

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

Appendix G – Scenario 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 2 nd QRG Review	26.02.10	T Edwards N Pontee

Halcrow Group Limited

Burderop Park, Swindon, Wiltshire SN4 0QD

Tel +44 (0)1793 812479 Fax +44 (0)1793 812089

www.halcrow.com

Halcrow Group Limited has prepared this report in accordance with the instructions of their client, Canterbury City Council, for their sole and specific use. Any other persons who use any information contained herein do so at their own risk.

© Halcrow Group Limited 2010

Appendix G: Scenario Testing

G1	Introduction	1
G2	Policy Scenario Shoreline Response Assessment	2
G3	Objective Appraisal.....	85
G4	Proposed Policy Options and Preferred Policy Scenario.....	194

Contents by Policy Unit

Note the geographic breakdown of the appraisals presented in this Appendix is not necessarily the same as the final Policy Units (PU). In this appendix the breakdown has been based upon coastal process and morphological changes along the shoreline. For ease of reference, the following table identifies the page number on which appraisals relevant to each PU start.

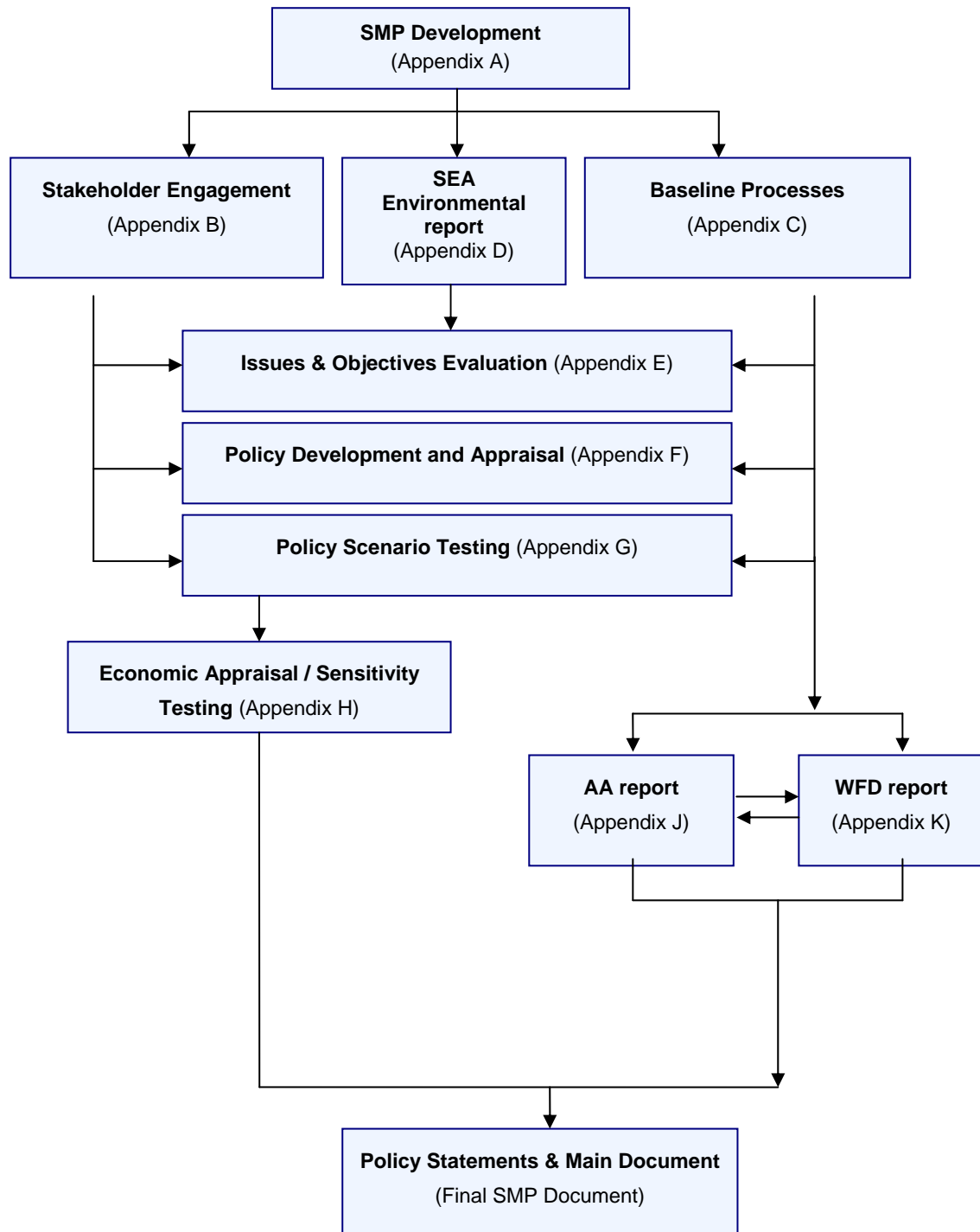
	Policy Unit	Shoreline Response	Theme and Page Number		Preferred Policy Scenario
			Objective Appraisal	Proposed Policy Options	
4a 01	Allhallows-on-Sea to Grain (south)	3	86	194	199
4a 02	Garrison Point to Minster	7	93	194	199
4a 03	Minster Town	9	101	194	199
4a 04	Minster Slopes to Warden Point	13	105	194	199
4a 05	Warden Point to Leysdown-on-Sea	14	107	194	199
4a 06	Leysdown-on-Sea to Shell Ness	17	113	195	199
4a 07A	Faversham Creek to the Sportsman Pub	21	116	195	199
4a 07B	Sportsman Pub to Seasalter	21	116	195	199
4a 08	Seasalter to Whitstable Town	26	120	195	200
4a 09	Whitstable Town to Whitstable Harbour	29	125	195	200
4a 10	Whitstable Harbour (east) to Swalecliffe	32	129	195	200
4a 11	Swalecliffe to Herne Bay Breakwater	36	135	195	200
4a 12	Herne Bay Breakwater to Bishopstone Manor	41	139	195	200
4a 13	Reculver Country Park	44	142	196	200
4a 14	Reculver Towers to Minnis Bay	45	145	196	200
4a 15	Minnis Bay to Westgate-on-Sea	48	150	196	200
4a 16	Margate	51	154	196	201
4a 17	Cliftonville	54	160	196	201
4b 18	White Ness to Ramsgate	57	164	196	201
4b 19	Ramsgate Harbour	59	167	196	201
4b 20	West Cliff (Ramsgate Harbour to north of the River Stour)	63	170	196	201
4b 21	South of the River Stour to Sandwich Bay Estate (north)	65	173	197	201
4b22	Sandwich Bay Estate north to Sandown Castle (remains of)	70	179	197	201
4b23	Sandown Castle (remains of) to Oldstairs Bay	73	182	197	202
4b24	Oldstairs Bay to St Margaret's Bay	78	187	197	202
4b25	St Margaret's Bay	79	189	197	202
4b26	South Foreland	83	192	197	202

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.



G1 Introduction

This Appendix presents the assessment and appraisal of policies.

There have been two main stages:

- Assessment of shoreline interactions and response; and,
- Assessment of achievement of objectives.

The process analysis has been developed using the understanding of shoreline behaviour from the baseline process report and the two baseline scenarios (no active intervention and with present management)¹.

From this analysis, maps of predicted erosion zones have been produced to identify those features affected². The next stage was appraising achievement of objectives using this information and this has been recorded in the Issues and Objectives Table.³

In order to sensibly assess potential shoreline response for each of the proposed scenarios, assumptions regarding the *likely* implementation measures that would be used to achieve these policies were made.

From these assessments a set of Proposed Policy Options⁴ were identified and put to the Coastal Steering Group for discussion. The outcome of this discussion resulted in the identification of a Preferred Policy Scenario⁵ for the SMP frontage.

¹ Refer to Appendix C

² Refer to Annex G1

³ Refer to Appendix E and Section G3

⁴ Refer to Section G4.1

⁵ Refer to Section G4.2

G2 Policy Scenario Shoreline Response Assessment

G2.1 INTRODUCTION

Following on from the broad-level assessment of the Defra generic policies, which combined policy options along the various sections of the shoreline; and policy appraisal, which included feedback from the stakeholders; the preferred policy scenarios were assessed.⁶ For each scenario, broad assumptions were made regarding implementation for each location.⁷ At this stage, the Policy Units were more or less defined and therefore the locations are more or less applicable to the final Policy Units presented in the plan.

The following tables assess the shoreline interactions and responses along discrete sections of the shoreline for each policy to be appraised. Implications for defence requirements are also included.

⁶ Refer to Appendix F

⁷ Refer to Appendix F5

G2.2 SCENARIO TESTING: SHORELINE INTERACTION AND RESPONSE

Allhallows-on-Sea to Grain		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Before the close of this epoch all defences will need to be replaced / upgraded; in particular the cliffs at Grain will need substantial defences / management to arrest erosion.</p>	<p>Maintain the defence structures; continue to implement cliff management practises at Grain Cliffs.</p>	<p>Further maintenance / upgrading of the defences are required. Recharging the shingle beach.</p>
<p>The present day defences will need to be upgraded to maintain a suitable standard of defence, which will reduce the risk of flooding to the low-lying hinterland. Until the defences are upgraded it is predicted that the shoreline will continue to respond in a similar manner to the present day:</p> <ul style="list-style-type: none"> • The potential for a second Medway mouth forming between Yantlet and Colemouth Creek will continue to be constrained by the defended shoreline. (Note this is also dependent upon policy selection at Stoke Marshes); • The slopes at Grain will experience some erosion • The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002); and, • The drift divide at Grain will remain (material will continue to be moved westwards along the north coast of the Isle of Grain moved southwards, along the east coast of the Isle 	<p>Having upgraded the defences, fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM), as sea levels rise, will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>The more substantial defences at Grain slopes will continue to arrest erosion, which will prevent the release of gravel sized deposits. As such the following is predicted:</p> <ul style="list-style-type: none"> • The narrow shingle beach will reduce; • The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002); • Platform lowering / scour will be initiated; and, • The volume of material transported alongshore (westwards along the north coast of Grain and southwards along the east coast of Grain) is predicted to 	<p>During this epoch a continuation of the one previous is predicted, albeit at an accelerated rate.</p> <ul style="list-style-type: none"> • Narrowing of the inter-tidal areas is expected, due to the predicted decrease in sediment and / or sea level rise (6mm/yr). This will exert increased pressure on the defences. Thus further maintenance and / or upgrading the flood and erosion defences will be required; • 'Holding the Line' will exacerbate the issue of coastal squeeze and as such exacerbate inter-tidal losses; • Reducing the inter-tidal area will affect the shingle beach; whereby under storm conditions more shingle will be drawn down the beach and potentially lost to the offshore region; and, • The narrow shingle beach will further reduce (unless recharged), a consequence of a static plan form position, sea level rise and a lack of contemporary feed.

<p>of Grain, into the Medway Estuary).</p> <p>The construction of new defences will not significantly alter shoreline response but it is assumed that they will prevent slope erosion at Grain, which will reduce the sediment supply of fines. In holding the line the plan-form position of the defended shoreline will be fixed.</p>	<p>reduce.</p>	
Allhallows-on-Sea to Grain		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow the embankment that protects the low-lying hinterland to fail, construct new defences at a suitable landwards position.</p>	<p>Maintain the defences along the low-lying section. Upgrade the revetment at Grain cliffs and monitor cliff erosion.</p>	<p>Maintain / upgrade the realigned defences.</p>
<p>To implement a policy of Managed Realignment, the current embankment, which presently reduces the probability of flood inundation must be 1) removed or 2) allowed to fail (predicted before the close of this epoch). For this section of the coast the latter has been assumed.</p> <p>Defence failure is predicted to take place before the close of this epoch thus new defences would need to be constructed, at a more landward position, before the embankment fails.</p> <p>For the low-lying section of this coast, a linear flood defence structure would be most appropriate; as this would continue to reduce the probability of large scale flooding further landwards, whilst allowing some inundation and some degree of natural coastal processes seaward of the defence. The defence would prevent the formation of a second mouth to the Medway (again</p>	<p>During this epoch the shoreline will respond/adjust to the implementation of managed realignment at the close of the previous epoch, thus:</p> <ul style="list-style-type: none"> • The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002); • Depending on the realignment policy implemented there is potential for the mudflats and saltmarsh in Yantlet Creek to transgress landwards; • If the mudflats and saltmarsh translate landwards then they could afford protection to the realigned defences; 	<p>Depending on defence alignment and type, further upgrading may be required during this epoch, to sustain a similar standard of protection and limit the risk of flood inundation. During this epoch it is envisaged that tidal flats. Their expansion will provide the backing defences with some protection from wave attenuation and rising sea levels.</p> <p>It is predicted that the slopes at Grain will continue to erode throughout this epoch, albeit at a reduced rate, under a policy of managed realignment, when compared to No Active Intervention. The fronting shingle and sand beach is expected to diminish over time, due to input of sediment not being sufficient to counter sea level rise. Sea level rise could also increase the amount of shingle drawn down the beach during storms. The provision of fines will contribute to the sediment budget, which may supply the inter-tidal area around Yantlet</p>

<p>this policy impacts on the adopted policy at Stoke Marshes, for the Medway and Swale Estuary SMP).</p> <p>Erosion of the slopes at Grain will continue, although the rate will be monitored and if deemed excessive the revetment will be upgraded (although this is deemed unnecessary for this epoch).</p> <p>The drift divide at Grain will remain (material will continue to be moved westwards along the north coast of the Isle of Grain moved southwards, along the east coast of the Isle of Grain, into the Medway Estuary).</p> <p>The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002).</p> <p>The amount of realignment and subsequent flood (spatial) extent implemented along this frontage, has the potential to (slightly) increase tidal levels in the upstream sections of the Thames Estuary.</p>	<ul style="list-style-type: none"> • It is not known whether an upper shingle beach, as observed at present, will remain along the open coast. This continuity will be dependent on the input of coarse sediment, from the east, and sea level rise. (6mm/yr); • Erosion of the slopes at Grain would need to be managed. Depending on the amount of erosion deemed acceptable, the construction of a revetment / bund is probably most appropriate. A revetment / bund would allow the cliffs to erode albeit at reduced rate and would also enable material from the cliffs to be released. This material is predominantly fine-grained sediment, although there is also sand and gravel sized deposits as well. This input provides some insitu feed to the fronting foreshore and could contribute to mudflat development (at Yantlet Creek) and the offshore; and, • The amount of realignment and subsequent flood (spatial) extent implemented along this frontage, has the potential to (slightly) increase tidal levels in the upstream sections of the Thames Estuary. 	<p>Creek or the offshore.</p> <p>The amount of realignment and subsequent flood (spatial) extent implemented along this frontage, has the potential to (slightly) increase tidal levels in the upstream sections of the Thames Estuary.</p>
Allallows-on-Sea to Grain		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow the embankment that protects the low-lying hinterland to fail, allow the revetment / groyne in front of Grain cliffs to fail.</p>	<p>No defences / management practises</p>	<p>No defences / management practises</p>

<p>Until defences fail the majority of this epoch the shoreline will continue to respond in a similar manner to the present day. Thus the following is predicted:</p> <ul style="list-style-type: none"> • The remaining defences will continue to prevent a second estuary (Medway) mouth forming; • The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002); • Erosion of the undefended gravel slopes at Grain (0.5m-1m/yr); and, • The drift divide at Grain will remain (material will continue to be moved westwards along the north coast of the Isle of Grain moved southwards, along the east coast of the Isle of Grain, into the Medway Estuary). <p>By the close of this epoch all defences will have failed and this will result in flooding of the low-lying hinterland and accelerated cliff erosion at Grain cliffs. Note that large scale inundation in the downstream sections of the Medway Estuary has the potential to increase tidal levels in the upstream sections of the Medway Estuary.</p>	<p>The plan form position of the present coastline will change dramatically. It is envisaged that only the high ground, at Grain (in the east), which is in the region of 10-12m height, will remain free from flooding.</p> <p>The rate of slope erosion and landslide frequency, at Grain, will continue (annual erosion could be in the region of 0.5-1.0m/year).</p> <p>The Medway estuary would be substantially re-defined. The eventual complete failure of defences could result in the Medway estuary increasing in size as Yantlet Creek connects with Colemouth Creek to the south, essentially creating a second channel and mouth to the Medway (dependant on the policy for Stoke Marshes in the Medway Estuary). The size of the estuary channel would widen and the creation of inter-tidal habitats would be encouraged. There is also the potential for tidal flows, into and out of these new inter-tidal areas, to create new channels or result in the expansion of the existing creek network.</p> <p>Tidal prism and tidal flows within the estuary are likely to increase as the estuary widens. This has the potential for increasing downstream erosion, e.g. at the mouth of the Medway estuary. Large scale changes in coastal processes and sediment transport regimes would be expected but are difficult to predict at this stage.</p>	<p>Without defences in place and a predicted increase in sea level rise (6mm/year), further uncontrolled tidal inundation of the low-lying land, is anticipated.</p> <p>The plan form of the shoreline will undergo further change and it is predicted that Grain will become an island.</p> <p>It is envisaged that the second mouth of the River Medway (at Yantlet Creek) will become more established during this epoch. However, the exact nature of the dominant sedimentary dynamics i.e. ebb or flow, at this second mouth and the existing, primary mouth is difficult to postulate, for this is dependent on sea level rise, tidal flows, sediment supply and the channels cross sectional area and also any changes in management practises within the Medway Estuary.</p> <p>The slopes at Grain are likely to erode at a higher rate than present, in response to the lack of defences and continued sea level rise. Material eroded from the cliffs (shingle and fines) will contribute to the sediment budget.</p>
---	---	---

