# Isle of Grain to South Foreland Shoreline Management Plan (SMP) Review

## Appendix H – Economic and Sensitivity Testing

# Contents Amendment Record

This report has been issued and amended as follows:

| Issue | Revision | Description | Date | Approved by |
|---|---|---|---|---|
| 1 | 0 | Consultation Draft | 01.05.07 | S McFarland |
| | 1 | Amendments following public consultation | 11.03.08 | N Pontee |
| | 2 | Amendments following QRG review | 08.07.09 | N Pontee |
| | 3 | Amendments following 2nd QRG Review | 26.02.10 | T Edwards<br>N Pontee |
| | 4 | Amendments following 3rd QRG Review | 27.04.10 | T Edwards |

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# Appendix H: Economic Appraisal and Sensitivity Testing

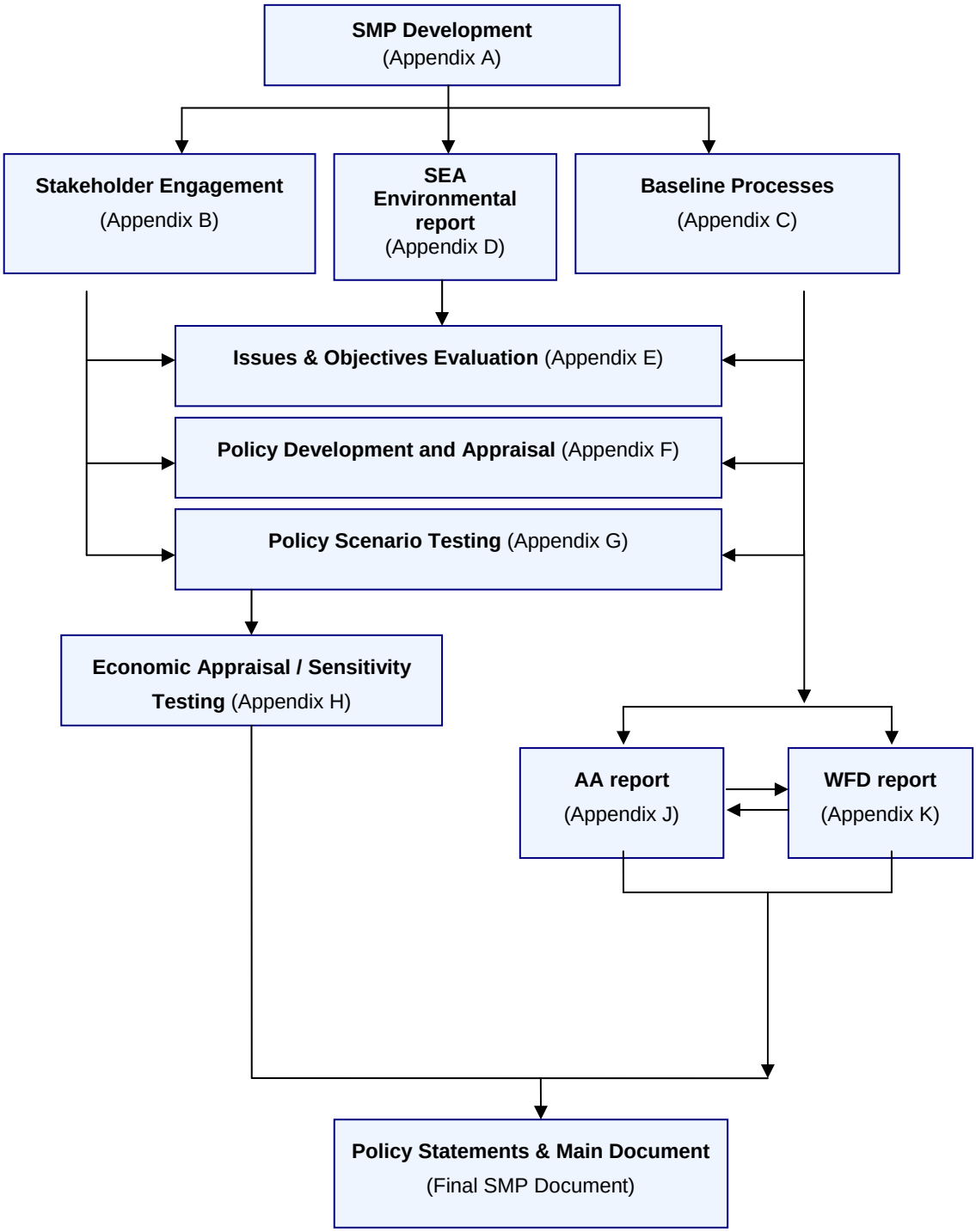
## Contents by Policy Unit

**The Supporting Appendices**

This appendix and the accompanying documents provide all of the information required to support the Shoreline Management Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable. The appendices are:

| | |
|---|---|
| A: SMP Development | This reports the history of development of the SMP, describing more fully the plan and policy decision-making process. |
| B: Stakeholder Engagement | All communications from the stakeholder process are provided here, together with information arising from the consultation process. |
| C: Baseline Process Understanding | Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments. |
| D: SEA Environmental Report (Theme Review) | This report identifies and evaluates the environmental features (natural environment, landscape character, historic environment, land use, infrastructure and material assets, and population and human health). |
| E: Issues & Objective Evaluation | Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance. |
| F: Initial Policy Appraisal & Scenario Development | Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. |
| G: Scenario Testing | Presents the policy assessment and appraisal of objective achievement towards definition of the Preferred Plan (as presented in the Shoreline Management Plan document). |
| H: Economic Appraisal and Sensitivity Testing | Presents the economic analysis undertaken in support of the Preferred Plan. |
| I: Metadatabase and Bibliographic database | All supporting information used to develop the SMP is referenced for future examination and retrieval. |
| J: Appropriate Assessment | Presents an assessment of the effect the plan will have on European sites. |
| K: Retrospective WFD Assessment | Presents a retrospective Water Framework Directive Assessment. |

Within each appendix cross-referencing highlights the documents where related appraisals are presented. The broad relationships between the appendices are as below.



# H1 Introduction

A review of economic viability has been carried out for the **Preferred Plan** and its associated policies.

It should be noted that this review is not to establish the economic justification for a scheme as defined by Defra's Flood and Coastal Defence Project Appraisal Guidance Note 3: Economic Appraisal (FCDPAG3)). The review makes a broad assessment of the economic robustness of the preferred policies. The economic review therefore determines whether or not each policy is:

- Clearly economically viable;
- Clearly not economically viable; or,
- Of marginal viability (and therefore may be in need of more detailed assessment at a later date, e.g. as part of a strategic plan, although some commentary on this is provided within this report).

It must be recognised that the justification for a particular policy is not necessarily dependant on economic viability alone, as impacts on other benefits may be considered more important (e.g. holding existing defences to sustain a designated habitat). Any policies where this is the case may not be considered economically efficient under current Treasury guidance.

The following sections detail how the economic assessment has been undertaken. This is followed by a series of economic statements for each policy unit, and spreadsheets providing the numerical analysis performed as part of the SMP.

# H2 Use of existing information

The following data sets were consulted to obtain information:

| | |
|---|---|
| National Property Dataset | Property locations |
| Up-My-Street | Property prices |
| Defra | Agricultural land values |
| Procedural Guidance | Defence Costs |
| Futurecoast | Erosion rates |
| Environment Agency | Indicative flood maps |

# H3 Generation of new data

Where there is no existing information that can be used directly to confirm robustness of the SMP policy, new economic data has been derived through application of the Modelling and Decision Support Framework (MDSF) tool (which consists of a customised GIS (ESRI ArcView) and a data management toolkit). This 'Broad-scale Economic Review', described below, uses nationally available information on property locations and values, and the risk maps developed through the assessment of shoreline interactions and responses (see Appendix C: Baseline Process Understanding).

## H3.1 Determining damages and benefits

The benefits are the damages averted or deferred by the Preferred Plan, i.e. the difference in losses between implementing this and the No Active Intervention (NAI) scenario. The damages have been calculated at the time they occur in the NAI scenario and summed over the 100 period of the plan to arrive at the total benefit. The preferred plan costs and damages have been calculated for each epoch as well as being summed over the 100 year period. This allows the economics of any policy changes over the three epochs to be assessed and for the financial argument to be provided to guide the decision making process through the epochs.

Although policy appraisal has determined a 'zone' of likely future erosion, for the purposes of estimating possible benefits, only the most landward extent of the likely erosion (for each period: 0-20, 20-50 and 50-100 years) has been used in the present analysis. These lines have been mapped and overlain with the property location/value data to calculate potential economic losses and economic benefits for the NAI scenario and the Preferred Plan scenario. It should be noted that average erosion rates used for this SMP are estimates (see Appendix C). As such, erosion losses calculated by MDSF are indicative and should be used accordingly.

In areas where there is a flooding risk, no attempt has been made to undertake detailed flood risk modelling; rather areas identified as at flooding risk by the Environment Agency's flood mapping have been used to identify assets potentially at risk. The potential damages in these areas are simply taken as the summed value of all the 'at risk' assets. This is based on the assumption that under a NAI scenario flood defences would fail and all at risk assets would be inundated and become uninhabitable. This is taken as an indicative figure for the assets potentially protected by defence structures.

In calculating damages and benefits for the preferred scenario, no account has been taken of the potential for short-term accelerated or delayed losses compared to NAI, other than the total adjustment in shoreline position at the end of each epoch.

The SMP does not take account of standards of protection as it is only defence management policy that is being determined. Standards of protection relate to implementation of these policies which is usually undertaken within more detailed 'strategy' level studies.

### H3.1.1 Benefit values

For properties, losses and benefits have been calculated only on the basis of residential and commercial property values. Other assets, such as utilities, highways, and intangibles, such as recreation, Losses and Benefits have been calculated using MDSF. This was populated with data from a national property database. The database is built from the Ordnance Survey Address Point dataset and the Valuation Office Focus database. Address Point identifies the location of all existing properties. The Focus database then identifies which are non-residential (i.e. commercial/industrial) and provides a rateable value from which an approximate capital value is obtained, by applying a conversion factor. The remaining properties are assumed to be residential and current average residential property prices are obtained from www.upmystreet.co.uk, which provides property price statistics by postcode.

Using the 20, 50 and 100 year erosion contours, MDSF has been used to calculate the Capital Value (CV) and discounted Present Value (PV).

For the flood risk areas, GIS has been used to simply sum the CV for all built assets within the flood area, using the property database.

Impacts upon the local economy or environment have not been valued or included. Exclusion of these factors will robustly confirm economic viability, as these would provide added value.

### H3.1.2 Generation of new defence cost information

Future coastal defence management approaches for each Policy Unit have been developed as part of the Preferred Plan. From this, the broad replacement and maintenance requirements for each epoch have been determined.

Where there is no existing information relating to future defence costs for an area, e.g. from a strategy plan or scheme design, costs have been generated using other nationally available information.

#### (a) Cost Rates

Replacement costs for general defence types have been taken from the revised Shoreline Management Plan Guidance[1]. This suggests average replacement costs for linear structures (e.g. revetments, seawalls) as £2.7million/km and costs for beach management schemes at £5.1million/km. Replacement costs for Groynes, embankments and other ''low cost'' defence types are taken as £0.6million/km.

Maintenance costs have been taken from the Defra National Appraisal of Defence Needs And Costs (NADNAC) study[2]. This used annual maintenance costs for linear structures and for groyne fields at £10,000/km, and for beach schemes £20,000/km.

