

Subject:	Brighton Marina to River Adur flood and coastal erosion risk management strategy		
Date of Meeting:	14th January 2014		
Report of:	Executive Director for Environment, Development and Housing		
Contact Officer:	Name:	Martin Eade	Tel: 294568
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Ward(s) affected:	South Portslade, Wish, Westbourne, Central Hove, Brunswick & Adelaide, Regency, Queen's Park, East Brighton, Rottingdean Coastal.		

FOR GENERAL RELEASE

1. PURPOSE OF REPORT AND POLICY CONTEXT

- 1.1 The city council is a Coast Protection Authority taking its powers from the Coast Protection Act 1949. The Act defines coast protection as the prevention of erosion and encroachment by the sea and allows authorities to apply to the Secretary of State for funding towards the cost of schemes and studies.
- 1.2 Strategies are one stage in the process of establishing a business case for funding towards the building of coast defences. Initially a regional Shoreline Management Plan [SMP] is prepared which sets policies for coast defence. For Brighton & Hove, the Selsey Bill to Beachy Head SMP has set a policy of holding the currently defended line. The SMP and its policies were adopted by the council's Environment Committee on 14 September 2006, and part of the SMP's action plan is to prepare coastal strategies.
- 1.3 It is essential that the council has a risk-based management strategy for coast defence in order to ensure that the city's coastline is not adversely affected by coastal erosion and sea flooding. Such strategies are encouraged by the government department DEFRA (Department for Environment, Food & Rural Affairs), and funded through the Environment Agency.
- 1.4 Addressing flooding issues is a key component of the City Deal proposals for the Greater Brighton City Region. In particular, the role and resilience of Shoreham Port in those proposals is significant and mitigating the effects of coastal flooding will be an important factor in maintaining its effective operation and securing its economic contribution to the local area, and enabling development proposals to come forward. The council is jointly seeking funding through City Deal towards delivering flood defences to unlock private sector investment in the Shoreham Harbour area.
- 1.5 The results of consultation on a long list of options for protecting the city's coastline are set out in this report and have informed the proposed shortlist of

options. The committee's agreement is sought for a further round of public consultation to inform the management strategy of the coast defence between the Marina and the western City boundary. This will enable a preferred option to be considered and agreed at a future committee meeting.

2. RECOMMENDATIONS:

- 2.1 That the Committee notes the results of the recent public consultation on a long list of options for the Brighton Marina to River Adur flood and coastal erosion risk management strategy.
- 2.2 That the Committee agrees that a further round of public consultation is carried out on the proposed, preferred options for the Brighton Marina to River Adur flood and coastal erosion risk management strategy, set out in Appendix 2, and the results reported back to a future committee meeting in early 2014 for consideration and agreement.

3. CONTEXT/ BACKGROUND INFORMATION

- 3.1 The coast between Brighton Marina and the River Adur is defended by a range of structures: groynes, sea walls and shingle beaches. As the climate changes so these defences also need to change so that the city is adequately protected from sea level rises and the worst effects of storms at sea.
- 3.2 Maintenance of the existing defences is undertaken but from time to time a strategic assessment is needed to see how the defences should be adapted and the coast managed so as to accommodate future change. This risk management strategy looks at the coast in detail and the pressures on it, and how those pressures are likely to change in the future. It then develops options for coastal management for the next 100 years in accordance with the Environment Agency's requirements. Once finalised the strategy is then submitted to the Environment Agency for agreement. Individual applications can then be made to the Environment Agency for grant aid to build and adapt defences, as recommended in the strategy.
- 3.3 The preparation of a draft strategy, known formally as the 'Brighton Marina to River Adur - Flood and Coastal Erosion Risk Management Strategy', began last year with the gathering of information and data. It is being carried out in partnership with Worthing & Adur Councils. A further informal information gathering exercise has been undertaken to help inform and shape the development of a long list of proposed management options for protecting the coast. These options apply to three distinct sections of the coastline within the city, and are referred to as :-
 - Unit 1 – Locked section at Shoreham Port
 - Unit 2 – Open coast (mouth of the Adur to Brighton Marina western arm)
 - Unit 3 – Brighton Marina.
- 3.4 Although the protection of all three units is important to the city, only Unit 2 is of direct relevance to the city council as the Coast Protection Authority. The

defence of Unit 1 is the responsibility of Shoreham Port Authority and of Unit 3 the responsibility of the Brighton Marina Company. Both organisations plan and fund their own programmes of works for maintenance, renewal and improvement. The consultation that is programmed to begin on 24th January will canvass opinion on the options for all three units.

