

*ADDENDUM*

## **ADDENDUM TO STRATEGY APPRAISAL REPORT**

### **CHANGE IN INVESTMENT DATE FOR MAIN SOUTHERN FRONTAGE**

#### **1.1 BACKGROUND TO THIS ADDENDUM**

The Strategy Project Appraisal Report (PAR) was submitted to the Environment Agency's National Review Group [NRG] in January 2006 and received minor comments.

Havant Borough Council (HBC) submitted the revised document to Defra in March 2006 requesting agreement. Defra advised that the Environment Agency as lead authority must approve the strategy as the Whole Life Cost is less than £50m and also that the proposed implementation plan was unrealistic in relation to the recent changes in the availability of Defra's coast protection funding for the Council.

An amended version setting out a revised programme was considered by the Environment Agency's NRG in April 2006. The proposed expenditure by Havant in 06/07 and Defra's response to HBC was noted and NRG concluded "If Defra decide that the money will not be made available then the document is not up to date. Priority scores for Havant work is 21.2 and the scheme is sound. Action: Team asked to update cost expenditure profiles on basis of knowledge we now have."

Following this, Atkins was requested to produce an addendum to the PAR, the purpose of which is to test the economics, both benefits and costs to delaying the intervention on the southern frontage from 06/07 to 07/08. It is also necessary to delay the Environment Agency work at Bracklesham Road by splitting the scheme PAR, design and construction document preparation cost from the construction cost and moving the construction cost to 2007.

The following amendments have been included in this addendum:

- The spreadsheets 5, 6, 7 and 8 in Appendix 4 Costs Estimates have been updated by amending the PV costs (as the price date does not change).
- The spreadsheets 1, 2, and 3 contained within Appendix 5 Economic Appraisal have been updated to account for the changes in the timing of the works. The preferred option has been altered to account for the change in standard of protection in advance of the works. In the updates to spreadsheets 2 and 3 in Appendix 5, the preferred option has been updated and sensitivity tests have been carried out to confirm the incremental benefit cost ratio to reconfirm the selection of the preferred scheme.
- Sensitivity tests have been included against reduced water levels, property prices and updating by the RPI.

#### **1.2 CURRENT SITUATION**

The Environment Agency and Havant Borough Council have been following the principals set out in the strategy plan for the Eastoke frontage subject to the delay to capital works stated in 1.1 of this Addendum. They have been implementing the preferred scheme, all bar the major shingle feeding. They have been continuing with the local shingle recycling programme which is the same as the Do Minimum option.

### **1.3 BENEFIT ASSESSMENT METHODOLOGY**

This addendum has kept 2005 as year 0, this is the same year 0 as the strategy report.

Havant Borough Council undertook the Eastoke Frontage Condition Survey (April 2006) in advance of the recycling programme. The standard of protection varied widely along the frontage showing that there is sufficient material to allow recycling this year. As a result of the recycling programme the southern frontage has a standard of protection consistent with the Do Minimum scenario.

In order to calculate the residual damages associated with the preferred option, the Do Minimum scenario damages continue until the date of major shingle replenishment, when the 1:200 SOP is then in place. Thereafter, regular beach feeding maintains this 1:200 standard of protection.

In the strategy report issued in January 2006, the decision rule was followed to identify the preferred option. This involved starting with the option with the highest benefit cost ratio and stepping up according to the incremental benefit cost ratios, to come to the economic choice of a 1:200 standard of defence for the Southern Frontage. This process has been repeated for this addendum.

### **1.4 SCHEME COSTS**

The spreadsheets included with this addendum supersede spreadsheets 5,6,7,8 contained with Appendix 4 Costs Estimates. The new construction programme only affects the Eastoke Southern Main Frontage so the other sub-unit of work have remained unchanged. The price date is unchanged. Therefore only the PV costs column has been adjusted.

Three sets of revised estimates have been produced:

- for 07/08 construction,
- for 08/09 construction and
- for 11/12 construction.

### **1.5 RESULTS**

The PVd for the 1:200 beach management option with shingle replenishment in year 2007-08 is £2,556k. This results in overtopping benefits of £21,916 plus £51,872 for erosion protection, totalling £73,788k. This is a 2% reduction against the January 2006 Strategy Appraisal Report.

The delay in the construction programme results in lower present value costs of £8,867k. This is a 2% reduction in the PV costs for the Eastoke main frontage and a 1% reduction in the PV costs for the whole strategy.

The benefit cost ratio of this scheme is therefore 6.39 for the Eastoke southern frontage, and 6.73 for the whole peninsular strategy (previously 6.42 and 6.74 respectively). Both of these are robust, and are sensitivity tested later.

