

Southend-on-Sea Borough Council

Agenda
Item No.

Report of Corporate Director for Place
To

Place Scrutiny Committee

On

7th October 2013

Report prepared by: Richard Atkins
Coastal Defences Engineer

Shoebury Common Flood Risk Management Scheme

Executive Councillor: Councillor John Lamb

A Part 1 Public Agenda Item

1. Purpose of Report

To advise Members of the outcome of the consultation undertaken on the proposed sea defence scheme on Shoebury Common and to and make recommendations on how to progress the delivery of the proposals. The report is presented to Members as part of pre Cabinet scrutiny and in advance of the proposal being considered by Cabinet at its meeting on 5th November 2013.

2. Recommendations

2.1 Scrutiny Member's views are sought on the following proposed recommendations

- i. **Note the results of the public consultation undertaken during April and May 2013 as set out in Appendix 1.**
- ii. **Approve the continued development of the Council's "preferred option".**

3. Background

3.1 Members received and approved a report on the draft Southend Shoreline Strategy (the strategy) on 1st November 2011. This document sets out a vision over a 100 year timeframe of the methods that the Council proposes to use to implement the regional Shoreline Management Plan (the SMP) policy in the Borough.

The Council's policy is to "Hold the Line – Sustain", which means that the Council would wish to retain the existing sea defence alignments and improve the defences at time intervals to keep pace with the ongoing rise in sea levels around the coastline of Britain.

The strategy is intended to be approved by the Environment Agency (EA). Their approval would indicate their agreement to the proposals, and also indicate their commitment to contribute to the implementation costs.

- 3.2 The strategy was first formally presented to the EA in October 2012 who subsequently requested that modifications be made to it - most significantly to the east and west boundaries of the plan area. These modifications are presently being implemented and the strategy will be returned to Members for approval of the changes when they are complete, before re-submission to EA.
- 3.3 One of the projects identified in the strategy for the short term was the Shoebury Common Flood Risk Management Scheme. For this project, the construction of an earth embankment on the open areas of Shoebury Common had for some years been seen as a practical alternative to the raising of the existing front line flood wall.

Raising the flood wall would have obstructed the sea views from the promenade and the beach huts and would have been detrimental to the ambience of the promenade and local environment.

In addition to this, structural analysis of the present wall's foundations indicated that the raising of the flood wall presented particularly difficult technical challenges because of the form of the wall's foundations and that overcoming these challenges involved considerable additional cost.

- 3.4 As an embankment was a possible solution at the Shoebury site, the planned stabilisation work to the cliff at Western Esplanade, which, it was known, would generate a large quantity of sound engineering soil, appeared to offer an opportunity as a source of the material needed for the construction of the embankment.

This had the potential to provide substantial savings in the costs of both projects and therefore efforts were made to align the timings of the two projects should the embankment emerge as the preferred method of improving the flood defences.

To achieve this it was necessary to develop a Project Appraisal Report (PAR), which is the document on which the EA's determination of schemes is based; this was commenced ahead of the programme set out in the strategy.

The development of a PAR involves a great deal of specialist engineering, environmental and economic input and therefore Messrs Black & Veatch, who are the consultant engineers who had developed the strategy, were commissioned to carry out the work.

It became evident that the progress of the cliff stabilisation project was far ahead of the PAR process, and that it would be in construction before work could commence on the sea defences. It therefore became necessary to make arrangements for the temporary stockpiling of the excavated material so that it should be available for the proposed embankment if needed.

4. Project Appraisal Report

- 4.1 The PAR development process is laid down by EA for projects for which their financial support would be required. It consists of assessment of:

- the Standard of Protection (SoP) and residual life of the existing defence system;
- the environmental context of the area;
- topographic detail of the flood risk area;
- the feasible options for reducing the flood risk, including estimation of the costs of initial construction, future maintenance and eventual reconstruction of the options when dictated by sea level rise (SLR);
- the inshore wave climate, based on calculation of the propagation of wave from offshore survey points under the influence of wind conditions;
- the water levels experienced at the line of the defences due to the wave; climate superimposed on the extreme tide levels provided by EA for stated probabilities of exceedence;
- the impact of the global rise of sea level on extreme tide levels into the future. The amounts of SLR to be applied in the assessment are provided by EA;
- the quantities of water which would pass over the various defence options due to events of stated probabilities under present conditions and future sea level scenarios, and the spread of this water over the ground, based on the ground levels and contours of the flood area (determined by computer modelling);
- identification and valuation of the damage to properties and other social and environmental assets and parameters due to the modelled spread of water over the flood risk area;
- annualised damage costs in the flood risk area, determined by combining the costs due to a range of event probabilities. These damages are calculated for a range of times into the future, because one effect of SLR is to gradually raise the annual probability of occurrence of an event of any stated intensity;
- environmental impacts of all the feasible options for management of flood risk;
- analysis of the ratio of the values of benefits in comparison to the costs of all the options, and from this, determination of the “preferred option”
- the level of support in the form of Grant in Aid from Defra, for which the preferred option would qualify (see section 5);
- the production of the technical report, a Strategic Environmental Assessment and a Water Framework Directive assessment.

4.2 The outcome of the PAR process identified that a form of the embankment scheme most successfully fulfilled the consent requirements of the EA and a new “set-back” defence emerged as the “preferred option”.

4.3 This was the outcome irrespective of the availability of the stockpiled cliff material.

4.4 The proposal (option 1) consists of the construction of a landscaped mound where sufficient width exists, along the length of Shoebury Common. This would be supported on the south face by a sheet piled wall, with appropriate facing and capping, effectively giving a half width embankment, about 1.5m high above finished levels on the greensward.

4.5 At appropriate locations on the wall, flood gates or combined steps and ramps would provide access between the Common and the promenade. Continuity of the defence line would be provided at the east end by linking the embankment to

the existing improved defences on the Gunners Park wall with a series of walls, penetrated by flood gates to maintain access to the promenade and launching ramp. At the west end, the defence line would transfer to the existing wall which would be raised, either by extending upwards, or building behind it, to the necessary crest level.

To assist Members visualise this proposal there is an artist's impression of what the scheme would look like included as **Appendix 3**.

- 4.6 Options 2 and 3 are feasible versions of works making use of the high ground forming the hinterland of the coastal strip from Thorpe Bay Gardens to Waterford Road. This would require substantial works to link from the end of the bank behind Leitrim Avenue to the defence line at Gunners Park. Either version would require a very large steel flood gate across Shoebury Common Road.
- 4.7 Option 3 includes the raising of the carriageways at the location of the gate in order to reduce its height. Both options would also require works to protect the south facing properties of Lodwick, which incorporate lower floors extending down to the level of the Common. The most economical way to achieve this is considered to be the construction of a new continuous wall to the necessary height on the line of the existing boundaries. To maintain existing accesses, a large number of flood-proof access gates would be required to pierce the wall.

To assist Members visualise this proposal there is an artist's impression of what the scheme would look like included as **Appendix 3**.

- 4.8 The PAR also identified that the present Standard of Protection (SoP) provided by the existing defences varies between 2% and 20% annual probability of occurrence, which are low standards. They arise because the crest level of the sea wall is low, up to 1m below the adjacent crest wall on the Old Ranges site, and because the height and width of the beach at the Common varies widely in width and height.

The 20% extreme figure is not supported by any history of flooding at the site, and may have arisen because the beach parameters, measured by topographic survey at a particular date, were atypically adverse. However, even the best standard, 2%, is low for an urban area, where SoPs between 1% and 0.33% are considered normal.

5. The Funding System

- 5.1 In 2011, the Department for Environment, Food and Rural Affairs (Defra), the government ministry responsible for distributing Flood Defence Grant in Aid (FDGiA) completely revised the grant system.

It had been one where projects received either 100% funding, or nothing at all. Schemes had been prioritised on the levels of Benefit/Cost Ratio (BCR) and Environment benefits which they were able to achieve. While this ensured that national investment in Flood Risk Management was effectively targeted at the most beneficial schemes, it left many areas at risk of flooding without the opportunity to improve their situation because of the typically high costs of works.