- 3.5 It is not possible to eliminate all the risks that the sea presents but these options will enable the management of risk along the coastline over the next 100 years (the period of time that the Environment Agency requires the long-term strategy to be planned for). The council's Policy & Resources Committee agreed to public consultation on a long list of potential coast defence options in May 2013.
- 3.6 The draft strategy is due to be finalised in 2014 when it will be reported back to committee for approval prior to being submitted to the Environment Agency. In order to reach that point, a further round of public consultation is proposed to seek views on the proposed, preferred options. These will be outlined in a consultation document (draft extracts are illustrated in Appendix 1) and are set out in a more detailed, summary table of the programme of works in Appendix 2 of this report.

4. ANALYSIS & CONSIDERATION OF ANY ALTERNATIVE OPTIONS

- 4.1 The public consultation on a long list of proposals for managing the coast enables consideration of a number of alternative options. This recognises that the city's coastline could be defended to any standard; coast defence standards are rated according to the severity of storm that they would provide protection against. In the case of large urban areas such as Brighton & Hove, a level of defence capable of resisting a 1 in 200-year storm event is considered appropriate, which is an accepted standard for an urban area within the UK. The options to be consulted on will provide that level of defence and the strategy as a whole would sustain that level of protection over its 100-year timescale.
- 4.2 The strategy process includes an examination of a wide range of alternatives for managing the coast. These are:
1. *No active intervention*: abandoning the defences and undertaking no further maintenance or repair.
 2. *Do minimum*: only undertaking work where there is a breach in the seawall or a physical collapse of part of the defences.
 3. *Maintain*: repairing and replacing defences to the current standard. This would result in increasing flood risk over time as the standard of defence declines in the face of climate change.
 4. *Sustain*: constructing new defences where necessary to reflect sea level rise and so keeping pace with change and maintaining the standard of defence.
 5. *Improve*: construct new defences to increase erosion and flood protection over and above what is necessary to keep pace with climate change.

5. COMMUNITY ENGAGEMENT & CONSULTATION

- 5.1 An Engagement and Communications Plan was developed at the beginning of work on the strategy to help guide the council's engagement with stakeholders during the process. It identifies the council and external consultees that have been, and will continue to be, involved in the consultation for the options and the Strategic Environmental Assessment [SEA]. These include Parish Councils, MPs, councillors, local resident and interest groups and members of the public. The consultation took place between May and July 2013, and included published and on-line material and public exhibitions.
- 5.2 A total of 15 responses were received, which are summarised in Appendix 3.

6. CONCLUSION

- 6.1 It is important that the public and local stakeholders have the opportunity to be directly engaged in the development of long term policies for the protection of the city's coast. Once the results of the consultation on the shortlist have been fully evaluated the coast defence management proposals will be finalised along, with cost estimates, and reported back to Committee for final approval prior to submission to the Environment Agency. This consultation period will result in a defined programme of works to sustain the city's defences for the next 100 years.

7. FINANCIAL & OTHER IMPLICATIONS:

Financial Implications:

- 7.1 Work on the preparation of the strategy will be 100% grant-aided by DEFRA through the Environment Agency. The cost of any work that is not grant eligible (such as some elements of the consultation process) will be met from the council's coast protection revenue budget.
- 7.2 The total cost of the works required for epoch 1 is in the region of £7m and the works are detailed in Appendix 2. It should be noted that this figure is a broad estimate at this stage. The strategy as currently proposed consists of three elements:
- The capital works shown in the table in Appendix 2
 - Annual movement of shingle from Kemp Town back to the beaches at the western end towards the river
 - The continued maintenance of the existing groynes and seawalls.
- 7.3 Funding arrangements for coast protection works vary from year to year so it is not possible to say exactly how much the council might receive in grant. However the Agency's funding regime always requires some degree of stakeholder contribution. The council has an existing revenue budget of approximately £200,000 which covers the costs of the third bullet point above and it is currently anticipated that this would constitute the council's contribution. Therefore at this stage it is expected that the council will be submitting a bid for approximately £6.8 million of grant funding to cover the costs of the first two bullet points above.

- 7.4 Updated details of costs and the funding arrangements will be detailed in a subsequent report to committee when approval for the final strategy is sought.