In order to reapply the decision rule, the 1:100 scheme has had its costs adjusted and its damages adjusted to take into account a later investment date, it leads to an incremental ratio between the 1:100 and the 1:200 SOP schemes of 4.43, well above the ratio of 3 required by the FCDPAG3 decision rule.

Based on the information presented above it is clear that the 1:200 Beach Management Plan (BMP) scheme is still the preferred option passing the defra decision rules.

The construction costs for Bracklesham Road were discounted from a capital investment date of 2007. This reduces the PV costs from £100k to £93k. This has no significant effect on the benefits as the current standard of protection is nearly 1 in 80 years.

## **1.6 SENSITIVITY TESTS**

Six sensitivity tests have been carried out. The first test considers the robustness of the economic appraisal to the choice of return period water levels applied. All water levels were reduced by 100mm and in both the Do Nothing and the preferred scheme (this is a repeat of a sensitivity test within the strategy). This results in a benefit cost ratio of 6.68.

The second test considers changes which have occurred since the appraisal date. It updates all costs and benefits to a May 2006 price date and includes the effect of property value increases. The benefit cost ratio for the strategy remains robust at 7.19.

Two further tests were completed to assess the sensitivity to the date of starting the shingle replenishment. Results are presented for capital recharge in years 2008-09 and 2011-12. These have benefit cost ratios of 6.73 and 6.91, and priority scores of 21.3 and 21.9 respectively. This rise in benefit cost ratio over time indicates the increasing urgency of the works.

The fifth test covers the effects of all possible timings, by combining the 2007 recharge costs with the 2011 recharge benefits. This results in a benefit cost ratio of 6.63 and a priority score of 21.1.

	BCR	Priority Score
Reduced Extreme WLS	6.68	21.6
Price Revision to May 2006	7.19	22.0
Recharge in 2008-09	6.73	21.3
Recharge in 2010-11	6.91	21.9
Costs in 2007 but no improvement in benefits until 2011	6.63	21.1

**Table 1 Sensitivity Tests**

It should be noted that the costs for the whole strategy would have to rise by over 12% before the priority score drops below 19, the latest threshold for grant aid.

## **1.7 CONCLUSIONS**

1. The recommended option for the Southern Frontage is the Beach Management, this is preferred against other 'do something' options on environmental, technical and economic

grounds and therefore any delay in the availability of funds will not alter the selection of Beach Management as the preferred option for the southern frontage.

2. Beach Management is an extension of the existing 'do minimum' situation as it offers a minimum standard of protection by maintaining a healthy beach. The main difference between the 'do minimum' and the Beach Management proposal is the amount of capital recharge proposed.

3. The delay to the capital investment in recharge is therefore relative to operating a 'do minimum' option in the short term. This has the impact of reducing standard of protection, but continues to provide a significant reduction the risk of a breach and a reduction in overtopping. It will also maintain the beach (albeit to a much lower standard), such that when a capital recharge can be funded, the aims and objectives of the strategy can be achieved.

4. There still remains an urgent need for the capital recharge, as system losses over a longer period (say 5 to 10 years) will increase the risk of breach to unacceptable levels. This is reflected by the increase in priority score with increasing delay in the recharge programme.

The following table lists all tables included in this addendum, and references the table in the Jan 2006 Strategy Report which they replace.

Addendum Table	Title	Strategy Report Table
1	Sensitivity Tests	Table 2.6 in main text
2	Southern Frontage Cost Estimate	Appendix 4 spreadsheet page 5
3	Northern Frontage Cost Estimate	Appendix 4 spreadsheet page 6
4	Section Summaries	Appendix 4 spreadsheet page 7
5	Summary Costs	Appendix 4 spreadsheet page 8
6	Selection of preferred option	Appendix 5 spreadsheet page 1
7	Southern Frontage – Preferred SOP	Appendix 5 spreadsheet page 2
8	Northern Frontage – Preferred SOP	Appendix 5 spreadsheet page 3
9	Sensitivity Tests	Appendix 5 spreadsheet page 4