[1] *Defra, 2006. Flood and Coastal Defence Appraisal Guidance, FCDPAG3 Economic Appraisal, Supplementary Note to Operating Authorities – Climate Change Impacts, October 2006.*

**(b) Cost Calculations**

It has been assumed that the timing of full scheme reconstruction required (i.e. design life) is at least once every 100 years for linear defences, such as seawalls and revetments; every 50 years for beach schemes; and every 30 years for groynes and embankments. However, these periods may become more frequent for areas where erosion potential is high. Maintenance has been assumed to be the same rate every year throughout the life of the scheme. In reality, this will be less in the early years and will increase in later years of the scheme's life. However, for the broad brush appraisal undertaken for the SMP this will make no difference to decisions.

Allowance has also been made for the increase in costs due to climate change, based upon factors developed for the NADNAC study[3]. This takes account of the need to make structures higher, deeper, and more resilient to increased exposure. The assumptions were: no cost increase for the 0-20 year epoch; costs factored up by 1.5 times present day rates for the 20-50 year epoch; and costs factored up by 2.0 times the present day rates for the 50-100 year epoch.

Optimism bias in accordance with most recent Defra guidelines was finally applied to all costs (at 60%) to reflect uncertainty in broad level analysis at the SMP scale.

### H3.1.3 Methodology for calculating agricultural land prices

Agricultural land values were calculated from land prices obtained from Defra (2006) Agricultural land sales and prices in England, Quarter End 31st December, 2006. For each agricultural grade a unique value (£ per Ha) has been assigned according to Table 1.

| | Predominant Grade of Land | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 and 2 | | | 3 | | | 4 and 5 | | | Not graded | | | All Grades | | |
| Year | Number of sales | Area Sold (Ha) | Average Price (£ per Ha) | Number of sales | Area Sold (Ha) | Average Price (£ per) | Number of sales | Area Sold (Ha) | Average Price (£ per) | Number of sales | Area sold (Ha) | Average Price (£ per) | Number of sales | Area sold (Ha) | Average Price (£ per Ha) |
| 1993 | 399 | 14,470 | 3,617 | 1,723 | 51,517 | 3,927 | 747 | 10,146 | 3,654 | 93 | 2,475 | 2,539 | 2,689 | 78,607 | 3,791 |
| 1994 | 370 | 13,104 | 4,614 | 7,850 | 57,954 | 4,429 | 506 | 13,333 | 3,211 | 85 | 2,185 | 2,832 | 2,811 | 86,576 | 4,229 |
| 1995 | 425 | 16,778 | 5,144 | 1,862 | 53,329 | 5,473 | 462 | 17,930 | 2,677 | 113 | 3,335 | 3,397 | 2,862 | 91,371 | 4,788 |
| 1996 | 585 | 21,679 | 6,798 | 2,236 | 66,742 | 6,396 | 485 | 14,410 | 3,700 | 119 | 2,912 | 4,474 | 3,425 | 105,743 | 6,058 |
| 1997 | 552 | 19,131 | 7,348 | 2,881 | 80,883 | 7,217 | 592 | 20,160 | 3,135 | 162 | 4,666 | 3,738 | 4,187 | 124,840 | 6,448 |
| 1998 | 488 | 15,016 | 6,974 | 2,340 | 69,356 | 6,569 | 545 | 15,653 | 4,066 | 125 | 3,777 | 3,384 | 3,498 | 103,802 | 6,134 |
| 1999 | 489 | 16,319 | 7,354 | 2,384 | 58,566 | 7,313 | 483 | 13,384 | 4,043 | 81 | 3,266 | 2,576 | 3,437 | 91,534 | 6,673 |
| 2000 | 462 | 12,365 | 6,948 | 2,189 | 52,587 | 7,589 | 489 | 11,854 | 5,266 | 87 | 1,696 | 5,029 | 3,227 | 78,502 | 7,082 |
| 2001 | 391 | 13,313 | 7,072 | 1,794 | 43,832 | 7,904 | 354 | 7,132 | 5,297 | 64 | 1,105 | 5,271 | 2,603 | 65,383 | 7,406 |
| 2002† | 397 | 12,524 | 6,696 | 2,067 | 50,444 | 7,610 | 477 | 11,642 | 4,848 | 88 | 2,877 | 4,158 | 3,029 | 77,487 | 6,915 |
| 2003† | 315 | 11,036 | 7,043 | 1,700 | 40,346 | 7,659 | 375 | 11,093 | 6,143 | 69 | 2,387 | 4,325 | 2,459 | 64,861 | 7,172 |
| 2004† | 205 | 6,275 | 7,256 | 1,077 | 23,713 | 8,289 | 244 | 5,973 | 6,572 | 44 | 1,674 | 4,016 | 1,570 | 37,634 | 7,654 |

† denotes provisional estimates

Number of sales and area sold will increase as additional transactions are included

*Table 1 Agricultural Land Sales in England, by Class (Defra, 2006)*

Defra, 2006 also assigns a unique value (£ per Ha) for agricultural land in the south east of England as shown in Table 2.

| Year | South East | | | South West | | | England | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of Sales | Area Sold (Ha) | Average Price (£ per Ha) | Number of sales | Area Sold (Ha) | Average Price (£ per Ha) | Number of Sales | Area Sold (Ha) | Average Price (£ per Ha) |
| *1993* | *383* | *10,399* | *4,576* | *627* | *14,662* | *3,689* | *2,689* | *78,607* | *3,791* |
| *1994* | *457* | *13,843* | *4,908* | *559* | *13,196* | *4,115* | *2,811* | *86,576* | *4,229* |
| *1995* | *391* | *10,803* | *5,947* | *621* | *14,791* | *4,889* | *2,862* | *91,371* | *4,788* |
| *1996* | *506* | *13,412* | *6,845* | *693* | *16,089* | *6,.067* | *3,425* | *105,743* | *6,058* |
| *1997* | *524* | *13,973* | *7,866* | *1,019* | *24,102* | *7,158* | *4,158* | *124,840* | *6,448* |
| *1998* | *426* | *10,031* | *8,277* | *856* | *18,927* | *6,775* | *3,498* | *103,802* | *6,134* |
| *1999* | *382* | *9,899* | *7,880* | *890* | *20,817* | *6,912* | *3,437* | *91,534* | *6,673* |
| *2000* | *321* | *8,183* | *8,584* | *922* | *18,930* | *7,870* | *3,227* | *78,502* | *7,082* |
| *2001* | *298* | *7,370* | *8,190* | *695* | *14,422* | *9,241* | *2,603* | *65,383* | *7,406* |
| *2002†* | *301* | *7,469* | *9,082* | *738* | *14,897* | *7,954* | *3,029* | *77,487* | *6,915* |
| *2003†* | *289* | *7,482* | *9,285* | *669* | *13,889* | *8,944* | *2,459* | *64,861* | *7,172* |
| *2004†* | *123* | *3,469* | *9,999* | *454* | *9,757* | *8,605* | *1,570* | *37,634* | *7,654* |

*Table 2 Agricultural Land Sales in England, by Government Office Region (Defra, 2006).*

Therefore a combination of these two values was used to determine the average value of Grades 1, 2, 3, 4 and no grade, in the south-east of England. For example:

Average cost land in England = £7654 / ha

Average cost of land in SE England = £9999 / ha

Therefore land in SE England is 31% more expensive than average England land prices.

As these figures are 2004 figures, inflation was added to bring the figures up to date (2007). The Bank of England inflation rates were checked and 3%, per year for 2005, 2006 and 2007.

In accordance with the guidance in the MCM (2005), the values of land are multiplied by a factor of 0.65 to remove the cost of subsidies. Table 3 below illustrates the results:

| Grade | Ave price per hectare (£ per Ha) 2004 | Average price per Ha for south-east England 2004 | Price per Ha multiplied by 0.65 to remove cost of subsidies | Price per Ha updated to 2007 base date (3% pa) (3 per ha) |
|---|---|---|---|---|
| 1 & 2 | 7256 | 9479 | 6161 | **6733** |
| 3 | 8289 | 10829 | 7039 | **7691** |
| 4 & 5 | 6572 | 8586 | 5581 | **6098** |
| no grade | 4016 | 5246 | 3410 | **3726** |

Table 3 *Land values used to calculate 'financial loss' (Note: The figures in the end column were be used to assign values in the economic assessment, to agricultural land losses due to flooding and erosion.)*

## H3.2 Comparison of costs and benefits

As this review is not a full economic assessment, a formal benefit-cost assessment using benefit-cost ratios (BCR) has not been conducted; rather, the information available has been used to review the robustness of the preferred plan.

In comparing likely benefits and likely costs for the policies for an individual location, over the full 100 year period, it is however still useful in some instances to be able to consider these in terms of Present Value (PV).

Present Value is the value of a stream of benefits or costs when discounted back to the present day. For this SMP, the discount factors used are the latest provided by Defra for assessment of schemes, i.e. 3.5% for years 0-30, 3.0% for years 31-75, and 2.5% thereafter.

For calculation of PV damages/damages, the approximate timing of property losses has been determined using MDSF and corresponding discount factors applied accordingly. For calculation of PV costs for defence replacement, the average discount factor for each epoch has been used, the actual timing of works being uncertain at present. The year-on-year maintenance PV costs have been calculated using the total of the discount rates for that epoch.*

The figures generated for this SMP are presented only as CVs in Section H4, reflecting the 'broad-scale' nature of the assessments undertaken. However, for further information, the PV of these figures are presented in Annex H1 (for erosion benefits/damages) and H2 (for costs).

# H4 Economic appraisal summary table

The Tables below provides a summary of the economic review of the preferred plan for each Policy Unit; it outlines any information used in this review, including benefits and costs, together with a statement on economic robustness.

Table H4 Preferred Plan Economic Summary Table

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | **Damages and Benefits[4] Capital Value (CV)** | **Assumed Defence Works & Costs Capital Value (CV)** | |
| **Allhallows-on-Sea to Grain**<br><br>**4a01** | HTL | MR | MR | ***NAI Damages:***<br>NAI could result in the inundation of the Isle of Grain flood risk area (including Grain Power Station, Thamesport Container Terminal).<br>NAI (CV) Damages 2105: **£158.37m** (properties)<br><br>Agricultural land loss:<br>Grade 1: 5.5ha<br>Grade 2: 3.7ha<br>Grade 4: 102.7ha<br>= Capital value of agricultural land loss is c. **£0.7m.**<br><br>**Total NAI damages (CV) £159m** | The maintenance and replacement of existing and realignment defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.33m<br>By year 2055: £6.6m<br>By year 2105: £16.5m<br><br>(These include Optimism Bias and Climate Change allowance)<br><br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated for the inundation of a discrete area seaward of the defence line at All Hallows | The value of assets at risk indicates that the policy is economically viable<br><br>(£24.4m preferred plan costs and £1.8m preferred plan damages versus £159m NAI damages) |

[4] *The indicative and maximum extents of the indicative erosion zones were used in MDSF calculations.*