Finance Officer Consulted: Jeff Coates

Date: 13/12/13

Legal Implications:

- 7.5 The Council takes its coast defence powers from the Coast Protection Act 1949. The Act confers permissive powers on coast protection authorities such as Brighton & Hove. This means that the council has the power to take the action set out in the report but there is no legal requirement for the council to defend the coast nor any right to defence by occupiers of the coastal zone or commercial interests, as there is in some European countries. The Act also gives authorities the power to submit applications for grant aid towards coast defence works to the Secretary of State. The Flood and Water Management Act 2010 requires a lead local flood authority to develop, maintain, apply and monitor a strategy for local flood risk management in its area, which is consistent with the recommendations in the report.

Lawyer Consulted:

Elizabeth Culbert

Date: 13/12/13

Equalities Implications:

- 7.1 There are no immediate equalities implications resulting from the consultation process. All consultation material will comply with the council's guidance and standards. The primary aim of the strategy itself is to manage and reduce the risk of coastal erosion, and this will therefore ensure that access to the seafront and coastline is maintained for all. This is reflected in those options that have been consulted on and those which are now being proposed as preferred.

Sustainability Implications:

- 7.2 A strategic study of this kind is essential if the city is to be protected from the potential effects of climate change. The project is also supported and informed by a Strategic Environmental Assessment [SEA]. This document will also be consulted on, alongside the preferred options, and will be made available to key consultees including the Environment Agency.

Crime & Disorder Implications:

- 7.3 There are no implications for crime and disorder.

Risk and Opportunity Management Implications:

- 7.4 There are no immediate implications for risk and opportunity management resulting from the consultation process, but the primary aim of the strategy itself is to manage and reduce the risk of coastal erosion, and this is reflected in those options that have been consulted on and those which are now being proposed as preferred.

Public Health Implications:

- 7.5 There are no immediate implications for public health resulting from the consultation process, but the primary aim of the strategy itself is to manage and reduce the risk of coastal erosion. This in turn protects access to, and the use of, the city's seafront and beaches for recreational and relaxation activities, thereby contributing to improving people's health, wellbeing and quality of life. For example, data taken from a permanent counter on the Undercliff Walk at the Marina showed a total 2-way flow of pedestrians and cycles of over 14,000 in February this year.

Corporate / Citywide Implications:

- 7.6 The city's beaches and seafront play an important role in the city's economy and, although difficult to quantify, it supports the economic value that commercial and other activities on the seafront provide for the city. This is recognised in the City Deal proposals submitted for the Greater Brighton City Region, as outlined in section 1 of this report.
- 7.7 The preparation of the Coastal Defence Strategy will also inform and support the development of the council's Seafront Strategy. Although the SMP is based on the next 100 years, it will ensure that as far as possible it reflects the aspirations of local interests.

SUPPORTING DOCUMENTATION

Appendices :

1. Extracts from Draft Consultation Document
2. Works programme and cost estimate
3. Report on the outcome of the first round of public consultation

Documents in Members' Rooms :

None

Background documents:

1. Policy & Resources Committee report – May 2013

THE COAST BETWEEN BRIGHTON MARINA AND THE RIVER ADUR

Brighton & Hove City, and Adur and Worthing Councils are developing a 100-year strategy for the management of the coast between Brighton Marina and the River Adur - *the Brighton Marina to River Adur Flood and Coastal Erosion Risk Management Strategy*.

What is the Brighton Marina to River Adur Flood and Coastal Erosion Risk Management Strategy?

The aim of the Strategy is to establish a plan for the management of flood and coastal erosion risk for the next 100 years. With climate changing, sea levels rising and the increased frequency and intensity of storms, our existing coast defences are under increasing threat from the elements. The Strategy considers the risks and impacts of coastal erosion and flooding to communities and the environment, both now and in the future.

What area does it cover?

The area covered by the Strategy is defined by a western boundary at the lock gates at Shoreham, (including the east basin) the coast from the mouth of the River Adur to Brighton Marina and Brighton Marina itself (see map below). Similar studies cover the coast to the east and west.



What have we done so far?

We have undertaken a series of investigations to improve our understanding of the area. We developed a long list of options which we have consulted on and appraised against key criteria to provide a short list.

Following economic, technical and environmental appraisal of the short list options we have identified the Preferred Option for flood and coastal erosion management for each Unit.

This newsletter presents the Preferred Options for consultation.

