

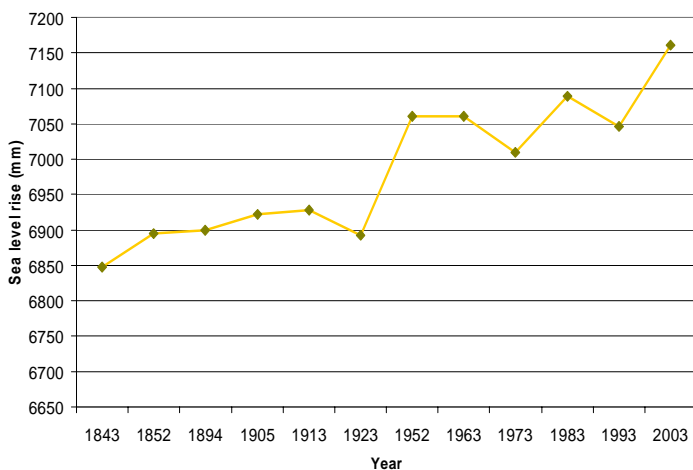
# Coastal Management

## A changing coast



The coastline is undergoing constant changes from the effects of waves and currents, either resulting in the loss of land (erosion) or the accumulation of beach sediment (accretion). The amount of physical change that results generally depends on the degree of exposure and the predominant geology.

In addition to erosion and accretion, the coast is also experiencing a rise in sea levels. Sea level rise is a phenomenon that is mainly produced by isostatic movement combined with subsidence of the coast however global sea level rise as a result of climate change is exacerbating this effect. The annual sea level rise in Southern England is about 6mm, of which 4.5mm is attributed to climate change. The chart below shows sea level rise of the past 150 years (as measured from Sheerness) - it is yet unknown whether the big rise in the past 10 years represents a long term trend or a shorter term phenomena.



Erosion results when waves and currents change the physical shape of the coastline, whereas flooding occurs when defences or natural barriers are breached or overtopped. Both can have catastrophic effects on the communities living where the flooding or erosion event takes place. Many of Kent's major settlements are based at the coast and it is therefore vital that coastal erosion and flood risk is appropriately managed.

## Facts and figures

- Sea level rise in Southern England is about 6mm per year.
- In the past 10 years the sea level in Kent rose by 115mm (2003).
- 10% of Kent's population is at risk from coastal flooding (2001).
- 161,532 people living in the zone are at risk from coastal flooding (2001).
- In the 2003/04 financial year over £18 million was invested in coastal defence.
- The Kent coast is covered by two Shoreline Management Plans and eight coastal strategies.

## Shoreline Management Plan (SMP)

The purpose of an SMP is to provide a large-scale assessment of the risks associated with coastal processes and to present a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable way. It determines the natural forces that are sculpting the shoreline and predicts, so far as it is possible, the way in which it will be shaped into the future. The coastal defence policies are determined with full consideration of the coastline's environmental, social and economic issues in order to develop a sustainable plan for the next 100 years. Kent is currently covered by two SMPs: Beachy Head to South Foreland SMP and North & East Kent SMP.

## Coastal defence policies

During coastal defence planning process of SMPs four coastal defence policies are considered:

- Hold the line - maintaining or upgrading the level of protection provided by defences.
- Advance the line - building new defence seaward of the existing defence line.
- Managed realignment - allowing retreat of the shoreline, with management to control or limit movement.
- No active intervention - a decision not to invest in providing or maintaining defences.

Each of these policies have implications for the future which will result in a different coastline to the one we know today. Should a no active intervention policy be adopted it is predicted that within the policy timescale (100 years) all defences will fail, resulting in frequent inundation of low-lying areas but leading, eventually, to a more naturally functioning shoreline.



This picture may encourage present management to be continued however the future picture under the present management scenario would be a more fragmented coastline, with highly exposed frontages and loss of beaches in front of hard defences. Even with present management practices there would still be an increased risk of breaching of defences and flooding, requiring more substantial & expensive defences. It is therefore important that the policy selected takes into account the many facets of the shoreline to ensure we get the correct balance between as naturally functioning coast as possible, whilst still protecting human life and assets.

