projects designed by local communities.</li> <li>Small grants programme aims at raising involvement in community level projects.</li> <li>New 'Access to the Natural Environment' schemes expected in 2007.</li> </ul>
<b>OTHER</b>	
<b>Landfill Communities Fund</b>	<ul style="list-style-type: none"> <li>Supports the environment and the provision of public space; must be within 10 miles of a landfill site.</li> </ul>
<b>Regional Development Agencies (RDAs)</b>	<ul style="list-style-type: none"> <li>Significant potential – project would have to benefit the local economy.</li> </ul>
<b>Local Authorities</b>	<ul style="list-style-type: none"> <li>Varying grants – to providers of public facilities.</li> </ul>
<b>Trusts and Foundations Support from business</b>	<ul style="list-style-type: none"> <li>Likely to be small amounts, but Trusts and Foundations with a national or a local focus, or local businesses, could potentially support projects.</li> </ul>

# Protecting wildlife

Internationally important wildlife habitat is being lost from the UK's coastline. Nearly a third of the saltmarsh between Lincolnshire and the Thames could disappear by 2050. This makes flood risk management important to organisations like the Environment Agency, Natural England and the RSPB. As well as protecting people and property, flood risk management should help protect wildlife and conserve the environment for future generations. A wide range of vegetation, bird species, fish and other wildlife is essential to maintaining healthy and beautiful landscapes.

► Managed realignment will help to restore saltmarsh – a vital habitat for bird and plant life – across the UK.



Site Trainer (rspb-images.com)



Courtesy of the Environment Agency

## Freiston Shore

Land at Freiston Shore in Lincolnshire was the last area to be claimed from the Wash in the early 1980s. However, the sea wall was very exposed to wave erosion at high tides, and it was estimated that in the absence of work to improve flood defences, over £19 million worth of damage would occur. Over a 50 year period, the cost to repair and maintain the existing flood banks was estimated at £2.47 million, but a managed realignment option was billed at £2 million – a far more cost-effective way to provide flood protection over time.

The completed realignment scheme at Freiston Shore in Lincolnshire has created new jobs in the local area, improved the standard of protection from flooding for adjacent properties and created a new recreational site for local people. It has been delivered by a partnership of organisations. For full details, see: [www.coastalfutures.org.uk/benefits.html](http://www.coastalfutures.org.uk/benefits.html).

◀ Freiston Shore

"... the development of the RSPB reserve at Freiston Shore... has resulted in a much needed improvement to our local economy"

Bill Dodson Landlord at the Kings Head, Freiston Shore



## Changes in our coastal landscape

Flood risk management cannot continue in the way it has historically been undertaken; changes must be made to continue to provide adequate protection as sea levels rise. Realignment can be the most sustainable way of adapting to the situation – by setting defences back, they can be cheaper to construct, give a higher standard of protection and help reverse damage to wildlife.

By giving a little land to the sea, we have a better chance of protecting ourselves from much greater damage from climate change.

The 'Coastal Futures Project' has been developed through a partnership of the RSPB, Environment Agency, Natural England and Defra to support communities dealing with coastal change and sea level rise.

For more details of the Coastal Futures Project, visit the website or contact the project office on 01709 312907. Produced on behalf of the partnership by the RSPB, registered charity no 207076.

Front cover image: Courtesy of the Environment Agency  
Back cover image: Chris Knights (rspb-images.com)

[www.coastalfutures.org.uk](http://www.coastalfutures.org.uk)