Southern Frontage - Main Section Beach Management			
	Actual Costs	PV Costs	SOD Approval
<b>Years 0 to 5 Expenditure</b>			
<b>2007 Capital Recharge 95,000 cu.m</b>			
Authority Costs	£40,000	£37,340	£37,340
Fees	£80,000	£74,681	£74,681
Investigations	£20,000	£18,670	£18,670
Construction (2007)	£1,358,500	£1,268,174	£1,268,174
Compensation	£0	£0	£0
Contingency	£449,550	£419,660	£419,660
Inflation @ 5%			£0
<b>Further work in Period</b>			
Authority Costs	£0	£0	£0
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£0
<b>Maintenance 2005 to 2009</b>			
0.902 Authority Costs	£140,000	£126,272	£140,000
0.902 Fees	£0	£0	£0
0.902 Investigations	£0	£0	£0
0.902 Construction	£325,000	£293,131	£325,000
0.902 Compensation	£0	£0	£0
0.902 Contingency	£139,500	£125,821	£139,500
Inflation @ 5%			£90,675
<b>Years 0 to 5 Expenditure Summary</b>			
Authority Costs	£180,000	£163,612	£177,340
Fees	£80,000	£74,681	£74,681
Investigations	£20,000	£18,670	£18,670
Construction	£1,683,500	£1,561,306	£1,593,174
Compensation	£0	£0	£0
Contingency	£589,050	£545,481	£559,160
Inflation @ 5%	£0	£0	£90,675
<b>Future Costs</b>			
Future Costs (upgrade and maintenance)	£16,986,000	£4,898,458	£0
Future Contingency	£6,254,100	£1,605,116	£0
<b>Total</b>	<b>£25,792,650</b>	<b>£8,867,324</b>	<b>£2,513,701</b>

Southern Frontage - Eastoke Point Future Works - dependent on study			
	Actual Costs	PV Costs	SOD Approval
<b>Years 0 to 5 Expenditure</b>			
<b>Study and further works</b>			
Authority Costs	£50,000	£50,000	£50,000
Fees	£117,500	£117,500	£117,500
Investigations	£50,000	£50,000	£50,000
1 Construction (2007)	£1,320,000	£1,320,000	£1,320,000
1 Compensation	£30,000	£30,000	£30,000
1 Contingency	£940,500	£940,500	£940,500
Inflation @ 5%			£156,750
<b>Further Works</b>			
Authority Costs	£0	£0	£0
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£0
<b>Maintenance 2005 to 2009</b>			
Authority Costs	£0	£0	£0
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£0
<b>Years 0 to 5 Expenditure Summary</b>			
Authority Costs	£50,000	£50,000	£50,000
Fees	£117,500	£117,500	£117,500
Investigations	£50,000	£50,000	£50,000
Construction	£1,320,000	£1,320,000	£1,320,000
Compensation	£30,000	£30,000	£30,000
Contingency	£940,500	£940,500	£940,500
Inflation @ 5%	£0	£0	£156,750
<b>Future Costs</b>			
Future Costs (upgrade and maintenance)	£470,000	£108,348	£0
Future Contingency	£282,000	£65,009	£0
<b>Total</b>	<b>£3,260,000</b>	<b>£2,681,358</b>	<b>£2,664,750</b>

Future Costs:				
DCF	Annual (year 5 to 99 ) per annum	£8,835,000	£2,479,882	£0
0.842	Year 5	£429,000	£361,206	£0
0.709	Year 10	£429,000	£304,126	£0
0.597	Year 15	£429,000	£256,066	£0
0.503	Year 20	£429,000	£215,601	£0
0.423	Year 25	£429,000	£181,530	£0
0.356	Year 30	£429,000	£152,843	£0
0.355	Year 35	£429,000	£152,459	£0
0.307	Year 40	£429,000	£131,513	£0
0.264	Year 45	£429,000	£113,444	£0
0.228	Year 50	£429,000	£97,858	£0
0.197	Year 55	£429,000	£84,413	£0
0.170	Year 60	£429,000	£72,815	£0
0.146	Year 65	£429,000	£62,811	£0
0.126	Year 70	£429,000	£54,182	£0
0.109	Year 75	£429,000	£46,737	£0
0.094	Year 80	£429,000	£40,316	£0
0.081	Year 85	£429,000	£34,777	£0
0.070	Year 90	£429,000	£29,999	£0
0.060	Year 95	£429,000	£25,877	£0

Future Costs:				
DCF	Annual (year 5 to 99 ) per annum	£0	£0	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15			
0.503	Year 20			
0.423	Year 25	£15,000	£6,347	£0
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£440,000	£100,367	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75	£15,000	£1,634	£0
0.094	Year 80			
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

