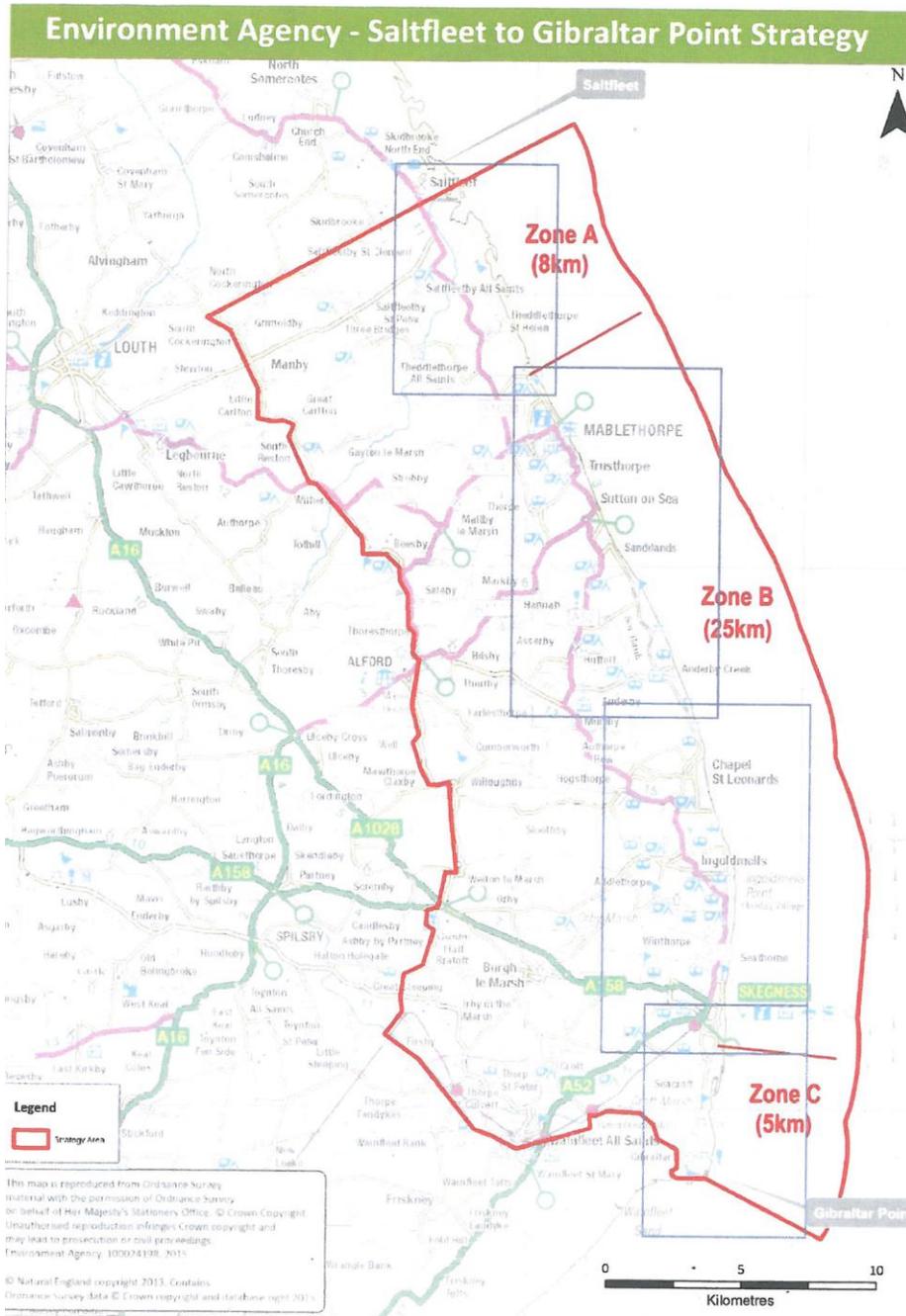


# Environment Agency Saltfleet to Gibraltar Point Strategy Report By Cllr M Gabbitas

A meeting took place at Anderby Creek with the Environment Agency to discuss flood prevention along the coast. It covered three zones, Zone A, 8km of the coast, Zone B, 25km which includes Skegness and Zone C, 5km between Skegness and Gibraltar Point.



Four stations were covered:

1. Beach without control structures
2. Beach with control structures
3. Sea Walls (no beach)
4. Segment the coast and manage in different ways

Number 1. Means putting sand on the beach from the seabed some 20 kilometers offshore it is transported by dredger and pumped back onto the beach at high tide and levelled. It currently costs between 6 and 7 million pounds each year making a total of 90 to 105 million pounds in fifteen years. The beach north of Mablethorpe in Zone A is stable and the beach south of Skegness Zone C is gaining material. There is no requirement for beach nourishment at either of these locations at present. All of us at the meeting stated that sand is not the answer due to it costing the council ten thousand pounds to remove sand from the promenade and people's gardens and streets when sand is back blown by strong easterly winds. It was stated the overall cost will increase and potentially double in the long term (estimated £1-3 billion over the next 100 years) to replace sand on the beach.