Sheerness to Minster (Chalet Park)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>A rock bund/revetment, seawall and groyned shingle beach protects Garrison Point to Bartons Point. Between Barton's Point and the western edge of Minster the gravel beach is recharged.</p>	<p>Upgrade all the defences between Garrison Point and Bartons Point and potentially construct new defences between Barton's Point and the western edge of Minster - supplement with beach recharge.</p>	<p>Further upgrading / maintaining of the defences will be required. The frequency of beach recharge will need to increase if a shingle beach is to be maintained.</p>
<p>During this epoch the present day defences and management practises will continue to 'hold' the plan form position of the shoreline, influence the coastal processes and reduce the flood risk to the low-lying hinterland.</p> <p>As such the presence of the port and its associated construction will exert a major influence over the plan position of the shoreline (MHW) and the alongshore coastal processes. The fronting beach will continue to narrow (unless recharged), placing increased pressure on the backing defences.</p> <p>There will be continued westward transport of coarse sediment; rates of transport will be controlled by the groyne.</p>	<p>During this epoch the majority of the defences, between Garrison Point and Barton's Point, will need to be upgraded, whilst between Barton's Point and the western edge of Minster new defences (e.g. seawall and groynes) may be required and if a suitable beach is to be maintained then beach recharge may be required.</p> <p>Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>If groynes are introduced between Barton's Point and Minster then the alongshore transportation of sand and shingle, along the upper beach, will be interrupted, creating small embayments within which sand and shingle will form pocket beaches within groyne bays (as observed between Sheerness and Barton's Point).</p> <p>By the close of this epoch, the predicted rise in sea level (6mm/yr) coupled with an increase in storminess will lead to an increase in nearshore wave energy. This increase will lead</p>	<p>During this epoch a continuation of previous trends is predicted:</p> <ul style="list-style-type: none"> • The plan-form position of the shoreline will remain fixed at HWM; • Further narrowing of the inter-tidal area; <p>The combination of the aforementioned factors will induce increased pressure on the foreshore; culminating in the need for further and / or greater expenditure on defences, if deemed appropriate, beach recharge and a net loss of inter-tidal flats. Losses here will affect the upper foreshore, in particular the shingle beach; whereby under storm conditions more shingle may be lost from the beach, leading to the requirement for an increase in beach recharge.</p> <p>During this period the westward transport of sediment (sand and shingle) is likely to be low, due to the lack of contemporary material available and the presence of defences.</p> <p>The mobilisation and transport of fines from the lower beach is</p>

	to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures. This may result in an increased requirement in the amount / frequency of beach recharge.	expected to continue with transport of muds and silts in suspension.
Sheerness to Minster (Chalet Park)		
OPTION 2		
Advance the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
The defence structures and management practises along the frontage will need to be upgraded / changed to accommodate an advancement of the line.	Maintain the defence structures	Further upgrading of the defences will be required during this epoch.
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline. As such the following changes are predicted:</p> <ul style="list-style-type: none"> • The inter-tidal area could be lost, depending on the position of the advanced line; • The fronting beaches will be lost unless recharge is carried out; • Alongshore coastal processes will be severely affected, i.e. alongshore transport rates will be reduced, if pronounced headlands develop or extensive groyne fields are implemented; • The 'shoreline' will become more vulnerable to wave attack; and, 	<p>Predicted rises in sea level (6mm/yr) coupled with an increase in storminess will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of advanced structures</p> <p>To combat an increase in wave attack, the advanced line will require further maintenance; resulting in an increasingly hard engineered frontage.</p> <p>Advancing the line may affect sediment movement; alongshore transportation is predicted to be negligible, sedimentation will be reduced and more sediment (fines) could be transported offshore (due to an increase in wave energy at the shoreline).</p> <p>The impact of advancing the line along the open coast will result in continued implications for the Medway Estuary. The</p>	<p>During this epoch it will become increasingly difficult and expensive to hold the shoreline at its advanced location. The continued rise in sea level (6mm/yr) will lead to increased wave energy at the shoreline.</p> <p>To counter this all defences will require further works and additional structures may need to be constructed offshore (e.g. breakwaters) to accommodate the position of the advanced shoreline.</p> <p>It will be increasingly difficult to maintain the foreshore, There will be no foreshore, only heavy engineering, which will become increasingly susceptible to overtopping.</p>

<ul style="list-style-type: none"> There will be an increased probability of overtopping. 	<p>mouth will be more constrained than it presently is, management of the outer reaches / mouth may need to increase and sediment dynamics between the two systems will be adversely affected.</p>	
Minster Town (Chalet Park to Royal Oak Pub)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Minster is protected by a sea wall and groyne (<20 years). The slopes have been regarded.</p>	<p>Upgrade all the defences and / or construct new defences. Recharge the shingle beach.</p>	<p>Upgrade / maintain the defences</p>
<p>During this epoch the present day defences / management practises will continue to 'hold' the plan form position of the shoreline at HWM and influence the coastal processes.</p> <p>Minster is located on raised land, known as Minster slopes, these slopes have been re-graded and are heavily defended, which will continue to prevent a landwards migration of the shoreline.</p> <p>Some narrowing of the shingle beach (which sits on top of a shore platform cut into the London Clay basement) and degradation of the fronting shore platform is predicted; due to limited input of sediment from alongshore and locally. Historically there has been foreshore steepening along this section and this trend is expected to continue.</p> <p>Westward sediment transport is likely to continue albeit at a low</p>	<p>During this epoch a continuation of trends from the previous epoch is predicted, although defences will need to be upgraded and potentially replaced to provide continued standards of protection.</p> <p>Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>It is envisaged that the shingle beach will narrow (unless it is recharged) and that defences (groynes) will limit the westward transport of coarse sediment.</p>	<p>Defences will need to be upgraded and maintained, to continue holding the shoreline seawards of its natural alignment.</p> <p>Rising sea levels (6mm/yr) and increased storminess, coupled with a landward recession of the low water mark (LWM) will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate lowering of beach levels and the steepening of beaches in front of defences. Only a very narrow beach at the top of the groyne bays is expected to remain (unless recharge takes place).</p> <p>Depending on the management strategy implemented, cliff land-sliding could reduce or sub-aerial weathering could continue. The seawall, at the toe of the cliffs, will continue to restrict sediment feed into the outer Thames and Garrison Point.</p>

<p>rate (due to the groynes).</p> <p>As the beach narrows material moving alongshore will become trapped in the groyne bays and therefore the volume of sediment moved alongshore may reduce.</p>		<p>The presence of defences (groynes) will limit the westward transport of coarse sediment.</p>
Minster Town (Chalet Park to Royal Oak Pub)		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>It is assumed that existing defences will remain until they fail. Prior to failure new defences will need to be constructed, in a retreated position.</p>	<p>Maintain or upgrade realigned defences and/or recharge the beach.</p>	<p>Maintain and upgrade the realigned defences.</p>
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) allow the defences to fail (predicted to occur before Year 20).</p> <p>The town of Minster is located on raised land, known as Minster slopes. These slopes have been re-graded and are heavily defended. These defences will prevent landward migration of the HWM until they fail.</p> <p>Ahead of present day defence failure new defences will need to be planned and constructed. For this section of the coast a revetment would be most appropriate. A revetment would allow the cliffs to erode albeit at reduced and managed rate</p> <p>Some narrowing of the shingle beach, which sits on top of a shore platform cut into the London Clay basement, is expected</p>	<p>Under this policy the shoreline would be allowed to retreat to a more sustainable position, i.e. one which is more commensurate with the rising sea levels. This would enable the HWM to migrate landwards with a rise in sea level and depending on the alignment and implementation (e.g. groyne removal / not encouraging a bay formation) of it could improve coastal process linkages.</p> <p>Under a policy of managed realignment it is envisaged that erosion of the slopes at Minster would be reactivated. A revetment / bund would, for example, allow the cliffs to erode at reduced and managed rate and enable material from the cliffs, predominantly fines, to be transported alongshore/offshore to the outer Thames Estuary and coarser material transported westwards alongshore.</p> <p>Depending on the rate of managed erosion, deemed</p>	<p>During this epoch a continuation of previous trends is envisaged, although shoreline response and cliff erosion will be influenced by the realignment strategy implemented (in the previous epoch), the degree of maintenance and the predicted rise in sea level (6mm/yr).</p> <p>Rising sea levels and the predicted increase in storminess, coupled with a landward recession of the low water mark (LWM) could potentially lead to an increase in nearshore wave energy and as such increased cliff erosion (if cliff erosion does not keep pace with sea level rise). Material will continue to be transported alongshore. However, if managed realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>

<p>as is degradation of the fronting shore platform.</p> <p>Until failure of the groynes, westward sediment transport is likely to continue at a low rate. However, following failure material previously held by the groynes will be released – temporarily increasing the volume transported alongshore.</p> <p>By the close of this epoch all present day defences will have failed and the realigned defences will come into operation.</p>	<p>acceptable, by the close of this epoch there is likely to be losses to some built assets at Minster.</p>	
Minster Town (Chalet Park to Royal Oak Pub)		
OPTION 3		
Hold the Line (0-50 Years) and Managed Realignment (50-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The existing defences (sea wall and groynes) and management practise (recharged shingle beach).</p>	<p>Maintain and / or upgrade all the defences and recharge the shingle beach. Implement a policy to manage the amount of cliff erosion.</p>	<p>Maintain the realigned defences</p>
<p>During this epoch the present day defences and management practises will continue to 'hold' the plan form position of the defended shoreline and influence the coastal processes.</p> <p>Minster is located on raised land, known as Minster slopes, these slopes have been re-graded and will remain heavily defended, which will continue to prevent a landwards migration of the shoreline.</p> <p>Some narrowing of the shingle beach (which sits on top of a shore platform cut into the London Clay basement) and</p>	<p>During this epoch a continuation of previous trends is predicted, although defences will need to be maintained and upgraded, whilst the groyned shingle beach recharged, to provide continued standards of protection.</p> <p>Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>The transportation of material alongshore will remain interrupted due to the continued presence of groynes.</p>	<p>During this epoch a change from previous trends is envisaged, although it must be recognised that shoreline response /cliff erosion will be influenced by the realignment strategy implemented (in the previous epoch), the degree of maintenance and the predicted rise in sea level (6mm/yr).</p> <p>Rising sea levels and the predicted increased storminess, coupled with a landward recession of the low water mark (LWM) will lead to an increase in nearshore wave energy and increased cliff erosion (if cliff erosion does not keep pace with sea level rise).</p>

<p>degradation of the fronting shore platform is predicted.</p> <p>Westward sediment transport to the west is likely to continue albeit at a low rate.</p> <p>As the beach narrows material moving alongshore will become trapped in the groyne bays and therefore the volume of sediment moved alongshore may reduce.</p>	<p>However, before the close of this epoch those defences would be allowed to fail, thus enabling the alongshore transportation of material to commence. Before the close of this epoch the seawall would be also be allowed to fail however, it is recommended that the revetment remain / be upgraded to implement a policy of realignment – as this would allow the cliffs to erode albeit at reduced and managed rate and enable material from the cliffs, predominantly fines, to be transported alongshore.</p>	<p>Material will continue to be transported alongshore. However, if managed realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p> <p>Depending on the rate of managed erosion, deemed acceptable, by the close of this epoch losses of built assets at Minster is predicted.</p>
Minster Town (Chalet Park to Royal Oak Pub)		
OPTION 4		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Minster is protected by a sea wall (<20 years).</p>	<p>No defences</p>	<p>No defences</p>
<p>The town of Minster is located on raised land, known as Minster slopes. These slopes have been re-graded and are heavily defended, which prevents a landwards migration of the Minster shoreline. Defences are expected to remain for the majority of this epoch therefore the shoreline will remain fixed.</p> <p>It is predicted that there will be some narrowing of the shingle beach (which sits on top of a shore platform cut into the London Clay basement) and degradation of the fronting shore platform.</p> <p>Westwards sediment transport to the west is likely to continue at a low rate, but as the beaches narrow this material will become trapped, albeit temporarily, within the groyne bays, therefore the volume of sediment moved alongshore will reduce.</p> <p>However, as defence failure is predicted before the end of this</p>	<p>During this epoch, readjustment from the one previous may still be taking place thus:</p> <p>The clay cliffs could continue to experience erosion in the region of 1.0m/yr).</p> <p>Material from cliff erosion (predominantly fines with some shingle-sized deposits) will provide little ‘beach building’ material. Therefore the fronting sand / shingle beach will reduce in volume, providing reduced cliff toe protection and combined with sea level rise, will accelerate cliff failure.</p> <p>It has been assumed that the predominant drift direction will remain westwards; potentially transporting material (fines) towards the mouth of the Medway estuary.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level.</p> <p>The raised land, on which Minster rests, will continue to erode and the cliffs could become increasingly susceptible to rotational failure. As such cliff top assets will be at risk.</p> <p>Erosion of the clay cliffs, which could exceed 1.0m/yr, will continue to yield predominantly fines, which will not contribute significantly to the beach building budget. Again the combination of a rise in sea level together with a lack of contemporary beach building material will exacerbate erosion rates. However, if no active intervention leads to the development of an embayment, then this has the potential to</p>

<p>epoch then the aforementioned interruption will cease and cliff erosion will be reactivated.</p> <p>Towards the end of this period, the seawall is expected to fail. This will result in reactivation of the cliffs, which being composed of clay is susceptible to deep-seated rotational failure. Erosion could be as high as 1.0m / year and should a rotational failure occur then metres of land could be lost. As the cliffs along this frontage have been re-graded the latter may not occur initially.</p> <p>The groynes are also expected to fail, resulting in increased sediment transportation rates, although actual rates of shingle transport will be limited by the volume of shingle present.</p>		<p>reduce alongshore sediment transport rates.</p>
Minster Slopes (Royal Oak Point to Warden Point)		
OPTION 1		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p> undefended section of coast</p>	<p>No Defences</p>	<p>No Defences</p>
<p>Minster slopes are undefended clay cliffs and as such are subjected to high rates of erosion; a consequence of the cliffs being prone to periodic deep-seated rotational slips, thus impacting a large distance inland.</p> <p>Erosion at Minster Slopes releases mainly fines i.e. clay, which is then transported, in suspension, to the Outer Thames system. Some material is however transported alongshore (west),</p>	<p>During this epoch a continuation of previous trends is envisaged. Failure will be mainly through landslides, as the cliffs are vulnerable to complex, rotational failures.</p> <p>Material from cliff erosion will yield predominately fines, which will continue to be removed relatively quickly by tidal action (suspension).</p>	<p>Again during this epoch a continuation of previous trends is predicted albeit at an accelerated rate, due to sea level rise and increased storminess. Thus, there will be:</p> <ul style="list-style-type: none"> • Increased cliff erosion, • Increased probability of landslides;

<p>although the volume of this is low.</p> <p>There is also the potential that a large cliff failure event could push a lobe of material into the inter-tidal zone, thus advancing the plan position of the shoreline temporarily and in between creating small embayments, as observed at present. These embayments will temporarily assist in maintaining the presence of very small pocket beaches. As the cliffs retreat, it is predicted that the narrow shingle beach will remain at the cliff toe.</p>	<p>The input of coarse sediment and the westwards transportation of material alongshore will remain low. Nonetheless as the slopes retreat it is envisaged that the relict, narrow shingle beach will also do so.</p>	<ul style="list-style-type: none"> • Fine sediment will continue to be released to the system and transported in suspension; • Continued low sediment transport to the west; • Small release of shingle and small; and, • If an embayment develops, there will be the potential for alongshore sediment transport rates to be reduced.
Warden Point to Leysdown on Sea (south)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The towns of Warden and Leysdown are fronted by a number of defences (groynes, revetment and seawall). At 'The Bay' the unmanaged barrier beach provides the first line of defence. There is a secondary defence (flood embankment) in place however, its standard of protection is very low and if the fronting beach were to reduce significantly the backing hinterland would be vulnerable to flooding.</p>	<p>Upgrade all the defences / management practises; recharge 'The Bay.</p>	<p>Upgrade all the defences / management practises</p>
<p>Warden and Leysdown are dominated by clay cliffs and both their frontages are defended with a combination of structures. The seawall at the southern section of Warden will continue to fix the plan-form of the shoreline, whilst the revetment along the remaining frontage and at Leysdown allows for a small amount of movement / transgression.</p> <p>Under a policy of Hold the Line, the undefended stretch, known as The Bay, may need management implemented or potentially</p>	<p>With a predicted rise in sea level (6mm/year) more substantial defences will need to be constructed to continue implementing a policy of Hold the Line.</p> <p>Under policy of Hold the Line, 'The Bay' will need further management (be it in the form of soft engineering or harder engineering), to continue to provide flood risk protection to the low-lying hinterland.</p>	<p>Defence structures at Warden and Leysdown will continue to prevent cliff toe erosion. During this epoch, stabilisation measures may need to be implemented to prevent cliff toe erosion (and potentially reduce the risk of sub-aerial weathering). As such the plan form of the shoreline will remain fixed at MHW and sediment release prevented.</p> <p>Rising sea levels and the potential increase in storminess, coupled with a landward recession of the low water mark</p>

<p>defences constructed to reduce the flood risk. This section of the coast is low-lying, and could be prone to flooding; therefore two key options are possible: 1) recharging and managing the shingle beach or 2) constructing flood defences.</p> <p>The groynes at Warden Village and Leysdown-on-Sea will continue to maintain a sandy beach, although some degree of narrowing is anticipated.</p>	<p>The hard defences at Warden and Leysdown will continue to fix the plan position of the shoreline and interrupt alongshore coastal processes. Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>If beach narrowing is to be countered then additional recharge will be required.</p>	<p>(LWM) will lead to an increase in nearshore wave energy and a lowering of the foreshore.</p> <p>If groynes are maintained between Warden Point and Leysdown then alongshore transport will continue to be limited.</p> <p>'The Bay' area will need continued management (be it in the form of soft engineering or harder engineering), to provide flood risk protection to the low-lying hinterland.</p>
Warden Point to Leysdown on Sea (south)		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>During this epoch the seawall at Warden and the groynes at Warden and Leysdown-on-Sea would be allowed to fail. 'The Bay' will be monitored and a secondary (flood) defence structure / soft engineering option could be implemented.</p>	<p>During this epoch the policy of managed realignment would involve continuing to manage the amount of cliff erosion and flood inundation via a revetment / embankment.</p>	<p>Potentially upgrade the revetment in response to sea level rise</p>
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) to allow the present defences to fail (predicted to occur before Year 20 in most cases and although the short section of revetment is predicted to fail between Years 20- 50).</p> <p>Warden and Leysdown are dominated by clay cliffs and both their frontages are defended with a combination of structures. Initially the seawall at the southern section of Warden will continue to fix the plan-form of the shoreline at MHW, whilst the revetment along the remaining frontage and at Leysdown allows</p>	<p>Following the failure of the seawall and the groynes, in the previous epoch, the revetment remaining along Warden and Leysdown will need to be upgraded / extended.</p> <p>Upgrading / extending the revetment allow the cliffs to erode at a reduced and managed rate. A revetment would also enable material from the cliffs, predominantly fines, to be transported alongshore.</p> <p>Depending on the rate of managed erosion, deemed acceptable, by the close of this epoch there could be losses to</p>	<p>During this epoch, a continuation of previous trends is envisaged. The rate of managed erosion will be dependent on the realignment strategy implemented and the predicted rise in sea level (6mm/yr).</p> <p>Rising sea levels and a potential increase in storminess, coupled with a landward recession of the low water mark (LWM) will lead to an increase in nearshore wave energy (if the inter-tidal area has steepened due to the HWM not translating sufficiently landwards – to counter sea level rise), increased cliff erosion and on the barrier beach, increased overtopping and overwashing processes. Consequently, this will drive the</p>

<p>for a small amount of movement / transgression.</p> <p>Following groyne failure, sediment (predominantly sand) would be free to move alongshore, in a south-eastwards direction.</p> <p>The area known as 'The Bay' (between Warden and Leysdown) is low-lying and therefore will need to be monitored, due to its susceptibility to flooding. If the risk increases significantly during this epoch, then a decision must be made to 1) upgrade the secondary flood defence or 2) implement a soft engineering management strategy.</p>	<p>some built assets at Warden and Leysdown-on-Sea.</p> <p>If secondary defences are constructed inland of 'The Bay' then managed retreat of the plan form is predicted. Retreat of the shoreline will be limited by the position of the realigned 'line'. Setting the position a distance inland could fragment the alongshore coastal processes, as the indentation may act as a sink, trapping sediment (sand and clay) from updrift sources moving south. However, if realignment at The Bay is commensurate with realignment at Warden and Leysdown-on-Sea then it is likely that there would be no significant change in the coastal processes.</p>	<p>onshore migration of the barrier.</p> <p>Material (sand and clay) will continue to be transported alongshore. However, if managed realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>
Warden Point to Leysdown on Sea (south)		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The towns of Warden and Leysdown are fronted by a number of defences (groynes, revetment and seawall). At 'The Bay' the unmanaged barrier beach provides the first line of defence. There is a secondary defence (flood embankment) in place however; its standard of protection is very low.</p>	<p>No Defences</p>	<p>No Defences</p>
<p>Warden and Leysdown are dominated by clay cliffs and both their frontages are defended with a combination of structures. Initially the seawall at the southern section of Warden will continue to fix the plan-form of the shoreline at MHW, whilst the revetment along the remaining frontage and at Leysdown allows for a small amount of movement / transgression.</p>	<p>During this epoch, sediment will continue to move freely with the predominant drift direction i.e. south-eastwards. The movement of material will result in increased exposure of the revetment, which will ultimately lead to its demise.</p> <p>With no defences in place a readjustment phase will take place. This will involve reactivating cliff erosion and as such</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, in response to a rise in sea level (6mm/yr).</p> <p>Rising sea levels and a predicted increase in storminess, coupled with a landward recession of the low water mark (LWM) will lead to an increase in nearshore wave energy (if the</p>