Future Contingency				
DCF	Annual (year 5 to 99 ) per annum	£2,650,500	£743,965	£0
0.842	Year 5	£128,700	£108,362	£0
0.709	Year 10	£128,700	£91,238	£0
0.597	Year 15	£128,700	£76,820	£0
0.503	Year 20	£128,700	£64,680	£0
0.423	Year 25	£128,700	£54,459	£0
0.356	Year 30	£128,700	£45,853	£0
0.355	Year 35	£128,700	£45,738	£0
0.307	Year 40	£128,700	£39,454	£0
0.264	Year 45	£128,700	£34,033	£0
0.228	Year 50	£128,700	£29,357	£0
0.197	Year 55	£257,400	£50,648	£0
0.170	Year 60	£257,400	£43,689	£0
0.146	Year 65	£257,400	£37,687	£0
0.126	Year 70	£257,400	£32,509	£0
0.109	Year 75	£257,400	£28,042	£0
0.094	Year 80	£257,400	£24,190	£0
0.081	Year 85	£257,400	£20,866	£0
0.070	Year 90	£257,400	£17,999	£0
0.060	Year 95	£257,400	£15,526	£0

Future Contingency				
DCF	Annual (year 5 to 99 ) per annum	£0	£0	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15			
0.503	Year 20			
0.423	Year 25	£9,000	£3,808	£0
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£264,000	£60,220	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75	£9,000	£981	£0
0.094	Year 80			
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

**Addendum Table 2 - Southern Frontage Cost Estimate**

Northern Frontage - Main Section Phased Scheme of Refurbished and New Walls			
	Actual Costs	PV Costs	SOD Approval
<b>Years 0 to 5 Expenditure</b>			
<b>2004 Flood Defence Scheme Construction</b>			
Authority Costs	£80,000	£80,000	£80,000
Fees	£429,600	£429,600	£429,600
Investigations	£80,000	£80,000	£80,000
Construction	£1,895,704	£1,895,704	£1,895,704
Compensation	£0	£0	£0
Contingency	£120,000	£120,000	£120,000
Inflation @ 5%			£0
<b>2009 Habitat Creation</b>			
0.871 Authority Costs	£10,000	£8,714	£8,714
0.871 Fees	£40,000	£34,858	£34,858
0.871 Investigations	£10,000	£8,714	£8,714
0.871 Construction	£200,000	£174,288	£200,000
0.871 Compensation	£100,000	£87,144	£100,000
0.871 Contingency	£216,000	£188,232	£216,000
Inflation @ 5%			£103,200
<b>Maintenance 2005 to 2009</b>			
0.934 Authority Costs	£50,000	£46,676	£50,000
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£7,500
<b>Years 0 to 5 Expenditure Summary</b>			
Authority Costs	£140,000	£135,390	£138,714
Fees	£469,600	£464,458	£464,458
Investigations	£90,000	£88,714	£88,714
Construction	£2,095,704	£2,069,992	£2,095,704
Compensation	£100,000	£87,144	£100,000
Contingency	£336,000	£308,232	£336,000
Inflation @ 5%	£0	£0	£110,700
<b>Future Costs</b>			
Future Costs (upgrade and maintenance)	£6,930,800	£2,328,223	£0
Future Contingency	£3,588,480	£1,236,942	£0
<b>Total</b>	<b>£13,750,584</b>	<b>£6,719,095</b>	<b>£3,334,291</b>

Northern Frontage - Bracklesham Road Inland Line - Phased Scheme of Embankments			
	Actual Costs	PV Costs	SOD Approval
<b>Years 0 to 5 Expenditure</b>			
<b>2004 Flood Defence Scheme Construction</b>			
Authority Costs	£16,000	£16,000	£16,000
Fees	£60,000	£60,000	£60,000
Investigations	£10,000	£10,000	£10,000
Construction	£100,000	£93,351	£93,351
Compensation	£30,000	£30,000	£30,000
Contingency	£129,600	£129,600	£129,600
Inflation @ 5%			£20,935
<b>Further Works</b>			
Authority Costs	£0	£0	£0
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£0
<b>Maintenance 2005 to 2009</b>			
Authority Costs	£0	£0	£0
Fees	£0	£0	£0
Investigations	£0	£0	£0
Construction	£0	£0	£0
Compensation	£0	£0	£0
Contingency	£0	£0	£0
Inflation @ 5%			£0
<b>Years 0 to 5 Expenditure Summary</b>			
Authority Costs	£16,000	£16,000	£16,000
Fees	£60,000	£60,000	£60,000
Investigations	£10,000	£10,000	£10,000
Construction	£100,000	£93,351	£93,351
Compensation	£30,000	£30,000	£30,000
Contingency	£129,600	£129,600	£129,600
Inflation @ 5%	£0	£0	£20,935
<b>Future Costs</b>			
Future Costs (upgrade and maintenance)	£600,000	£269,626	£0
Future Contingency	£360,000	£161,776	£0
<b>Total</b>	<b>£1,305,600</b>	<b>£770,353</b>	<b>£359,886</b>