The system which replaced this is one where any project, which provides a flood management benefit, attracts some level of FDGiA support. The amount of aid is calculated from various factors determined in the PAR. They include the:

- BCR
- the numbers of residential properties removed from, or given greater protection from flood risk
- the numbers of these which are included among the most deprived areas of the country and
- the areas of priority habitat created, or designated environmental areas protected.

It follows that, where two or more possible solutions to a flood risk problem exist which provide the same benefits, the level of grant aid available for each will be approximately the same, irrespective of their cost. By this system, projects providing high levels of benefits may still attract 100% funding, but the majority of schemes will not.

In this majority of cases, either the scheme costs must be reduced to the level of FDGiA available for them, or “partnership” funding will be required to complete the funding required, if they are to be implemented. There is a wide range of sources from which this funding may be sought, including local businesses or even residents who benefit directly from the works.

Any shortfall in funding, for example due to adopting a more expensive project than optimum, would have to be found from community sources which in effect means the Council.

5.2 For the project under consideration the Council’s preferred option (option 1) the financial requirements and funding arrangements are as follows:-

5.2.1 Estimated costs, including substantial contingency, as required by EA are

Engineering (detailed design etc)	£386,000
Construction	£4,645,000
Maintenance for the next 15 years (period up to the next planned Intervention)	£1,835,000 capital <u>£386,000</u> revenue
Total 15 year scheme cost	£7,252,000

5.2.2 The funding package which has been arranged is

FDGiA (to be confirmed)	£3,034,000 2013/14
	£1,612,000 future years
Regional Flood and Coastal Committee	£750,000
Borough Council capital	£500,000
Garrison Developments	£970,000

(dependant on planning consent)	
Borough routine maintenance	<u>£386,000</u>
Total	£7,252,000

6. Public Consultation

- 6.1 At an early stage of outline development it became public knowledge that plans were being considered to carry out these improvements, and that a possible option was the construction of an embankment along the common. This resulted in a number of press enquiries and concerns being expressed from a number of local residents and business / beach hut owners.

As a result of these concerns officers arranged a public information exhibition of the preliminary designs in Summer of 2012. The exhibition, which was attended by large numbers of people, helped the project team to understand many of the concerns of people, in particular the owners of the approximately 150 beach huts which stand on the promenade and will lie between the existing flood wall and the set back defence.

- 6.2 Subsequently the Council was invited to address a special meeting of the Shoeburyness Residents Association and at this meeting a formal commitment was given for a further public meeting and detailed consultation on the project.

At this meeting individuals spoke who subsequently established themselves as leading members of a group known as "The Friends of Shoebury Common" (FoSC).

- 6.3 The PAR was completed and presented to EA in October 2012. Although no major issues were raised by the EA reviewing panel, which was supportive of the need for the project, amendments were requested which would be signed off by chair of the panel.

It was clear that the project would receive support from EA. The requested alterations have been made and following the Council's formal determination of the PAR and the proposals contained in this report will be re-submitted to EA. It is important to note though that the Council has made it clear that it will not resubmit its proposal until detailed consultation with residents and those affected by the scheme had taken place.

- 6.4 The outline designs were developed to a more detailed stage, in preparation for the planned consultation events. The opportunity was taken to incorporate changes resulting from comments at the earlier exhibition, and to produce details of the other main options.

Face-to-face meetings were held with members of FoSC and the Southend Beach Hut Owners Association (SBHOA).

At one of the meetings with representatives of FoSC an outline alternative design for the project was presented which was based on raising the existing sea wall, the promenade behind it and the line of beach huts. This was appraised by in-

house staff and Black and Veatch and it was found to have a number of impracticable aspects.