<p>To implement a policy of No Active Intervention all the defences will be allowed to fail – until failure, processes and response are likely to remain similar to the present day.</p> <p>Following groyne failure, sediment (predominantly sand) would be free to move alongshore, in a south-eastwards direction.</p> <p>Following failure of the seawall (south Warden) erosion of the cliffs would be reactivated.</p>	<p>rapid retreat of the shoreline until a plan position more commensurate with the forcing factors, is reached.</p> <p>The rate of alongshore transport is predicted to increase (due to increased sediment input and the failure of groynes) although it has been assumed that the predominant drift direction will remain as present (southwards).</p> <p>‘The Bay’ area will become increasingly vulnerable to flooding; the backing hinterland is likely to be inundated on spring tides / extreme events. However, the area prone to flooding is relatively small.</p>	<p>inter-tidal area has steepened due to the HWM not translating sufficiently landwards), increased cliff erosion and at the barrier beach, an increase in overtopping and overwashing process. This will consequently drive the onshore migration of the barrier. Material (sand and clay) will continue to be transported alongshore in a south-easterly direction. However, if no active intervention leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p> <p>Protective foreshore cover along this frontage could reduce, due to the cliffs yielding predominantly fines (clay), which will exacerbate cliff toe erosion and flooding of the low-lying hinterland.</p> <p>The very small amount of beach building material (sand and shingle) will be released from the cliffs but it is predicted that this will be insufficient to provide even temporary protection to the cliff toe.</p> <p>There is the potential for The Bay are to be inundated on a semi-permanent to permanent basis. It is uncertain whether inundation here would affect the alongshore processes and should this strategy be implemented then this would require further investigation.</p>
Leysdown on Sea (south) to Shell Ness		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

<p>Maintain the groynes that protect the majority of this frontage. At Shellness maintain the embankment, groynes and the fronting shell beach.</p>	<p>Upgrade all the defences / management practises. Construct new defences along the presently undefended section of coast.</p>	<p>Upgrade all the defences and recharge the fronting beach.</p>
<p>Under this policy the frontage will remain defended, which will continue to fix the plan form position of the shoreline at MHW.</p> <p>The groynes between Leysdown-on-Sea (south) and the nose of Shell Ness will help to maintain the sand/shell beach, although some degree of narrowing is anticipated. In the small section where there are no groynes the beach will need to be monitored.</p> <p>It is believed that material fed to this frontage, comes predominantly from offshore shell banks (the rate of feed is unknown) and via alongshore transportation. Alongshore rates are believed to be low and under a policy of hold the line the net volume is likely to be reduced due to the presence of groynes.</p> <p>From available evidence it is assumed the shell spit (chenier) at Shell Ness will continue to accrete, extending into the outer reaches of the River Swale.</p> <p>Holding the Line along this section of the coast will impede the development of a second mouth on the eastern side of the Swale Estuary. It is important to note that this stretch of shoreline will be influenced by the adopted policy within the Medway and Swale Estuary SMP (Shell Ness to Kingsferry Bridge).</p>	<p>During this epoch new defences will need to be constructed and existing defences will need to be upgraded to implement a policy of hold the line.</p> <p>Hard defences will continue to fix the plan position of the shoreline at MHW and interrupt alongshore coastal processes. Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze). Consequently, during this epoch it is possible that the fronting beaches will need to be recharged.</p> <p>The future evolution of Shell Ness is uncertain, as a rising sea level could either mean an increase in the amount of shell received from offshore, or the source of shell could become submerged.</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary.</p>	<p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark (LWM) and the sustained presence of backshore/shoreline structures, will lead to an increase in nearshore wave energy and a lowering of the foreshore.</p> <p>During this epoch the supply of sediment is uncertain, as the offshore supply is unknown and under a policy of hold the line (and the implementation of groynes) the small alongshore supply will be interrupted.</p> <p>As such further maintenance / upgrading and recharge will be necessary before the close of this epoch.</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary.</p>
<p>Leysdown on Sea to Shell Ness</p>		

OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
It is assumed that existing defences will remain until they fail. Prior to failure new defences will need to be constructed, in a retreated position.	Maintain or upgrade realigned defences and/or recharge the beach.	Maintain / upgrade the realigned defences.
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) allow defences to fail (predicted to occur before Year 20). In this assessment the latter has been assumed, thus until failure, the embankment will continue to influence the plan-form position of the shoreline, whilst the groynes will continue to hold the sand and shell beaches in place, although some degree of narrowing is expected.</p> <p>Before failure, new defences will need to be constructed in a realigned position.</p> <p>Following failure sediment (predominantly sand) will be free to be moved alongshore, in a south-eastwards direction and the plan form position of the shoreline will migrate landwards.</p> <p>During this epoch no significant impact on Shell Ness is predicted.</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary. A new channel which would essentially create a second estuary mouth between the west of the Isle of Harty and south of Leysdown-on-Sea may potentially form if a policy of managed</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>It has been assumed that the predominant drift direction will remain southeast; transporting a small volume of material (fines and sand) towards the mouth of the River Swale. However, it is unlikely that the volume of sand will be sufficient to build significant beaches and therefore the frontage may need to be recharged or the realigned defences upgraded.</p> <p>During this epoch there is uncertainty over the durability of Shell Ness, due to the uncertainty of feed (offshore) and the predicted rise in sea level.</p> <p>The amount of realignment and subsequent flood (spatial) extent has the potential to increase tidal levels in the upstream sections of the Swale Estuary.</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary. If a secondary channel is formed (dependant on the policy adopted in the Swale) new habitat in realigned areas will become more established and new channels will become</p>	<p>During this epoch a continuation of previous trends is envisaged. The rate of managed erosion / flooding will be dependent on the realignment strategy implemented and the predicted rise in sea level (6mm/yr).</p> <p>Finding a position commensurate with the forcing factors is key and the 'line' may need to change during this epoch to facilitate this.</p> <p>During this epoch it is unlikely that Shell Ness will remain as a consequence of sea level rise and limited contemporary feed (although there is some uncertainty).</p> <p>The amount of realignment and subsequent flood (spatial) extent has the potential to increase tidal levels in the upstream sections of the Swale Estuary</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary. If a second channel is formed (dependant on the policy adopted in the Swale) habitats in realigned areas and new channels will become more established throughout this epoch.</p>

<p>retreat or no active intervention were adopted on the southern shoreline of the Isle of Sheppey in the Swale estuary. Inundation of low-lying land within the new channel would encourage the creation of new intertidal habitat in the realigned areas.</p>	<p>more defined.</p>	
Leysdown on Sea to Shell Ness		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Existing embankments and wooden groynes will fail before the end of this epoch.</p>	<p>No Defences</p>	<p>No Defences</p>
<p>Initially, defences will fix the plan form position of the shoreline at MHW, reducing the risk of flooding and holding the fronting beach in place. A continuation of this trend is predicted, until defence's fail.</p> <p>Thereafter sediment (predominantly sand) will be free to move alongshore, in a south-eastwards direction and the MHW plan form position of the shoreline will migrate landwards. During this epoch no significant impact on Shell Ness is predicted.</p> <p>Material fed to this frontage, comes predominantly from offshore shell banks (the rate has yet to be established) and via alongshore transportation (rates are believed to be low). This trend is predicted to continue throughout this epoch.</p> <p>From available evidence it has been assumed that the sand/shell spit at Shell Ness will continue to extend into the outer reaches of the River Swale. There is the potential for Shell Ness to be overwashed occasionally during this epoch but</p>	<p>During this epoch the shoreline will respond further to the forcing factors, the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <ul style="list-style-type: none"> • Sediment will continue to move freely in the predominant drift direction i.e. south-eastwards; • The shoreline will migrate landwards; • There is a risk that the barrier will become vulnerable to breaching, which could result in uncontrolled flooding of the low-lying hinterland. Once breached it may seal, albeit temporarily. In the future (50-100 years) it is predicted that this breach will become more permanent; and, • There is a risk that Shell Ness will become vulnerable to breaching. <p>A policy of Managed Realignment or No Active Intervention</p>	<p>During this epoch the shoreline will continue to respond to the natural forcing factors, albeit at an accelerated rate due to the predicted rise in sea level (6mm/yr).</p> <p>It is predicted that the area of land between Leysdown Country Park and Shell Ness will be permanently inundated (providing sea level rise outpaces sediment supply) creating a second estuary mouth, on the eastern side, if a policy of Managed Realignment or No Active Intervention is adopted on the northern banks of the Swale). If a new channel forms, the Isle of Harty will become an island again. Consequently a large-scale change in the dynamics of the open coast system to an estuarine system is anticipated. Note that large scale inundation in the downstream sections of the Swale Estuary has the potential to increase tidal levels in the upstream sections of the Swale Estuary.</p> <p>It is likely that the Swale estuarine system would expand; occupying areas which are presently open coast, thus new</p>

<p>it is predicted that there is a sufficient volume of material and supply of sediment to counter this in the short (and potentially the medium) term.</p> <p>It is important to note that this stretch of shoreline will be affected by any change in policy within the Swale Estuary, for example, realignment or no active intervention policy on the north shoreline of the Swale could allow the formation of a new channel over time, connecting the open coast with the Swale estuary. Note that large scale inundation in the downstream sections of the Swale Estuary has the potential to increase tidal levels in the upstream sections of the Swale Estuary.</p>	<p>adopted on the north bank of the Swale could allow the formation of a second estuary channel / mouth (on the eastern side) connecting the estuary with the open coast between the west of the Isle of Harty and south of Leysdown-on-Sea. Inundation of low-lying land within the new channel would encourage the creation of new inter-tidal habitat in the realigned areas. Note that large scale inundation in the downstream sections of the Swale Estuary has the potential to increase tidal levels in the upstream sections of the Swale Estuary.</p>	<p>areas of inter-tidal habitats would be created. The exact nature of the dominant sedimentary dynamics (ebb / flow) is difficult to postulate, as this is dependent on a number of factors (sea level rise, tidal flows, sediment supply and the channels cross sectional area).</p>
Faversham Creek to Seasalter (Blue Anchor)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>A Hold the Line policy will be implemented through maintaining and upgrading (where necessary) the existing defences.</p>	<p>Hold the Line Policy will be implemented through maintaining and upgrading (where necessary) defences</p>	<p>Hold the Line Policy will be implemented through maintaining and upgrading defences</p>
<p>Under a policy of Hold the Line, the frontage will remain defended, as such the plan form position of the shoreline at MHW will remain fixed and alongshore processes (east to west) affected. As such the inter-tidal area will steepen and narrow, due to a landwards recession of the LWM.</p> <p>Faversham Creek, at the western end of this frontage, is predicted to continue acting as a barrier to sediment movement. As such, the sandy beach here with a high shell content</p>	<p>During this epoch new defences will need to be constructed and / or existing defences will need to be upgraded to implement a policy of Hold the Line.</p> <p>Defences will continue to fix the plan position of the shoreline at MHW and interrupt alongshore coastal processes (although some material will still be transported towards Castle Coot). Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low</p>	<p>During this epoch a continuation of the previous trends is predicted, albeit at an accelerated rate.</p> <ul style="list-style-type: none"> • Narrowing of the inter-tidal areas is expected to continue, which will exert increased pressure on the defences. Thus further maintenance and / or upgrading the flood defences will be necessary; • 'Holding the Line' will exacerbate the issue of coastal

<p>(believed to be fed from the same offshore sources that feed, it is speculated on an annual basis, Shell Ness) will continue to feed Castle Coot Spit (east of Faversham creek via the westward transportation of material. From here the strong ebb flows, of the River Swale, will push the sediment north to Pollard Spit.</p> <p>This stretch of coastline will be affected by any changes in the estuary regime of the Swale, e.g. large scale realignment in the estuary will lead to erosion of the foreshore on the outside of meanders (i.e. at Nagden Marshes) due to increased tidal flows.</p>	<p>water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>It is however likely that the western end of the frontage will still receive offshore inputs.</p> <p>During this epoch the defended shoreline fronting Graveney Marshes and potentially Cleve Marshes will need to be closely monitored as this section of the coast is extremely vulnerable to coastal squeeze. Under a Hold the Line policy it is uncertain whether the substantial mudflats and saltmarshes, in front of the defences will maintain the same area. If there is a reduction in area then pressure on the defended shoreline could increase, leading to an increase on the frequency of maintenance / upgrading.</p> <p>This stretch of coastline will be affected by any changes in the estuary regime of the Swale.</p>	<p>squeeze and further losses of the inter-tidal flats are predicted (especially at Graveney and Cleve Marshes); and,</p> <ul style="list-style-type: none"> Reducing the inter-tidal area will affect the foreshore; under storm conditions more material could be drawn down the beach and lost offshore. <p>Beaches fronting Graveney and Cleve Marshes may need to be recharged, whilst at Castle Coot spit the trend of accretion is likely to change to erosion (although there is uncertainty over whether this feature receives a contemporary input of shell). If this were to be the case then recharge could also be required here.</p>
Faversham Creek to Seasalter (Blue Anchor)		
OPTION 2		
Advance the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The defence structures and management practises along the frontage will need to be upgraded / changed to accommodate an advancement of the line.</p>	<p>Maintain the advanced defence structures</p>	<p>Further upgrading of the advanced defences will be required during this epoch.</p>
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline. As such</p>	<p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This increase will lead to</p>	<p>During this epoch it will become increasingly difficult / expensive to hold the shoreline at its advanced location. The continued rise in sea level (6mm/yr) will lead to an increase in</p>

<p>the following is predicted:</p> <ul style="list-style-type: none"> • The inter-tidal area could be lost, depending on the position of the advanced line; • The fronting beaches could be lost (depending on the advance shoreline position along with the introduction of recharged material); • Saltmarsh and mudflats could be lost; • Alongshore coastal processes could be affected if, for example, advancing the line led to a pronounced headland or extensive groyne fields were implemented, then alongshore transport rates are expected to reduce; • Linkages between the open coast and the Swale Estuary will be irrevocably damaged; • The 'shoreline' will become more vulnerable to wave attack; and, • There will be an increased probability of overtopping. 	<p>increases in alongshore and offshore transport of beach material which will accelerate the lowering of beach levels in front of advanced defences. If a groyne field is implemented however, alongshore transport of sediment would be reduced.</p> <p>To combat an increase in wave attack, due to continued sea level rise, the advanced line will require further maintenance; resulting in an increasingly hard engineered frontage.</p> <p>The impact of advancing the line along the open coast will result in continued implications for the Swale Estuary. Constraining part of the mouth could lead to further interruptions in alongshore coastal processes, if advancing the line culminated in an artificial 'headland' feature and the construction of extensive groyne fields.</p>	<p>wave energy at the shore.</p> <p>To counter this, all defences will require further works and additional structures may need to be constructed offshore (e.g. breakwaters) to accommodate the position of the advanced shoreline.</p> <p>As there will be a limited inter-tidal area, hard defences will become increasingly susceptible to overtopping.</p> <p>Advancing the line could continue to affect sediment movement throughout this epoch and continue to have implications on the Swale Estuary. If a pronounced headland develops, or the shoreline is associated with extensive groyne fields, then alongshore transport rates could reduce.</p>
Faversham Creek to Seasalter (Blue Anchor)		
OPTION 3		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
New defences will need to be constructed at a more landwards position and the current defences will be allowed to fail.	Maintain / upgrade the realigned defences.	Maintain the realigned defences and / or realign to a new more commensurate position.

<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) to allow the defences to fail (predicted to occur before Year 20). For this assessment the latter has been assumed.</p> <p>Until failure, the embankment will continue to influence the plan-form position of the shoreline at MHW, whilst the groynes will continue to hold the sand / gravel beach in place, although some degree of narrowing is expected. Before failure of existing defences, new defences will need to be constructed in a realigned position. Following failure the following changes are predicted:</p> <ul style="list-style-type: none"> • A landwards transgression of the shoreline, e.g. roll back of the sand/shingle upper beach across the former saltmarsh hinterland; • Some accretion of the mudflats / salt marshes at the western end of the frontage is predicted; and, • The continuation of alongshore transport (sand and shingle), albeit it at a naturally low rate is predicted. <p>Graveney and Cleve Marshes will need to be monitored as these locations are vulnerable to overtopping / flooding. Defences at this location may need to be more substantial or some form of soft engineering may need to supplement the chosen realigned defence option.</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>It has been assumed that the predominant drift direction will remain westwards; transporting a small volume of material (mainly fines although there are some sands), into the mouth of the River Swale. However, it is unlikely that the volume of sand will be sufficient to build significant beaches and thus as the shoreline translates landwards, the beach may start to narrow (unless recharge is implemented) and/or coarser material (sand) may get left behind. If the beach narrows (and is not recharged) then there the defences may need to be upgraded to maintain a suitable standard of flood protection to the low-lying hinterland.</p> <p>With regards to the tidal flats and their evolution, this will depend on the supply of sediment from updrift and offshore sources. If updrift frontages i.e. Seasalter to Whitstable Golf Course and Whitstable Town were to maintain similar policies to the present day or introduce realignment then it is likely that the tidal flats will continue to accrete vertically, during this epoch, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002). However, if an advance the line policy were to be implemented updrift then it is uncertain whether the supply of sediment, to this frontage, would be sufficient to counter sea level rise.</p> <p>The amount of realignment and subsequent flood (spatial) extent has the potential to increase tidal levels in the upstream sections of the Swale Estuary</p>	<p>Under a policy of Managed Realignment it has been assumed that the flood risk will be managed, via the choice and maintenance of defence structures.</p> <p>During this epoch a continuation of previous trends is envisaged. The amount of managed flooding will be dependent on the realignment strategy implemented and the predicted rise in sea level (6mm/yr).</p> <p>The amount of realignment and subsequent flood (spatial) extent has the potential to increase tidal levels in the upstream sections of the Swale Estuary</p> <p>Finding a position commensurate with the forcing factors is key and the 'line' may need to change (i.e. move landwards) to facilitate this.</p> <p>The evolution of the tidal flats will depend on the supply of sediment, which over this epoch is likely to continue to support vertical accretion, keeping pace with sea level rise (IECS, 1993, CCM, 2002 and CHaMP, 2002).</p> <p>If realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates into the Swale estuary.</p>
<p>Faversham Creek to Seasalter (Blue Anchor)</p>		

OPTION 4		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Allow the combination of defences along this section of coast to fail	No Defences	No defences
<p>Extensive tidal flats backed by large areas of former salt marsh, enclosed and reclaimed from the sea for agricultural use, dominate this section of the coast.</p> <p>During this epoch under a policy of No Active Intervention, the existing defences will be allowed to fail. However, prior to failure:</p> <p>Initially the plan position of the shoreline and process interactions will continue to be held and affected by the defence structures. Thereafter, the probability of a breach / flood inundation occurring is inevitable. Faversham Road is particularly vulnerable to storm events (i.e. 1: 10yrs) and as such the houses, built on / close to the beach, would be susceptible to uncontrolled flooding.</p> <p>Sediment will continue to move alongshore, in the dominant drift direction (westwards) and in the west receive feed from material washed onshore from the extensive shellfish beds in the mouth of the River Swale estuary.</p> <p>Faversham Creek will continue to act as a barrier to sediment and as such the sandy beach, with high shell content, will continue to accumulate on the east bank of the creek.</p>	<p>Following defence failure, at the close of the previous epoch, and the predicted increase in sea level rise (6mm/yr), further flooding and / or greater susceptibility to uncontrolled flooding will dominate the low-lying hinterland (Cleve Marsh, Graveney Marsh and Seasalter Levels) and lead to changes in the existing plan-form of the Swale Estuary.</p> <p>Note that large scale inundation in the downstream sections of the Swale Estuary has the potential to increase tidal levels in the upstream sections of the Swale Estuary</p> <p>Further property losses are to be expected due to uncontrolled flooding.</p>	<p>During this epoch a continuation of the previous trends is predicted, albeit at an accelerated rate.</p> <p>The marine transgression is likely to expand the estuarine extent by increasing the width of the Swale's channel. As such inter-tidal habitats could increase as the floodplain is inundated.</p> <p>It is predicted that sediment will still be fed to this frontage from updrift sections of the coast (further east). The newly-created inter-tidal areas could act as a sink for fine-grained sediment, which may encourage further development of saltmarsh and mudflats.</p> <p>Note that large scale inundation in the downstream sections of the Swale Estuary has the potential to increase tidal levels in the upstream sections of the Swale Estuary</p> <p>If no active intervention leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>