Future Costs:				
DCF	Annual (year 5 to 99 ) per annum	£950,000	£266,654	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15	£1,872,000	£1,117,379	£0
0.503	Year 20			
0.423	Year 25	£114,000	£48,239	£0
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£3,880,800	£885,238	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75			
0.094	Year 80	£114,000	£10,713	£0
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

Future Costs:				
DCF	Annual (year 5 to 99 ) per annum	£0	£0	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15	£360,000	£214,881	£0
0.503	Year 20			
0.423	Year 25			
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£240,000	£54,746	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75			
0.094	Year 80			
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

Future Contingency				
DCF	Year	£1,123,200	£670,428	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15	£1,123,200	£670,428	£0
0.503	Year 20			
0.423	Year 25	£68,400	£28,943	£0
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£2,328,480	£531,143	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75			
0.094	Year 80	£68,400	£6,428	£0
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

Future Contingency				
DCF	Year	£216,000	£128,928	£0
0.842	Year 5			
0.709	Year 10			
0.597	Year 15	£216,000	£128,928	£0
0.503	Year 20			
0.423	Year 25			
0.356	Year 30			
0.355	Year 35			
0.307	Year 40			
0.264	Year 45			
0.228	Year 50	£144,000	£32,847	£0
0.197	Year 55			
0.170	Year 60			
0.146	Year 65			
0.126	Year 70			
0.109	Year 75			
0.094	Year 80			
0.081	Year 85			
0.070	Year 90			
0.060	Year 95			

Addendum Table 3 Northern Frontage Cost Estimate

APPENDIX 4 : COST SUMMARY							
HAVANT BOROUGH COUNCIL							
Southern Frontage - Main Section				Southern Frontage - Eastoke Point			
Beach Management				Future Works - dependent on study			
	pv Cost	Cash Cost	SOD		pv Cost	Cash Cost	SOD
Authority Costs	£163,612	£180,000	£180,000	Authority Costs	£50,000	£50,000	£50,000
Fees	£74,681	£80,000	£80,000	Fees	£117,500	£117,500	£117,500
Investigations	£18,670	£20,000	£20,000	Investigations	£50,000	£50,000	£50,000
Construction	£1,561,306	£1,683,500	£1,683,500	Construction	£1,320,000	£1,320,000	£1,320,000
Compensation	£0	£0	£0	Compensation	£30,000	£30,000	£30,000
Contingency	£545,481	£589,050	£589,050	Contingency	£940,500	£940,500	£940,500
Inflation @ 5%	£0	£0	£90,675	Inflation @ 5%	£0	£0	£156,750
Future Costs				Future Costs			
Future Costs (upgrade and maint)	£4,898,458	£16,986,000	£0	Future Costs (upgrade and maint)	£108,348	£470,000	£0
Future Contingency	£1,605,116	£6,254,100	£0	Future Contingency	£65,009	£282,000	£0
<b>Total</b>	<b>£8,867,324</b>	<b>£25,792,650</b>	<b>£2,643,225</b>	<b>Total</b>	<b>£2,681,358</b>	<b>£3,260,000</b>	<b>£2,664,750</b>
ENVIRONMENT AGENCY							
Northern Frontage - Main Section				Northern Frontage - Bracklesham Road			
Phased Scheme of Refurbished and New Walls				Inland Line - Phased Scheme of Embankments			
	pv Cost	Cash Cost	SOD		pv Cost	Cash Cost	SOD
Authority Costs	£135,390	£140,000	£140,000	Authority Costs	£16,000	£16,000	£16,000
Fees	£464,458	£469,600	£469,600	Fees	£60,000	£60,000	£60,000
Investigations	£88,714	£90,000	£90,000	Investigations	£10,000	£10,000	£10,000
Construction	£2,069,992	£2,095,704	£2,095,704	Construction	£93,351	£100,000	£100,000
Compensation	£87,144	£100,000	£100,000	Compensation	£30,000	£30,000	£30,000
Contingency	£308,232	£336,000	£336,000	Contingency	£129,600	£129,600	£129,600
Inflation @ 5%	£0	£0	£110,700	Inflation @ 5%	£0	£0	£21,600
Future Costs				Future Costs			
Future Costs (upgrade and maint)	£2,328,223	£6,930,800	£0	Future Costs (upgrade and maint)	£269,626	£600,000	£0
Future Contingency	£1,236,942	£3,588,480	£0	Future Contingency	£161,776	£360,000	£0
<b>Total</b>	<b>£6,719,095</b>	<b>£13,750,584</b>	<b>£3,334,291</b>	<b>Total</b>	<b>£770,353</b>	<b>£1,305,600</b>	<b>£367,200</b>