## Coastal strategies

Whilst the SMP provides a long term policy framework, it does not determine how that policy will be delivered. A coastal strategy is developed from a strategic assessment of the defence options for a specific management unit of the coastline. The strategy then selects the most appropriate method for protecting the coastline. The majority of the Kent coast is covered by eight coastal strategies, with exception of the Thanet coast and the coastline between Folkestone and South Foreland, where it has been determined that there is currently no need for a strategy.

## Providing coastal defence

Once a defence scheme has been identified through the coastal strategy, the scheme is then thoroughly examined to determine whether or not it receives grant aid funding. Works can either be capital works, typically increasing the defence standard over a period of 20-100 years, or maintenance work to existing defences.

A range of different coastal defence structures can be seen along the coast of Kent, reflecting the diverse nature of the county's coastline and the particular requirements of the site. Structures commonly seen along Kent's shores include:

- Groynes - structures in rock and timber situated to control beach movement and retain material. Seen at Whitstable and Dymchurch.
- Breakwater - rock or concrete armour structure designed to protect an area from wave action. Seen at Herne Bay.
- Revetment - a sloping surface of stone, concrete or other material to protect the shoreline against wave action. Seen at Reculver and Folkestone Warren.
- Beach replenishment - the mechanical import of sediment to a beach. To be seen at Hythe.
- Beach reprofile - the mechanical movement of beach sediment from downdrift to updrift. Seen at Sandwich Bay.



## The South East Coastal Group

In order to combat the often adverse effects that the ad hoc coastal management practices were having on neighbouring shorelines, MAFF (now Defra) commissioned research to determine a more appropriate approach to implementing flood and coastal defence. This research suggested that the coastline could be divided into major sediment cells. A sediment cell is a length of coastline that is relatively self-contained, as far as the movement of sand and shingle is concerned, and where interruptions to such movements should not have a significant effect on adjacent sediment cells. The boundaries of the sediment cells generally coincide with the mouths of major estuaries or prominent coastal headlands.

To provide a more co-ordinated response to coastal erosion and flooding, 'Regional Coastal Groups' comprising of local authorities, the Environment Agency, English Nature and other organisations with a direct role in shoreline management were set up. These Groups are arranged around the natural coastal sediment cells rather than administrative boundaries, which encourages a more strategic approach to coastal defence management based on natural coastal processes.

Kent is covered by the South East Coastal Group (SECG), which brings together the region's local authorities and the Environment Agency (which have the statutory powers to undertake flood defence or coastal protection activities), county councils, English Nature, land owners and Defra. SECG works to encourage an integrated, strategic approach to the management of the entire coastal zone. It provides a forum for coastal practitioners to both discuss problems and develop shoreline management techniques that are both economically efficient and sensitive to environmental considerations. The focus of the group has traditionally been coastal flooding and erosion defence issues although the group recognises the importance of the natural, human and built environments on coastal defence policies, as demonstrated in the Shoreline Management Plans.



## Coastal defence roles explained

- Defra - has overall responsibility for flood and coastal erosion risk in England.
- Operating authority - a body with statutory powers to undertake flood defence or coast protection activities - usually a maritime local authority or the Environment Agency.
- Environment Agency - generally have powers to undertake defence works when the risk is flooding.
- Local authority - generally have powers to undertake defence works when the risk is coastal erosion.
- English Nature - are a statutory consultee on coastal defence schemes and provide advice on the natural environment.
- Landowner - sometimes landowners also have a responsibility for coastal defence. For example, Network Rail is responsible for the defences protecting the Folkestone Warren train line.

### Sources of information:

- [www.se-coastalgroup.org.uk](http://www.se-coastalgroup.org.uk)
- [www.defra.gov.uk/enviro/fcd](http://www.defra.gov.uk/enviro/fcd)
- [www.vliz.be/projects/SAIL/](http://www.vliz.be/projects/SAIL/)