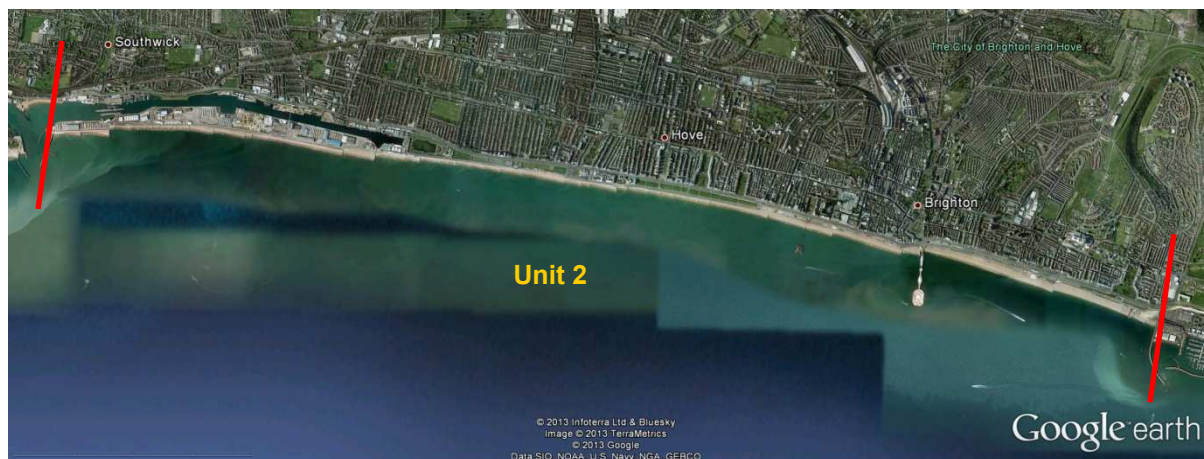
What are the short listed options?

For each of the three units a number of appropriate options were shortlisted for further analysis, these were then considered in terms of:

- Flood and erosion risk to people and property,
- Climate change and predicted sea level rise,
- Cost of the option and value of protected assets,
- Impact on the natural environment.

The following sections outline the short-listed options for each unit. The preferred option for each unit has been highlighted in blue.

Unit 2 Open Coast



<p>No Active Intervention</p>	<p>No further works or repairs would be undertaken and beach recycling and beach bypassing operations would be stopped. The defences would be left to deteriorate and fail over time.</p> <p>Beaches along the Shoreham frontage would erode, resulting in the loss of properties and land including industries at Shoreham Port. Open water conditions in the locked section would result in collapse of the north bank of the basin with further loss of properties and the A259. Failure of beach control structures along the open coast would result in beach loss and increased wave overtopping along most of the frontage. However, material released from beaches will result in wider beaches to the east of the pier.</p>
<p>Do Minimum</p>	<p>As the No Active Intervention Option, except that reactive repair works to the seawalls and some beach recycling to protect vulnerable seawall sections in the short term will delay deterioration and the failure of defences.</p> <p>This option would result in the loss of properties and the A259 at Shoreham and increased flood damages to properties along the open coast.</p>
<p>Maintain</p>	<p>Existing groynes, seawalls and other defences will be repaired and replaced, as required. Beach material will be recycled from Kemp Town to Shoreham, and beach bypassing operations from Shoreham will continue.</p> <p>Flood risk to properties and amenities along the frontage will increase in the long term as sea levels rise.</p>
<p>Improve A – Wall Raising</p>	<p>Wall raising at Shoreham along the coast between the lock gates and the eastern limit of the Sewage Treatment Works combined with the upgrading of existing groynes with higher and/or longer groynes to increase the size of the beaches, where required, along the rest of the open coast frontage will improve the standard of protection. Groynes, seawalls and other defences will be refurbished and repaired as required. Beach material will be recycled from Kemp Town to Shoreham, and beach bypassing operations from Shoreham will continue.</p> <p>Consideration of a range of standards of protection has been undertaken.</p> <p>Flood risk to properties and amenities along the frontage would be reduced.</p>
<p>Improve B – Beach Widening</p>	<p>Existing groynes will be upgraded with higher and/or longer groynes to increase the size of the beaches to improve the standard of protection, where required, along the entire open coast frontage. Groynes, seawalls and other defences will be refurbished and repaired as required. Beach material will be recycled from Kemp Town to Shoreham, and beach bypassing operations from Shoreham will continue.</p> <p>Consideration of a range of standards of protection has been undertaken.</p> <p>Flood risk to properties and amenities along the frontage would be reduced.</p>

Option 'Improve A' has been selected because the existing level of protection from wave overtopping is low in some parts of the frontage. It is the leading economic and environmental solution.