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | Additionally, nationally important infrastructure, e.g. the A228 road, railway line and pylons could also be inundated (however the value of these has not been included in the present assessment).<br><br>***Preferred Plan Damages:***<br>By year 2105: £1.61m (properties)<br>£0.19m (agriculture)<br>31 hectares<br>**Total preferred plan damages (CV): £1.8m** | Marsh. | |
| **Garrison Point to Minster (west – chalet park)**<br><br>**4a02** | HTL | HTL | HTL | ***NAI Damages:***<br>NAI could result in the inundation of Sheerness Docks, Sheerness town and surrounding marshes.<br>NAI (CV) Damages 2105: **£1273.15m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 5.4ha<br>Grade 4: 51.2ha<br>Grade 5: 1.3ha<br>= Capital value of agricultural land loss is c. **£0.4m.**<br><br>**Total NAI damages (CV) £1274m**<br><br>Additionally, regionally important infrastructure, e.g. the A249 and A250 roads, railway line and pylons could also be inundated (however the value of these has | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £3.40m<br>By year 2055: £58.65m<br>By year 2105: £67.15m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the hold the line policy is economically viable<br><br>(£129.2m preferred plan costs against £1274m NAI damages). |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | not been included in the present assessment).<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible | | |
| **Minster Town (chalet park to Royal Oak Pub)**<br><br>**4a03** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £23.26m (properties)<br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.30m<br>By year 2055: £22.43m<br>By year 2105: £25.68m<br><br>(These include Optimism Bias and Climate Change allowance) | HTL along this frontage does not appear to be economically preferable when evaluating preferred plan costs against NAI damages.<br>A NAI policy is however, considered inappropriate as unconstrained erosion in this location would include land-sliding, which could initiate the development of a flood corridor to the adjacent flood risk area of Sheerness.<br>The NAI figures presented do not include for losses associated with flooding to Sheerness and its associated flood risk zone or to infrastructure. It is considered that a fuller economic evaluation of these potential benefits would therefore be appropriate to further justify a policy of HTL.<br><br>(£49.41m preferred plan costs against £23.26m NAI property damages). |
| **Minster Slopes**<br><br>**4a04** | NAI | NAI | NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £3.77m (properties)<br><br>***Preferred Plan Damages:***<br>By year 2025: £0m | ***Preferred Plan Costs:***<br>By year 2025: £0 (NAI)<br>By year 2055: £0 (NAI)<br>By year 2105: £0 (NAI) | A NAI policy is appropriate as no other option would be economically viable. |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | By year 2105: £3.77m (properties) | | |
| **Warden Point to Leysdown-on-Sea**<br><br>**4a05** | HTL/MR | HTL/MR | HTL/MR | ***NAI Damages:***<br>NAI (CV) Damages 2105: **£89.19m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 3.9ha<br>= Capital value of agricultural land loss is c. **£0.03m.**<br><br>**Total NAI damages (CV) £89.2m**<br><br>***Preferred Plan Damages:***<br>By year 2025:£0m<br>By year 2055: £1.89m (properties)<br>By year 2105: £0.95m (properties)<br>£0.01m (agriculture):<br>1.5 hectares<br>Total preferred plan damages (CV): **£2.85m** | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £3.27m<br>By year 2055: £11.97m<br>By year 2105: £66.64m<br><br>(These include Optimism Bias and Climate Change allowance) | Managed Realignment with localised Hold the Line along this frontage appears to be only marginally viable in economic terms. Localised MR has been proposed on technical grounds as providing a more sustainable defence alignment in the future, in an area where standards of protection provided by the beach have reduced.<br>NAI damages have not included infrastructure and therefore a more detailed economic evaluation will be required to assess economic justification before this policy is implemented.<br><br>(£81.88m preferred plan costs and £2.85m preferred plan damages against £89.2m NAI damages). |
| **Leysdown-on-Sea to Shell Ness**<br><br>**4a06** | MR | MR | MR | ***NAI Damages:***<br>NAI could result in large scale inundation of the south Sheppey flood risk area.<br>NAI (CV) Damages 2105: **£3.49m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 5.5ha<br>Grade 4: 123.7ha | The maintenance and replacement of defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.68m<br>By year 2055: £1.01m<br>By year 2105: £7.2m<br><br>(These include Optimism Bias and Climate | There are insufficient assets to justify intervention of any significance along this frontage.<br>However, it appears that there may be economic advantages to provide a set-back defence along this frontage instead of HTL, with added opportunity for habitat creation in realigned areas.<br>As only an indicative realignment extent is shown, there is potential to position the realignment with shorter defence lengths, |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | Grade 5: 13.2ha<br>= Capital value of agricultural land loss is c. **£0.9m.**<br><br>**Total NAI damages (CV) £4.4m**<br><br>***Preferred Plan Damages:***<br>By year 2105: £2.83 (properties)<br>£0.17m (agriculture):<br>27 hectares<br>Total preferred plan damages (CV): **£3m** | Change allowance)<br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated for possible inundation of Harty Marshes, incorporating higher land where possible. | which may be more cost effective. More detailed assessment will therefore be required before this policy is implemented.<br><br>(£9.89m preferred plan costs and £3m damages against £4.4m NAI damages). |
| **Faversham Creek to Sportsman Pub**<br><br>**4a07A** | HTL | MR | MR | ***NAI Damages:***<br>NAI could result in the inundation of the Graveney Marshes and Seasalter Levels flood risk area<br>Faversham Creek to Whitstable Harbour Strategy 2004<br>NAI (PV) losses at Graveney of:<br>Total = £94.3m<br>(based on 100 year appraisal, current discount rates)<br><br>Agricultural land loss:<br>Grade 1: 5.0ha<br>Grade 2: 4.3ha<br>Grade 3: 111.7ha<br>Grade 4: 0.7ha<br>= Capital value of agricultural land loss is c. **£0.9m.**<br><br>***Preferred Plan Damages:*** | The maintenance and replacement of existing and realignment defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.2m<br>By year 2055: £3.6m<br>By year 2105: £9m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable<br><br>(£13.8m preferred plan costs against £94.3m (PV) NAI property damages). |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | By year 2105: £ negligible | | |
| **Sportsman Pub to Seasalter**<br><br>**4a07B** | HTL | HTL | MR | ***NAI Damages:***<br>NAI could result in the inundation of the Graveney Marshes and Seasalter Levels flood risk area.<br>Faversham Creek to Whitstable Harbour Strategy 2004<br>NAI (PV) losses at Graveney of:<br>Total = £94.3m<br>(based on 100 year appraisal, current discount rates)<br><br>Agricultural land loss:<br>Grade 1: 5.0ha<br>Grade 2: 4.3ha<br>Grade 3: 111.7ha<br>Grade 4: 0.7ha<br>= Capital value of agricultural land loss is c. **£0.9m.**<br><br>Additionally, the primary infrastructure, i.e. the regionally important railway line, and pylons, and agricultural businesses would effectively be lost once defence management ceased.<br><br>***Preferred Plan Damages:***<br>By year 2105: £29.07m (properties) | The maintenance and replacement of existing and realignment defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.4m<br>By year 2055: £2.6m<br>By year 2105: £12.8m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable<br><br>Even with a hold the line policy, properties seaward of defences along Faversham Road will be lost as sea levels rise and with increased storminess.<br>(£15.8m preferred plan costs and £29.1m damages against £94.3m (PV) NAI property damages). |
| **Seasalter to Whitstable** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£23.82m (properties) | The maintenance and replacement of existing defences have been costed as: | The value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A HTL policy is the most appropriate |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| **Town**<br><br>**4a08** | | | | Additionally, the primary infrastructure, i.e. the railway line, and local roads would effectively be at risk once defence management ceased. No attempt has been made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | ***Preferred Plan Costs:***<br>By year 2025: £1.90m<br>By year 2055: £32.78m<br>By year 2105: £37.53m<br><br>(These include Optimism Bias and Climate Change allowance) | policy to implement along this frontage, primarily being selected on technical grounds.<br>As the NAI damages presented do not include for losses associated with the railway line, local roads or other infrastructure. It is considered that a fuller economic evaluation of these potential benefits would provide a more robust economic justification for Hold the Line over 100 years.<br><br>(£72.21m preferred plan costs against £23.82m NAI property damages). |
| **Whitstable Town to Whitstable Harbour**<br><br>**4a09** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£636.13m (properties)<br>Additionally, the harbour would effectively be at risk once defence management ceased. No attempt has been made to value this asset.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.90m<br>By year 2055: £15.53m<br>By year 2105: £17.78m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable<br><br>(£34.21m preferred plan costs against £636.13m NAI property damages). |
| **Whitstable Harbour (east) to Swalecliffe**<br><br>**4a10** | HTL | HTL | HTL | ***NAI Damages:***<br>NAI (CV) Damages 2105: **£35.15m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 5.9ha | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £2.20m<br>By year 2055: £37.95m | The value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A HTL policy is the most appropriate policy to implement along this frontage on technical and social grounds.<br>As the NAI damages presented do not |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | Grade 4: 0.4ha<br>Non agricultural: 0.2ha<br>= Capital value of agricultural land loss is c. **£0.05m.**<br><br>**Total NAI damages (CV) £35.2m**<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | By year 2105: £43.45m<br><br>(These include Optimism Bias and Climate Change allowance) | include for losses associated with local roads or other infrastructure. It is considered that a fuller economic evaluation of these potential benefits would provide a more robust economic justification for Hold the Line over 100 years.<br><br>(£83.60m preferred plan costs against £35.2m NAI damages). |
| **Swalecliffe to Herne Bay Breakwater**<br><br>**4a11** | HTL | HTL | HTL | ***NAI Damages:***<br>NAI (CV) Damages 2105: **£235.75m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 3.2ha<br>Grade 4: 0.4ha<br>= Capital value of agricultural land loss is c. **£0.03m.**<br><br>**Total NAI damages (CV) £235.8m**<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £3.60m<br>By year 2055: £11.48m<br>By year 2105: £94.50m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable<br><br>(£109.58m preferred plan costs against £235.8m NAI damages). |
| **Herne Bay Breakwater to** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £96.04m (properties) | The maintenance and replacement of existing defences have been costed as: | The value of assets at risk suggests that a HTL policy is marginally economically preferable. |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| **Bishopstone Manor**<br><br>**4a12** | | | | ***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | ***Preferred Plan Costs:***<br>By year 2025: £2.40m<br>By year 2055: £41.40m<br>By year 2105: £47.40m<br><br>(These include Optimism Bias and Climate Change allowance) | As the NAI damages presented do not include for losses associated with local roads or other infrastructure. It is considered that a fuller economic evaluation of these potential benefits would provide a more robust economic justification for Hold the Line over 100 years.<br><br>(£91.20m preferred plan costs against £96.04m NAI property damages). |
| **Reculver Country Park**<br><br>**4a13** | NAI | NAI | NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£1.68m (properties)<br><br>***Preferred Plan Damages:***<br>By year 2105: £1.68m | ***Preferred Plan Costs:***<br>By year 2025: £0<br>By year 2055: £0<br>By year 2105: £0 | A NAI policy is appropriate as no other option would be economically viable. |
| **Reculver Towers to Minnis Bay**<br><br>**4a14** | HTL | MR | MR | ***NAI Damages:***<br>Reculver to Minnis Bay Scheme Strategy Plan (1998) NAI PV damages:<br>**£94.9m**.<br>This includes 1960ha of agricultural land lost, at a discounted value of £3.9m.<br><br>Additionally, the primary infrastructure, i.e. the sub-regionally important railway line, A229 road and pylons would effectively be lost once defence management ceased. No attempt has been made to value these assets. This section also lies within a floodplain which links to Sandwich Bay. To avoid double counting, associated NAI flood losses were not attributed to this section. | The maintenance and replacement of existing and realignment defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.15m<br>By year 2055: £16.22m<br>By year 2105: £41.37m<br><br>(These include Optimism Bias and Climate Change allowance)<br><br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated | The value of assets at risk suggests that the policy is economically preferable.<br><br>Localised MR has been proposed on technical grounds as providing a more sustainable defence alignment in the future, as well as providing added opportunity for habitat creation in realigned areas.<br><br>As only an indicative realignment extent is shown, there is potential to position the realignment with shorter defence lengths, which may be more cost effective. More detailed assessment will therefore be required before this policy is implemented. |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | ***Preferred Plan Damages:***<br>By year 2105: £1.24m (properties)<br>£0.15m (agriculture):<br>19 hectares<br>Total preferred plan damages (CV): **£1.4m** | for a maximum long-term realignment extent, up to the railway line. | (£58.74m preferred plan costs (CV) and £1.4m preferred plan damages (CV) against £94.9m NAI damages (PV)). |
| **Minnis Bay to Westgate-on-Sea**<br><br>**4a15** | HTL & NAI at Epple Bay | HTL & NAI at Epple Bay | HTL & NAI at Epple Bay | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£0m (properties)<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.70m<br>By year 2055: £15.23m<br>By year 2105: £3.50m<br><br>(These include Optimism Bias and Climate Change allowance) | The negligible value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A localised HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£19.43m preferred plan costs against £0m NAI property damages). |
| **Margate**<br><br>**4a16** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£20.9m (properties)<br>Additionally, the harbour and roads would effectively be at risk once defence management ceased. No attempt has been made to value these assets. | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £4.40m<br>By year 2055: £75.90m<br>By year 2105: £86.90m | The low value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with the |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | ***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | | harbour, local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£167.20m preferred plan costs against £20.9m NAI property damages). |
| **Cliftonville (Fulsam Rock to White Ness)**<br><br>**4a17** | HTL & NAI | HTL & NAI | HTL & NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£0m (properties)<br>Additionally, roads and other infrastructure would effectively be at risk once defence management ceased. No attempt has been made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.75m<br>By year 2055: £16.31m<br>By year 2105: £3.75m<br><br>(These include Optimism Bias and Climate Change allowance) | The negligible value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A localised HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£20.81m preferred plan costs against £0m NAI property damages). |
| **White Ness to Ramsgate**<br><br>**4b18** | HTL & NAI | HTL & NAI | HTL & NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£0m (properties)<br>Additionally, roads and other infrastructure would effectively be at risk once defence management ceased. No attempt has been | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £1.38m<br>By year 2055: £29.91m | The negligible value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A localised HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | By year 2105: £6.88m<br><br>(These include Optimism Bias and Climate Change allowance) | economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£38.17m preferred plan costs against £0m NAI property damages). |
| **Ramsgate Harbour**<br><br>**4b19** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£4.7m (properties)<br>Additionally, the harbour, roads and other infrastructure would effectively be at risk once defence management ceased. No attempt has been made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.20m<br>By year 2055: £4.35m<br>By year 2105: £1.00m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and economic grounds.<br>As the NAI damages presented do not include for losses associated with the harbour, local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£5.55m preferred plan costs against £4.7m NAI property damages). |
| **West Cliff (Western Harbour arm) to north of** | HTL & NAI | HTL & NAI | HTL & NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105:<br>£0m (properties)<br>Additionally, roads, sewage treatment works | ***Preferred Plan Costs:***<br>By year 2025: £1.38m<br>By year 2055: £19.15m<br>By year 2105: £13.80m | The negligible value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A localised HTL policy is however, considered to be |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| **the River Stour**<br><br>**4b20** | | | | and other infrastructure would effectively be at risk / lost once defence management ceased. No attempt has been made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | (These include Optimism Bias and Climate Change allowance) | the most appropriate policy to implement along this frontage on social and economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with local roads, sewage treatment works, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£34.33m preferred plan costs against £0m NAI property damages). |
| **South of the River Stour to Sandwich Bay Estate (north)**<br><br>**4b21** | NAI | NAI | NAI | ***NAI Damages:***<br>Pegwell Bay to Kingsdown Coastal Strategy (2008) NAI PV damages:<br>£0m properties – Shell Ness to Sandwich Bay Estate.<br><br>The CFMP will address the issue of flood risk along the River Stour frontage.<br><br>Agricultural land loss:<br>Grade 1: 88.2ha<br>Grade 2: 176.8ha<br>Grade 3: 251.4ha<br>Grade 4: 52.1ha<br>Grade 5: 32.2ha<br>Non-agricultural: 71.6ha<br>= Capital value of agricultural land loss is c. | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0m<br>By year 2055: £0m<br>By year 2105: £0m | A NAI policy is appropriate as no other option would be economically viable. |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | **£4.5m.**<br><br>***Preferred Plan Damages:***<br>Agricultural land loss:<br>Grade 1: 88.2ha<br>Grade 2: 176.8ha<br>Grade 3: 251.4ha<br>Grade 4: 52.1ha<br>Grade 5: 32.2ha<br>Non-agricultural: 71.6ha<br>= Capital value of agricultural land loss is c. **£4.5m.** | | |
| **Sandwich Bay Estate (north) to Sandown Castle (remains of)**<br><br>**4b22** | HTL | HTL | HTL | ***NAI Damages:***<br>Pegwell Bay to Kingsdown Coastal Strategy (2008) NAI PV damages:<br>£1.6m – Sandwich Bay Estate<br>£383.8m – Sandwich Bay Estate to Deal Castle<br>(based on 100 year appraisal at current discount rates)<br><br>Agricultural land loss:<br>Grade 1: 88.2ha<br>Grade 2: 176.8ha<br>Grade 3: 251.4ha<br>Grade 4: 52.1ha<br>Grade 5: 32.2ha<br>Non-agricultural: 71.6ha<br>= Capital value of agricultural land loss is c. **£4.5m.** | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £2.72m<br>By year 2055: £6.86m<br>By year 2105: £13.65m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable.<br>(£23.23 preferred plan costs (CV) against £389.9m (PV) NAI property damages). |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| | | | | ***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | | |
| **Sandown Castle (remains of) to Oldstairs Bay**<br><br>**4b23** | HTL | HTL | HTL | ***NAI Damages:***<br>Pegwell Bay to Kingsdown Coastal Strategy (2008) NAI PV damages:<br>£383.8m – Sandwich Bay Estate to Deal Castle<br>£0m - Deal Castle to Walmer Castle<br>£34.2m – Walmer Castle, Kingsdown and Oldstairs Bay<br>(based on 100 year appraisal at current discount rates)<br><br>Agricultural land loss:<br>Grade 1: 88.2ha<br>Grade 2: 176.8ha<br>Grade 3: 251.4ha<br>Grade 4: 52.1ha<br>Grade 5: 32.2ha<br>Non-agricultural: 71.6ha<br>= Capital value of agricultural land loss is c. **£4.5m.**<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £2.6m<br>By year 2055: £51.4m<br>By year 2105: £110.4m<br><br>(These include Optimism Bias and Climate Change allowance) | The value of assets at risk indicates that the policy is economically viable.<br>(£164.4m preferred plan costs (CV) against £422.5m (PV) NAI property damages). |