- 6.5 The formal public consultation began on 15th April 2013 and ran until 12th May. It consisted of a public exhibition mounted in Thorpedene Library in Shoebury, and manned at certain times, a parallel on-line exhibition on the Council web-site and a public meeting at Shoebury High School, planned for the evening of 22nd April. Feedback forms were available from all the consultation sites.
- 6.6 The public meeting was attended by supporters of FoSC. The numbers seeking to attend exceeded the safe capacity of the meeting hall (250+), and over 100 were turned away – an additional meeting was arranged for the following week.
- 6.7 The combined attendance for the two meetings was 438. 25 people attended both meetings.
- 6.8 In order to ensure balanced consideration of all options the FoSC were invited to present their proposed scheme at the start of each of the public meetings
- 6.9 This was followed by a technical presentation by Black and Veatch of the basis for the scheme and the details of the Council's preferred option.
- 6.10 This in turn was followed by an open question and answer session to representatives of B&V, the Council and FoSC.
- 6.11 241 feedback forms were returned from all sources; of these 131 included written comments and suggestions, responses to which are provided in the Consultation summary in Appendix 1. These responses are broken down into consideration of a large number of recurring themes, evident in the feedback.
- 6.12 The following table identifies the levels of support and opposition for the options proposed by the Council, which are broken down into interest groups as shown.

Interest Group	Level of support %														
	Option 1					Option 2					Option 3				
	Strongly support	Support	No view	Oppose	Strongly oppose	Strongly support	Support	No view	Oppose	Strongly oppose	Strongly support	Support	No view	Oppose	Strongly oppose
Residents at flood risk	22	15	4	3	56	4	14	14	14	54	14	4	18	21	43
Businesses at flood risk	33	0	0	0	67	4	4	0	0	92	0	33	0	0	67
Residents of Shoebury	21	8	3	10	58	2	7	7	16	68	8	5	13	17	57
Beach hut owners	0	2	3	0	95	8	14	16	5	55	18	15	18	0	49
Residents overlooking	16	6	0	0	78	0	0	0	12	88	0	0	0	11	89
Residents of Southend	4	0	6	10	80	2	7	18	8	65	10	10	18	2	60
Visitors	7	0	13	0	80	7	0	27	0	66	7	6	28	0	59
Organised groups	0	0	0	20	80	20	40	0	0	40	20	20	0	20	40
All responses	11	5	4	6	74	4	9	12	10	65	11	7	16	9	57

- 6.13 34 of the 241 respondents stated that they support the scheme proposed by FoSC.

It is apparent from the consultation responses that there is no clear support for any of the options put forward by the Council and the preferred option is strongly opposed by a majority of respondents – interestingly there is less opposition for options 2 and 3 both of which are considered to be much more visually intrusive and therefore unacceptable than the preferred option.

This may indicate that residents are sceptical about the risk of flood. However of the responses the strongest level of support is for Option 1 and from residents directly in the flood risk zone.

- 6.14 What can be seen from a comparison of respondent's comments at Appendix 1 and Officer's responses to them at Appendix 2 is that a significant proportion of people have based their choice on misleading information.
- 6.15 During the public consultation meetings the Council undertook to commission a full technical appraisal of the FoSC model to assess the cost implications of delivering it. This was undertaken by Black & Veatch at the Council's cost and was done so that the same assessment methodology could be applied to ensure that the options the Council had prepared were compared on an equal basis.

The outcome of this technical appraisal is that the FoSC proposal is briefly detailed below:

'The proposal involves the raising of both the seawall and the promenade with an in-situ concrete gravity structure built to a level of 5.8mAOD with landscaping of imported material on its landward face, which also involves raising 169 beach huts. In principle, based upon the information available the proposed scheme could work, in that it could successfully alleviate flood risk during a 1 in 200 year surge event (0.5% AEP).

However, the proposals are only presented in outline design form and are consequently lacking in engineering detail. In fact, some of the indicative levels and scaling that have been used in the presentation of the scheme appear to be misleading.

Some of the key issues that have not been considered by these proposals that could potentially prove to be show stoppers include:

- *Both the condition and limited foundation size of the existing seawall, particularly at the eastern end, which is likely to be prohibitive to the stability of the new structure.*
- *The proposed new structure relies on high beach levels in front of the existing seawall to provide the necessary lateral support. However, no details of any proposed beach management activities have been included within the proposal.*
- *Since the underlying geology of the existing promenade is likely to be a man-made granular fill over the formation clay, the expected loading of the proposed structure on the existing promenade is likely to cause settlement*

of the sub-base materials. This in turn is likely to result in uneven surfaces, cracking and, in time, failure of the new structure.