Have your say

We want to know what you think. Your opinions on the leading options are important:

- Do you support the leading options?
- Do you have ideas for improvements?
- Do you have any other comments?

Please let us have your views on the options listed via the online questionnaire at www.brighton-hove.gov.uk/coastalstudy or send your comments by post or email to:

Joanna Walker,
CH2MHill, Elms House, 43 Brook Green, London W6 7EF
Walkerej@halcrow.com

What happens next?

We will be holding public exhibitions at Brighton Jubilee Library, Hove Town Hall, King Alfred Leisure Centre and Adur Civic Centre from January to April 2014.

Dates and times will be advertised in advance by the council and in the local media.

Following consultation, the preferred options will be considered by the councils and then included within the Strategy Review documents and submitted for approval to the Environment Agency. If approved, the implementation of the preferred options will then depend upon the funding available from a number of different sources. The cost of coast defence work is met from a combination of government grant and local contributions, and the proportions of those amounts will be calculated using the government funding guidelines that are current at the time.

Appendix 2
Works programme and cost estimate

Brighton Marina to River Adur coastal strategy – preferred strategy – Capital Works Marina to Seaside Villas

To establish and maintain coast defences appropriate to a large urban area such as Brighton & Hove for the next 100 years (given current climate change predictions) the following programme of works will be required (in addition to general maintenance). The current practice of moving shingle from Kemp Town and Shoreham Beach onto the beaches at the western end would also need to continue. The works shown would generally be carried out during the first 2 years of each epoch with maintenance and annual shingle movement continuing.

Works to the Port's defences and the defences in front of the private terrace to the west of the Hove Deep Sea Anglers' clubhouse are also required but not shown here.

Strategy periods	Defence structure	Location	Work Required	Comments	Cost estimate
<u>Epoch 1 –</u> <u>years 1 to 29</u>	<u>B8 Dalton's groynes</u> <u>B9 New Steine groynes</u>	<u>First groyne east of Brighton Pier</u> <u>Second groyne east of Brighton Pier</u>	<u>Lengthen by 10m, raise height and recharge beach</u>		<u>£7m</u>
	<u>Groynes H10 to H16</u>	<u>Courtenay Gate flats to the King Alfred</u>	<u>Lengthen by 15m, raise height and recharge beach</u>		
	<u>H31 Baxter's groyne</u> <u>H30</u>	<u>East side of the Deep Sea Anglers' clubhouse Lagoon outfall</u> <u>Oppo east end of Hove Lagoon</u>	<u>Lengthen by 10m, raise height and recharge beach – alterations also required to Hove Lagoon outfall</u>	<u>Only required if work on the private beaches to the west is carried out.</u>	
<u>Epoch 2 –</u> <u>years 30 to 79</u>	<u>B7 Albion groyne</u> <u>B5 Grand hotel</u>	<u>First groyne west of Brighton Pier</u> <u>Oppo Grand Hotel</u>	<u>Lengthen by 10m, raise height and recharge beach – alterations also required to Hove Lagoon outfall</u>		
	<u>B1 Norfolk groyne</u>	<u>First groyne east of the Peace Statue</u>	<u>Lengthen by 10m, raise height and recharge beach</u>		
	<u>B6 East St groyne</u>	<u>Oppo East St</u>			
<u>Epoch 3 –</u> <u>years 80 to 82</u>	<u>Groynes H10 to H16</u>	<u>Courtenay Gate flats to the King Alfred</u>	<u>Lengthen by 5m, raise height and recharge beach – alterations also required to Hove Lagoon outfall</u>	<u>Only required if work on the private beaches to the west is carried out.</u>	
	<u>H31 Baxter's groyne</u> <u>H30</u>	<u>East side of the Deep Sea Anglers' clubhouse</u> <u>Oppo east end of Hove Lagoon</u>	<u>Lengthen by 10m, raise height and recharge beach</u>		
	<u>Groynes H1 to H9</u>	<u>First 9 groynes west of the Peace Statue</u>	<u>Lengthen by 10m, raise height and recharge beach</u>		
<u>Epoch 4 –</u> <u>Years 83 to 84</u>	<u>B8 Dalton's groyne</u>	<u>First groyne east of Brighton Pier</u>	<u>Lengthen by 5m, raise height and recharge beach.</u>		
	<u>B9 New Steine groyne</u>	<u>Second groyne east of Brighton Pier</u>			
<u>Epoch 5 –</u> <u>Years 85 to 100</u>					

Appendix 3

Report on the outcome of the first round of public consultation

Over 150 people were contacted directly using an established database for this study, there was a press release by both Adur and BHCC and an article in the Evening Argus.

