

1. Options Identification and Appraisal

Caveat:

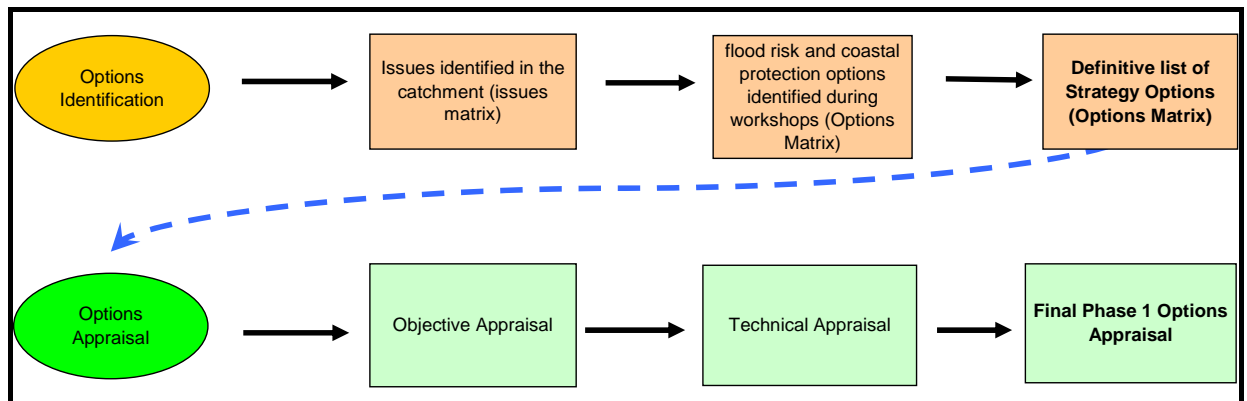
The information contained in this document is for information only and not for Development Control or other purposes. The information was accurate at time of writing in October 2006 however this may have been superseded by new information. The Eastern Yar Strategy is ongoing and as such the thoughts and conclusions outlined may have changed following further work. As such these are draft project outputs and do not necessarily reflect the views of the Isle of Wight Council and the Environment Agency.

The aim of this early option identification is to ensure that the data collection and supporting technical investigations are sufficient to provide corroborative evidence for the options appraisal process. This has been complex with sufficient detail required to assess the technical, environmental and economic considerations both alone and in combination.

The project team have developed a series of matrices to collate the options identified in the different workshops and appraise them in a clear and transparent manner. The appraisal includes technical appraisal (engineering, hydrological; catchment management; coastal and fluvial processes and environmental); economic; policy and objective.

The approach is illustrated in the Figure below.

Figure - Appraisal Matrix Approach



The objective of the matrix approach is to provide a transparent filter to identify which options should progress to Phase 2 for further appraisal and which options are not feasible or suitable and should be rejected without further investigation, thereby focusing resources on the more appropriate options. The matrices provide the transparency to review the reasons why some options have been rejected at this stage. The matrices are contained within an Excel Spreadsheet, and are:

- Issues Identification Matrix
- Options Matrix
- Objective Appraisal
- Technical Appraisal
- Final Phase 1 Options Appraisal

The matrix approach to be adopted for this Strategy draws together the concept ideas being proposed in the latest SMP2 Procedural Guidance notes (Defra 2004), current flood management procedures and the knowledge and input of the wider Atkins Technical Team.

This approach is intended to provide three key benefits to the strategy development process. Firstly, and most simply, it allows Atkins to reject those options which are not acceptable to the project team and focus attention, during Phase 2, on those sections of the Strategy where strategic option selection is more contentious. This also avoids the need for unnecessary appraisal in areas where the policy requirement is obvious. Secondly, it enables appraisal on the less clear-cut sections of the study area be made with an appreciation of the impacts of the policies driven by different objectives and legislative requirements. This is particularly relevant for areas such as the Eastern Yar catchment which is significantly constrained by the Habitats Regulations. Care needs to be taken that the legislation and associated project objectives are not 'double-counted' to the detriment of the human impacts and requirements.

The options can be categorised as follows

Table – Strategic Options

Strategic Coastal Protection Options	Strategic Sea Defence Options	Strategic Fluvial Defence Options
Advance the Line	Advance the Line	Hold the Line
Maintain the Line	Maintain the Line	Flood Peak Reduction
Do Minimum	Do Minimum	Fast Evacuation
Retreat the Line	Retreat the Line	Land Management
Do Nothing	Do nothing	do nothing

The table below lists those options which have been appraised. The options matrices will be provided at the Steering Committee.

Table - Options which have been appraised

Technical options	Description	Strategic option	Sub-catchment
1	Refurbish Groynes and beach nourishment	CP Hold the Line	3
2	refurbish and extend groynes with beach nourishment/recycling	CP Hold the Line	3
3	beach nourishment/recycling	CP Do minimum	3
4	Extend harbour/Duver wall	CP Advance the Line	3
5	Rebuild Duver sea wall with rear dune	CP Hold the Line	3

