Exe Estuary: The Strategy

Exe Estuary Strategy Baseline Studies

In January 2010 the Environment Agency commissioned a strategic study for the Exe Estuary to examine the current and future flood and coastal risks and select strategic options to manage them. These include the risks of flooding from the sea, of erosion to the coastline and the effects of these on people and on the environment. Management policies have been considered within the South Devon and Dorset Shoreline Management Plan which was finalised in June 2011. The Strategy develops these policies into proposed actions including the need for new and improved defences.

Any proposed actions need to be based on a sound understanding of the area and of the processes that are shaping it. The first stage of developing the Strategy is therefore to create a baseline against which any strategic options can be assessed. We need to consider the physical processes such as tides and currents including the impacts of climate change. We also need to consider the performance of existing flood and coastal defences so that we know the existing risks and how these may change. The best management option will be the one that delivers the best balance of economic and environmental outcomes against cost.

What do the baseline studies show?

Baseline studies show that action is needed to prevent the flood and coastal risks from increasing significantly over the next 100 years. Our existing defences are deteriorating but even if we continue to maintain them the protection that they provide will reduce due to the impacts of climate change.

Predictions for extreme sea and wave levels are based on the best available records and on forecast increases in sea level due to climate change (see separate Sea Level Rise fact sheet). We have considered a range of possibilities and our best estimate is that sea levels will rise about 110mm by 2030, 320mm by 2060 and 750mm by 2110, above those in 2010. These amounts may seem small but they have a significant effect on the risk of flooding.

If we do nothing then the majority of coastal defences around the estuary could fail by 2060. The value of damage that would occur has been estimated at £868million at today’s prices. Continuing to maintain our coastal defences as we do now will reduce the likely damage but they will offer little protection by 2110 due to sea level rise, and so damage costing £556million could still be expected. The majority of these damages would be expected at Exmouth and at Starcross.
Key points from the baseline studies

Coastal squeeze
An important feature of the Estuary is the presence of the railway lines along both the east and west banks. These lines have constrained the estuary since their construction; they require protection and, along some lengths, provide protection to the land behind. We know that the main line is already vulnerable to storm damage, particularly around Dawlish. Flood and coastal risk management options are strongly dependent on the costs and benefits of protecting the railway.

The railway embankments and other flood banks, such as in the River Clyst Valley and from Exminster to Starcross, “squeeze” the estuary, preventing it from naturally adapting. This could lead to a loss of inter-tidal habitat which is important for the birdlife, such as saltmarsh, when sea levels rise. The Exe Estuary has special protection as a site of European importance, which means that we must do all that we can to avoid overall damage. One way of doing this is to provide new habitat as compensation for losses, which may mean allowing some agricultural areas to flood so that we can continue to protect areas where people live.

Dawlish Warren
A key issue for the Strategy is how Dawlish Warren sand spit at the estuary mouth will evolve. This is an important feature which has European designation as a Special Area of Conservation (SAC) and is of economic and amenity value. In flood and coastal defence terms, Dawlish Warren protects the mouth of the estuary from storms that might otherwise raise sea and wave levels up the Estuary, causing damage that has been estimated would cost £93 million. However we also know that Dawlish Warren is not a permanent feature. Like other sand spits around our coast, it can grow (accrete) or reduce (erode) and is always changing. Some of these changes, like the sand bars and channels in the estuary, are cyclical but others may be more permanent. With a limited supply of offshore sediment and rising sea levels, Dawlish Warren sand spit is likely to rotate anti-clockwise in the estuary, the end eventually becoming permanently separated and flattened. We are not expecting this in the next twenty years but from 2030-2060, depending on what action is taken.

The key conclusion from the baseline study is that large scale change within the Exe Estuary is predicted over the next 100 years. This conclusion provides a sound case for developing options to manage the changes and associated risks, for the benefit of people and the natural environment.

How do I find out more?

- You can send comments or queries to the Strategy Team at ExeEstuaryStrategy@atkinsglobal.com

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