Seasalter (Blue Anchor) to Whitstable Golf Course		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Implementation of a hold the line policy will involve maintaining the defences. It has been assumed that beaches will narrow unless beach recharge is implemented / continued. continue.	Maintenance and upgrading/ replacement of defences (as necessary) and continued beach recharge (at increased rates as necessary)	Maintenance and upgrading/ replacement of defences (as necessary) and continued beach recharge (at increased rates as necessary)
<p>Under a policy of Hold the Line, the frontage will remain defended, as such:</p> <ul style="list-style-type: none"> • The plan form position of the shoreline will remain fixed at HWM; • The groynes will continue to interrupt alongshore transportation (sand and shingle), which will impact on downdrift beaches (towards the Swale Estuary); • The mean low-water position will continue to retreat landwards (resulting in coastal squeeze); and, • The pressure on the existing defences will increase. <p>As such the beach will start to narrow (unless recharged); especially the area fronting the golf course (which could be denude of (coarse) sediment in approximately 10 years time.</p>	<p>During this epoch new defences will need to be upgraded to continue implementing a policy of Hold the Line.</p> <p>Defences will continue to fix the plan position of the shoreline at HWM and interrupt alongshore coastal processes. Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>It is envisaged that beaches will narrow (unless recharged).</p> <p>In essence Holding the Line prevents the shoreline from responding naturally.</p>	<p>During this epoch a continuation of previous trends is predicted, albeit at an accelerated rate due to sea level rise.</p> <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark (LWM) and the sustained presence of backshore/shoreline structures, will lead to an increase in nearshore wave energy and a lowering of the foreshore, resulting in a net loss of surface area of inter-tidal flats.</p> <p>This will exert increased pressure on the defences. Thus further maintenance and / or upgrading the flood defences will be necessary.</p> <p>With the shoreline being held seawards of its natural alignment, the coast will potentially become more exposed and the rise in sea level foreshore cover will diminish further. By the close of this epoch it will be more difficult and expensive to maintain a beach along this section of the coast.</p>

Seasalter (Blue Anchor) to Whitstable Golf Course		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
New defences will need to be constructed at a more landwards position before the original defences are removed.	Maintain / upgrade the realigned defences.	Maintain the realigned defences and / or realign to a new more commensurate position.
<p>To implement a policy of managed realignment three options are possible: 1) to remove the defences immediately, 2) to remove the defences at the close of this epoch or 3) to allow the defences to fail (predicted before Year 50).</p> <p>In this instance allowing the defence to fail (and managing their removal once they have failed) has been assumed. Thus, until failure, the defences will continue to influence the plan-form position of the shoreline and influence the coastal processes.</p> <p>It has been assumed that the predominant drift direction will remain westwards; transporting the small volume of (predominantly fine) material. The volume / nature of this material is unlikely to be sufficient / suitable to build significant beaches and therefore the fronting beaches will narrow (unless recharged).</p> <p>A landwards transgression of the shoreline, roll back of the sand/shingle upper beach, some mudflat / salt marsh accretion and a continuation of alongshore transport (sand and shingle), albeit it at a naturally low rate.</p>	<p>Until failure of the present day defences takes place a continuation of previous trends is envisaged. However, once present day defences fail specific shore parallel assets i.e. sewage pipeline will be at risk and this will need to be managed. Similarly under a policy of managed realignment, it is envisaged that new (realigned) defences will be constructed. In this instance a revetment would be most appropriate, as this would allow some erosion albeit at reduced and managed rate. A revetment would also enable the eroded material, predominantly fines, to be incorporated into the sediment budget and transported alongshore.</p> <p>It has been assumed that the predominant drift direction will remain westwards; transporting the small volume of (predominantly fine) material. The volume / nature of this material is unlikely to be sufficient / suitable to build defensive beaches.</p> <p>Depending on the rate of erosion deemed acceptable, by the close of this epoch there could be some socio-economic losses along this section of the coast.</p>	<p>During this epoch the evolution of the realigned area will be dependent on the rate of erosion and the supply of sediment. The rate of managed erosion will be dependent on the realignment strategy implemented and the predicted rise in sea level (6mm/yr), whilst the supply of sediment (from updrift, offshore and local sources) will determine whether the salt marsh and mudflats will continue to accrete vertically, keeping pace with sea level rise. However, if sediment supply is not sufficient or conditions for settling not conducive then there is the potential for the inter-tidal area to decrease.</p> <p>There is the potential for realignment to lead to the development of an embayment, which has the potential to reduce transportation rates alongshore.</p> <p>Before the close of this epoch the realigned defences may need to be upgraded / moved further landwards to accommodate the rise in sea level. Nonetheless before the close of this epoch, asset loss is inevitable.</p>

Seasalter (Blue Anchor) to Whitstable Golf Course		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
No maintenance of existing defences	Defences expected to fail before the close of this epoch	No Defences
<p>Defences along this section of the coast have recently been upgraded therefore failure is not anticipated until the following epoch. Therefore the shoreline position will remain fixed by the defences. In the interim no further beach recharge will take place, resulting in narrowing of the foreshore, particularly at the beach fronting the golf course.</p> <p>Some material will continue to bypass the defences, moving westwards along the coast with the predominant drift direction.</p>	<p>Groyne performance is expected to reduce significantly during this epoch. However, until failure of defences, alongshore coastal processes will continue to be affected. With no beach recharge and a predicted rise in sea level (6mm/yr), foreshore cover is likely to decrease. As such, the backing defences will become increasingly exposed to wave attack; ultimately leading to their demise. With no defences in place a readjustment phase will take. This will involve:</p> <ul style="list-style-type: none"> • Reactivating erosion of the backing hinterland (Seasalter Slopes), resulting in rapid retreat of the shoreline, until a shoreline position more commensurate with the forcing factors, is reached; • A potential increase in the inter-tidal area as the shoreline (HWM) migrates landwards; • Evolution of the inter-tidal area will be dependent sediment supply and nearshore conditions. If the HWM translates landwards and sediment supply is sufficient to counter sea level rise, then the fronting salt marsh / mudflat will accrete vertically. If sediment supply is not sufficient and / or 	<p>During this epoch it is predicted that sea level will continue to rise (6mm/yr) thus at Seasalter, slope erosion and landsliding will increase.</p> <p>Rates could be in the region of 0.5-1m/yr supplemented by periodic localised erosion events.</p> <p>It has been assumed that the dominant drift direction will remain westwards.</p> <p>It is speculated that the inter-tidal habitat in realigned areas could act as sinks for fine-grained sediment, which will encourage the development of salt marsh and mudflats.</p> <p>If realignment under no active intervention leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>

	<p>conditions for settling not conducive then the inter-tidal area could decrease; and,</p> <ul style="list-style-type: none"> • Loss of assets – the railway line, for example, would be lost in 5-10 years. 	
<p>Whitstable Town</p> <p>(Golf Course - NE corner to Whitstable Harbour - eastern extent)</p>		
<p>OPTION 1</p>		
<p>Hold the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>Substantial defences protect the majority of this epoch – little maintenance is envisaged, with the exception of the defences fronting the golf course. Recharge the foreshore.</p>	<p>All defences will need to be upgraded to continue offering a suitable standard of (flood and erosion) protection</p>	<p>Maintain / upgrade the defences and recharge the foreshore</p>
<p>This section of the coast is heavily defended and will remain so under a policy of Hold the Line. Although little maintenance is envisaged for this epoch the structures are such that they will continue to fix plan form position of the shoreline at HWM.</p> <p>There is no beach building supply of sediment to this section of the coast, therefore over time, beaches will steepen and narrow. To combat this recharge is recommended. If the beach is not recharged then the pressure on the backing structures / defences will increase.</p> <p>Throughout this epoch it is envisaged that the groynes will continue to restrict the alongshore transportation of sediment (westwards), which will help maintain / stabilise beaches along</p>	<p>During this epoch all the defences will need to be upgraded / replaced to maintain integrity.</p> <p>Defences will continue to fix the plan position of the shoreline at HWM and the harbour arms and groynes will interrupt alongshore coastal processes (from the east). Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>There is no contemporary beach building sediment supply (Seasalter slopes / along and offshore) to this frontage, from alongshore and offshore sources, as such further recharge will</p>	<p>During this epoch a continuation of previous trends is anticipated, albeit at an accelerated rate thus:</p> <ul style="list-style-type: none"> • Rising sea levels and increased storminess, coupled with a landward recession of the LWM will lead to an increase in nearshore wave energy. Defences will therefore need further upgrading / maintaining; • A continued loss of beach volume will occur and therefore additional recharge will be required and / or alternative practises may need to be introduced e.g. rock revetments. If the latter is the case then amenity beaches will be lost; • Alongshore coastal processes will continue to be interrupted; therefore little movement west is predicted,

<p>this stretch.</p> <p>Before the close of this epoch the wall fronting the golf course will need to be upgraded.</p>	<p>be required to maintain present / suitable beach volumes.</p>	<p>which will continue to impact on areas downdrift; and,</p> <ul style="list-style-type: none"> • Preventing erosion of Seasalter slopes – this will eliminate feed but feed from the slopes is not significant anyway.
<p>Whitstable Town</p> <p>(Golf Course - NE corner to Whitstable Harbour - eastern extent)</p>		
<p>OPTION 2</p>		
<p>Advance the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>The defence structures and management practises along the frontage will need to be moved seawards to accommodate an advancement of the line.</p>	<p>Maintain the advanced defence structures.</p>	<p>Further upgrading of the advanced defences will be required during this epoch.</p>
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline. As such the following is predicted:</p> <ul style="list-style-type: none"> • Depending on the position of the advanced line the inter-tidal area and the fronting beaches could be lost; • Recession of the low water mark will take place; • Alongshore coastal processes may potentially be affected, e.g. transportation rates (sand) could reduce, if the policy of advance the line leads to the development of pronounced headlands or extensive groyne fields are implemented (under a policy of advance the line it has been assumed that fine material should be able to bypass 	<p>To combat an increase in wave attack, the advanced line / defended line will require further maintenance and or further beach recharge.</p> <p>No beach building feed from the offshore and alongshore is predicted.</p> <p>Advancing the line in combination with landward recession of the LWM with rising sea levels and an increase in storminess will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures.</p>	<p>During this epoch it will become increasingly difficult / expensive to hold the shoreline at its advanced location. The continued rise in sea level (6mm/yr) will exacerbate the impact of the forcing factors.</p> <p>To counter this, all defences will require further works and additional structures may need to be constructed (offshore) to accommodate the position of the advanced shoreline.</p> <p>There will be limited foreshore, unless beach recharge is carried out– only a heavily engineered frontage, which will become increasingly susceptible to overtopping.</p>

<p>the defence structures);</p> <ul style="list-style-type: none"> • The advanced 'shoreline' will become more vulnerable to wave attack ; and, • There will be an increased probability of overtopping. 		
<p>Whitstable Town (Golf Course - NE corner to Whitstable Harbour - eastern extent)</p>		
<p>OPTION 3</p>		
<p>No Active Intervention (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>With the exception of the defences fronting the golf course, substantial defences protect the majority of this epoch. Under a policy of NAI no maintenance will be implemented.</p>	<p>The remaining defences will fail before the close of this epoch.</p>	<p>No Defences</p>
<p>Defences along this section of the coast have recently been upgraded therefore failure is not anticipated until the following epoch. The shoreline position will therefore remain fixed and coastal processes similar to the present day. However, it is assumed that no beach recharge will be undertaken under a policy of No Active Intervention.</p> <p>During this epoch the throughput of sediment (shingle to silt) will continue to be restricted. Thus part of this frontage plus frontages down drift will be 'starved' of sediment.</p> <p>Beaches are expected to narrow, due to limited feed into the</p>	<p>Groyne performance is expected to reduce during this epoch, eventually resulting in their failure. However, until this takes place alongshore sediment transport will continue to be limited. Following failure, sediment 'held' in the groynes will be released and moved alongshore, in the dominant drift direction (westwards).</p> <p>The movement of foreshore cover / material will result in increased exposure of the backing defences, which will ultimately lead to their demise.</p> <p>With no groynes in place and the predicted rise in sea level (6mm/yr), a readjustment phase will be initiated. This is likely</p>	<p>During this epoch a continuation of previous trends is predicted, albeit at an accelerated rate, due to the predicted rise in sea level (6mm/yr). Therefore:</p> <p>Migration of the shoreline will accelerate landwards (due to erosion and flooding);</p> <p>Material will continue to be moved westwards, under the assumption that the present day hydrodynamics continue throughout this epoch;</p> <p>Whitstable Town will be inundated by flood waters; and,</p>

<p>area (and no recharge).</p>	<p>to involve rapid retreat of the shoreline. Beach material will be stripped, within 5-10 years and transported alongshore, in a westwards direction towards the golf course. Thereafter, the frontage will be vulnerable to breaching. Following a breach events the inter-tidal has the potential to increase and/or the inter-tidal area has the potential to migrate landwards, in response to the shoreline migrating landwards and sea level rise. By the close of this epoch Whitstable's harbour arms will have failed allowing sediment held updrift of the eastern harbour arm to be rapidly transported alongshore</p>	<p>There is a possibility that the inter-tidal habitat could act as a sink for the fine-grained sediment, which will encourage the development of salt marsh and mudflats.</p>
<p>Whitstable Harbour (eastern extent) to Swalecliffe</p>		
<p>OPTION 1</p>		
<p>Hold the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>Implementation of a hold the line policy will involve maintaining the existing seawall / embankment and continuing to re-grade the slopes and recharge the beach.</p>	<p>Maintain and upgrade defences as necessary. Continue (and increase as necessary) beach recharge</p>	<p>Maintain and upgrade defences as necessary. Continue (and increase as necessary) beach recharge</p>
<p>The shoreline position will continue to be held by defences, whilst groyne along the majority of this frontage (with the exception of Long Rock) will continue to entrap beach material / sediment moving alongshore.</p> <p>As natural response of the shoreline is restricted (by the defences) over time, beaches will tend to steepen and narrow, which could result in increased beach recharge to maintain a suitable beach / standard of protection along this stretch.</p> <p>During this epoch the eastern harbour arm at Whitstable will continue to act like a terminal groyne. Thus sediment moving</p>	<p>During this epoch all the defences will need to be replaced to maintain integrity.</p> <p>Defences will continue to fix the plan position of the shoreline at HWM and the terminal groyne effect of the eastern harbour arm will continue to interrupt alongshore sediment transport processes, encouraging the updrift build up of sediment (from the east). Therefore, under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p>	<p>During this epoch a continuation of previous trends is anticipated, albeit at an accelerated rate, thus:</p> <ul style="list-style-type: none"> • Defences will need further upgrading / maintaining; • The beach will come under increased pressure, due to coastal squeeze, sea level rise (6mm/yr) and increased storminess and therefore additional recharge will be required and / or alternative practises may need to be introduced e.g. rock revetments. If the latter is the case then amenity beaches are likely to be lost;

<p>alongshore will continue to accrete updrift of the harbour arm.</p> <p>At Long Rock there are no shoreline defences, therefore the beach will be allowed to respond naturally to the forcing factors. However, the backing clay bund will be maintained to prevent flooding of the hinterland.</p> <p>It is predicted that Long Rock will continue to act as a sink, for shingle sized sediment, during this epoch.</p>	<p>Under a policy of Hold the Line an alternative, more substantial structure may need to be constructed at Long Rock, to replace the clay bund, to maintain a suitable standard of flood protection.</p>	<ul style="list-style-type: none"> • The static backshore defence will preclude sediment input (sand and shingle); • There will be continued platform lowering, which will make maintenance of a beach technically more difficult over time as the foreshore becomes increasingly exposed; and, • Alongshore coast processes will continue to be interrupted; particularly by the eastern harbour arm at Whitstable, therefore little movement downdrift is predicted.
Whitstable Harbour (eastern extent) to Swalecliffe		
OPTION 2		
Advance the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The defence structures and management practises along the frontage will need to be moved seawards to accommodate an advancement of the line.</p>	<p>Maintain the advanced defence structures.</p>	<p>Further upgrading of the advanced defences will be required during this epoch.</p>
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline. As such the following is predicted:</p> <ul style="list-style-type: none"> • No erosion of the backing slopes will take place; • Depending on the position of the advanced line the inter-tidal area could be lost; • Fronting beaches could be lost (unless recharge is carried 	<p>To combat an increase in wave attack, the advanced line will require further maintenance.</p> <p>No (beach building) feed from the offshore and alongshore is predicted; although under a policy of advance the line it is predicted that fine material will still be able to bypass the defence structures.</p> <p>Advancing the line in combination with landward recession of the LWM with rising sea levels and an increase in storminess will lead to an increase in nearshore wave energy. This</p>	<p>During this epoch it will become increasingly difficult / expensive to hold the shoreline at its advanced location.</p> <p>The predicted, continued rise in sea level (6mm/yr) and its associated impact on the forcing factors will exacerbate the situation.</p> <p>To counter this all defences will require further works and / or additional structures may need to be constructed offshore (breakwaters) to accommodate the position of the advanced</p>

<p>out);</p> <ul style="list-style-type: none"> • The inter-tidal area could be lost; • Alongshore coastal processes may potentially be affected, e.g. alongshore transport rates will be reduced, if the policy of advance the line leads to the development of pronounced headlands or extensive groyne fields are implemented; • The advanced 'shoreline' will become more vulnerable to wave attack; and, • There will be an increased probability of overtopping. 	<p>increase could lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures. Additional pressure will be exerted on the defences, by these forcing factors.</p>	<p>shoreline.</p> <p>Under a policy of advance the line it is unlikely that there will be foreshore cover (unless substantial groynes and beach recharge is carried out) resulting in a heavily engineered frontage, which over time will become increasingly susceptible to overtopping.</p> <p>If advancing the line leads to the development of pronounced headlands or is associated with extensive groyne fields, then this could reduce alongshore transport rates.</p>
<p>Whitstable Harbour (eastern extent) to Swalecliffe</p>		
<p>OPTION 3</p>		
<p>Managed Realignment (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>Failure of the present day defences will be managed.</p>	<p>Following failure of the present day defences, new realigned defences will need to be constructed (at a more landwards position).</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) allow the defences to fail (predicted to take place before the close of this epoch).</p> <p>For this assessment, allowing the defences to fail has been assumed. Therefore, until failure, the defences will continue to</p>	<p>Following the managed failure of defences, new defences will need to be constructed in a realigned position. At Whitstable and at Long Rock, which is prone to flooding, constructing a seawall / embankment landwards of the present position would be most appropriate. Whereas, at Tankerton a revetment would be more appropriate, as this would allow some erosion of the clay cliffs, albeit at reduced and managed</p>	<p>During this epoch a continuation of previous trends is envisaged. The rate of managed erosion and flood risk will be dependent on the realignment strategy implemented and the predicted rise in sea level (6mm/yr).</p> <p>Realigned defences may need to be moved further landwards to accommodate the predicted (accelerated) increase in sea</p>