**Table H4: Preferred Plan Economic Summary Table**

| Location | Epoch 1 | Epoch 2 | Epoch 3 | Broad-scale Review (this SMP) | | Conclusion |
|---|---|---|---|---|---|---|
| | | | | Damages and Benefits[4] Capital Value (CV) | Assumed Defence Works & Costs Capital Value (CV) | |
| **Oldstairs Bay to St Margaret's Bay**<br><br>**4b24** | NAI | NAI | NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £0m<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | ***Preferred Plan Costs:***<br>By year 2025: £0m<br>By year 2055: £0m<br>By year 2105: £0m | A NAI policy is appropriate as no other option would be economically viable. |
| **St Margaret's Bay**<br><br>**4b25** | HTL | HTL | HTL | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £0.20m (properties)<br><br>***Preferred Plan Damages:***<br>By year 2025: £ negligible<br>By year 2055: £ negligible<br>By year 2105: £ negligible | The maintenance and replacement of existing defences have been costed as:<br><br>***Preferred Plan Costs:***<br>By year 2025: £0.40m<br>By year 2055: £6.90m<br>By year 2105: £7.90m<br><br>(These include Optimism Bias and Climate Change allowance) | The negligible value of assets at risk suggests that a policy of Hold the Line does not appear to be economically preferable in the long term. A HTL policy is however, considered to be the most appropriate policy to implement along this frontage on social and economic (tourism) grounds.<br>As the NAI damages presented do not include for losses associated with local roads, other infrastructure or intangible benefits such as tourism. It is considered that a fuller economic evaluation of these potential benefits would provide more economic justification for Hold the Line over 100 years.<br><br>(£15.2m preferred plan costs against £0.2m NAI property damages). |
| **South Foreland**<br><br>**4b26** | NAI | NAI | NAI | ***NAI Damages:***<br>Total NAI (CV) Damages 2105: £0m (properties)<br><br>***Preferred Plan Damages:*** | ***Preferred Plan Costs:***<br>By year 2025: £0m<br>By year 2055: £0m<br>By year 2105: £0m | A NAI policy is appropriate as no other option would be economically viable. |

| Table H4: Preferred Plan Economic Summary Table | | | | | | |
|---|---|---|---|---|---|---|
| **Location** | **Epoch 1** | **Epoch 2** | **Epoch 3** | **Broad-scale Review (this SMP)** | | **Conclusion** |
| | | | | **Damages and Benefits[4] Capital Value (CV)** | **Assumed Defence Works & Costs Capital Value (CV)** | |
| | | | | By year 2105: £ negligible | | |

# H5 Economic sensitivity assessment summary tables

Table H5.1 below provides a summary of the economic reviews undertaken for selected locations that required a sensitivity assessment. The table summarises the calculated benefits and costs, together with a statement on economic viability when assessing the alternative policy of Hold the Line as a sensitivity test, along policy units where Managed Realignment is proposed. Also, in response to stakeholder concerns that the original economic assessment given in Section H4 of the present appendix undervalued agricultural land, the sensitivity analysis presented here has increased agricultural land values by a factor of 2. The conclusions show that when assessing the alternative policy of Hold the Line where a Managed Realignment policy is proposed, the alternative policy is, in most cases more costly than the preferred policy. Where this is not the case, the Managed Realignment policy remains the preferred policy on technical grounds and sustainability. Increasing the value of agricultural land by a factor of two did not significantly change the economic viabilities of the preferred policy option.

Note: An allowance should be made for errors of approximately +/- £1m in each epoch, due to an error allowance of +/- 250m in the measurement of defence lengths for each unit.