#### What could be done differently in the future?

The SGPS will consider and seek views on different sand replacement (nourishment) techniques, in combination with existing sea defenses to reduce coastal flood risk.

#### What are control structures?

Control structures limit sand movement and longer term losses, reducing the impact of coastal erosion and wave action. This would provide a more stable beach frontage because the quantity and frequency of beach nourishment would be significantly reduced creating a long-term cost saving and efficiencies compared to open beaches. They can be of differing design size and material and they need to be stable when in place and weather salt and wave erosion resistant. Their location size and spacing distance between structures is very dependent on the angle of the coastline and the effects of the sea and weather patterns.

#### When might control structures be needed?

Combining beach nourishment with control structures means that coastal flood risk could be reduced for longer while remaining sustainable and affordable. Beach nourishment with control structures is currently estimated to cost between £550 - £600 million over 100 years. This could enhance tourism as controlled beaches become more stable. People's leisure time, for example, would not be restricted by closed beaches when sand pumping is taking place. Control structures may need replacing within the next 20 years in order to be effective in long term in terms of current climate change predictions could still continue in the short term. Once control structures are installed they can be modified (i.e. raised, extended, moved). A special case would need to be made to the government for such large expenditures currently estimated at £250 million over 10 years for structures alone.

### Beach with control structures

The type of material being considered is granite rock which has been used in several locations in the country and has a good track record of reducing coastal flood risk. The form of control structures could include rock groins, rock reefs or rock fishtail groins. The Lincolnshire coast used to have a large number of timber groins intended to control sand movement. During the 1970's and 80's it became clear they did not work. Despite their presence sand was stripped from the beaches. These timber groins have since been removed between Mablethorpe and Ingoldmells. Timber groins are unlikely to emerge as an option on their own as beaches are considerably higher today and they have design limitations longer term with maximum height and foundation.

Footnote – Everyone agreed the rock groins including fish tail and reef groins is far better than putting sand from the seabed onto the beaches.

### Sea walls no beach

Improving the existing sea defenses i.e. raising or widening to keep pace with climate change with no sand replacement would in the short term still be effective to reduce the risk of coastal flooding. However, as coastal erosion continues along this coast line it would not be long before the beaches resembled those of the early 1980's. Sand would disappear leaving no protection to the sea defense toe or clay layer, and ultimately impacting on the stability of the sea defense.

### Key Considerations

1. More land required to accommodate the sea defense construction footprint.
2. Cannot extend landward side as heavily development would need to happen on the seaward side. Parts of existing beach frontage would be lost.
3. More permanent sea defenses needed to protect stability and foundation clay layer.
4. Reduces longer-term maintenance but initial construction costs are very high – estimated at £600 million spread over 30 years.
5. If the height of the sea defense has to increase the area in front would need to also increase to limit the impact of wave action.
6. If sea defense height remains the same the area in front would need to be extended substantially seaward. This could however remain latter and potentially could become an area to support coastal tourism.

### Segment the coast and manage in different ways

Segmenting the coast requires the introduction of strategic “hard points” such as large rock structures, much larger than those without segmentation, at key locations to break up the coastline. This approach would allow each resulting section of the coast to be managed in different ways. Large fishtail groin would create small bays along the coastline which are more effective as a control structure to manage sand movement and coastal erosion. These large structures can be different shape and sizes they could be replaced at regular intervals along the coastline.

### When might segmenting the coast be needed?

To respond to climate change, such large structures may not be needed for 20 or 30 years. However, delaying their introduction means more up front expenditure on, for example, beach nourishment smaller rock groins could be modified into larger regular trigger points in the future i.e. sea levels rise again, there would be funding challenges for large control structures, as typically they would require placement over a 10 to 20-year timespan. Estimated costs for such structures would be in the region of £700 million and this would mean making a special case to government. Depending on the timing of intervention, estimated total cost could range from £820 - £950 million.

### Segment the coast and manage in different ways

Partner organisations and others may see opportunities here to consider other forms of segmenting the coastline to benefit tourism. For instance, as long as coastal flood risk was reduced effectively to a given standard then large structures like marina piers and headland could be installed. This would require additional funding such consideration would need to form a key part of SGPS at the earliest opportunity to enable appropriate assessment. Strategic hard points can themselves also form features. Examples include opportunities for fishing piers also additional waterside development.

The meeting closed at 15:30hrs.

The next meeting at Anderby Creek is on 17<sup>th</sup> March 2017.

Report given by Cllr M Gabbitas.