<p>influence the plan-form position of the shoreline and influence the coastal processes.</p>	<p>rate. A revetment would also enable the eroded material (sand and shingle) to be incorporated into the (offshore and alongshore) sediment budget.</p> <p>Under a scenario of managed realignment, the plan position of the shoreline would transgress landwards, the upper sand/shingle beach would roll back and without groyne there would be alongshore transportation (sand and shingle). However, the volume of material is not likely to be sufficient to build significant beaches and therefore the frontage may require recharge or the realigned defences upgraded.</p> <p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>The evolution of the realigned area will be dependent on supply of sediment and the amount of exposure. If the volume is high enough and the exposure low enough, then realigned areas will accrete vertically. If not then the inter-tidal area will reduce.</p> <p>By the close of this epoch socio-economic losses are predicted.</p>	<p>level. If the line does not migrate landwards then the realigned defences may need to be upgraded to continue to afford a suitable standard of protection.</p> <p>It has been assumed that if realignment leads to the development of an embayment, and then this has the potential to reduce alongshore sediment transport rates.</p> <p>By the close of this epoch asset loss is inevitable.</p>
<p>Whitstable Harbour (eastern extent) to Swalecliffe</p>		
<p>OPTION 4</p>		
<p>No Active Intervention (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>

<p>Defences will be allowed to fail and beach recharge / recycling will cease immediately</p>	<p>No Defences</p>	<p>No Defences</p>
<p>Defences and beach management practises currently fix the plan form position of the shoreline at HWM; reduce the risk of erosion, reduce the risk of flooding (at the extreme ends) and hold the shoreline and the fronting beach in place. Under a policy of No Active Intervention, beach recharge/recycling would cease immediately. Thus, despite the continued presence of groynes, it is predicted that the beach will narrow. Thus, the amount of protection this affords will reduce, leading to increased wave attack along the defended shoreline.</p> <p>Before the close of this epoch it is likely that the groynes will have failed and as such sediment (sand and shingle) will be free to move alongshore (westwards). The seawall</p> <p>It is envisaged that the eastern harbour arm at Whitstable will continue to act like a terminal groyne. Thus sediment moving alongshore will continue to be retained updrift of this structure.</p>	<p>Following the failure of the seawall, erosion of the previously defended slopes at Tankerton would be reactivated – as such the plan form position of the shoreline will migrate landwards and the low-lying backing hinterland, at the extreme eastern and western ends, will become increasingly vulnerable to flooding.</p> <p>Under a scenario of sea level rise (6mm/yr), erosion of the Tankerton slopes could accelerate, which would result in the plan form position migrating further landwards and the London Clay shore platform experiencing potentially greater rates of lowering / basal undercutting, which could induce landsliding behaviour within the slopes.</p> <p>By the close of this epoch frequent / permanent flooding at the extreme ends of this frontage is predicted.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate due to the continued rise in sea level (6mm/yr).</p> <p>Thus, a landwards migration of the shoreline is predicted, as is further / accelerated erosion of the slopes; resulting in little feed to the sediment budget, as the majority of the material is clay, which is unsuitable for building protective beaches.</p> <p>It has been assumed that the predominant drift direction will remain westwards and at the extreme ends of this frontage further flooding, of the low-lying hinterland, is predicted.</p> <p>Under a policy of no active intervention there is the potential for embayment's to develop, particularly at the extreme eastern and western ends of this frontage. Should this take place then this has the potential to reduce alongshore sediment transport rates.</p>
<p>Swalecliffe to Herne Bay Breakwater</p>		
<p>OPTION 1</p>		
<p>Hold the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>

<p>Implementation of a Hold the Line policy will involve maintaining, upgrading and potentially replacing the existing defences. The recently recharged beach between Herne Bay Pier and Herne Bay Harbour will need to be monitored. Recycling activities from Hampton to the area downdrift of the breakwater.</p>	<p>Maintenance and upgrade the defences between Long Rock and Herne Bay frontage</p>	<p>Maintenance and upgrade all the defences along the frontage.</p>
<p>The HWM shoreline position will continue to be held by the defences and as such the natural response of the coastline will remain constrained under a policy of a Hold the Line.</p> <p>The dominant drift direction will remain westwards and the terminal groyne at Hampton Pier will continue to have a major controlling influence; sustaining a wider beach updrift of the structure and a narrower one in its lee (due to the structure continuing to interrupt sediment movement alongshore). Holding the Line along this section of the coast will continue to interrupt feed to frontages downdrift (Whitstable Harbour).</p> <p>The harbour arm at Herne Bay will provide some degree of protection to Herne Bay. As such the sand beach, in its lee, will remain reasonably wide. However, as one moves west along the frontage the mixed shingle and sand beach narrows despite the groyne field and the westward transferral of sediment. This will need to be monitored as too much narrowing (unless recharge is implemented) could result in increased pressure on the backing defences. If this were to become the case then the defences would need to be upgraded.</p>	<p>The shoreline position will continue to be held by the defences at the HWM. Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p> <p>Although the groynes will add some stability to the foreshore, beach narrowing is expected, particularly along the Studd Hill frontage (west of Hampton's Pier). This increase in pressure on defences will need to be compensated for by 1) an increase in recharge or 2) further maintenance or upgrading of the existing defence structures.</p> <p>Holding the Line along this section of the coast will continue to interrupt feed to frontages downdrift (Whitstable Harbour).</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate:</p> <ul style="list-style-type: none"> • The shoreline position will remain fixed by defences; • Continued lowering of the London Clay platform is expected; • Feed to frontages downdrift (Whitstable Harbour) will be affected; and, • Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures. During this epoch recharging the beach may no longer be technically feasible, especially along the Studd Hill frontage, therefore alternative options may need to be implemented (e.g. a rock bund).
<p>Swalecliffe to Herne Bay Breakwater</p>		
<p>OPTION 2</p>		
<p>Advance the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>

<p>The defence structures and management practises along the frontage will need to be moved seawards to accommodate an advancement of the line.</p>	<p>Maintain the advanced defence structures.</p>	<p>Further upgrading of the advanced defences will be required during this epoch.</p>
<p>New defences will need to be constructed seawards of the existing defences thus advancing the position of the shoreline.</p> <ul style="list-style-type: none"> • No erosion of the backing slopes will take place; • Advancing the line will reduce the inter-tidal area; • Fronting beaches could be lost unless recharge is carried out; • Alongshore coastal processes may potentially be affected, e.g. alongshore transport rates will be reduced, if the policy of advance the line leads to the development of pronounced headlands or extensive groyne fields are implemented; • The advanced 'shoreline' will become more vulnerable to wave attack e.g. as the coastline is orientated east-west, it is prone to attack from the North Sea and North Sea surges; and, • There will be an increased probability of overtopping. 	<p>To combat an increase in wave attack, the advanced line / defended line will require further maintenance and / or further beach recharge.</p> <p>No feed from offshore or alongshore is predicted; although it is envisaged that fines (clay) will be able to bypass the defence structures.</p> <p>Advancing the line in combination with landward recession of the LWM with rising sea levels and the predicted increase in storminess will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures. Additional pressure will be exerted on the defences, by these forcing factors.</p> <p>Assuming the breakwater and the groynes are maintained, under a policy of advance the line, the amount of sediment moving alongshore will be negligible.</p>	<p>During this epoch it will become increasingly difficult and expensive to hold the shoreline at its advanced location.</p> <p>The predicted, continued rise in sea level (6mm/yr) and its associated impact on the forcing factors will exacerbate the situation.</p> <p>To counter this all defences will require further works and / or additional structures may need to be constructed offshore (breakwaters) to accommodate the position of the advanced shoreline.</p> <p>Under a policy of advance the line it has been assumed that there will be a limited foreshore (unless beach recharge is carried out), resulting in a heavily engineered frontage, which will become increasingly susceptible to overtopping.</p> <p>If advancing the line leads to the development of pronounced headlands or is associated with extensive groyne fields, then this could reduce alongshore transport rates.</p>
<p>Swalecliffe to Herne Bay Breakwater</p>		
<p>OPTION 3</p>		
<p>Managed Realignment (0-100 Years)</p>		

Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>New defences will need to be constructed at a more landwards position before the original defences are removed / allowed to fail.</p>	<p>Maintain / upgrade the realigned defences.</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) allow the defences to fail (predicted to take place before the close of this epoch).</p> <p>In this instance allowing the defences to fail has been selected for the majority of structures, with the exception of the breakwater, which has a longer residual life and would therefore be removed by the close of this epoch. Therefore, until failure, the defences will continue to influence the plan-form position of the shoreline and influence the coastal processes.</p> <p>Before failure of existing defences, new defences will need to be constructed in a realigned position. As this section of the coast is prone to flooding, a seawall / embankment landwards of the present position would be most appropriate. It is not envisaged that groyne would be constructed, therefore under a policy of managed realignment; alongshore coastal processes would not be interrupted.</p> <p>Following failure / removal of the original defences it is predicted that there would be: a landwards transgression of the shoreline, rapid alongshore transportation of the sand/shingle beach and increased exposure to wave energy (particularly during extreme storm events). Loss of assets is expected in this epoch.</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>It has been assumed that the predominant drift direction will remain westwards and under a policy of management realignment there is scope for improved sediment linkages (although it is acknowledged that, the volume of material available for transportation is very small i.e.3000-5000 m3/yr [providing the breakwater is no longer there).</p> <p>Similarly the volume of material on the foreshore is unlikely to be sufficient to maintain / build significant beaches, therefore alternative protection measures may need to be sought, the realigned defences upgraded or the position of realignment altered.</p> <p>The evolution of the realigned area will be dependent on supply of sediment. If this is high enough then realigned areas will accrete vertically. If not then there may be decreases in inter-tidal area.</p> <p>Depending on the implementation of realignment and / or the realigned line, the backing assets could be at risk to overtopping and potentially flooding.</p>	<p>During this epoch an acceleration of previous trends is envisaged. The probability of flooding will be dependent on the predicted rise in sea level (6mm/yr) and the realignment strategy implemented.</p> <p>Realigned defences may need to be moved further landwards to accommodate the increase in sea level rise. If the line does not migrate landwards then the realigned defences may need to be upgraded.</p> <p>If a decision is made not to upgrade the defences then the probability of flooding will increase. As such by the close of this epoch asset loss will become increasing probabilistic.</p> <p>If realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>
<p>Swalecliffe to Herne Bay Breakwater</p>		

OPTION 4		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
No further maintenance of the defences / implementation of beach management.	No further maintenance of the remaining defences – resulting in failure of the terminal groyne and groynes.	No maintenance of the remaining defence (breakwater) – failure predicted at the start of this epoch.
<p>Defences and beach management practises currently fix the plan form position of the shoreline at the HWM; reduce the risk of flooding and hold the shoreline and the fronting beach in place. Under a policy of No Active Intervention, beach recharge would cease immediately. In response the beach is expected to narrow, despite the continued presence of groynes. The protection the beach affords will reduce, impacting on the remaining defence structures. As such defence failure will take place before the close of this epoch.</p> <p>Following failure: 1) beach material will be rapidly transported alongshore; 2) the dominant drift direction will remain westerly; 3) the terminal groyne at Hampton Pier will continue to have a controlling affect (sustaining a beach updrift of the structure) and 4) Herne Bay's breakwater will continue to provide some degree of protection to the town's frontage.</p> <p>By the close of this epoch the shoreline in the west, will be responding quasi-naturally, with only the terminal groyne in the west influencing natural functioning. In the east, defences are not predicted to fail until the subsequent epoch(s).</p>	<p>Following the failure of the terminal groyne, in the west, a rapid readjustment of the coastline is anticipated. It is envisaged that there would be improved sediment linkages (along this frontage and those downdrift) and reactivation of the backing London Clay cliffs. With the predicted rise in sea level, basal undercutting will increase, inducing landsliding behaviour.</p> <p>The presence of defences at the eastern end of the frontage will remain throughout this epoch thus similar response / processes to the present day are predicted. Therefore, little foreshore cover will remain; the inter-tidal area will be squeezed and the predicted rise in sea level (6mm/yr) and increased storminess will put increased pressure on the remaining defences, resulting in their failure (with the exception of the breakwater) before the close of this epoch.</p> <p>Following their failure the land behind the seawall is a natural basin and it is predicted that this would be flooded.</p>	<p>During this epoch the remaining defence structure (Herne Bay breakwater) is expected to fail. Prior to failure the shoreline in the west could be experiencing a greater degree of exposure than that backing the breakwater. As such the shoreline may assume a slightly stepped plan shape However, as soon the breakwater fails:</p> <ul style="list-style-type: none"> • A rapid readjustment will take place until a position, commensurate with the forcing factors, is reached; and • The central section of Herne Bay will be inundated with flood water. <p>Along the remainder of the frontage the cliffs will continue to erode, there will little material on the foreshore and insufficient material to maintain a protective beach.</p> <p>If realignment resulting from no active intervention leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>

Herne Bay Breakwater to Bishopstone Manor		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Hold the Line will involve maintenance and upgrading/replacing the seawall/ promenade and groynes between Herne Bay Harbour and Bishopstone Manor.	Maintain the defences and recharge the beach.	Maintain /upgrade the defences, implement alternative foreshore management practises.
<p>The shoreline position will continue to be held by defences at the HWM, thereby constraining the natural response of the coastline and inducing coastal squeeze.</p> <p>Under a Hold the Line policy the drainage schemes which stabilise the cliff face will also need to be maintained, to prevent the clay cliffs from deep seated rotational slides.</p> <p>Maintaining the groynes will add some stability to the shingle beach and the backing defences. Under rising sea levels however, the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze). This will put increased pressure on the defences and the beach; as such the defences will need to be upgraded before the close of this epoch. If beach levels fall there is the possibility for landslide events to be triggered along this frontage.</p> <p>Sediment feed into the system is predicted to continue; the two main sources being; sand (with a very small amount of shingle) from updrift frontage (Reculver Country Park) and an intermittent</p>	<p>In continuing to fix the present plan-form position of the shoreline, under a policy of Hold the Line, progressive squeeze of the foreshore between a rising sea level and a static backshore defence is predicted and sediment inputs (sand and shingle) from the cliffs will be prevented.</p> <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels and the London Clay platform in front of structures. To counter this beach recharge is recommended</p> <p>Some sediment feed into the system is anticipated (alongshore /offshore) although it is thought that the volume is unlikely to be sufficient to build / maintain beaches.</p> <p>It is therefore possible that the defences will require further maintenance to maintain a suitable standard of protection.</p>	<p>During this epoch a continuation of previous trends is envisaged. However, in response to sea level rise (6mm/yr) it will become increasingly difficult, detrimental and expensive to maintain defences and Hold the Line.</p> <p>Coastal squeeze is likely to accelerate, exerting increased pressure on the static shoreline, foreshore, London Clay platform and defences.</p> <p>Feed (sand and shingle) from the cliffs will continue to be precluded, which will reduce sediment supply and the protective ability of the foreshore. During this epoch it may not be feasible / sufficient to recharge the beach and therefore alternative management practises may need to be implemented.</p>

<p>(limited volume) offshore input (sand) from Margate Hook. Although the latter is not appropriate beach building material.</p> <p>Thus under a policy of hold the line, shoreline response and coastal processes will not significantly alter from the present day.</p>		
Herne Bay Breakwater to Bishopstone Manor		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>New defences will need to be constructed at a more landwards position before the original defences are removed / allowed to fail.</p>	<p>Maintain / upgrade the realigned defences.</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of managed realignment two options are possible: 1) to remove the defences immediately or 2) allow the defences to fail (predicted to take place before the close of this epoch).</p> <p>For this appraisal, allowing the defences to fail has been assumed. Therefore, until failure the defences will continue to influence the plan-form position of the shoreline and influence the coastal processes.</p> <p>Following their failure, new defences will need to be constructed to implement managed realignment. Along this frontage a revetment would be most appropriate, as this would allow some erosion albeit at reduced and managed rate. A revetment / bund would also enable the eroded material (sand and shingle) to be incorporated into the sediment budget and allow alongshore transportation. Management of the drainage</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>The rate of erosion will be governed by the implementation of Managed Realignment. If for example the revetment / bund were upgraded during this epoch, in response to the rise in sea level, then the number of cliff top assets lost would be less than if no further maintenance was conducted.</p> <p>Material eroded from the cliffs may, again depending on the degree of realignment deemed acceptable, provide build some form of protective foreshore cover. However, it is more likely that the volume of material released will not be sufficient to build beaches that counter the rise in sea level. As such the realigned defence structures may need some form of</p>	<p>During this epoch a continuation of previous trends is envisaged, although rates of erosion could increase, due to the predicted rise in sea level.</p> <p>Again the amount of erosion will be dependent on the realignment strategy implemented. However, losses of cliff top assets are expected.</p> <p>Realigned defences may need to be moved further landwards to accommodate the increase in sea level rise. If the line does not migrate landwards then the realigned defences standards may need to be upgraded.</p> <p>If realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates.</p>

<p>schemes / cliff face will also need to be incorporate into the realignment strategy.</p> <p>Following failure of the original defences it is predicted that there would be a landwards transgression of the shoreline, roll back of the sand/shingle upper beach and sediment would be free to move alongshore (in a predominantly westwards direction).</p>	<p>maintenance.</p> <p>During this epoch the frequency for landsliding could increase. Again this will be governed by the amount of realignment deemed acceptable.</p> <p>Throughout this epoch it has been assumed that the predominant drift direction will remain westwards; continuing to transport the small volume of (sand and shingle) material west.</p>	
Herne Bay Breakwater to Bishopstone Manor		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow all the defences to fail.</p>	<p>No Defences</p>	<p>No Defences</p>
<p>To implement a policy of No Active Intervention defences will be allowed to fail.</p> <p>Thus, until failure the defences will continue to influence the plan-form position of the shoreline / cliff line and influence the coastal processes. Following failure a readjustment period will commence, although the response is more likely to be felt in the next epoch.</p> <p>Sediment feed into the system is predicted to continue; the two main sources being: sand and shingle from updrift frontages</p>	<p>Following defence removal / failure at the close of the previous epoch, beach material (sand and shingle) will be released and free to move alongshore, providing a small amount of feed to downdrift frontages.</p> <p>Failure of the seawall will reactivate erosion of the London Clay Cliffs (with a sand/gravel base) and potentially landsliding. Material eroded from the cliffs will provide some foreshore cover. Similarly it has been assumed that the offshore source of sand, from Margate Sand, will continue. However, this may not be sufficient enough to build beaches</p>	<p>Cliff erosion and platform lowering is predicted to accelerate during this epoch, in response to continued sea level rise (6mm/yr). Furthermore, the cliffs will become increasingly susceptible to large landsliding events.</p> <p>Cliff erosion and landsliding will provide mixed material (gravel, sand and clay) to the foreshore. This combined with alongshore and offshore feed (both quantities are low) could provide some protection to the cliff toe, although it is more likely that the volume will not be sufficient enough to counter the affects of sea level rise. Thus, the foreshore's ability to</p>