There were 15 responses, either written (as detailed below) or via the consultation portal response form on the council's website. Both sets of responses are summarised in Table 1 (below) and cover only Unit 2 (Open Coast), as Units 1 and 3 are outside the council's responsibilities for coast protection.

Natural England

- Noted that features of interest along the coast often require natural coastal processes (such as movement of shingle, cliff erosion and avoidance of coastal squeeze) to be maintained.
- Key designated sites are Adur Estuary SSSI, Brighton to Newhaven Cliffs SSSI and proposed Marine Conservation Zone Beachy Head West.
- Unit 1 (Shoreham Port) – potential impacts on River Adur SSSI. Identified a need to understand whether sustaining or increasing the defences affect volume or movement of water entering the estuary and, if so, what the potential impacts on River Adur SSSI may be.
- Unit 2 (open coast) – the sustaining or improving options could have impacts, depending on where the shingle is sourced. Operations involving only recycling within the area are unlikely to cause impacts on designated sites. Other impacts may arise at the deposition site and if there are structural changes to the coastal defences that influence shingle movement and coastal processes, possibly affecting habitats at the mouth of the River Adur or within the SSSI.
- Unit 3 (Brighton Marina) – options have potential to affect Brighton to Newhaven SSSI and Beachy Head West pMCZ. For example, impacts on the chalk reef (SSSI and pMCZ) from extending any structure or impacts from work to the inner wall on the pMCZ.
- Further assessment will be required as the options are progressed. NE is happy to advise on potential impacts and solutions to avoid or mitigate potential impacts.

Adur and Worthing Councils (Planning, Regeneration and Well-being)

- Comments relate to Shoreham Harbour area.
- Regeneration aims for the harbour are set out in the Draft Adur Local Plan.
- A Joint Action Plan is also being developed (Adur District Council, Brighton and Hove City Council and West Sussex County Council) for revitalisation of the area, working with Shoreham Port Authority, to bring back vacant and underused sites into use (new employment and housing developments, raising the quality of the local environment and waterfront access).
- Development Briefs for the Western Harbour Arm (to south of railway, from new footbridge to Kingston Beach) and South Portslade Industrial Estate and Aldrington Basin are being finalised. Further details on <http://w4ww.adur-worthing.gov.uk/shoreham-harbour-regeneration> .
- A Flood Risk management Technical Guide with a Design Code is also being developed by the Shoreham Harbour Regeneration Partnership. This may provide information to the current strategy. The Regeneration Partnership is also seeking external funds. There may be potential to work together to deliver aspects of the current strategy.
- Key aspirations for Shoreham Harbour are presented.
- Unit 1 – Option 4, Sustain and Option 5, Improve are most appropriate. Option 5 would be preferred, but could be expensive and technically difficult. Options 1 to 3 conflict with Port future operating capacity, due to increased flood risk.
- Unit 2 – Notes that none of the options refer to public realm improvements or reductions on height of seawall defences. Would like to see removal of the (tall) wall along Basin Road South, or provision of pedestrian /cycle route on seaward side or reduction in its scale. Options 1 to 5 would result in increased flood risk and therefore not considered appropriate (for businesses, residents and image of area as a tourist destination). Option 6 would maintain current standard of defence

and increase size of beaches (recreational benefit). Option 8 would be similar but also raise level of protection. These two are the preferred options. Option 7 would provide similar protection to Option 6, but without increasing beach size. Option 9 would be similar to Option 7, except with increased levels of protection. These two options are considered acceptable but less preferable to Options 6 and 8. The impact of the offshore breakwaters of Option 10 could result in a negative impact on recreation and visual attraction, and the impact of rock revetment of Option 11 on public access and visual amenity is considered negative. These two options are therefore considered less attractive options. Option 12 is also likely to result in negative impacts on recreation and visual amenity and is also, therefore, considered a less attractive option.