Table H5.1 Preferred Plan Economic Sensitivity Table 1

| **Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices)** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| **4a 01 Allhallows-on-Sea to Grain** | HTL | MR | MR | Hold the Line along the whole frontage. | Total NAI damages (CV): **£159m**<br><br>Total preferred plan damages (CV): **£1.8m** | To maintain and replace an embankment over the 6.6 km frontage would cost:<br>£1.33m CV in years 0-20<br>£7.95m CV in years 20-50 | This alternative is not considered economically preferable. The provision of defences to HTL is more costly than the potential costs for MR along this frontage.<br>HTL followed by MR would cost: |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | HTL damages: **£ negligible** | £19.88m CV in years 50-100<br>(Total £**29.16m** CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | £1.3m CV in years 0-20<br>£6.6m CV in years 20-50<br>£16.5m CV in years 50-100<br>(Total £**24.4m** CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. |
| | | | | Agricultural land values doubled | ***NAI Damages:***<br>NAI could result in the inundation of the Isle of Grain flood risk area (including Grain Power Station, Thamesport Container Terminal).<br>Total NAI (CV) Damages 2105:<br>£158.37m (properties)<br>Agricultural land loss:<br>Grade 1: 5.5ha<br>Grade 2: 3.7ha<br>Grade 4: 102.7ha<br>= Capital value of agricultural land loss is c. **£1.4m.**<br><br>**Total NAI damages (CV) with land values doubled = £160m**<br><br>Additionally, nationally important infrastructure, e.g. the A228 road, railway line and pylons could also be inundated (however the value of these has not been included in the present assessment). | ***Preferred Plan CV Costs:***<br>By year 2025: £1.33m<br>By year 2055: £6.6m<br>By year 2105: £14.3m<br>(Total **£22.23m** CV)<br>(This includes Optimum Bias and Climate Change allowance)<br><br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated for the inundation of a discrete area seaward of the defence line at All Hallows Marsh. | When increasing the value of agricultural land by a factor of two, there is little change in comparison to the original economic appraisal (Section H4). The value of assets at risk indicates that the preferred policy is economically viable.<br><br>(£22.23m preferred plan costs and £2m preferred plan damages versus £160m NAI damages) |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | ***Preferred Plan Damages:***<br>Indicative MR extent agricultural loss:<br>31 hectares: £0.38m (agriculture value doubled)<br>£1.61m (properties)<br>Total preferred plan damages with agricultural land values doubled = **£2m** | | |
| **4a 05 Warden Point to Leysdown-on-Sea** | HTL / MR | HTL / MR | HTL / MR | Hold the Line along the whole frontage. | NAI (CV) Damages 2105: **£89.19m** (properties)<br><br>Total preferred plan damages (CV): **£2.85m**<br><br>HTL damages: **£ negligible** | To maintain and replace a line of defence over the 2.5km frontage (i.e. seawall; groynes and beach recharge) would cost:<br>£2m CV in years 0-20<br>£16.1m CV in years 20-50<br>£39.5m CV in years 50-100<br>(Total **£57.63m** CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | Although the provision of defences to HTL is less costly compared to potential costs for HTL and MR along this frontage, a HTL policy has been rejected on technical grounds. Localised MR has been proposed as providing a more sustainable defence alignment in the future, in an area where standards of protection provided by the beach have reduced. A continued HTL policy would reduce beach levels and consequently compromise beach standards of protection further, meaning a requirement for larger, more substantial defences in this location.<br>HTL followed by MR would cost:<br>***Preferred Plan Costs:***<br>By year 2025: £3.27m<br>By year 2055: £11.97m<br>By year 2105: £66.64m<br><br>These figures allow for maintenance and replacement, optimum bias and climate |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | | | change. |
| | | | | Agricultural land values doubled | ***NAI Damages:***<br>NAI (CV) Damages 2105: **£89.19m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 3.9ha<br>= Capital value of agricultural land loss (values doubled) is c. **£0.06m.**<br><br>**Total NAI damages (CV) £89.25m**<br><br>***Preferred Plan Damages:***<br>By year 2025:£0m<br>By year 2055: £1.89m (properties)<br>By year 2105: £0.95m (properties)<br>£0.02m (agriculture – values doubled):<br>1.5 hectares<br>Total preferred plan damages (CV): **£2.86m** | ***Preferred Plan CV Costs:***<br>By year 2025: £3.27m<br>By year 2055: £11.97m<br>By year 2105: £66.64m<br>(Total £81.88m CV)<br>(This includes Optimum Bias and Climate Change allowance)<br><br>The cost of providing set back defences would depend upon the alignment chosen. | When increasing the value of agricultural land by a factor of two, there is little change in comparison to the original economic appraisal (Section H4).<br><br>(£88.18m preferred plan costs and £2.86m preferred plan damages versus £89.25m NAI damages) |
| **4a 06 Leysdown-0n-Sea to Shell Ness** | MR | MR | MR | Hold the Line along the whole frontage. | Total NAI damages (CV): **£4.4m**<br><br>Total preferred plan damages (CV): **£3m** | To maintain and replace a line of defence over the 3km frontage (i.e. groynes) would cost:<br>£0.6m CV in years 0-20<br>£3.6m CV in years 20-50 | This alternative is not considered economically preferable. The provision of defences to HTL is more costly than the potential costs for MR along this frontage.<br>The provision of defences to MR would cost:<br>£1.68m CV in years 0-20 |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | Total HTL damages: **£ negligible** | £9m CV in years 50-100<br>(Total £**13.2m** CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | £1.01m CV in years 20-50<br>£7.2m CV in years 50-100<br>(Total £**9.89m** CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. |
| | | | | Agricultural land values doubled | ***NAI Damages:***<br>NAI could result in large scale inundation of the south Sheppey flood risk area.<br>NAI (CV) Damages 2105: **£3.49m** (properties)<br><br>Agricultural land loss:<br>Grade 3: 5.5ha<br>Grade 4: 123.7ha<br>Grade 5: 13.2ha<br>= Capital value of agricultural land loss (value doubled) is c. **£1.8m.**<br><br>**Total NAI damages (CV) £5.3m**<br><br>***Preferred Plan Damages:***<br>By year 2105: £2.83 (properties)<br>£0.34m (agriculture values doubled):<br>27 hectares<br>Total preferred plan damages (CV): **£3.2m** | ***Preferred Plan CV Costs:***<br>By year 2025: £1.44m<br>By year 2055: £1.01m<br>By year 2105: £6.24m<br>(Total £8.69m CV)<br>(This includes Optimum Bias and Climate Change allowance)<br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated for possible inundation of Harty Marshes, incorporating higher land where possible. | When increasing the value of agricultural land by a factor of two, there is little change in comparison to the original economic appraisal (Section H4).<br><br>(£8.69m preferred plan costs and £3.2m preferred plan damages versus £5.3m NAI damages) |

**Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices)**

| Location | Policy | | | Description of Alternative tested | Broad-scale Review (this SMP) | | Conclusions |
|---|---|---|---|---|---|---|---|
| | | | | | Alternative Damages and Benefits Capital Value (CV) | Alternative Costs Capital Value (CV) | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| **4a 07 A Faversham Creek to The Sportsmans Pub** | HTL | MR | MR | Hold the Line along the whole frontage. | ***Total NAI Damages*** = £94.3m (based on 100 year appraisal, current discount rates)<br><br>Total preferred plan damaged: £ negligible<br><br>HTL damages: £ negligible | To maintain and replace a line of defence over the 6km frontage (i.e. linear defence) would cost:<br>£1.2m CV in years 0-20<br>£26.7m CV in years 20-50<br>£6.1m CV in years 50-100<br>(Total £34m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | This alternative is not considered economically preferable. The provision of defences to HTL is more costly than the potential costs for MR along this frontage.<br>The provision of defences to MR would cost:<br>£1.2m CV in years 0-20<br>£3.6m CV in years 20-50<br>£9m CV in years 50-100<br>(Total £13.8m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. |
| **4a 07B The Sportsmans Pub to Seasalter** | HTL | HTL | MR | Hold the Line along the whole frontage. | ***Total NAI Damages*** = £94.3m (based on 100 year appraisal, current discount rates)<br><br>***Preferred Plan Damages:***<br>By year 2105: £29.07m (properties)<br><br>HTL damages: £ negligible | To maintain and replace a line of defence over the 2km frontage (i.e. linear defence, groynes and beach recharge) would cost:<br>£0.85m CV in years 0-20<br>£11.82m CV in years 20-50<br>£33.65m CV in years 50-100<br>(Total £46.32m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | This alternative is not considered economically preferable. The provision of defences to HTL is more costly than the potential costs for MR along this frontage.<br>The provision of defences to MR would cost:<br>£0.4m CV in years 0-20<br>£2.6m CV in years 20-50<br>£12.8m CV in years 50-100<br>(Total £13.8m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. |
| **4a 14 Reculver Towers to Minnis Bay** | HTL | MR | MR | Hold the Line along the whole frontage. | Total NAI damages (PV): **£94.9m** (Ref: Reculver to Minnis Bay Scheme Strategy (1998))<br><br>Total preferred plan damages | To maintain and replace a line of defence over the 5.75km frontage (i.e. linear defence) would cost:<br>£1.15m CV in years 0-20<br>£30.19m CV in years 20-50 | The alternative is not considered to be economically preferable. The provision of defences to HTL is more costly than the potential costs for MR along this frontage.<br>The provision of defences to MR in the second epoch would cost: |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | (CV): **£1.4m**<br><br>HTL damages: **£ negligible** | £47.15m CV in years 50-100<br>(Total £78.49m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. | By year 2025: £1.15m<br>By year 2055: £16.22m<br>By year 2105: £41.37m<br>(Total £58.7m CV)<br>These figures allow for maintenance and replacement, optimum bias and climate change. |
| | | | | Agricultural land values doubled | ***NAI Damages:***<br>NAI (CV) Damages 2105: **£32.55m** (properties)<br><br>Agricultural land loss:<br>Grade 1: 20.2ha<br>Grade 2: 13.8ha<br>Grade 3: 52.8ha<br>Grade 4: 45.2ha<br>= Capital value of agricultural land loss (values doubled) is c. **£1.8m.**<br><br>**Total NAI damages (CV) with agricultural land values doubled: £34.35m**<br><br>Additionally, the primary infrastructure, i.e. the sub-regionally important railway line, A229 road and pylons would effectively be lost once defence management ceased. No attempt | ***Preferred Plan Costs:***<br>By year 2025: £1.15m<br>By year 2055: £16.22m<br>By year 2105: £41.37m<br><br>(These include Optimism Bias and Climate Change allowance)<br><br>The cost of providing set back defences would depend upon the alignment chosen. Estimated capital values were generated for a maximum long-term realignment extending up to the railway line. | When increasing the value of agricultural land by a factor of two, there is little change in comparison to the original economic appraisal (Section H4).<br><br>(£58.74m preferred plan costs and £1.54m preferred plan damages versus £34.35m NAI damages) |

| Table H5.1: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of MR and Agricultural Land Prices) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Location** | **Policy** | | | **Description of Alternative tested** | **Broad-scale Review (this SMP)** | | **Conclusions** |
| | | | | | **Alternative Damages and Benefits Capital Value (CV)** | **Alternative Costs Capital Value (CV)** | |
| **(HTL = Hold the Line; MR = Managed Realignment; NAI = No Active Intervention)** | | | | | | | |
| | | | | | has been made to value these assets.<br><br>***Preferred Plan Damages:***<br>By year 2105: £1.24m (properties)<br>£0.3m (agriculture):<br>19 hectares<br>Total preferred plan damages (CV): **£1.54m** | | |

As part of the Economic Assessment, flood damages have been calculated on a policy unit by policy unit basis, based on damages within flood cells. Along one frontage within the SMP boundaries, one flood cell extends over three policy units. As a sensitivity test, where a number of Policy Units extend over more than one flood cell, the No Active Intervention damages for these flood cells have been combined to give a value for 'total damages' for the flood areas affected, and defence costs for the associated Policy Units have been aggregated to provide a value for 'total costs'. The calculated 'total' damage and cost values are compared and summarised in Table H5.2. The conclusions show that this assessment did not change the economic viabilities of the preferred policy option in these locations.

Note: An allowance should be made for errors of approximately +/- £1m in each epoch, due to an error allowance of +/- 250m in the measurement of defence lengths for each unit.

