

**BRIGHTON AND HOVE COUNCIL**

**LEWES DISTRICT COUNCIL**

**BRIGHTON MARINA TO SALTDEAN**

**COASTAL DEFENCE STRATEGY**

**EXECUTIVE SUMMARY**

(Revision 3)

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# Brighton Marina to Saltdean Coast Defence Strategy Study

## Executive Summary

The Brighton to Saltdean Strategy Study provides a strategic framework of preferred policies for the coastal defence of the study area over the next 50 years, i.e. up to the year 2051. It is anticipated that it will be reviewed and updated on a five-yearly basis. The coastal defence strategy area extends from Brighton Marina in the west to Saltdean in the east, covering a distance of approximately 4.4km of open coastline. A location plan of the frontage is shown in Figure 1. A coastal defence strategy generally focuses on a relatively short length of coastline whilst refining the recommendations of the broader, more general policy documents, such as the South Downs Shoreline Management Plan (SMP), which considers in less specific terms the coast between Selsey Bill and Beachy Head. The preparation of a Strategy Plan allows a more detailed assessment of the prevailing environmental, engineering and economic issues to be made.

The Ministry of Agriculture, Fisheries and Food (MAFF) has overall responsibility for administering government funding for flood defence and coast protection in England and Wales. It administers grant aid for large-scale defence schemes and studies such as this. The planning, design, maintenance and operation of defensive measures are carried out by the relevant Coast Protection Authorities, in this case Brighton and Hove Council and Lewes District Council.

Applications to MAFF for grant aid of coastal defence works are required to pass three stages of appraisal based on: -

- Compliance with absolute thresholds (e.g. technical, economic and environmental criteria)
- Achievement of an appropriate priority score
- Satisfactory completion of MAFF project appraisal requirements current at time of application. MAFF guidelines for strategic planning states the following with regard to the establishment of strategic aims and objectives:

*Strategic aims and objectives should be established jointly through consultation with all stakeholders and consultees and expressed in suitable terms which address the identified problems without presupposing any specific solution.*

Sustainable development is also an important concept that needs to be adopted. It acknowledges the need to ensure that schemes undertaken today do not prejudice options available to future generations in respect of resource use and development.

### The Study Frontage

Immediately to the west of the study frontage lies Brighton Marina. For the purposes of this report the 4.4 km length of study frontage coastline has been split into 4 defence lengths based on existing defence type, condition and responsibility, as shown on Drawings E3608 1.1 & 1.2.

- **Defence Length 1** is the 1.8 km length from Brighton Marina to Ovingdean.
- **Defence Length 2** is the 1.2 km length between Ovingdean and the eastern edge of Rottingdean.
- **Defence Length 3** is the 1.1 km length between the eastern edge of Rottingdean and the Brighton & Hove Council boundary at Saltdean.
- **Defence Length 4** is the 300m length of seawall within Management Unit 12 which belongs to Lewes District Council.

To the east of the study area the chalk cliffs are unprotected.

Picturesque chalk cliffs backing an extensive chalk wave cut platform dominate the coastline between Brighton Marina and Saltdean. The western part of the study area is relatively undeveloped, with grassland extending along the cliff top. Whereas the eastern part of the study area comprises the villages of Rottingdean and Saltdean, which extend, in places, to the coastline. Industry is generally limited to boating and fishing, which are based at the Marina, and tourism and recreation all along the frontage. There are several access points to the base of the cliff from the main A259 road, which runs along the cliff top. A promenade provides foot access along the base of the cliffs.

The whole of the study area has been designated a Site of Special Scientific Interest in recognition of the fine geological exposures. There are also several Sites of Nature Conservation Interest for the unimproved and semi-improved cliff top grassland. In recognition of the high landscape quality, the area has also been designated as an Area of Important Landscape and Environmental Value.

A major road (A259), linking Brighton to the villages and the developed coastal areas of Peacehaven and Newhaven to the east, runs along the top of the cliff. The road is heavily used by commuting and domestic traffic and by industrial vehicles as well as tourist traffic. There are residential developments at Rottingdean, Saltdean and Ovingdean, and a residential development and a large public school at Roedean.

The shingle beaches and promenade are used extensively for recreation by roller bladers, walkers, local residents and tourists.

Within the cliffs at approximately the same level as the seawall is the main trunk intercepting sewer, which serves the whole of the Brighton and Hove area. It discharges via the long sea outfall at Portobello, near Peacehaven. Under or immediately adjacent to the A259 are other major services, (gas, electricity and telecom) which are important to the national distribution system.

### **Shoreline Management Plan (SMP) and Strategy Study Recommendations**

The South Downs SMP stated that for the study area it is necessary to “Hold the Line” (i.e. to maintain the coastal defences on the current line), in order to protect the infrastructure and the existing urban development. The same generic option was recommended for Brighton Marina, west of the study area whilst east of the study area “Do Nothing”(i.e. construct no artificial defences) was recommended.

This Study has also concluded that “Hold the Line” is the appropriate policy option for this section of coastline.