#### Addendum Table 4 Section Summaries

#### APPENDIX 4 : SUMMARY COSTS

<b>Eastoke Strategy Total Costs</b>			
<b>£000's</b>	<b>Economic Appraisal</b>	<b>Whole Life</b>	<b>SoD Approval</b>
Costs pre SAR			£200
Costs post SAR			
Agency / HBC costs	£365	£386	£386
Fees	£717	£727	£727
Investigations	£167	£170	£170
Construction	£5,045	£5,199	£5,199
Compensation	£147	£160	£160
Contingency	£1,924	£1,995	£1,995
Inflation (at 5%)			£380
Future Costs	£7,605	£24,987	
Future Contingency	£3,069	£10,485	
<b>Total</b>	<b>£19,038</b>	<b>£44,109</b>	<b>£9,217</b>

<b>Havant Borough Council Costs</b>			
<b>£000's</b>	<b>Economic Appraisal</b>	<b>Whole Life</b>	<b>SoD Approval</b>
Costs pre SAR			£100
Costs post SAR			
HBC Costs	£214	£230	£230
Fees	£192	£198	£198
Investigations	£69	£70	£70
Construction	£2,881	£3,004	£3,004
Compensation	£30	£30	£30
Contingency	£1,486	£1,530	£1,530
Inflation (at 5%)			£247
Future Costs	£5,007	£17,456	
Future Contingency	£1,670	£6,536	
<b>Total</b>	<b>£11,549</b>	<b>£29,053</b>	<b>£5,408</b>

<b>Environment Agency Costs</b>			
<b>£000's</b>	<b>Economic Appraisal</b>	<b>Whole Life</b>	<b>SoD Approval</b>
Costs pre SAR			£100
Costs post SAR			
Agency Costs	£151	£156	£156
Fees	£524	£530	£530
Investigations	£99	£100	£100
Construction	£2,163	£2,196	£2,196
Compensation	£117	£130	£130
Contingency	£438	£466	£466
Inflation (at 5%)			£132
Future Costs	£2,598	£7,531	
Future Contingency	£1,399	£3,948	
<b>Total</b>	<b>£7,489</b>	<b>£15,056</b>	<b>£3,809</b>

#### Addendum Table 5 Summary Costs

**FCDPAG3 - ECONOMIC APPRAISAL SPREADSHEET  
SELECTION OF PREFERRED OPTION**

<b>EASTOKE PENINSULA - STRATEGY</b>		<b>Do Nothing</b>	<b>Do Minimum</b>	<b>Option 1</b>	<b>Option 2</b>
	Southern - Main	Discontinue BM	Continue BM and occasional recharge	BMP	BMP, Major works in 2007-08
	Southern - Eastoke	Discontinue BM	Continue BM and occasional recharge	Either Additional Revet / Groynes or BM or Retreated Line	Either Additional Revet / Groynes or BM or Retreated Line
	Northern - Bracklesham	No works	Sand Bags as required	Do Nothing	Inland Line: Phased defences
	Northern - Main	No works (pre 2004)	Maintain (pre 2004) defences	Hold the line	Hold the Line
SoP	Initial	10 to 20	20	20	>100
	In 50 years	0	0	0	100
	In 100 years	0	0	0	100
PV Costs (PVc)	Southern - Main	£0k	£8,180k	£8,867k	£8,867k
	Southern - Eastoke	£0k	£923k	£2,681k	£2,681k
	Northern - Bracklesham	£0k	£242k	£0k	£770k
	Northern - Main	£0k	£3,976k	£6,719k	£6,719k
			<b>£13,321k</b>	<b>£18,267k</b>	<b>£19,037k</b>
PV Damages PVd	Southern	£24,472k	£11,500k	£5,769k	£2,556k
	Northern	£55,661k	£35,925k	£7,681k	£1,363k
		£80,133k	<b>£47,425k</b>	<b>£13,450k</b>	<b>£3,919k</b>
PV Damage Avoided			<b>£32,708k</b>	<b>£66,683k</b>	<b>£76,214k</b>
PV Assets Pva	Southern Only	£56,826k	£4,954k	£4,954k	£4,954k
PV Asset Protection			<b>£51,872k</b>	<b>£51,872k</b>	<b>£51,872k</b>
Total PV Benefits (PVb)			<b>£84,580k</b>	<b>£118,555k</b>	<b>£128,086k</b>
Net Present Value			<b>£71,259k</b>	<b>£100,288k</b>	<b>£109,049k</b>
BCR			6.35	6.49	6.73
IBCR				6.87	12.38