6	Allow Duver to fail and build a new wall at base of coastal slope	CP Retreat the Line	3
7	Build sluices at Sandown Bay to evacuate flood water	FD Fast Evacuation	3
8	Remove Bembridge Sluice	SD Retreat the line	3
9	Raise the Duver Road	CP Hold the Line	3
10	Raise Embankment Road	SD Hold the Line	3
11	Replace Bembridge Sluice with Wiers	SD Hold the Line	3
12	Maintain Embankment Road at existing height	SD Do Minimum	3
13	Realignment to alignment of Great Sluice	SD Retreat the Line	3
14	Remove Great and Little Sluices	SD Retreat the Line	3
15	Introduce Buffer Strips	FD Land management	1,2,4,5
16	Stop arable farming from the flood plain	FD Land management	1,2,4,5
17	river restoration	FD Fast Evacuation	1,2,4,5
18	wetland creation	FD Flood Peak Reduction	1,2,4,5
19	create additional flood plain storage	FD Flood Peak Reduction	1,2,4,5
20	Water retention - additional wier structures in upper catchment	FD Flood Peak Reduction	1,2,4,5
21	Pump water from upper catchment	FD Fast Evacuation	1,2,4,5
22	Restrict development in the floodplain	FD Land management	3
23	Build flood plain storage structures above Alverstone	FD Flood Peak Reduction	2
24	Initiate intertidal habitat development	SD Retreat the Line	1,2,4,5
25	lock gates at entrance to harbour	SD Advance the Line	3
26	lower existing embankment levels	SD Retreat the line	1,2,3,4,5
27	use secondary bunds	SD Retreat the line	1,2,3,4,5
28	Optimise operation of Bembridge (and other) Sluice	FD Fast Evacuation	3
29	increase conveyance through Yar Bridge	FD Fast Evacuation	3
30	improve drainage channels around Sandown	FD Fast Evacuation	3
31	Repair and improve existing charge pipe at Sandown sea wall.	FD Fast Evacuation	3

32	compulsory purchase affected properties in flood plain	SD Do Minimum	3,2
33	raise bed levels in channel	FD Flood Peak Reduction	1,2,4,5
34	reafforestation in upper catchment	FD Land management	1,2,4,5
35	change farming practices	FD Land management	1,2,4,5
36	plant riparian vegetation	FD Land management	1,2,4,5
37	improve channel maintenance	FD Flood Peak Reduction	1,2,3,4,5
38	improved management of withy beds and alders	FD Land management	1,2,4,5
39	improve conveyance of water through culverts under railway	FD Flood Peak Reduction	3
40	removal of underdrains in upper catchment	FD Land management	1,2,4,5
41	improve wier management at Alverstone Mill	FD Fast Evacuation	2
42	improve conveyance at 2 culverts in whitwell	FD Fast Evacuation	1
43	improve conveyance through increased culvert size under Brading/Sandown Road	FD Fast Evacuation	3
44	Repairing sheet piling in Duver Wall	CP Do minimum	3
45	Realign to Yar Bridge	SD Retreat the line	3
46	Realign to sandown/brading road	SD Retreat the line	3
47	Do nothing at Duver	CP Do Nothing	3
48	Do nothing at Embankment Road	SD Do Nothing	3
49	do nothing in the catchmet	FD Do Nothing	1,2,3,4,5
50	stop dredging at harbour entrance	SD Do Minimum	3
51	Individual property protection at Whitwell, Southford, Newchurch, Alverstone, Brading and Bembridge - e.g. sandbags, flood boards etc.	FD Hold the Line	1

52	Properties at risk adjacent to Wroxall Stream: Improve conveyance of channel by increasing channel and culvert capacities. Upstream storage not likely to work as flooding from the river is likely to be mainly due to urban runoff entering the river downstream of any practical storage site.	FD Fast Evacuation	5
53	Sandown: Raise flood defence on right bank to protect properties upstream of A3055. Raise flood defence and install flap gate on drain to protect properties (primarily industrial estate) downstream of A3055. Provide compensation for loss of floodplain storage in this area by lowering levels east of the Sewage Treatment Works.	FD Hold the Line/SD Retreat the Line	3
54	Increase culvert size under A3036	FD Fast Evacuation	2
55	Improve drainage channels in Brading Marshes	FD Fast Evacuation	3
56	New localised flood defences north of Yaverland	FD Hold the Line/SD Retreat the Line	3
57	New flood defences around Brading	SD Retreat the Line	3
58	Culverts under Embankment Road	FD Fast Evacuation	3
59	More sluices under Embankment Road	FD Fast Evacuation	3
60	Embankment Road to be converted to a causeway	SD Retreat the line	3
61	Increase culvert capacity at Great and/or Little Sluices	FD Fast Evacuation	3
62	setback part of Duver sea wall (500-700m chainage)	SD Retreat the line	3
63	Evacuation of flood waters though partnership with Southern Water infrastructure	FD Fast Evacuation	3
64	Maintenance/upgrade Bembridge Point Groyne	CD Maintain the line	3
65	No Nothing at Bembridge Point Groyne	CD retreat the line	3

Results of the Phase 1 Appraisal

Approximately 65 options were identified through internal and external workshops and during the project discussions. These options were appraised using a form of multi-criteria analysis

to provide a transparent screening process. The options were also categorised into a series Strategic and Supporting options.

Appraising the options identified the following:

- 5 options should be taken forward as a separate Local Options Report
- 12 options should be taken forward as a separate Catchment Management Report
- 15 options should be rejected on technical grounds or unsuitability
- 32 options to be taken through for further appraisal and completion of the Strategy

From the Phase 1 work:

- 7 Coast Protection (CP) options have been selected for more detailed assessment within Phase 2;
- 11 Sea Defence (SD) options have been selected for more detailed assessment within Phase 2;
- 14 Flood Defence (FD) options have been selected for more detailed assessment within Phase 2;

Phase 2 work:

- Phase 2 will be reviewing the outputs of phase 1 and taking those options for further investigation. To date additional options have been included relating to the management of Bembridge Groyne.