<p>(Reculver Country Park) and an offshore input (fines) from Margate Sand. Although the latter is not appropriate beach building material.</p>	<p>that counter the rise in sea level (6mm/yr). Losses of cliff top assets are expected during this epoch.</p>	<p>dissipate incoming wave energy will reduce, resulting in accelerated rates of basal undercutting. If realignment under a no active intervention policy leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates. Under a policy of No Active Intervention the coast will function naturally, alongshore processes will not be interrupted and defence expenditure will not be required. However, there will be further losses of cliff top assets.</p>
<p>Reculver Country Park</p>		
<p>OPTION 1</p>		
<p>No Active Intervention (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>No further maintenance of the rock bund at the extreme ends of the frontage</p>	<p>No maintenance of the defences</p>	<p>No maintenance of the defences</p>
<p>The majority of this frontage is undefended with the exception of a rock revetment, at the extreme western and eastern ends. The cliffs along this section of the coast are composed of a greater proportion of sand (attributed to the Oldhaven Beds, Woolwich Beds and the Thanet Sands). Capping the (Oldhaven Beds) sand is a thin band of gravel-sized sediments (glacial deposits). As the majority of this frontage is undefended and under a policy of No Active Intervention, erosion will continue without any interruptions. Where there are defences, at the</p>	<p>With the predicted rise in sea level (6mm/yr) erosion of the 'soft' cliffs will accelerate. The rate of erosion along the undefended section will be higher than the cliffs backing the rock bund. Material eroded from the cliffs (sand and gravel) will continue to provide protective cover to the foreshore. However, with the predominant alongshore transportation being westwards, it is envisaged that this material will be moved alongshore,</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, in response to sea level rise (6mm/yr). Rates of cliff erosion are expected to be in the region of 0.1-0.5m/yr. Under a scenario of sea level rise, rates of sediment transport could increase, thus material released from the cliffs will be rapidly transported alongshore, in the predominant drift</p>

<p>extreme western and eastern ends of this frontage, then the rate of cliff erosion will continue to be slightly lower.</p> <p>Erosion of the cliffs will provide beach building material (sand and shingle) to the foreshore; afford some degree of protection to the cliff toe.</p> <p>Alongshore inputs into the frontage are low due to updrift 'terminal groyne-like' affect of Reculver Towers.</p>	<p>towards Herne Bay.</p> <p>Sediment feed into the frontage will be dependent on management practises implemented updrift (Reculver to Minnis Bay). If the updrift policy is to Hold the Line then feed into this frontage will continue to be affected, due to the prevention of erosion (Reculver Towers) and a reduced sediment supply.</p>	<p>direction (westwards).</p> <p>Due to this rapid transferral of sediment, foreshore cover along the frontage could reduce, which will exacerbate erosion of the backing cliffs and Platform lowering of the London Clay shore platform.</p>
Reculver Towers to Minnis Bay		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Implementation of a Hold the Line policy will involve maintaining / upgrading the existing defences. A short section of the beach (in front of the lagoon) is presently managed via recycling and profiling.</p>	<p>Upgrade all defences and maintain the beach with recharge.</p>	<p>Upgrade / maintain the ragstone apron, and increase the frequency / volume of beach recharge.</p>
<p>The present day defences will need to be maintained and later upgraded to sustain a suitable standard of defence / flood protection (with the exception of Reculver Towers). Beach levels will need to be monitored and recharge material added if necessary.</p> <p>Nonetheless the shoreline is predicted to respond in a similar manner to the present day, therefore:</p> <ul style="list-style-type: none"> The sediment transport patterns along this section will remain complex, due to the presence of offshore banks; 	<p>Under a policy of Hold the Line, more substantial structures may need to be constructed and management practises implemented, along this frontage, to ensure that a suitable standard of flood and erosion protection is maintained. In upgrading and thereafter maintaining the defences the following is envisaged:</p> <ul style="list-style-type: none"> The plan form position of the shoreline will remain fixed at the HWM; Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low 	<p>In response to the predicted rise in sea level it is foreseen that defence structures will need further upgrading.</p> <p>Rising sea levels and the predicted increase in storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach levels in front of structures. In the west it is unlikely that a beach would remain by the close of this epoch.</p> <p>Consequently coastal squeeze is likely to increase during this</p>

<ul style="list-style-type: none"> The dominant movement of material along this frontage is likely to remain westwards, although it is acknowledged that material can move eastwards also; The supply and transfer of sediment offshore is predicted to continue (from Margate Sands) – providing a larger volume of sands in the east compared to a smaller volume of fines to the west ; and, Reculver Towers will continue to act as a barrier to the alongshore (east to west) transportation of material, thus helping to stabilise beaches at this end of the frontage. 	<p>water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze), consequently foreshore cover will narrow, reducing beach volume, particularly in the west;</p> <ul style="list-style-type: none"> Erosion of Reculver cliffs will continue be prevented (although it is recognised that feed from this section would be negligible); Accelerated lowering of the shore platform; and, The probability of overtopping could increase. <p>Irrespective of a Hold the Line policy the contemporary sediment supply will remain insufficient to counter the forcing factors predicted during this epoch.</p>	<p>epoch, resulting in a very narrow inter-tidal area. Therefore alternative management practises may need to be implemented to counter beach loss.</p> <p>During this epoch there is uncertainty regarding sediment dynamics, particularly offshore / onshore transferrals. With regards to feed from alongshore it has been assumed that there may still be some from the east, although the volume will be very small / negligible. Despite the dominant drift direction remaining westwards, there will be very little sediment (fines) that is transported alongshore.</p>
Reculver Towers to Minnis Bay		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>New defences will need to be constructed at a more landwards position before the original defences are removed / allowed to fail.</p>	<p>Maintain / upgrade the realigned defences.</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of managed realignment along this section of the coast two approaches will need to be adopted:</p> <p>1) At Reculver Towers a realignment is not possible, thus the defences will either need to be maintained, to</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>It has been assumed that the predominant drift direction will</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level (6mm/yr).</p> <p>The rate of managed erosion will be dependent on the</p>

<p>preserve the SAM, or allowed to fail, resulting in the loss of this feature (unless it was 'moved' inland); and,</p> <p>2) Between Reculver Towers (east) and Minnis Bay a new flood defence structure will need to be constructed, in a realigned position, to afford some protection to the low-lying hinterland.</p> <p>Ahead of realignment construction the present defences will be allowed to fail. Prior to failure, shoreline response / interactions will be similar to the present day; however following failure a readjustment period is predicted. Along the low-lying section the response is likely to be rapid – it is envisaged that the shoreline will quickly migrate to the new realigned shore line.</p>	<p>remain westwards; transporting the small volume of (predominantly sand / fines) material. However, the volume of material available is unlikely to be sufficient to build protective beaches, especially in the west (unless recharge is implemented). To counter this reduction in volume, the realigned defences, along the low-lying section will need to be maintained / upgraded.</p> <p>It is acknowledges that the evolution of the realigned area will be dependent on supply of sediment and the rate of sea level rise. Utilising in-situ sediments (fines) and feed from offshore (sand and fines) there is the potential for the inter-tidal area to accrete vertically. However, if the volume is not sufficient to counter sea level rise then the inter-tidal habitats will reduce.</p> <p>If realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates; although it is acknowledged that along this frontage these are very low.</p>	<p>realignment strategy implemented and the predicted rise in sea level (6mm/yr).</p> <p>Realigned defences may need to be moved further landwards to accommodate the increase in sea level rise. If the line does not migrate landwards then the realigned defence standards may need to be upgraded. If however, a decision is made not to upgrade the defences then the probability of overtopping / flooding will increase.</p> <p>If realignment leads to the development of an embayment, then this has the potential to reduce alongshore sediment transport rates; although it is acknowledged that along this frontage these are very low.</p>
Reculver Towers to Minnis Bay		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Allow all the defences to fail	The majority of defences will have failed (with the exception of those at Reculver Towers)	No Defences
A seawall and embankments separate a groyned shingle/sand beach and low-lying alluvium hinterland, which	During this epoch the stone apron will continue to provide some protection against erosion to Reculver Towers rock and act as a	During this epoch it is likely that flood depth and flood extent

<p>forms part of the Wantsum Channel flood cell.</p> <p>Until defences fail, little change in coastal processes and geomorphological response is envisaged. Although immediate cessation of recharge will increase beach vulnerability in the central section; inducing further pressure on the groyne. Sediment transport patterns along this section will remain somewhat complicated, due to the presence of offshore banks and the dominant movement of material along this frontage is likely to remain westwards, although it is acknowledged that material can move eastwards also .</p> <p>By the close of this epoch it is envisaged that some of the embankments will have failed and the backing hinterland will be vulnerable to flooding or have experienced some flooding.</p>	<p>barrier to the alongshore (east to west) transportation of material. However, following its failure, predicted to take place during this epoch, a readjustment period is expected. This would involve toe erosion of the sand cliffs.</p> <p>With the demise of all the defences a landwards migration of the plan form position is predicted along with breaching / flooding of the low-lying backing hinterland.</p> <p>The degree and frequency of flooding will be dependent on the hinterland topography, its composition, tidal conditions, sea level rise and storm frequency. Initially breaches may seal however, over time the breaches are likely to widen, particularly during storm events, eventually leading to the development of a tidal lagoon. As such by the close of this epoch some standing water occupying the backing hinterland is envisaged.</p> <p>There is the potential for flooding from this frontage, to combine with inundation from the east Kent coast (between Cliffs End and Deal north). Should this occur, then the former tidal channel between north and east Kent would be re-created. On each inundation, erosion and scour of the former channel will occur (the extent is of course governed by tidal flows). This has the potential to leave the Isle of Thanet separated from the mainland.</p>	<p>will increase, due to the predicted rise in sea level.</p> <p>Inundation of the former Wantsum Channel could result in the flooding of up to 9500 hectares of low lying land and 1500 hectares of erosion (SMP1, 1996; Reculver to Minnis Bay Scheme, 2001).</p> <p>Depending on the dynamics of the River Stour and the tidal currents of the North Sea, there is the potential for either an ebb tidal delta or flood tidal channel to form. As such wave attenuation (height, direction) could change, leading to changes in coastal processes (i.e. drift reversals, alongshore transportation being interrupted).</p> <p>Throughout this epoch the cliffs at Reculver Towers will continue to erode, occupying a retreated position more commensurate with the forcing factors. Cliff toe erosion will provide some beach feeding material to the foreshore. This material will however be transported westwards by alongshore coastal processes.</p>
Minnis Bay to Westgate-on-Sea		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

<p>Some maintenance of the existing defences will be required.</p>	<p>Upgrade the defences, recharge the beaches.</p>	<p>Further maintenance / upgrading of the defences and further recharge of the beaches.</p>
<p>With the exception of a small gap in the defences around Epple Bay, the chalk cliffs / coastline will remain protected by concrete seawalls and promenades. As such erosion of the Cretaceous chalk cliffs will be prevented and the plan position of the shoreline will remain fixed.</p> <p>Along some sections of the coast i.e. Grenham Bay and St Mildred's Bay, the existing defences will need to be upgraded before the close of this epoch; elsewhere the structures will require only maintenance.</p> <p>Throughout this epoch and under this policy of Hold the Line it is envisaged that the offshore will continue to provide some (fine) material to the frontage.</p> <p>It is also envisaged that during this epoch the sand beach, at Westgate-on-Sea and in Epple Bay, will remain in front of the defences.</p> <p>Throughout this epoch and under this management policy it is envisaged that the offshore (Margate Hook Sands) will continue to provide some material to the frontage; although it is acknowledged that the physiology of the platform will determine retention (i.e. if there is a depression then material is more likely to be held).</p>	<p>With sea level predicted to rise (6mm/year) and the plan form of the shoreline remaining fixed, it is predicted that:</p> <ul style="list-style-type: none"> • Cliff erosion of the chalk cliffs will continue to be prevented, therefore no / little sediment inputs from cliff erosion (although this does not beach building material); • The foreshore will continue to narrow; • Geological exposures are adversely affected; • Sediment cover will continue to reduce; and, • Defences will become more prone to attack. <p>As such all defences will need to be upgraded before the close of this epoch.</p>	<p>During this epoch a continuation of previous trends is envisaged. In essence:</p> <p>The Chalk sea cliffs will not experience a major change in plan-form, due to the presence of defences along much of their length;</p> <p>It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>The foreshore will progressively be squeezed between rising sea levels and a static (defended) / slowly eroding (undefended) backshore; and,</p> <p>Volumes of alongshore sediment transportation are predicted as being very low / negligible.</p>
<p>Minnis Bay to Westgate-on-Sea</p>		
<p>OPTION 2</p>		

No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Allow the seawall to fail	No defences	No defences
<p>To implement a policy of No Active Intervention the seawall and promenade, which presently restricts erosion of the steep chalk cliffs will be allowed to fail, which is expected to occur before the close of this epoch.</p> <p>Until defence failure little to no change in the plan form of the defended shoreline and associated coastal processes is predicted.</p> <p>Following failure of existing defences reactivation of cliff toe erosion will take place.</p> <p>It is predicted that the mobile layer of sand, which rests on top of a chalk platform, will remain in the bays of Westgate-on-Sea and Epple Bay.</p> <p>Throughout this epoch and under this management policy it is envisaged that the offshore (Margate Sands) will continue to provide some material to the frontage; although it is acknowledged that the physiology of the platform will determine retention (i.e. if there is a depression then material is more likely to be held).</p> <p>Erosion of undefended cliffs at Westgate Golf Course will continue at a relatively low rate.</p>	<p>Following defence failure, at the end of the previous epoch, the shoreline could still be responding to change.</p> <p>Erosion rates will vary dependant on the number of faults and joints and degree of exposure of the cliffs (D'Olier, 2007).</p> <p>During this epoch and under a policy of No Active Intervention, the probability of failure occurring will increase with time. Episodic events will also occur. However, these events coupled with 'annual' erosion will provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>The dominant westward movement of material (supplied from the offshore source of Margate Sands) will continue throughout this epoch.</p> <p>By the close of this epoch there is the potential that some cliff top assets could be at risk / lost.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at a slightly accelerated rate, due to the predicted rise in sea level.</p> <p>The rate of chalk cliff recession (and chalk platform lowering) is predicted to increase due to the predicted rise in sea level (6mm/yr).</p> <p>The probability of a failure occurring will increase with time. Episodic events coupled with 'annual' erosion will provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>The dominant westward movement of material (supplied from the offshore source of Margate Sands) will continue throughout this epoch. By the close of this epoch some cliff top assets will be lost.</p>

Margate (Epple Bay to Fulsam Rock)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Some maintenance of the existing defences may be required.	Upgrade / maintain the existing defences. To maintain a beach recharge may be required.	Further maintenance / upgrading of the defences and further recharge of the beaches.
<p>Seawalls will continue to protect the chalk cliffs (10-25m in height) and the backing assets and fix the plan position of the shoreline. However, despite the sustained presence of a seawall it is predicted that the chalk cliffs will continue to experience sub-aerial weathering, which result in the formation of talus behind the defence.</p> <p>The harbour arms at Margate and the groynes along the frontage will continue retaining the mobile layer of predominantly sand (with very little shingle), which rests on top of a chalk platform (which can reach up to 250m in width, in places).</p> <p>Margate Pier will continue to provide some shelter to Margate from wave overtopping. However, as this structure is likely to fail before the close of this epoch an increase in exposure is predicted thereafter.</p> <p>It is envisaged that the offshore (Margate Sands) will continue to provide material to the frontage, although where there are harbour arms this could interrupt this supply.</p>	<p>With sea level predicted to rise (6mm/year) , coupled with plan form of the shoreline remaining fixed and the landward recession of the low water mark, it is predicted that the foreshore will narrow (coastal squeeze), and the sandy beaches may reduce. To maintain an amenity beach, recharge could be necessary.</p> <p>Little feed (quantity yet to be established) of material from the east is predicted, both due to defences and the natural configuration of the shoreline i.e. the presence of mini-bays.</p> <p>The defences (harbour arms and groynes) will continue to restrict alongshore movement and as such down-drift frontages could be affected, due to the reduced sediment supply.</p> <p>During this epoch all the defences will need to be upgraded and potentially replaced to maintain integrity.</p>	<p>During this epoch all the defences will need to be maintained and potentially upgraded to sustain their integrity.</p> <p>It is predicted that the Chalk sea cliffs will not experience a major change in plan-form. Due to sea level rise and the presence of defences there will be coastal squeeze resulting in further beach narrowing. It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>Little feed (quantity yet to be established) of material from the east is predicted to continue, due to defences and the natural configuration of the shoreline i.e. mini bays.</p> <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This increase will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of beach</p>

		<p>levels in front of structures.</p> <p>If amenity beaches are to maintained then recharge could be required, otherwise the fronting beaches could be very narrow.</p> <p>Defences (harbour arms and groynes) will continue to restrict alongshore movement, leading to further impact on down-drift frontages.</p>
Margate (Epple Bay to Fulsam Rock)		
OPTION 2		
Advance the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Extend the harbour arms, pro-grade the seawall, upgrade the groynes (dimensions / construction type), and recharge the beach.	Maintain the extended defences and recharge the beach.	All the defences will need to be upgraded / replaced during this epoch.
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline. The following is predicted:</p> <ul style="list-style-type: none"> No toe erosion of the chalk cliffs; It is envisaged that the seawall and promenade will be constructed on top of the wide chalk platform (which extends to a width of 250m); Depending on the position of the advanced defences, the inter-tidal area and the fronting beaches could be 	<p>During this epoch maintenance of the advanced defences will be required.</p> <p>There will continue to be no toe erosion of the chalk cliffs, due to the sustained presence of defences.</p> <p>Rising sea levels, the predicted increase in storminess and a landward recession of the low water mark will lead to an increase in nearshore wave energy, which will exert significant pressure on the defences.</p> <p>A small amount of feed from the offshore is predicted; however the ability for this material to be retained is uncertain under a policy of</p>	<p>During this epoch all the defences will need to be upgraded / replaced to continue holding the shoreline in an advanced position.</p> <p>The Chalk sea cliffs will continue to not experience toe erosion, which will reduce their conservation value.</p> <p>The chalk platform is predicted to continue experiencing both chemical weathering (solution) and mechanical abrasion (wave action). With the predicted acceleration in sea level it is envisaged that the chalk platform will become submerged i.e. less exposed at low water. As such, the rate</p>

<p>lost (unless the beach is recharged); and,</p> <ul style="list-style-type: none"> Depending on the position and type of defences constructed under a policy of Advance the Line, transportation alongshore could improve (due to the potential removal of bays). 	<p>advance the line and the natural geology of this frontage. With regards to transportation alongshore, it is predicted that fines will continue to bypass the defence structures but anything coarser (i.e. sand) will not be transported due to the defence structures, the natural geology of the coastline (headlands) and the limited amount of contemporary sediment supply. As such no beach-building feed, to frontages down-drift is predicted.</p>	<p>of platform lowering will become negligible.</p> <p>The foreshore will be increasingly squeezed between rising sea levels and the advanced shoreline position.</p> <p>The feasibility of maintaining a beach along this section of the coast will become more difficult (technically / economically) during this epoch due to increased exposure to wave / tidal activity.</p>
<p>Margate (Epple Bay to Fulsam Rock)</p>		
<p>OPTION 3</p>		
<p>Hold the Line (0-20 Years) and No Active Intervention (20-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>
<p>Some maintenance of the existing defences may be required</p>	<p>No maintenance of the defences / allow defences to fail</p>	<p>No Defences</p>
<p>Seawalls will continue to protect the chalk cliffs (10-25m in height) and the backing assets and fix the plan position of the shoreline. However, despite the sustained presence of a seawall it is predicted that the chalk cliffs will continue to experience sub-aerial weathering, which result in the formation of talus behind the defence.</p> <p>The harbour arms at Margate and the groyne along the frontage will continue retaining the mobile layer of sand and shingle, which rests on top of a chalk platform (which can reach up to 250m in width, in places).</p> <p>It is envisaged that the offshore (Margate Sands) will continue</p>	<p>Groyne failure is predicted to take place at the start of this epoch. It is predicted that following their failure alongshore transportation linkages, between the mini-bays, will not change significantly, a consequence of the natural geology. As such cross-shore processes are predicted to remain the predominant mechanism for sediment transportation.</p> <p>Wave attack on the remaining seawall is predicted to increase in response to sea level rise and coastal squeeze. This will ultimately lead to its failure.</p> <p>Prior to failure, the plan form of the shoreline will remain in its present position, upon failure a readjustment period is envisaged:</p>	<p>With the continued rise in sea level predicted (6mm/yr) the pressure and impact on the remaining defence structures will increase, eventually resulting in their demise.</p> <p>Failure of the harbour arms will leave this section of the coast to function freely, thus:</p> <ul style="list-style-type: none"> Sediment (sand) retained by the harbour arms will be released and transported, a small distance, alongshore (westwards); Erosion of the backing chalk cliffs will accelerate (adding a small amount of flint but mainly fines to the