**Addendum Table 6 Selection of Preferred Option**

FCDPAG3 - ECONOMIC APPRAISAL SPREADSHEET  
SELECTION OF MOST BENEFICIAL SOP FOR SOUTHERN FRONTAGE PREFERRED OPTION

SOUTHERN FRONTAGE ONLY PREFERRED SOP							
	Do Nothing	Do Minimum	1 in 50 years	1 in 100 years	1 in 200 years	1 in 300 years	
				Major Works in 2007-08	Major Works in 2007-08	Major Works in 2007-08	
	Southern - Main	Discontinue BM	Limited BMP	BMP	BMP	BMP	
	Southern - Eastoke	Discontinue BM	Continue with BMP occ. Repairs	Either Additional Revet / Groynes or BM or Retreated Line	Either Additional Revet / Groynes or BM or Retreated Line	Either Additional Revet / Groynes or BM or Retreated Line	
PV Costs (PVc)	Southern - Main	£0k	£8,180k	£8,670k	£8,663k	£8,867k	£9,474k
	Southern - Eastoke	£0k	£923k	£2,578k	£2,620k	£2,681k	£2,865k
	Northern - Bracklesham						
	Northern - Main						
	<b>Total PV Costs</b>		<b>£9,103k</b>	<b>£11,248k</b>	<b>£11,283k</b>	<b>£11,549k</b>	<b>£12,339k</b>
PV Damages PVd	Southern	£24,472k	£11,500k	£4,426k	£3,735k	£2,556k	£920k
	Northern						
		<b>£24,472k</b>	<b>£11,500k</b>	<b>£4,426k</b>	<b>£3,735k</b>	<b>£2,556k</b>	<b>£920k</b>
PV Damage Avoided			<b>£12,972k</b>	<b>£20,046k</b>	<b>£20,737k</b>	<b>£21,916k</b>	<b>£23,552k</b>
PV Assets Pva	Southern Only	£56,826k	£4,954k	£4,954k	£4,954k	£4,954k	£4,954k
PV Asset Protection			<b>£51,872k</b>	<b>£51,872k</b>	<b>£51,872k</b>	<b>£51,872k</b>	<b>£51,872k</b>
<b>Total PV Benefits (PVb)</b>			<b>£64,844k</b>	<b>£71,918k</b>	<b>£72,609k</b>	<b>£73,788k</b>	<b>£75,424k</b>
Net Present Value			<b>£55,741k</b>	<b>£60,670k</b>	<b>£61,326k</b>	<b>£62,239k</b>	<b>£63,085k</b>
BCR			7.12	6.39	6.44	6.39	6.11
IBCR				3.30	20.06	4.43	2.07
PV Cost Adjustments based on previous assessment of SoP cost variations							
PV Costs in previous report (December 2004)		0	n/a	11107	11285	11551	12341
%age of 1 in 200 year Cost		0.0%	n/a	96.2%	97.7%	100.0%	106.8%

**Addendum Table 7 Southern Frontage - Selection of Preferred Standard of Protection**

**FCDPAG3 - ECONOMIC APPRAISAL SPREADSHEET  
SELECTION OF MOST BENEFICIAL SOP FOR NORTHERN FRONTAGE PREFERRED OPTION**

<b>NORTHERN FRONTAGE ONLY PREFERRED SOP</b>		<b>Do Nothing</b>	<b>Do Minimum</b>	<b>1 in 50 years</b>	<b>1 in 100 years</b>	<b>1 in 200 years</b>
	Northern - Bracklesham	Do Nothing	Sand Bags as required	Inland Line: Phased defences	Inland Line: Phased defences	Inland Line: Phased defences
	Northern - Main	Do Nothing	Maintain (pre 2004) defences	Hold the Line	Hold the Line	Hold the Line
PV Costs (PVc)	Southern - Main					
	Southern - Eastoke					
	Northern - Bracklesham	£0k	£404k	£711k	£770k	£886k
	Northern - Main	£0k	£3,525k	£6,208k	£6,719k	£7,735k
	<b>Total PV Costs</b>	<b>£0k</b>	<b>£3,929k</b>	<b>£6,919k</b>	<b>£7,489k</b>	<b>£8,621k</b>
PV Damages PVd	Southern					
	Northern	£55,661k	£35,925k	£2,344k	£1,363k	£636k
		<b>£55,661k</b>	<b>£35,925k</b>	<b>£2,344k</b>	<b>£1,363k</b>	<b>£636k</b>
PV Damage Avoided		<b>£0k</b>	<b>£19,736k</b>	<b>£53,317k</b>	<b>£54,298k</b>	<b>£55,025k</b>
PV Assets Pva	Southern Only					
PV Asset Protection						
<b>Total PV Benefits (PVb)</b>		<b>£0k</b>	<b>£19,736k</b>	<b>£53,317k</b>	<b>£54,298k</b>	<b>£55,025k</b>
<b>Net Present Value</b>		<b>£0k</b>	<b>£15,807k</b>	<b>£46,398k</b>	<b>£46,809k</b>	<b>£46,404k</b>
BCR			5.02	7.71	7.25	6.38
IBCR				11.23	1.72	0.64
PV Cost Adjustments based on previous assessment of SoP cost variations						
	PV Costs in previous report (December 2004)	0	3454	6083	6584	7579
	%age of 1 in 200 year Cost	0.0%	52.5%	92.4%	100.0%	115.1%