Table H5.2 Preferred Plan Economic Sensitivity Table 2

| **Table H5.2: Preferred Plan Economic Sensitivity Table 1 (Sensitivity of flood cells)** | | | | | | |
|---|---|---|---|---|---|---|
| **Flood management unit (FMU)** | **NAI Flooding Damages and Benefits (CV)** | | **Total Damages and Benefits** | **Policy Unit** | **Preferred Policy Option Costs (CV)** | **Conclusions** |
| | **Residential and commercial** | **Agricultural land loss** | | | | |
| **Policy Units 4b 21, 4b 22 and 4b 23 incorporate FMU 15** | | | | | | |
| 15 | damages taken from strategy and not calculated using flood management unit £419.6m | £4.5m | £424.1m | 4b 21 | £ - | Economically preferable |
| | | | | 4b 22 | £23.23m | |
| | | | | 4b 23 | £164.4m | |
| | | | **£424.1m** | | **£187.63m** | |

# H6 Sensitivity testing

Sensitivity Analysis was undertaken to highlight uncertainty or risks in key variables that may affect policy decisions and identifies the consequences for the preferred scenario. Examples of uncertainty include:

- Anticipated changes in development: regeneration/ development / decommissioning of assets;
- Contamination of land, locations which maybe at risk include; Power Stations, Historic industrial areas, Dockyards, Industrial areas, Historic landfill sites and Contemporary landfill sites;
- Change in environmental legislation, i.e. increased / decreased importance of environmental designations; and,
- Climate change / sea-level rise / increased storminess / increased fluvial flows.

SMP Procedural Guidance[5] states that it is not appropriate to speculate regarding uncertainties in changes in social attitudes or socio-economic policy; as such, the following uncertainties are acknowledged here, but are not included in the main analysis:

- A change in social preferences in relation to an increased acceptance to flood and erosion and / or adaptive methods;
- A change in funding priorities leading to increased / decreased funding;
- Availability of compensation for those affected by flooding and / or erosion; and,
- An increasing importance of agriculture.

[5] *Defra, 2006. Flood and Coastal Defence Appraisal Guidance, FCDPAG3 Economic Appraisal, Supplementary Note to Operating Authorities – Climate Change Impacts, October 2006.*

## H6.1 Uncertainty Identification Table

The table below highlights the degree to which the four generic management policies are exposed to uncertainty.

| Uncertainty | Exposure to Uncertainty | | | |
|---|---|---|---|---|
| | **HTL** | **ATL** | **MR** | **NAI** |
| **Change in land use – increased development** | Maintaining the defence line will provide a suitable standard of protection for increased development | Advancing the defence line will provide an increased standard of protection for increased development | Realigning the defence line is not favourable for increased development<br>**MR policy exposed to uncertainty** | No Active Intervention is not recommended for increased development<br>**NAI policy exposed to uncertainty** |
| **Change in land use – decreased development** | Maintaining the defence line may not be economically justifiable as development decreases<br>**HTL policy exposed to uncertainty** | Advancing the defence line may not be economically justifiable as development decreases<br>**ATL policy exposed to uncertainty** | Realigning the defences is possible as development decreases | No Active Intervention will not provide protection to remaining assets<br>**NAI policy exposed to uncertainty** |
| **Increased rates of SLR** | Under a scenario of HTL sea level rise will result in coastal squeeze and increased wave energy at defences. Erosion of the defence toe and risk of overtopping may increase. Defences will become more expensive and technically difficult to maintain<br>**HTL policy exposed to uncertainty** | Under a scenario of ATL sea level rise will result in greater coastal squeeze and greater increased wave energy at defences. It is likely that the inter-tidal will be lost. Erosion of the defence toe and the risk of overtopping are likely to be greater under this scenario. Defences will become more expensive and technically difficult to maintain<br>**ATL policy exposed to uncertainty** | Under a scenario of MR sea level rise may be accommodated. However, it may result in increased erosion of the foreshore and backshore. As such defences will become more expensive and technically difficult to maintain especially in areas where: 1) the coast is exposed, 2) the hinterland is low-lying and 3) the geology is 'soft'<br>**MR policy exposed to uncertainty** | Under a scenario of NAI sea level rise will result in uncontrolled flooding and erosion. The combination may, in places, lead to large scale morphological change. Where the shoreline was previously defended a readjustment period is envisaged. It is anticipated that this will be most significant along sections where the coast is low-lying and/or composed of soft geology. **NAI policy exposed to uncertainty** |
| **Reductions in sediment supply** | A reduced sediment supply will result in less foreshore cover and an increased exposure of defences to wave energy. As such, defences will become more expensive and technically difficult to maintain<br>**HTL policy exposed to uncertainty** | A reduced sediment supply will result in less foreshore cover and an increased exposure of defences to wave energy. Advancing the defence line will exacerbate this further. Defences will become more expensive and technically difficult to maintain.<br>There is also the potential that realigning the plan-form position of the shoreline could affect alongshore coastal processes.<br>**ATL policy exposed to** | Realigning the defence line may release sediment into the system. However, this sediment may 1) not be appropriate for beach building material and 2) the amount available may not be sufficient to offer a suitable standard of protection.<br>There is also the potential that advancing the plan-form position of the shoreline could affect alongshore coastal processes.<br>**MR policy exposed to** | No Active Intervention will result in a naturally functioning system. However, a reduction in the contemporary sediment supply will result in beach narrowing and reduced standards of flood and erosion protection.<br>**NAI policy exposed to uncertainty** |

| Uncertainty | Exposure to Uncertainty | | | |
|---|---|---|---|---|
| | **HTL** | **ATL** | **MR** | **NAI** |
| | | **uncertainty** | **uncertainty** | |
| **Increasing storminess** | With increased wave energy at defences, defences will become more expensive and technically difficult to maintain<br>**HTL policy exposed to uncertainty** | With increased wave energy at defences with increased storminess, a reduced foreshore will exacerbate wave energy further. Defences will become more expensive and technically difficult to maintain<br>**ATL policy exposed to uncertainty** | Realigning the defences will allow wave energy to be dissipated over a larger area, in a managed manner. However, with increased wave energy at defences, defences will become more expensive and technically difficult to maintain<br>**MR policy exposed to uncertainty** | No active intervention will result in uncontrolled flooding and erosion, however although NAI remains susceptible to increased storminess, NAI will allow wave energy to be dissipated over a larger area<br>**NAI policy exposed to uncertainty** |
| **Land may be contaminated** | Maintaining the defence line will continue to provide a suitable standard of protection for potentially contaminated land | Advancing the defence line may increase the standard of protection to potentially contaminated land | Contaminated land would require expensive remediation if MR was implemented, otherwise contaminants may be released into the estuary system<br>**MR policy exposed to uncertainty** | If the land is contaminated, NAI would allow contaminants to be released into the estuary system<br>**MR policy exposed to uncertainty** |
| **Change in legislation on habitat designation**<br><br>**FRESHWATER HABITATS** | **Increased Importance** | | | |
| | Increased requirement to maintain and improve habitats, maintaining the defence line will provide a suitable standard of protection to freshwater habitats | Increased requirement to maintain and improve habitats, advancing the defence line will increase the standard of protection to freshwater habitats | Increased requirement to maintain and improve habitats, MR would result in the managed loss of freshwater habitats<br>**MR policy exposed to uncertainty** | Increased requirement to maintain and improve habitats, NAI would result in the uncontrolled loss of freshwater habitats<br>**NAI policy exposed to uncertainty** |
| | **Decreased Importance** | | | |
| | Decreased requirement to maintain and improve habitats, maintaining the defence line may not be economically justifiable<br>**HTL policy exposed to uncertainty** | Decreased requirement to maintain and improve habitats, advancing the defence line to provide an increased standard of protection may not be economically justifiable<br>**ATL policy exposed to uncertainty** | Decreased requirement to maintain and improve habitats, acceptable managed loss of freshwater habitats | Decreased requirement to maintain and improve habitats, acceptable uncontrolled loss of freshwater habitats |
| **Change in legislation on habitat designation**<br><br>**INTERTIDAL HABITATS** | **Increased Importance** | | | |
| | Increased requirement to maintain and improve habitats, maintaining the defence line may result in coastal squeeze and loss of inter-tidal habitats<br>**HTL policy exposed to uncertainty** | Increased requirement to maintain and improve habitats, advancing the defence line will result in the loss of inter-tidal habitats<br>**ATL policy exposed to uncertainty** | Increased requirement to maintain and improve habitats, MR will result in the managed creation of inter-tidal habitat | Increased requirement to maintain and improve habitats, NAI will result uncontrolled flooding and inter-tidal habitat creation |
| | **Decreased Importance** | | | |

| Uncertainty | Exposure to Uncertainty | | | |
|---|---|---|---|---|
| | HTL | ATL | MR | NAI |
| | Decreased requirement to maintain and improve habitats, acceptable loss of habitat due to coastal squeeze when maintaining the defence line | Decreased requirement to maintain and improve habitats, acceptable loss of habitat with an advanced the defence line | Decreased requirement to maintain and improve habitats, MR for habitat creation may not be economically justifiable<br>**MR policy exposed to uncertainty** | Decreased requirement to maintain and improve habitats, therefore decreased importance of this habitat does not support a policy of NAI<br>**NAI policy exposed to uncertainty** |

## H6.2 Sensitivity Table

The following table identifies the uncertainties / risks which may affect each policy management unit, the potential consequences of the uncertainties, the main policies exposed to each uncertainty and in which epoch, and an overall assessment of the preferred policy in relation to its exposure to identified uncertainties.

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a01** | **Allhallows-on-Sea to Grain** | HTL | MR | MR | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties / amenities constructed i.e. Thames Gateway Regeneration) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is manageable. |
| | | | | | Change in land use - (the village of Allhallows on Grain could be abandoned / frontage could change from one driven by agriculture and nature conservation to one driven by socio-economic) | Requirement for flood and erosion risk management may reduce / increase | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a02** | **Garrison Point to Minster (west – chalet park** | HTL | HTL | HTL | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure etc) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (i.e. decommission of the port) | Reduced requirement for flood and erosion risk management. | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. HTL becomes more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| **4a03** | **Minster Town (chalet park to Royal Oak Pub)** | HTL | HTL | HTL | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure etc) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (the town of Minster could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. HTL becomes more expensive and technically difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Increase in storminess | Increase in wave energy. HTL becomes more expensive and technically more difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR** ◆ 1,2,3<br>**NAI** ◆ 1,2,3 | | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a04** | **Minster Slopes to Warden Point** | NAI | NAI | NAI | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Commercial and residential properties and associated infrastructure developed along this frontage) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation to one driven by socio-economic) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | is acceptable |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a05** | **Warden Point to Leysdown-on-Sea** | HTL | HTL | HTL / MR | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed at Warden and Leysdown) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is manageable |
| | | | | | Change in land use - (the town of Warden and Leysdown could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a06** | **Leysdown-on-Sea to Shell Ness** | HTL | MR | MR | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed between Leysdown and Shell Ness) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation to one driven by socio-economic) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | is manageable |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a07A and 4a 07B** | **Faversham Creek to Seasalter** | HTL | MR | MR | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed between Faversham Creek and Seasalter) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is manageable |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation to one driven by socio-economic) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>NAI | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| **4a08** | **Seasalter to Whitstable Town** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed between Seasalter and Whitstable Town) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a09** | **Whitstable Town to Whitstable Harbour** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed at Whitstable) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic assets could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a10** | **Whitstable Harbour (east) to Swalecliffe** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties, infrastructure constructed between Whitstable Harbour and Swalecliffe) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a11** | **Swalecliffe / Hampton Pier to Herne Bay Breakwater** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Swalecliffe and Herne Bay Breakwater) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic assets could be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Contaminants will be released unless expensive remediation is implemented | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a12** | **Herne Bay Breakwater to Bishopstone Manor** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between Herne Bay and Bishopstone Manor) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a13** | **Reculver Country Park** | **NAI** | **NAI** | **NAI** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed at Reculver Country Park) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is acceptable |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation to one driven by socio-economic) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>NAI | ◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a14** | **Reculver Towers to Minnis Bay** | HTL | MR | MR | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between Reculver Towers and Minnis Bay) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation and agriculture to one driven by socio-economics) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | is manageable |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL | | |
| | | | | | | | ATL | | |
| | | | | | | | **MR** | ◆ 1,2,3 | |
| | | | | | | | **NAI** | ◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL** | ◆ 1,2,3 | |
| | | | | | | | **ATL** | ◆ 1,2,3 | |
| | | | | | | | **MR** | ◆ 1,2,3 | |
| | | | | | | | **NAI** | ◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a15** | **Minnis Bay to Westgate-on-Sea** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties / infrastructure constructed between Minnis Bay and Westgate-on-Sea) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4a16** | **Margate** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties / infrastructure constructed at Margate) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4a17** | **Cliftonville** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between White Ness and Ramsgate) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4b18** | **White Ness to Ramsgate** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties / infrastructure constructed between Minnis Bay and Westgate-on-Sea) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increased wave energy at defences. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4b19** | **Ramsgate Harbour** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties / infrastructure constructed at Ramsgate Harbour) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4b20** | **Ramsgate Harbour (west) to north of the River Stour** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between Ramsgate Harbour western arm and north of the River Stour) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR**<br>**NAI** | | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| **4b21** | **South of the River Stour to Sandwich Bay Estate north** | **NAI** | **NAI** | **NAI** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between south of the River Stour and Sandwich bay Estate north) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is acceptable |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation to one driven by socio-economics) | Requirement for flood and erosion risk management increases | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** **(0-20 years)** | **Epoch 2** **(20-50 years)** | **Epoch 3** **(50-100 years)** | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** **Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| **4b22** | **Sandwich Bay Estate (south) to Sandown Castle (remains of)** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between Sandwich Bay Estate and Sandown Castle) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |

| PREFERRED PLAN | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL** | ◆ 2,3 | |
| | | | | | | | **ATL** | ◆ 2,3 | |
| | | | | | | | **MR** | ◆ 2,3 | |
| | | | | | | | **NAI** | ◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4b23** | **Sandown Castle (remains of) to Oldstairs Bay** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed between Sandown Castle and Oldstairs bay) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |

| PREFERRED PLAN | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (socio-economic and heritage assets could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

| PREFERRED PLAN | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| **4b24** | **Oldstairs Bay to St Margaret's Bay** | **NAI** | **NAI** | **NAI** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Properties constructed between Oldstairs Bay and St Margaret's) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty is acceptable |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation and recreation to one driven by socio-economics) | Requirement for flood and erosion risk management will increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4b25** | **St Margaret's Bay** | **HTL** | **HTL** | **HTL** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed at St Margaret's) | Further development of residential properties, commercial properties and infrastructure strengthens the requirement for flood and erosion risk management | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies |
| | | | | | Change in land use - (socio-economic could reduce / be abandoned) | Reduced requirement for flood and erosion risk management | **HTL**<br>**ATL**<br>MR<br>NAI | ◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
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| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty** Epochs 1, 2 & 3 | | **Overall assessment of preferred policy** |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL** ◆ 2,3<br>**ATL** ◆ 2,3<br>**MR** ◆ 2,3<br>**NAI** ◆ 2,3 | | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |
| **4b26** | **South Foreland** | **NAI** | **NAI** | **NAI** | Change in land use – increased development i.e. residential, commercial, infrastructure.<br><br>(Additional properties constructed at South Foreland) | Development of more residential properties and infrastructure leads to continued requirement for HTL. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | Acceptable policy since it is not unduly exposed to uncertainty compared to other policies and where it is the uncertainty |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Change in land use - (could change from a frontage driven by nature conservation and recreation to one driven by socio-economics) | Requirement for flood and erosion risk management could increase | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 2,3<br>◆ 2,3 | is acceptable |
| | | | | | Increased rates of SLR | Increase in water levels. Defences will become more expensive and technically more difficult to maintain | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Reductions in sediment supply (beach building material) | Reduction in protective foreshore cover. Defences become more expensive and technically difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |

| **PREFERRED PLAN** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Policy Unit** | | **Epoch 1** (0-20 years) | **Epoch 2** (20-50 years) | **Epoch 3** (50-100 years) | **Uncertainty** | **Consequence** | **Exposure to Uncertainty Epochs 1, 2 & 3** | | **Overall assessment of preferred policy** |
| | | | | | Increase in storminess | Increase in wave energy. Defences become more expensive and technically more difficult to maintain. | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 2,3<br>◆ 2,3<br>◆ 2,3<br>◆ 2,3 | |
| | | | | | Land may be contaminated | Expensive remediation is required or policy of HTL required. | HTL<br>ATL<br>**MR**<br>**NAI** | <br><br>◆ 1,2,3<br>◆ 1,2,3 | |
| | | | | | Change in legislation on habitat designation | Reduced/increased requirement for protection/conservation of habitats | **HTL**<br>**ATL**<br>**MR**<br>**NAI** | ◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3<br>◆ 1,2,3 | |

# Annex H1: Supporting Economic Appraisal Data – Damages/Benefits

## H6.3 Summary of Losses

### H6.3.1 No Active Intervention Residential Erosion Losses

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4a 01 | Allhallows-on-Sea to Grain (south) | 0 | - | - | 27 | £4,250,616 | £1,375,739 | 59 | £9,633,388 | £1,226,288 | **86** | **£13,884,004** | **£2,602,027** |
| 4a 02 | Garrison Point to Minster | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4a 03 | Minster Town | 0 | - | - | 32 | £5,077,376 | £1,489,147 | 106 | £16,818,808 | £1,606,911 | **138** | **£21,896,184** | **£3,096,058** |
| 4a 04 | Minster Slopes to Warden Bay | 0 | - | - | 1 | £157,999 | £37,265 | 19 | £3,001,981 | £317,236 | **20** | **£3,159,980** | **£354,501** |
| 4a 05 | Warden Point to Leysdown-on-Sea | 0 | - | - | 209 | £33,021,791 | £11,106,859 | 126 | £19,749,875 | £2,471,584 | **335** | **£52,771,666** | **£13,578,443** |
| 4a 06 | Leysdown-on-Sea to Shell Ness | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4a 07 | Faversham Creek to Seasalter | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4a 08 | Seasalter to Whitstable Town | 0 | - | - | 23 | £4,768,268 | £1,281,707 | 86 | £17,794,314 | £2,256,285 | **109** | **£22,562,582-** | **£3,537,992** |
| 4a 09 | Whitstable Town to Whitstable Harbour | 0 | - | - | 0 | - | - | 0 | - | - | **0** | | **-** |

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4a 10 | Whitstable Harbour (east) to Swalecliffe | 0 | - | - | 2 | £354,150 | £115,675 | 42 | £7,437,150 | £711,725 | **44** | **£7,791,300** | **£827,400** |
| 4a 11 | Swalecliffe to Herne Bay Breakwater | 0 | - | - | 10 | £1,730,160 | £424,083 | 202 | £34,949,232 | £3,820,809 | **212** | **£36,679,392** | **£4,244,892** |
| 4a 12 | Herne Bay Breakwater to Bishopstone Manor | 0 | - | - | 138 | £22,510,284 | £6,794,580 | 369 | £68,661,770 | £7,046,810 | **507** | **£91,172,054** | **£13,841,390** |
| 4a 13 | Reculver Country Park | 0 | - | - | 0 | - | - | 8 | £1,626,128 | £184,292 | **8** | **£1,626,128** | **£184,292** |
| 4a 14 | Reculver Towers to Minnis Bay | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4a 15 | Minnis Bay to Westgate-on-Sea | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4a 16 | Margate | 0 | - | - | 0 | **-** | **-** | 2 | £305,390 | £25,540 | **2** | **£305,390** | **£25,540** |
| 4a 17 | Cliftonville | 0 | - | - | 0 | - | - | 01 | - | - | **0** | - | - |
| 4b 18 | White Ness to Ramsgate | 0 | - | - | 0 | - | - | 0 | **-** | **-** | **0** | **-** | **-** |
| 4b 19 | Ramsgate Harbour | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |
| 4b 20 | West Cliff (Ramsgate Harbour to north of the River Stour) | 0 | - | - | 0 | - | - | 0 | **-** | **-** | **0** | **-** | **-** |
| 4b 21 | South of the River Stour to Sandwich Bay Estate (north) | 0 | - | - | 0 | - | - | 0 | - | - | **0** | **-** | **-** |

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4b22 | Sandwich Bay Estate north to Sandown Castle (remains of) | 0 | - | - | 0 | - | - | 0 | - | - | **-** | **-** | **-** |
| 4b23 | Sandown Castle (remains of) to Oldstairs Bay | 0 | - | - | 0 | - | - | 2 | £588,750 | £118,408 | **2** | **£588,750** | **£118,408** |
| 4b24 | Oldstairs Bay to St Margaret's | 0 | - | - | 0 | - | - | 0 | - | - | **-** | **-** | **-** |
| 4b25 | St Margaret's | 0 | - | - | 0 | - | - | 0 | - | - | **-** | **-** | **-** |
| 4b26 | South Foreland | 0 | - | - | 0 | - | - | 0 | - | - | **0** | - | - |

### H6.3.2 No Active Intervention Commercial Erosion Losses

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4a 01 | Allhallows-on-Sea to Grain (south) | 0 | - | - | | | | 3 | £5,952,785 | £1,497,522 | **3** | **£5,952,785** | **£1,497,522** |
| 4a 02 | Garrison Point to Minster | 0 | - | - | | | | | | | | | |
| 4a 03 | Minster Town | 0 | - | - | 5 | £1,021,152 | £293,034 | 2 | £341,866 | £19,832 | **7** | **£1,363,018** | **£312,866** |
| 4a 04 | Minster Slopes to Warden Bay | 0 | - | - | | | | 1 | £611,842 | £56,388 | **1** | **£611,842** | **£56,388** |
| 4a 05 | Warden Point to Leysdown-on-Sea | 0 | - | - | 33 | £7,890,554 | £3,331,560 | 6 | £759,808 | £108,535 | **39** | **£8,650,362** | **£3,440,095** |
| 4a 06 | Leysdown-on-Sea to Shell Ness | 0 | - | - | | | | | | | | | |
| 4a 07 | Faversham Creek to Seasalter | 0 | - | - | | | | | | | | | |
| 4a 08 | Seasalter to Whitstable Town | 0 | - | - | | | | 42 | £1,261,316 | £179,558 | **42** | **£1,261,316** | **£179,558** |
| 4a 09 | Whitstable Town to Whitstable Harbour | 0 | - | - | | | | | | | | | |
| 4a 10 | Whitstable Harbour (east) to Swalecliffe | 0 | - | - | 1 | £177,075 | £42,361 | 12 | £1,849,651 | £227,662 | **13** | **£2,026,726** | **£270,023** |
| 4a 11 | Swalecliffe to Herne Bay Breakwater | 0 | - | - | 13 | £1,034,914 | £269,071 | 10 | £1,624,301 | £235,804 | **23** | **£2,659,214** | **£504,874** |
| 4a 12 | Herne Bay Breakwater to Bishopstone Manor | 0 | - | - | 24 | £4,867,085 | £1,794,934 | 94 | £85 | £1,297,343 | **118** | **£4,867,170** | **£3,092,278** |