<p>to provide material to the frontage, although where there are harbour arms this could interrupt this supply.</p> <p>It is envisaged that the chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action) during this epoch. Erosion rates are predicted to remain low (Futurecoast, 2002; D'Olier, 2007). In places the chalk platform is covered by a thin and highly mobile layer of sand and shingle and it is predicted that this would remain</p>	<p>this will mainly involve:</p> <ul style="list-style-type: none"> • Reactivation of cliff toe erosion and cliff instability; • Isolated pockets of flooding (around the fun park and hospital); and, • Improved geological exposures <p>The foreshore consists of a chalk platform, which varies in width (up to 250m). It is envisaged that this will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002; D'Olier, 2007). In places the chalk platform is covered by a thin and highly mobile layer of sand and shingle and it is predicted that it is likely that this would remain</p>	<p>system); and,</p> <ul style="list-style-type: none"> • Isolated flooding (around the fun park and hospital) <p>The foreshore consists of a chalk platform, which varies in width (up to 250m). It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>It is uncertain whether the thin, highly mobile layer of sand and shingle would remain</p>
Cliftonville (Fulsam Rock to White Ness)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Maintain the seawall</p>	<p>Upgrade the existing seawall and construct new toe defences at Palm Bay, Botany Bay and at White Ness.</p>	<p>Upgrade the seawall.</p>
<p>During this epoch a continuation of present day trends is envisaged:</p> <ul style="list-style-type: none"> • Along the defended sections the seawall would continue to fix the plan form position of the coastline at HWM; 	<p>The existing defences will need to be upgraded and new toe defences will need to be constructed, along the presently undefended sections of the coast (Palm Bay, Botany Bay and White Ness). This will result in the following:</p> <ul style="list-style-type: none"> • The foreshore being increasingly squeezed between rising 	<p>In response to sea level rise, all defences will require maintenance / upgrading during this epoch. As such the Chalk sea cliffs will:</p> <ul style="list-style-type: none"> • Not be subjected to toe erosion;

<ul style="list-style-type: none"> • The mobile layer of sand, which rests on top of a chalk platform, will continue to do so during this epoch; • Along the undefended sections of the coast (Palm Bay and Botany Bay) cliff erosion should be monitored. Erosion rates are predicted to remain low; • Along the undefended section of cliff at White Ness, erosion is predicted to occur at an increased rate due to the number of faults and joints in the chalk and the degree of exposure (D'Olier, 2007). • The dominant westward movement of material along this frontage will continue throughout this epoch; and, • It is envisaged that the chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002). In places the chalk platform is covered by a thin and highly mobile layer of sand and shingle and it is predicted that this would remain 	<p>sea levels and an advanced / static shoreline;</p> <ul style="list-style-type: none"> • Geological exposures will be adversely affected; • No / little sediment inputs from cliff erosion; • Sand will continue to be retained updrift of structures (although it is acknowledged that some linkages could be affected by the natural geology); • Increased pressure on the sea defences, as the shoreline is held seawards of its natural position, which could lead to greater attack / scour; and, • The chalk platform, which varies in width (up to 250m).is envisaged to continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002). In places the chalk platform is covered by a thin and highly mobile layer of sand and shingle and it is predicted that this would remain. 	<ul style="list-style-type: none"> • Material (mainly fines) will not be added to the sediment budget; and, • The geological exposures will continue to be affected. <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy and the narrowing of the foreshore (coastal squeeze).</p> <p>The chalk platform is predicted to continue experiencing both chemical weathering (solution) and mechanical abrasion (wave action). It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible. It is uncertain whether the thin and highly mobile layer of sand and shingle, covering some of the platform, would remain.</p>
Cliftonville (Fulsam Rock to White Ness)		
OPTION 2		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

Allow the seawall to fail	No defences	No defences
<p>To implement a policy of No Active Intervention the seawall, which presently restricts erosion of the steep chalk cliffs, along the majority of the coast would be allowed to fail (predicted before the close of this epoch).</p> <p>Initially where defences remain, little to no change in the plan form of the defended shoreline is predicted.</p> <p>Along the undefended sections (Palm Bay and Botany Bay) erosion rates will remain low. However, rates will be higher at White Ness due to the number of faults and joints in the chalk and the degree of exposure (D'Olier, 2007).</p> <p>The foreshore consists of a chalk platform, which varies in width (up to 250m). It is envisaged that this will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002).</p> <p>In many places the chalk platform is covered by a thin and highly mobile layer of sand and shingle and it is predicted that this would remain.</p> <p>The dominant westward movement of material (supplied from the offshore source of Margate Sands) will continue</p>	<p>Under a policy of No Active Intervention the majority of cliff erosion along the frontage will continue at low rates, however, erosion at White Ness will remain higher (D'Olier, 2007). Episodic events (block failure) could also take place, yielding <10m in a single event.</p> <p>It is envisaged that the chalk platform will to continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002).</p> <p>There is potential for alongshore transport of sand (and in some cases shingle) to re-commence, thereby improving sediment linkages along the frontage. Sand previously retained updrift of structures will be transported alongshore; towards Ramsgate Harbour (although it is acknowledged that some linkages could be affected by the natural geology).</p> <p>The dominant westward movement of material (supplied from the offshore source of Margate Sands) will continue throughout this epoch.</p> <p>By the close of this epoch there is the potential that some of the recreational assets, located close to the cliff top, could be at risk / lost.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at a slightly accelerated rate, due to the predicted rise in sea level.</p> <p>The rate of chalk cliff recession (and chalk platform lowering) is predicted to increase due to the predicted rise in sea level (6mm/yr) and increased storminess.</p> <p>The probability of a failure occurring will increase with time. These episodic events could contribute to <0.2ha of land per slide.</p> <p>It is envisaged that erosion of the chalk cliffs will yield provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>The dominant westward movement of material (supplied from the offshore source of Margate Sands) will continue throughout this epoch, thus maintaining the drift divide at North Foreland.</p>

<p>throughout this epoch, thus maintaining the drift divide at North Foreland.</p>		
White Ness to Ramsgate Harbour		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>A seawall/promontory at Kingsgate, a small harbour at Broadstairs and a seawall founded on the chalk platform at Stone Bay</p>	<p>The defences will need to be upgraded during Years 20 to 50</p>	<p>Maintain the defences</p>
<p>Under a policy of Hold the Line it is predicted that the shoreline will continue to respond in a similar manner to the present day.</p> <ul style="list-style-type: none"> • Where the shoreline is undefended the chalk cliffs will continue to erode. • Where the cliffs are defended (Kingsgate, Broadstairs and Stone Bay), erosion of the cliff toe will be prevented, thus fixing the plan-form position. <p>The mobile layer of sand, which rests on top of the chalk platform, will continue to be retained within the bays during this epoch; despite very low contemporary sediment supply.</p> <p>The net movement of material southwards (sand) will continue; transporting material alongshore towards</p>	<p>During this epoch all the defences will need to be upgraded and potentially replaced. If the cliff top assets start to become vulnerable, where the coast is presently undefended, then under a policy of Hold the Line defences will need to be constructed to arrest erosion, and thereby maintaining those assets.</p> <p>Rising sea levels, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. This will result in the narrowing of the foreshore (coastal squeeze) in front of defences (and potentially along the undefended sections – if cliff erosion can not keep pace with sea level rise) which will be subject to increased wave attack.</p> <p>It is acknowledged that the natural configuration of this section of coast (i.e. a series of headlands and bays) plus the contemporary lack of sediment supply limits sediment input along this frontage. Despite this the pockets of sandy beaches are predicted to remain.</p>	<p>During this epoch sections defences along the defended shoreline will require further maintenance. In continuing to hold the plan form of the coast (and fixing the MHWM), it is predicted there will be:</p> <ul style="list-style-type: none"> • Erosion of the chalk cliffs, along the undefended sections, will yield provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition). • Coastal squeeze, resulting in net narrowing of beaches along this stretch (at particular locations there is a possibility that there could be no foreshore cover); • Increasing wave attack and exposure – leading to increasing pressure on defences;

<p>Ramsgate.</p> <p>Chalk platforms between North Foreland and Ramsgate will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002)</p>	<p>Some of this material (sand) could, under specific wave conditions, be transported alongshore, in a southwards direction.</p>	<ul style="list-style-type: none"> • A potential reduction in the net amount of material moving alongshore; • Continued lack of contemporary sediment supply; and, • Adverse affects on the geological features/ interest where the toe is defended or the cliffs sheathed; and, • It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.
White Ness to Ramsgate Harbour		
OPTION 2		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The combination of sea defences (seawalls, promontories and a small harbour) would not receive any maintenance during this epoch</p>	<p>No Defences</p>	<p>No Defences</p>
<p>Under a policy of No Active Intervention it is envisaged that:</p> <p>Along the undefended sections the cliffs will continue to erode at rates comparable to the present day, with small sandy beaches maintained within the natural embayments.</p>	<p>Following defence failure it is unlikely that there would be a significant readjustment phase.</p> <p>Cliff erosion rates will vary along the frontage, dependant on exposure and the number of faults and joints in the chalk.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at a slightly accelerated rate, due to the predicted rise in sea level and increase in wave energy.</p> <p>During this epoch there may be the potential for an increase in the frequency of failure. This could contribute to <0.2ha in</p>

<p>Alignment changes in shoreline orientation; from north-west to south-east to north-south would continue to be subject to variations in wave approach. Thus variations in incident wave energy are anticipated.</p> <p>Along the defended frontages i.e. Kingsgate, Broadstairs and Stone Bay limited erosion of the cliffs is predicted, resulting in no change in shorelines position.</p> <p>Chalk platforms between North Foreland and Ramsgate will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002)</p> <p>The volume of sand covering the chalk platform is predicted to remain similar to the present day.</p> <p>The contemporary lack of sediment supply to this frontage will continue.</p>	<p>It is envisaged that erosion of the chalk cliffs will yield very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition). Therefore beaches may start to narrow due to sea level rise, as cliff retreat is unlikely to keep pace with the rate of sea level rise.</p> <p>Following defence failure, material (sand) will move alongshore more easily, particularly at Broadstairs and around Marina Esplanade.</p> <p>The permanency of the beach updrift of Ramsgate (eastern harbour arm) will primarily depend upon the management policy implemented at Ramsgate Harbour. A Hold the Line policy at Ramsgate will continue to restrict alongshore sediment movement between the two frontages, whereas removing the harbour arms, under a policy of no active intervention, would lead to the transportation of these sediments southwards and the subsequent loss of the beach.</p>	<p>any given event.</p> <p>It is envisaged that erosion of the chalk cliffs will yield provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>Beaches are expected to narrow as 1) cliff retreat is unlikely to keep pace with sea level rise and 2) the cliffs will not yield beach-building sediments.</p>
Ramsgate Harbour		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

<p>Substantial harbour arms, with a rock armoured breakwater (that protect the cliff toe). The chalk cliffs are sheathed with concrete to reduce sub-aerial weathering.</p>	<p>The defences will need to be upgraded during Years 20 to 50</p>	<p>Maintain the defences</p>
<p>The present management practises at Ramsgate prevents erosion along this section of the coast, therefore there will be no change in the shoreline position.</p> <p>The present management practises precludes the alongshore transportation of sediment, due to the 'blocking-nature' of the harbour arms, which are holding up the adjacent beach to the north.</p> <p>The protection the defences afford, to the backing assets, will continue throughout this epoch.</p>	<p>The present management practises at Ramsgate will continue to prevent erosion. As such no change in shoreline position is expected during this epoch.</p> <p>Despite a predicted increase in sea level (6mm/year) the shoreline dynamics are predicted to remain similar to what they presently are i.e. north-east to south-west dominant hydrodynamics. Therefore material will continue to be retained updrift of Ramsgate.</p> <p>With no foreshore cover and a predicted increase in sea level, the standard of protection the defences afford, could start to reduce. Therefore defence works may need to be considered towards the end of this epoch.</p>	<p>During this epoch the defences will need to be upgraded to maintain the same standard of protection; with an accelerated rise in sea level predicted (6mm/yr), increased storminess and increased wave energy, the need for the present defences to be built bigger is inevitable.</p> <p>Alongshore transportation will continue to be restricted along this frontage, with sediment continuing to be held updrift of the harbour arms.</p> <p>By the close of this epoch it is envisaged that the shoreline position of the harbour could stand 'proud' when compared to the adjacent sections of the coast (this will be dependent on management options implemented along adjacent frontages). Should this be the case then it is possible that 1) the alongshore movement of material (albeit a small amount) will be further reduced and 2) there may be an outflanking issue beyond the lifetime of the SMP (+100 years).</p>
<p>Ramsgate Harbour</p>		
<p>OPTION 2</p>		
<p>Advance the Line (0-100 Years)</p>		
<p>Years 0-20 (2025)</p>	<p>Years 20-50 (2055)</p>	<p>Years 50-100 (2105)</p>

<p>Extend the harbour arms, prograde the seawall; upgrade the groynes (dimensions / construction type).</p>	<p>Maintain the extended defences (includes concrete sheathing) and recharge the beach.</p>	<p>All the defences will need to be upgraded / replaced during this epoch.</p>
<p>New defences will be constructed seawards of the existing defences thus advancing the position of the shoreline.</p> <p>It is envisaged that the seawall / promenade will be constructed on top of the inter-tidal chalk platform.</p> <p>Depending on the position of the advanced defences, the inter-tidal area could be lost.</p> <p>Existing structures already block the alongshore transport of sediment and there is potential for this to increase if structures are extended. However, as transportation rates along this section of the coast are believed to be low then advancing the line would not significantly interrupt alongshore coastal processes in comparison to hold the line.</p>	<p>The combination of sea level rise (6mm/year) and advancing the plan form of the shoreline will mean that the defences are subject to increased water levels and wave energy. Thus further maintenance of the advanced defences will be required.</p> <p>Under rising sea levels the fixation of the high water mark coupled with the landward recession of the low water mark will lead to a decrease in the width of the inter-tidal zone (coastal squeeze of the foreshore).</p> <p>It is predicted that alongshore transportation could continue to be affected and depending on how advance the line is implemented there is the potential that the alongshore linkages could be eliminated and that there may be some losses offshore.</p> <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy which will exert significant pressure on the defences.</p> <p>This increase in wave energy will lead to increases in the alongshore and offshore transport of beach material which will exacerbate the lowering of recharged beach levels in front of structures (coastal squeeze), thus additional recharge will be necessary, to maintain an amenity / defence value). Although increased exposure may result in more rapid beach loss.</p>	<p>During this epoch all the defences will need to be upgraded / replaced to continue holding the shoreline in an advanced position.</p> <p>Rising sea levels and the potential increase in storminess, coupled with a landward recession of the low water mark will lead to further increases in nearshore wave energy and therefore increased wave attack on the advanced structures.</p> <p>However, it is also predicted that with acceleration in sea level, the chalk platform will become submerged as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become almost irrelevant</p>

Ramsgate Harbour		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Substantial harbour arms, with a rock armoured breakwater (that protect the cliff toe). The chalk cliffs are sheathed with concrete to reduce sub-aerial weathering.	Failure of the harbour arms predicted by the close of this epoch	No Defences
<p>The present management practises at Ramsgate, prevents erosion of the shoreline. During this epoch these defences will not be maintained and thus start to fail. Until failure, the defences will:</p> <ul style="list-style-type: none"> • Continue to fix the plan form position of the shoreline; • Continue to offer some degree of protection to the backing hinterland; and, • Continue to impede the alongshore transportation of sediment. 	<p>By the close of this epoch defence failure is predicted. Until failure, the defences will:</p> <ul style="list-style-type: none"> • Continue to fix the plan form position of the shoreline; • Continue to offer some degree of protection to the backing hinterland; and, • Continue to impede the alongshore transportation of sediment; material will continue to be held updrift of Ramsgate's eastern harbour arm. <p>Following defence failure there will be:</p> <ul style="list-style-type: none"> • Assets within the harbour will be lost; • Reactivation of cliff face weathering, erosion of the cliffs will provide some material to the sediment budget, although this 	<p>Once re-activation of the cliffs takes place, which may be outside the time frame of this SMP but for this investigation Year 70 has been assumed, then it is predicted that the rate will be commensurate with the updrift and downdrift chalk sections.</p> <p>Sediment released from cliff reactivation will yield very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving only a small volume of flints to erode via attrition).</p> <p>The potential for a cliff failure is considered to be outside the timescale of the SMP, however, should one occur then it could yield <0.2ha in a single event.</p>

	<p>will not to be beach building material; and,</p> <ul style="list-style-type: none"> Potential for alongshore transport of sand (and in some cases shingle) to re-commence, thereby improving sediment linkages along the frontage. Thus sand retained updrift of the harbour will be transported alongshore, towards Pegwell Bay. (Although further north, linkages are affected by the natural geology). 	
West Cliff (Western Harbour Arm to Cliffs End)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
A seawall founded on a chalk platform (western undercliff defences), fronted by timber groynes	Upgrade the defences and recharge the beach in the east. Construct new defences in the west	Upgrade the defence structures; recharge the beach in the east and west.
<p>During this epoch it is unlikely that the present day defences will need to be upgraded. It is therefore envisaged that the general form and processes of today will be sustained throughout this epoch.</p> <p>Thus the defences that front the eastern half of the cliffs will continue to prevent toe erosion, only enabling the cliffs to experience sub-aerial weathering. As such the plan form position will not change.</p> <p>The groynes resting on the chalk platform, at the eastern end</p>	<p>During the early stages of this epoch the timber groynes will need to be upgraded, to continue to retain beaches similar to those of today under a scenario of sea level rise (6mm/year).</p> <p>Under rising sea levels the fixation of the high water mark (HWM) coupled with the landward recession of the low water mark (LWM) will lead to a decrease in the width of the inter-tidal zone (coastal squeeze), consequently platform will lower and foreshore cover will narrow (unless recharged), reducing beach volumes despite the presence of groynes.</p>	<p>During this epoch a continuation of previous trends is anticipated, thus:</p> <ul style="list-style-type: none"> Defences will need further maintenance and potentially upgrading; The amenity beach in the east will come under increased pressure, due to coastal squeeze (related to the plan form being held and a scenario of sea level rise (6mm/yr)) along with a contemporary lack of sediment supply. As such the beach will become very

<p>of this frontage, will continue to retain the small sandy beach, immediately downdrift of Ramsgate Harbour. In the lee of the groynes the foreshore cover will continue to narrow, in a westwards direction, to the point of there being no beach fronting the Pegwell settlement chalk cliffs.</p> <p>The undefended cliffs, between West Cliff and Pegwell Bay, will continue to erode, whilst the wave cut chalk platform is likely to lower, although at a being very low rate. There is currently very little sediment cover here and this is not expected to change.</p>	<p>To prevent erosion of the undefended chalk cliffs, in the west, new defences will need to be constructed. A seawall will prevent the landwards transgression of the plan form. Constructing defences here will eliminate the small supply of material, from the cliffs to the foreshore, however this material is deemed too 'fine' to build protective beaches. Therefore very little change to the foreshore is predicted.</p>	<p>narrow (unless further recharge is undertaken);</p> <ul style="list-style-type: none"> • Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. Therefore, defences will be subjected to increased wave attack; • Alongshore coast processes will remain affected by the continued presence of defences (groynes) within this unit (and indeed those updrift if the policy for Ramsgate Harbour remains Hold the Line); • Preventing cliff erosion along this section of the coast will preclude feed (although it is recognised that this will yield very little beach building material. The nano and microfossils will dissolve, leaving only a small volume of flints to erode via attrition; and, • The geological integrity of the cliffs will continue to be affected.
West Cliff (Western Harbour Arm to Cliffs End)		
OPTION 2		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
A seawall founded on a chalk platform (western undercliff defences), fronted by timber groynes	No Defences	No Defences