### **Defence Length 1 – Brighton Marina to Ovingdean**

The existing defences are close to the end of their life but have not been allowed to ‘fail’ yet, as repairs are undertaken, as necessary, to sustain the seawall.. The defences need replacement if coastal defence is to be continued. All options include some form of strengthened wall depending on the degree of exposure and also the replacement of the promenade and spalshwall. The options for this defence length are:

1. Continue current maintenance, then Do Nothing at most economic time which is year 3
2. Continue current maintenance. Replace defences at most economic time which is year 4
3. Replace existing defences in year 1 with Pre-cast encasement of wall with concrete apron and removal of some groynes.
4. Replace existing defences in year 1 with Pre-cast encasement of wall, rock fillet toe over the wall length, encasement of the groynes over the beach lengths, remainder of groynes left in situ.
5. Replace existing defences in year 1 with Pre-cast encasement of wall, rock revetment over the wall length, encasement of the groynes over the beach lengths, remainder of groynes left in situ.

6. Replace existing defences in year 1 with Pre-cast encasement of wall and new offshore breakwaters.
7. Replace existing defences in year 1 with Pre-cast encasement of wall and new groynes over whole length.

### **Defence Length 2 – Ovingdean to Rottingdean**

The existing defences in this length were constructed in 1995. The exposed seawall is suffering from abrasion. At present this is not causing any problems to the integrity of the defences but it will reduce the life of the seawall. The options for this length will be highly dependent on the severity of the abrasion rate to the exposed sections of wall. No measurements have been taken to date, therefore, it is considered necessary to monitor the abrasion in future to gain an understanding of the true problem. The beach and groynes are performing as designed. It is not necessary or appropriate to renew the defences at this early stage in their life so the options set out below only seek to extend the projected life of the defences at this time. The options for Defence Length 2 are:

1. Continue current maintenance. Replace defences like for like at the end of their life.
2. Continue current maintenance regime of seawall and beach, monitor the abrasion rate and carry out remedial work according to the results of the monitoring. Replace defences like for like at the end of their life.
3. Repair abraded areas, provide rock fillet over wall lengths and maintain beach lengths

### **Defence Length 3 – Rottingdean to Saltdean**

The existing defences in this length were constructed in 1997. Although the defences are relatively new there are problems due to abrasion of the seawall where no beach protects the seawall. The beaches are performing as originally designed and therefore should be maintained. The options for this length are as for Defence Length 2:

1. Continue current maintenance. Replace defences like for like at the end of their life.
2. Continue current maintenance regime of seawall and beach, monitor the abrasion rate and carry out remedial work according to the results of the monitoring. Replace defences like for like at the end of their life.
3. Repair abraded areas, provide rock fillet over wall lengths and maintain beach lengths.

### **Defence Length 4 – Saltdean (Lewes District Council)**

The latest works to the defences in this length were completed in 1993. The seawall does not appear to be suffering from the same abrasion problems as the walls in Defence Lengths 2 and 3. Nevertheless it may be appropriate to monitor abrasion to compare with the results from those Defence Lengths. The options for this Defence Length are:

1. Continue current maintenance. Replace defences like for like at the end of their life.
2. Continue current maintenance and monitor abrasion. Replace defences like for like at the end of their life.

## **Conclusions**

- A significant amount of damage would occur if a Do Nothing scenario were adopted.
- A number of possible coastal defence measures to prevent erosion have been identified and appraised.
- The appraisal shortlisted a number of options as being suitable for further consideration.
- Preferred options were tentatively identified for each defence length.
- A consultation period was held for comment on the draft strategy. No adverse comments were received.
- It is therefore concluded that the policy of “**Hold the Line**” is the most appropriate policy for this frontage.

- On that basis it is proposed that the strategy for the Brighton Marina to Saltdean frontage is:
  - **Where beaches currently exist, ( i.e. at Brighton Marina, Ovingdean, Rottingdean and Saltdean) they should be maintained whilst it is economically viable. Thereafter, some form of defence to the frontage will be sustained**
  - **Where no beach currently exists, the hard defences should be sustained and where possible, further measures should be undertaken to reduce reflection of wave energy and susceptibility to abrasion.**

Economically this is a viable strategy.

Environmentally this is an acceptable strategy.

Technically this is a sustainable strategy.

The Strategy is in harmony with the SMP and local plans.

The recommendations do not alter the current coastal processes. However, it should be noted that the beach material feed from the west is limited. Therefore, the beach levels need to be closely monitored and the strategy reviewed periodically in order to take account of natural changes.

The preferred strategy options for each of the defence lengths are:-

### **Defence Length 1**

Option 4 – Replace existing defences in Year 1 with Precast encasement of wall with rock fillet over the wall lengths and encasement of the groynes over the beach lengths.

Present value cost over 50 years	£ 7.93 million
Present value benefits over 50 years	£24.71 million
Benefit/Cost ratio	3.11

### **Defence Length 2**

Option 2 - Continue current maintenance regime of seawall and beach, monitor the abrasion rate and carry out remedial work according to the results of the monitoring. Replace the defences in year 45.

Present value cost over 50 years	£ 0.97 million
Present value benefits over 50 years	£ 4.40 million
Benefit/Cost ratio	4.53

### **Defence Length 3**

Option 2 - Continue current maintenance regime of seawall and beach, monitor the abrasion rate and carry out remedial work according to the results of the monitoring. Replace the defences in year 27.

Present value cost over 50 years	£ 0.93 million
Present value benefits over 50 years	£ 3.15 million
Benefit/Cost ratio	3.39

### **Defence Length 4**

Option 1 - Continue current maintenance. Replace the defences in year 40.

Present value cost over 50 years	£ 0.21 million
Present value benefits over 50 years	£ 0.80 million
Benefit/Cost ratio	3.87