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4a 13 | Reculver Country Park | 0 | - | - | | | | 2 | £53,947 | £10,923 | **2** | **£53,947** | **£10,923** |
| 4a 14 | Reculver Towers to Minnis Bay | 0 | - | - | | | | | | | | | |
| 4a 15 | Minnis Bay to Westgate-on-Sea | 0 | - | - | | | | | | | | | |
| 4a 16 | Margate | 0 | - | - | | | | 2 | £305,390 | £25,540 | **2** | **£305,390** | **£25,540** |
| 4a 17 | Cliftonville | 0 | - | - | | | | | | | | | |
| 4b 18 | White Ness to Ramsgate | 0 | - | - | | | | | | | | | |
| 4b 19 | Ramsgate Harbour | 0 | - | - | | | | 2 | £1,157,895 | £91,275 | **2** | **£1,157,895** | **£91,275** |
| 4b 20 | West Cliff (Ramsgate Harbour to north of the River Stour) | 0 | - | - | | | | | | | | | |
| 4b 21 | South of the River Stour to Sandwich Bay Estate (north) | 0 | - | - | | | | | | | | | |
| 4b22 | Sandwich Bay Estate north to Sandown Castle (remains of) | 0 | - | - | | | | | | | | | |
| 4b23 | Sandown Castle (remains of) to Oldstairs Bay | 0 | - | - | | | | | | | | | |
| 4b24 | Oldstairs Bay to St Margaret's | 0 | - | - | | | | | £196,382 | £23,147 | **18** | **£196,382** | **£23,147** |

| POLICY UNIT | | 0-20 | | | 20-50 | | | 50-100 | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | CV | PV | No. | CV | PV | No. | CV | PV | No. | CV | PV |
| 4b25 | St Margaret's | 0 | - | - | | | | 18 | | | | | |
| 4b26 | South Foreland | 0 | - | - | | | | | | | | | |

### H6.3.3 Combined (Residential and Commercial) No Active Intervention Erosion Losses

| COMBINED PROPERTY DAMAGES (RESDIENTIAL AND COMMERCIAL) | | | | |
|---|---|---|---|---|
| 0-100 YEARS | | | | |
| 4a 01 | Allhallows-on-Sea to Grain (south) | 89 | £19,836,789 | £4,099,549 |
| 4a 02 | Garrison Point to Minster | | | |
| 4a 03 | Minster Town | 145 | £23,259,202 | £3,408,924 |
| 4a 04 | Minster Slopes to Warden Bay | 21 | £3,771,822 | £410,889 |
| 4a 05 | Warden Point to Leysdown-on-Sea | 374 | £61,422,028 | £17,018,538 |
| 4a 06 | Leysdown-on-Sea to Shell Ness | | | |
| 4a 07 | Faversham Creek to Seasalter | | | |
| 4a 08 | Seasalter to Whitstable Town | 151 | £23,823,898 | £3,717,550 |
| 4a 09 | Whitstable Town to Whitstable Harbour | | | |
| 4a 10 | Whitstable Harbour (east) to Swalecliffe | 57 | £9,818,026 | £1,097,423 |
| 4a 11 | Swalecliffe to Herne Bay Breakwater | 235 | £39,338,606 | £4,749,766 |
| 4a 12 | Herne Bay Breakwater to Bishopstone Manor | 625 | £96,039,224 | £16,933,668 |
| 4a 13 | Reculver Country Park | 10 | £1,680,075 | £195,215 |
| 4a 14 | Reculver Towers to Minnis Bay | | | |
| 4a 15 | Minnis Bay to Westgate-on-Sea | | | |
| 4a 16 | Margate | 4 | £610,780 | £51,080 |
| 4a 17 | Cliftonville | | | |
| 4b 18 | White Ness to Ramsgate | | | |
| 4b 19 | Ramsgate Harbour | 2 | £1,157,895 | £91,275 |
| 4b 20 | West Cliff (Ramsgate Harbour to north of the River Stour) | | | |
| 4b 21 | South of the River Stour to Sandwich Bay Estate (north) | | | |
| 4b22 | Sandwich Bay Estate north to Sandown Castle (remains of) | | | |
| 4b23 | Sandown Castle (remains of) to Oldstairs Bay | 2 | £588,750 | £118,408 |
| 4b24 | Oldstairs Bay to St Margaret's | 18 | £196,382 | £23,147 |
| 4b25 | St Margaret's | | | |
| 4b26 | South Foreland | | | |

### H6.3.4 No Active Intervention Value of Asset Losses (Properties and Land): Flooding

| POLICY UNIT | | FMU | Residential | | Commercial | | Total | | Agricultural Land (Hectares) | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | CV | No. | CV | No. | CV | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | |
| 4a 01 | Allhallows-on-Sea to Grain (south) | 1 | 136 | £22,229,360 | 31 | £116,304,093 | 167 | £138,533,453 | 5.48 | 4 | | 103 | | 111.88 |
| 4a 02 | Garrison Point to Minster | 2 | 6,976 | £971,406,963 | 827 | £301,739,811 | 7,803 | £1,273,146,774 | | | 5 | 51 | 1 | 57.95 |
| 4a 03 | Minster Town | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4a 04 | Minster Slopes to Warden Bay | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4a 05 | Warden Point to Leysdown-on-Sea | 3 | 114 | £18,011,886 | 48 | £9,755,012 | 162 | £27,766,898 | | | 4 | | | 3.93 |
| 4a 06 | Leysdown-on-Sea to Shell Ness | 4 | 14 | £2,211,986 | 12 | £1,276,349 | 26 | £3,488,335 | | | 5 | 124 | 13 | 142.37 |
| 4a 07 | Faversham Creek to Seasalter | 5 | 401 | £83,055,254 | 52 | £6,660,942 | 453 | £89,716,196 | 4.96 | 4 | 112 | 1 | | 121.60 |
| 4a 08 | Seasalter to Whitstable Town | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4a 09 | Whitstable Town to Whitstable Harbour | 6 | 2,977 | £564,622,578 | 683 | £71,504,338 | 3,660 | £636,126,916 | | | | | | |
| 4a 10 | Whitstable Harbour (east) to Swalecliffe | 7 | 95 | £19,704,350 | 12 | £5,631,706 | 107 | £25,336,056 | | | 6 | 0 | | 6.26 |
| 4a 11 | Swalecliffe to Herne Bay Breakwater | 8&9&10 | 945 | £155,472,842 | 261 | £40,934,292 | 1,206 | £196,407,134 | | | 3 | 0 | | 3.55 |
| 4a 12 | Herne Bay Breakwater to Bishopstone Manor | | 0 | - | 0 | - | 0 | - | | | | | | |

| POLICY UNIT | | FMU | Residential | | Commercial | | Total | | Agricultural Land (Hectares) | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | CV | No. | CV | No. | CV | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | |
| 4a 13 | Reculver Country Park | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4a 14 | Reculver Towers to Minnis Bay | 11 | 141 | £26,044,933 | 30 | £6,507,885 | 171 | £32,552,818 | 20.21 | 14 | 53 | 45 | | 131.98 |
| 4a 15 | Minnis Bay to Westgate-on-Sea | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4a 16 | Margate | 12 | 22 | £3,359,290 | 61 | £16,957,724 | 83 | £20,317,014 | | | | | | |
| 4a 17 | Cliftonville | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4b 18 | White Ness to Ramsgate | 13a& 13b | 0 | - | 0 | - | 0 | - | | | | | | |
| 4b 19 | Ramsgate Harbour | 14 | 0 | - | 10 | £3,504,785 | 10 | £3,504,785 | | | | | | |
| 4b 20 | West Cliff (Ramsgate Harbour to north of the River Stour) | | 0 | - | 0 | - | 0 | - | | | | | | |
| 4b 21 | South of the River Stour to Sandwich Bay Estate (north) | 15 | 10,404 | £1,904,290,706 | 1,739 | £426,217,251 | 12,143 | £2,330,507,957 | 88.20 | 177 | 251 | 52 | 32 | 600.66 |
| 4b22 | Sandwich Bay Estate north to Sandown Castle (remains of) | 15 | 10,404 | £1,904,290,706 | 1,739 | £426,217,251 | 12,143 | £2,330,507,957 | 88.20 | 177 | 251 | 52 | 32 | 600.66 |
| 4b23 | Sandown Castle (remains of) to Oldstairs Bay | 15 & 16 | 10,426 | £1,910,767 | 1739 | £426,217,251 | 12165 | £428,128,018 | 88.20 | 177 | 251 | 52 | 32 | 600.66 |

| POLICY UNIT | | FMU | Residential | | Commercial | | Total | | Agricultural Land (Hectares) | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | CV | No. | CV | No. | CV | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | |
| 4b24 | Oldstairs Bay to St Margaret's | 17 | 0 | - | 0 | - | 0 | - | | | | | | |
| 4b25 | St Margaret's | 17 | | | | | 0 | - | | | | | | |
| 4b26 | South Foreland | 17 | | | | | 0 | - | | | | | | |

# Annex H2: Supporting economic appraisal data for SMP Costs

This annex presents the full preferred scenario costs developed for the SMP. As outlined in the assumptions below, these are generated from national generic costs and do not reflect local conditions. These figures should not be considered out of context. The costs presented in section H4 have been taken from available strategy and/or scheme documents where available, as these represent a more accurate and site specific consideration of implementation costs. The figures presented in this Annex have only been used where other, more detailed, cost information is not available. As such the costs presented here differ from those in section H4 for frontages where more detailed costs are available.

**Basis for cost assumptions:**

- Replacement costs taken from SMP Procedural Guidance[6] (Defra, 2006). This sets replacement costs for linear structures (e.g. revetments, seawalls) at £2.7million/km and cost for beach management schemes at £5.1million/km. Groyne field costs and embankments are taken as £0.6million/km.
- Maintenance costs taken from NADNAC study prepared for Defra (2004). This sets annual maintenance cost for linear structures and for groyne fields at £10k/km and for beach schemes £20k/km.
- Assumed design life (and thus full scheme reconstruction will be required) as 100 years for linear defences, 50 years for beach schemes and 30 years for groynes.
- Allow for maintenance as a linear cost, although realistically less in early years and increasing in latter years of scheme life.
- Allowance for increase in costs due to climate change: Period 20-50 years - costs factored up by 1.5 x present day rates; Period 50-100 years - costs factored up by 2.0x present day rates.
- Optimism bias (at 60%) to be applied to all costs when examining BCR, to reflect uncertainty in broad level analysis at SMP scale
- For "low cost" defence structures use same rate as groynes
- Rates for typical defences types used:

| Defence Type | Cost per km | |
|---|---|---|
| | Replacement | Maintenance |
| BEACH (B) | £5,100,000 | £20,000 |
| LINEAR (L) | £2,700,000 | £10,000 |
| GROYNE/OTHER (G) | £600,000 | £10,000 |

[6] Defra, (2006) Shoreline Management Plan Guidance.

# Annex H3: Supporting information for Sensitivity Testing

Proposed climate change scenarios (Defra, 2006):

| **Area** | **Assumed Vertical Land Movement (mm/yr)** | **Net Sea level Rise (mm/yr)** | | | |
|---|---|---|---|---|---|
| | | **1990-2025** | **2025-2055** | **2055-2085** | **2085-2115** |
| South-East of England | -0.8 | 4 | 8.5 | 12 | 15 |
| **Indicative Sensitivity Range - Peak river flow volume (within estuaries)** | | +10% | +20% | | |
| **Indicative Sensitivity Range – Extreme Wave Height / Offshore wave height (at entrances to estuaries)** | | +5%<br>+5% | | +10%<br>+10% | |