- *The proposed scheme requires that each of the beach huts behind the existing promenade is raised to a new level, approximately 1-2m higher than the existing. This will involve the removal, temporary storage and reinstatement of all of the beach huts. However, it is believed that the nature of construction and current condition of many of the beach huts will prevent them from being double handled in this way without significant damage.*
- *The proposed access from the proposed level of the promenade to Uncle Tom's Cabin(Cafe) in Section 5 is shown as a gently sloping gradient. However, following a comparison between the existing ground levels and those proposed it is clear that the required slope will be steeper than that depicted in the Section and it will not conform with the latest guidance for disabled/wheelchair access.*
- *The proposal needs to address how access to the beach from the promenade will occur, as to date no access details have been provided.*
- *The proposal needs to address how the defence crosses both Ness Road and the slipway and adjoins with the neighbouring frontage to the east.*

Using the information provided a cost estimate of the construction of the proposed scheme found that it could potentially cost more than double that of the SBC's preferred option in the recent PAR (B&V for SBC, 2013), if both beach recharge and replacement huts are included within the capital cost of the scheme, neither of which are required in SBC's preferred option.'

Shoebury Common Alternative Proposal, Technical review, Black & Veatch Sept 2013.

The full technical approval is included as Appendix 4.

Given the outcome of the technical assessment it is clear that the FoSC's alternative option is not deliverable and not affordable and given the lack of support for it evidenced through the public consultation it is not proposed that the Council should proceed with this option.

The option that provides the optimum solution in terms of impact on the environment, standard of protection and cost remains the Council's preferred option, option 1.

7. Other Options

7.1 Members have options to either:-

7.1.1 Approve the continued development of the preferred option (estimated 15 year scheme costs £7,252,000)

7.1.2 Approve the development of either of the Council's other options, 2 and 3, which involve linking the existing high ground forming the hinterland of much of the coastal frontage to the new defence wall at Gunners Park by a combination of new walls and flood gates across Shoebury Common

Road, (estimated 15 year scheme costs £7,432,000 and £7,943,000 respectively) or

7.1.3 Suspend development of the Council's options and adopt the option put forward by the Friends of Shoebury Common to raise the existing crest wall, the promenade behind it and the beach huts. Estimated cost 15 year scheme cost £8,663,000 minimum.

7.2 The adoption of any of the options in 8.1.2 or 8.1.3 will require the sourcing of additional funding equal to the difference in cost between the selected option and the preferred option.

8. Reasons for Recommendations

8.1 The preferred option emerged from the Project Appraisal process as providing the highest Benefit/Cost ratio and lowest cost of all the management and scheme options and low risk of environmental damage.

9. Corporate Implications

9.1 *Contribution to Council's Vision & Corporate Priorities.*

The Council is committed to protecting its local environment and to discharging its responsibilities in respect of flood defences and these proposals are completely consistent with those objectives.

9.2 *Financial Implications*

The funding arrangements for the "preferred option" project are set out in 5.4 above.

The adoption of any other option will require the securing of substantial amounts of additional partnership funding.

9.3 *Legal Implications*

This was a non-statutory consultation and as such is not subject to statutory processes.

9.4 *People Implications*

The proposed flood defence scheme will be developed using external specialist resources, which qualify for funding support from Defra, whereas salaries for in-house staff would not.

9.5 *Property Implications*

A number of Council Housing (Jena Close) and Parks (Shoebury Park) assets are located within the 1 in 200 year flood risk area, and so will benefit from increased flood protection if the scheme is constructed.

9.6 *Consultation*

The PAR development process requires a formal consultation process with statutory consultees on the environmental impacts of the proposals, and this has been carried out by the Council's expert advisors.

An extensive non-statutory public consultation has been carried out, as described in Section 6 above. The analysis of the feedback from this work and the responses to the many points raised as part of the feedback are attached as Appendix to this report.

Ward members have been regularly briefed on the proposals during preparation of the Flood Defence Scheme.

10. **Background Papers**

Report to cabinet of 1st November 2011 "Southend Shoreline Strategy".

11. **Appendices**

Appendix 1: Public Consultation Report

Appendix 2: Officers responses to comments made during the Public Consultation.

Appendix 3: Artists impression of the proposals

Appendix 4: Technical Review Shoebury Common Alternative Proposal