Environment Agency, Partnership and Strategic Overview East Sussex

- Raised a number of technical queries in terms of how the benefits of the strategy would be calculated for the three areas.
- Unit 1 – Suggested that a wall along the open coast should be considered
- Unit 2 – Suggested that it is unlikely that the volume of shingle under Option 4 would remain constant and that it would therefore require input from another source. Suggested an alternative option for Option 5, similar to Option 3 except movement of shingle from Kemp Town to further west than Shoreham, with continued by-passing of Shoreham Port. Suggested a further option to realign the seawall to remove protrusions (such as at the King Alfred complex) as development proposals arise. Queried whether there could be any options where the spacing between groynes is increased.
- Unit 3 - Suggested that an alternative to increase the height of the defences and water-resistant building is considered.

Local resident 1

- The No Active Intervention option is not feasible and reactive work is not considered sustainable for any area.
- Unit 1 – Options 4 and 5 considered most suitable as sea level rises are accommodated. Option 5 preferred.
- Unit 2 – Despite some reservations, the offshore breakwaters of Option 10 are considered beneficial due to reduction of wave energy and control of long-shore drift of sediment to help maintain beaches and provide habitat for marine life (including fish). The down-drift effect of retention of sediment, however, could be negative.
- Unit 3 – Considered Option 4 the most appropriate despite minor temporary adverse impacts during any works

Local resident 2

- Stated that the final decision should be based on a social cost-benefit analysis taking environmental consequences into account, but suggested that the no active intervention and do minimum options would be unacceptable for an urban service and industrial economy environment, whilst the maintain/ sustain options are likely to be better options and the improve option less acceptable in social cost-benefit terms.
- Suggested direct consultation with Brighton and Hove Geological Society, all local schools, tertiary colleges and university departments of environmental studies and geology

Dr Uwe Dornbusch (Environment Agency)

- Provided electronic link to sediment budget reports produced for the South East Coast Beach Management Plan Project

Local fishing club

- Comprising a club with over 1,300 members, located directly on promenade at Hove, considers the premises to be extremely vulnerable to coastal erosion and wave damage
- Commented only on Unit 2 (open coast)
- Options 1 to 5 considered unacceptable as they would result in increased flood risk.

- Options 6 and 7 not favoured due to no improvement to flood risk, movement of shingle (environmental impact) and ongoing annual cost and consequential vulnerability to future budget squeeze
- Options 8 and 9 would reduce the flooding risk but retain the ongoing environmental and cost impacts and would not provide any other 'added value'
- Option 10 would reduce the risk of flooding without requiring annual shingle movements, thereby eliminating those environmental and cost impacts. Assuming that it would be based on the same concept as trialled at Sea Palling in Norfolk, which protects and enhances the beach and coastline, creating a series of sheltered beaches ideal for all forms of water activities, a boost to the Brighton and Hove tourist economy
- Options 11 and 12 would reduce the risk of flooding. However the loss of beaches and difficult access to the water would affect waterborne activity, including the sea anglers club. It would be a disaster for tourism and would probably reduce the appeal of the city as a place to live, so hitting house prices and the economy as a whole.
- In summary, Hove Deep Sea Anglers advocates Option 10 and requests that it is implemented, at least along that section of the coast, in the very near future.

Anonymous (local resident)

- Concerned to protect Central Hove from flooding as sea level rises, and suggests that a longer time frame than 100 years should be examined.
- Concerned that as sea levels rise houses near the seafront will become very vulnerable to flooding. Also concerned about damage to listed buildings, the need to maintain public access to sea for leisure, including cycle route access along its length and the need to maintain the existing beaches, Shoreham Harbour and Brighton Marina in their current state.

Table 1

Unit 2 – Open Coast												
	1	2	3	4	5	6	7	8	9	10	11	12
A&WDC	-	-	-	-	-	1	2	1	2	3	3	3
NE	No preference stated											
EA	No preference stated											
Local resident 1	No preference stated											
Local resident 2	No preference stated											
U Dornbusch	No preference stated											
Local fishing club	-	-	-	-	-	2	2	2	2	1	3	3
Anonymous	No preference stated											
General Public Response 1	No preference stated											
General Public Response 2	-	-	-	-	-	-	-	1	1	2	2	-
General Public Response 3	-	-	1	2	1	2	2	2	2	-	-	-
General Public Response 4											1	
General Public Response 5	-	-	-	-	-	2	2	1	1	1	1	1
General Public Response 6			1									
General Public Response 7								1	1	1	1	1