**Addendum Table 8 Northern Frontage - Selection of Preferred Standard of Protection**

FCDPAG3 - ECONOMIC APPRAISAL SPREADSHEET  
 SENSITIVITY TESTS CONSTRUCTION IN 2007-08

SENSITIVITY TESTS		Do Nothing (Reduced Extreme W/Ls)	Preferred Option	Do Nothing (Price Date and property values May 2006)	Preferred Option
PV Costs (PVc)	Southern - Main	£0k	£8,617k	£0k	£9,275k
	Southern - Eastoke	£0k	£2,681k	£0k	£2,758k
	Northern - Brackley	£0k	£770k	£0k	£792k
	Northern - Main	£0k	£5,969k	£0k	£6,911k
			<b>£18,037k</b>		<b>£19,736k</b>
PV Damages PVd	Southern	£23,969k	£2,484k	£26,153k	£2,696k
	Northern	£48,156k	£1,363k	£61,423k	£1,445k
		£72,125k	<b>£3,847k</b>	£87,576k	<b>£4,141k</b>
		<b>£68,278k</b>		<b>£83,435k</b>	
PV Damage Avoided					
PV Assets Pva	Southern Only	£57,133k	£4,984k	£63,978k	£5,544k
PV Asset Protection			<b>£52,149k</b>		<b>£58,434k</b>
Total PV Benefits (PVb)			<b>£120,427k</b>		<b>£141,869k</b>
Net Present Value			<b>£102,390k</b>		<b>£122,133k</b>
BCR			<b>6.68</b>		<b>7.19</b>
Priority Score			21.6		22.0

SENSITIVITY TESTS

SENSITIVITY TESTS		Do Nothing	Preferred Option (Construction 2007- 08)	Do Nothing	Preferred Option (Construction 2008- 09)	Do Nothing	Preferred Option (Construction 2011-12)	Do Nothing	Preferred Option (Construction 2011- 12), but costs from 2005
PV Costs (PVc)	Southern - Main	£0k	£8,867k	£0k	£8,787k	£0k	£8,094k	£0k	£8,867k
	Southern - Eastoke	£0k	£2,681k	£0k	£2,681k	£0k	£2,681k	£0k	£2,681k
	Northern - Brackley	£0k	£770k	£0k	£767k	£0k	£758k	£0k	£770k
	Northern - Main	£0k	£6,719k	£0k	£6,719k	£0k	£6,719k	£0k	£6,719k
			<b>£19,038k</b>		<b>£18,955k</b>		<b>£18,252k</b>		<b>£19,038k</b>
PV Damages PVd	Southern	£24,472k	£2,556k	£24,472k	£3,049k	£24,472k	£4,513k	£24,472k	£4,513k
	Northern	£55,661k	£1,363k	£55,661k	£1,363k	£55,661k	£1,363k	£55,661k	£1,363k
		£80,133k	<b>£3,919k</b>	£80,133k	<b>£4,412k</b>	£80,133k	<b>£5,876k</b>	£80,133k	<b>£5,876k</b>
		<b>£76,214k</b>		<b>£75,721k</b>		<b>£74,257k</b>		<b>£74,257k</b>	
PV Damage Avoided									
PV Assets Pva	Southern Only	£56,826k	£4,954k	£56,826k	£4,954k	£56,826k	£4,954k	£56,826k	£4,954k
PV Asset Protection			<b>£51,872k</b>		<b>£51,872k</b>		<b>£51,872k</b>		<b>£51,872k</b>
Total PV Benefits (PVb)			<b>£128,086k</b>		<b>£127,593k</b>		<b>£126,129k</b>		<b>£126,129k</b>
Net Present Value			<b>£109,048k</b>		<b>£108,638k</b>		<b>£107,877k</b>		<b>£107,091k</b>
BCR			<b>6.73</b>		<b>6.73</b>		<b>6.91</b>		<b>6.63</b>
Priority Score			21.3		21.3		21.9		21.1

Addendum Table 9 Sensitivity Testing