<p>The present management practises along the West Cliff frontage, prevents erosion of the shoreline. During this epoch these defences will not be maintained and fail towards the close of this epoch / start of the next. Until failure:</p> <ul style="list-style-type: none"> • The shoreline will maintain a similar form / processes to the present day; • Toe erosion of the cliffs, in the east, will be prevented (enabling only sub-aerial weathering). • The groyne, at the eastern end of this frontage, will continue to retain the small sandy beach, immediately updrift of Ramsgate Harbour. <p>The undefended cliffs, between West Cliff and Pegwell Bay, will continue to erode, whilst the wave cut chalk platform is likely to lower, although the rate is anticipated at being very low.</p>	<p>The timber groynes are expected to fail at some point during this epoch. Upon their failure sediment previously retained (downdrift of Ramsgate Harbour) will be 'released' and transported alongshore.</p> <p>As the net drift is to the west, it is envisaged that the sand will be moved towards Pegwell Bay.</p> <p>With the removal of foreshore cover, a lack of sediment entering the system and a predicted rise in sea level (6mm/yr), the seawall will come under increased wave attack. As such before the close of this epoch the structure will fail.</p> <p>Following failure, cliff erosion will be reactivated and the integrity of the Ramsgate harbour access tunnel will be threatened. Cliff erosion will not, however contribute beach building sediment to the foreshore; therefore the chalk platform is likely to remain exposed.</p>	<p>With no defence structures in place the shoreline will start to respond naturally to the forcing factors. Thus a number of changes are predicted, in the east:</p> <p>Re-activation of the cliffs will take place; sediment released will be composed predominantly of fine material and as such will contribute very little to the beach building budget. There could be a tendency for a failure to occur, should this be the case then <0.2ha could be lost in a single event.</p> <p>Sediment will continue to be transported alongshore, in a westwards direction towards Pegwell Bay. However, this is only a limited volume (unless defences at Ramsgate Harbour are allowed to fail).</p> <p>In the west, further / increased erosion of the chalk cliffs that front the settlement at Pegwell is predicted. As such cliff top assets (residential, strategic links) are likely to be lost by the end of this epoch.</p>
Pegwell Bay (Cliffs End to Sandwich Bay Estate)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

<p>Along this section of coast the defences are limited to a revetted embankment in front of the nature reserve at Pegwell Bay; the remainder is protected by extensive sand dunes.</p>	<p>Upgrade all the defences, construct new shoreline defences and upgrade the defences along the River Stour.</p>	<p>Upgrade and maintain the defences</p>
<p>During this epoch it is predicted that the low-lying relict dune ridge system, will remain resilient to the continued implementation of this policy and a rise in sea level. Ponding occurs at the very northern end of these dunes, although this is a result of water propagating behind the dunes from the River Stour. However, in the future (i.e. 50-100 years) this has the potential to become problematic, in terms of coastal defence and habitat management.</p> <p>Under a policy of Hold the Line it is likely that the complex sediment pattern for this unit will remain. Sediment (predominantly fines) will continue to converge at Pegwell Bay with material entering from four sources; entering the system from the east (via a very small amount of alongshore inputs), south (via alongshore transport), from the offshore sand bank of Goodwin Sands and an extremely small amount from the River Stour. As such, it has been assumed that Pegwell Bay will remain a sediment sink for the small volume of predominantly fine sediment.</p> <p>The higher ground at Cliffs End will continue to restrict the northwards transgression of coarse material, whilst the ebb velocities of the River Stour will continue to influence the accretion of fine material. Similarly the training walls within</p>	<p>The predicted rise in sea level (6mm/yr) will necessitate that the revetment, which protects the nature reserve and the backing hinterland from flooding, will need to be upgraded substantially or an alternative defence constructed, to continue to provide a suitable standard of protection.</p> <p>If a defence was not constructed in the previous epoch to protect the hinterland that backs the sand dunes, then one will need to be constructed during this epoch, otherwise it is predicted that the backing hinterland will flood. Defence construction here will adversely affect dune integrity, as the foreshore / inter-tidal area are squeezed between a static backshore and rising sea level.</p> <p>The volume of material (sand and fines) entering the frontage, from alongshore and offshore is uncertain. Although it is known (from local monitoring and observations) that some sediment enters the system from the River Stour and the potential movement of material into the bay from Ramsgate is limited by the harbour and the groyne along the West Bay frontage.</p> <p>There is the potential that the rise in sea level (6mm/yr), combined with a shoreline being held seawards of its natural alignment, there is potential for greater wave attenuation along the defended shoreline. This could impact on sediment settling and dune integrity.</p>	<p>During this epoch a continuation of previous trends is predicted, albeit at an accelerated rate.</p> <p>Pressure on Pegwell Bay will increase due to the affects of sea level rise and the potential increased in storminess, as well as increased nearshore wave energy and the shoreline being held seawards of its natural alignment. As such, the following is foreseen:</p> <ul style="list-style-type: none"> • All the defences will need to be upgraded; • Although it is likely that Pegwell Bay will remain a sink it is uncertain whether Pegwell Bay will continue to pro-grade; • The foreshore will narrow (coastal squeeze); • The fronting relict dunes will decrease in volume and there is potential for these to be lost; and, • Fine material (sand) will be transported offshore.

<p>the Stour and at its mouth will continue to influence the evolution of the location / dimensions of the mouth and constrain the evolution of Shell Ness.</p> <p>In light of the aforementioned 'constraints' it is unknown whether Shell Ness will accretion/migrate during this epoch. or whether the offshore supply of sand (from Goodwin Sands) will continue.</p>		
Pegwell Bay (Cliffs End to Sandwich Bay Estate)		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow the revetted embankment that protects the nature reserve to fail, construct new defences at a realigned (landwards) position.</p>	<p>Maintain / upgrade the realigned defences.</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of Managed Realignment, the embankment, which presently reduces flood risk along most of the coast (except a short section north of the garage at Pegwell Bay, which is presently undefended) must be 1) removed or 2) allowed to fail (predicted before the close of this epoch). For this section of the coast the latter has been assumed.</p> <p>To implement managed realignment, a new defence will need to be constructed, at a more landwards location. For this section</p>	<p>During this epoch the shoreline will respond further to the change in plan form position and the predicted rise in sea level (6mm/yr).</p> <p>It is uncertain whether Pegwell Bay will remain a sediment sink for predominantly fine sediment during this epoch.</p> <p>Depending on the 'line' chosen and the defence and management practises implemented there is uncertainty whether the sand foreshore and relict dunes will remain (being reworked). There is</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level (6mm/yr), increased storminess and increased wave energy nearshore.</p> <p>Depending on the 'line' chosen and foreshore / inter-tidal response in the previous epoch, two scenarios are envisaged:</p>

<p>of the coast, a linear flood defence structure would be most appropriate; as this would continue to reduce the probability of large scale flood inundation, whilst allowing more natural dynamics in the inter-tidal / foreshore area. A linear flood defence structure would also maintain the alongshore coastal processes.</p> <p>In implementing managed realignment consideration must be given to the nature reserve area, which was once an old landfill site and appropriate measures will need to taken to eliminate contamination / reduce adverse affects.</p> <p>The chosen alignment must also encompass consideration regarding the position and dynamics of the River Stour. Presently training walls influence the evolution of the Stour (the dimensions and location of the mouth), they constrain the evolution of Shell Ness and they influence the amount of water propagation behind the relict dunes in the north. Realigning this section of the coast could result in changes to the aforementioned and should this be the case then this may need to be managed.</p>	<p>also uncertainty whether the mud flats and salt marshes, around the mouth of the River Stour would remain stable, expand or reduce.</p> <p>If the latter were to develop (further) then this would provide a first line of defence against wave attack, potentially influencing the degree of defence maintenance.</p> <p>During this epoch there is potential for water propagation, behind the relict dunes in the north, to increase due to the potential rise in fluvial and marine water levels.</p>	<p>1) The sand foreshore / relict dunes will diminish (due to the contemporary supply being insufficient to counter sea level rise), therefore further defence maintenance will be necessary or the 'line' may need to change i.e. move landwards, to be commensurate with the forcing factors.</p> <p>2) The evolution of the tidal flats will depend on the supply of sediment. However, it is predicted that these may reduce, due to the rise in sea level and an insufficient supply of cotemporary material. As such further maintenance of the realigned defences will be required and / or the retreated line of defence may need to change i.e. move landwards, to be commensurate with the forcing factors.</p> <p>If a decision is made not to upgrade the defences then the probability of overtopping and flooding will increase.</p>
Pegwell Bay (Cliffs End to Sandwich Bay Estate)		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

<p>A revetted embankment protects the nature reserve; the remainder is fronted by the extensive sand dunes.</p>	<p>Revetment is expected to fail in the latter half of this epoch (<50 years).</p>	<p>No Defences</p>
<p>The present management practises will continue to prevent flooding of the backing hinterland. Until their failure it is predicted that:</p> <p>Ponding at the very northern end of these dunes will continue, although this is a result of water propagating behind the dunes from the River Stour. However, in the future (i.e. 50-100 years) this has the potential to become problematic, in terms of coastal defence and habitat management..</p> <p>That sediment transportation will remain complicated; with fine (sand and silt) material converging at Pegwell Bay with material entering from 4 sources; entering the system from the east (cliff recession), south (alongshore transport), the River Stour and from the offshore sand bank of Goodwin Sands.</p> <p>The higher ground at Cliffs End will continue to restrict the northwards transgression of coarse material and that the ebb velocities of the River Stour will continue to influence the progradation / accretion of fine material.</p> <p>There is uncertainty over where Shell Ness will accrete during this epoch.</p>	<p>During this epoch defence failure is predicted and together with the predicted rise in sea level (6mm/yr) significant changes in the dynamics at Pegwell Bay are predicted:</p> <p>In the vicinity of Cliffs End, erosion and flooding are expected;</p> <p>The nature reserve will be prone / subjected to tidal flooding;</p> <p>The risk of uncontrolled contamination (from the former waste disposal site) is high;</p> <p>The dynamics of the River Stour may change. If the river were to breach through the tight meander around Rich borough, then the river's mouth would move southwards.</p> <p>Sediment stored within the dunes, on top of the shingle ridge between Shell Ness and Sandwich Flats, would be affected in two ways: 1) by the potential relocation of the Stour's mouth and 2) not having a sufficient supply of sediment to resist erosion / breaches. As such dune integrity will be affected. If a breach occurs and is not sealed (by natural processes), then a permanent breach will form, which will be inundated on normal tides, resulting in flooding of the backing hinterland. (There could be up to 2m of standing water in places (Halcrow, in pub.)</p> <p>There is the potential for flooding from this frontage to combine with the Sandwich Bay Estate (south) to Sandown Castle (remains of)</p>	<p>During this epoch further changes in the dynamics are predicted, as the system adjusts to changes from the previous epoch and responds to continued sea level rise (6mm/year), increased storminess and increased wave energy nearshore.</p> <p>Increased flooding of the low-lying backing hinterland is predicted.</p> <p>There is the possibility that the relict Wantsum Channel and its subsequent tributaries will be adopted during this epoch.</p> <p>Depending on the dynamics of the River Stour and the tidal currents there is the potential for either an ebb tidal delta or flood tidal channel to form in Pegwell Bay.</p> <p>This delta will have the potential to change local wave conditions and coastal processes (i.e. drift reversals, interrupting alongshore transportation).</p> <p>By the close of this epoch the area in the vicinity of Sandwich Bay Estate will also be at risk from flooding.</p>

	<p>flood cell and the north Kent coast (Reculver to Minnis Bay frontage) flood cell. Should this occur then the former tidal channel between north and east Kent will be re-activated. Initially it is predicted that the impact will be concentrated on the most seaward sections of the channel. However, as time progresses the impact will work its way landwards as the channel progressively deepens.</p>	
Sandwich Bay Estate to Sandown Castle (remains of)		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The defences (embankment) will need to be upgraded / replaced to maintain a suitable standard of protection. The fronting groyned shingle beach will continue to afford some protection to this section of the coast.</p>	<p>Implement alternative management/defence strategies</p>	<p>Maintain / upgrade defences, potentially construct perpendicular defences.</p>
<p>To maintain a suitable standard of protection the embankment will need to be upgraded or alternative defence structures will need to be constructed.</p> <p>Under rising sea levels the fixation of the high water mark coupled with the landward recession of the low water mark will lead to a decrease in the width of the inter-tidal zone.</p> <p>The net movement of sediment along this stretch of coast is northwards, related to the dominant south-east wave</p>	<p>To continue implementing a Hold the Line policy, along this section of the coast, under a scenario of sea level rise (6mm/yr), increased management of the shoreline is envisaged.</p> <p>As there is no higher ground for the shingle ridge to roll-back on, its integrity and suitability to provide protection, is questionable. In response to this a number of options are available e.g. recharging the mixed shingle and sand beach or constructing alternative, more substantial, defences.</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level (6mm/yr) and increased storminess, as well as the predicted increase in nearshore wave energy.</p> <p>Thus, following the construction/maintenance of the existing linear defences, in the previous epoch, squeeze of the foreshore and increased defence scour is predicted. This will be exacerbated by the alongshore movement of material and a limited contemporary supply of sediment. Thus further narrowing of the foreshore is predicted (unless the beach is</p>

<p>direction, although it is acknowledged that under north-easterly conditions sediment movement can be reversed.</p> <p>At specific locations, the beach is very narrow i.e. immediately north of Sandown Castle, a consequence of updrift defences. Thus, beach narrowing at this location is anticipated (unless recharge is implemented).</p>	<p>If new defences are constructed then it is likely that the MHW will become fixed and as such, the inter-tidal area squeezed. It is envisaged that the mixed shingle and sand beach will narrow (unless recharged).</p> <p>Holding the line here will significantly reduce the risk of large scale flooding.</p>	<p>recharged) and as such, defence structures may need to be upgraded (i.e. construct a seawall) to manage this change.</p> <p>It has been assumed that the predominant drift direction will remain north and as such, perpendicular structures may be required along this frontage to help maintain a healthy beach. However, if perpendicular structures are constructed then there would be an impact on downdrift frontages i.e. Pegwell Bay.</p> <p>Throughout this epoch regular monitoring of the beach is recommended.</p>
Sandwich Bay Estate to Sandown Castle (remains of)		
OPTION 2		
Managed Realignment (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow the embankment between Sandwich Bay Estate and Sandown Castle (remains of) to fail, construct new defences landwards of the embankment.</p>	<p>Maintain / upgrade the realigned defences.</p>	<p>Maintain the realigned defences and / or realign to a new more commensurate position.</p>
<p>To implement a policy of Managed Realignment, the embankment, which presently reduces the probability of flood inundation must be 1) removed or 2) allowed to fail (predicted before the close of this epoch). For this section of the coast</p>	<p>It has been assumed that the predominant drift direction will remain northwards; transporting a small volume of material (sand and shingle). However, it is unlikely that the volume will be sufficient to</p>	<p>Under a scenario of predicted sea level rise (6mm/yr), increased storminess and increased wave energy nearshore, it will become increasingly difficult to maintain the</p>

<p>the latter has been assumed.</p> <p>Defence failure is predicted to take place before the close of this epoch thus new defences would need to be constructed, at a realigned position, before the embankment fails.</p> <p>In the chosen position, a realigned linear flood defence structure would reduce the probability of large scale flood inundation, whilst allowing more natural dynamics alongshore.</p> <p>Along this section of coast the backing hinterland is low, as it once was part of the Wantsum Channel.</p> <p>Following failure of the existing defences it is predicted that shoreline response and readjustment would be rapid.</p>	<p>build fronting beaches.</p> <p>Therefore a re-working of sediment, presently stored within the ridge could occur. The ridge is likely to breakdown, with a number of breaches forming. This would put increased pressure on the realigned defences and therefore before the close of this epoch the structure(s) will need to be upgraded.</p> <p>The risk of flooding will be controlled by the realigned defences.</p>	<p>realigned defences.</p> <p>Similarly the predicted increase in wave energy could result in the alongshore transportation of material increasing and a landwards migration of the shingle and sand ridge. With the inter-tidal area potentially narrowing and foreshore cover potentially decreasing in volume, further defence maintenance could be necessary before the close of this epoch or further realignment of the 'line', could find a position more commensurate with the forcing factors.</p>
Sandwich Bay Estate (south) to Sandown Castle (remains of)		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Allow the embankment between Sandwich Bay Estate and Sandown Castle (remains of) to fail. The shingle beach (with a few groynes) will provide some protection, particularly in the north.</p>	<p>The northern section of the revetment will fail during this epoch leaving no defences.</p>	<p>No Defences</p>
<p>The low-lying backing hinterland is presently protected from flood inundation by an embankment. In the south this</p>	<p>Following the initial breach it is anticipated that further flooding would occur, on every spring tide and during any storm event, with</p>	<p>The naturally functioning coastline predicted for this epoch, under a scenario of No Active Intervention, will be</p>

<p>embankment is extremely vulnerable and is predicted to fail within the first 10 to 20 years.</p> <p>Until failure, the predominant drift direction will remain northwards (it is acknowledged that under north-easterly conditions, sediment movement reverses).</p> <p>Following failure, the shingle ridge would breach fairly quickly, in the south, and flood the low-lying backing hinterland. There is also the potential for outflanking, of defences in the north and south.</p> <p>As the backing hinterland is low lying (+2.0m O.D.) and the volume and type of sediment insufficient and inappropriate for cannibalisation, roll-back is not predicted. It is envisaged that by the end of this epoch a tidal inlet could be a feature at the southern end of this frontage.</p> <p>Should this take place then there will be a major impact on updrift frontages (i.e. Sandown Castle remains of to Oldstairs Bay - in particular north Deal which will experience back door flooding), downdrift frontages i.e. Sandwich Bay Estate to Shell Ness and environmental assets like Hacklinge Marsh.</p>	<p>depths greater than 1m. It is anticipated that initially these waters would dissipate within days but with the predicted rise in sea level, inundation would become more regular.</p> <p>Rising sea levels and the predicted increase in storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy. In the north the shingle ridge would therefore become increasingly prone to wave attack and as such further breaching would take place.</p> <p>During this epoch there is potential for flooding from this frontage and the Pegwell Bay frontage to combine with inundation from the north Kent coast (along the Reculver to Minnis Bay frontage). Should this occur then the former tidal channel between north and east Kent would be re-activated becoming, over time, a permanent tidal inlet. It is predicted that initially there is the potential for the former Roman shoreline position, at Richborough, to be reinstated and a large bay between Sandwich and the Isle of Thanet to resume. However, there is also the potential for more dramatic change, which would leave the Isle of Thanet separated from the mainland.</p> <p>Large scale change in shoreline dynamics and coastal processes are predicted for this epoch and under a scenario of no active intervention, they would be permanent.</p>	<p>completely different from the shoreline of today.</p> <p>By the close of this epoch it is predicted that:</p> <ul style="list-style-type: none"> • A tidal channel will separate the Isle of Thanet from mainland Kent; • Alongshore coastal processes will be interrupted by the tidal channel; • The plan position between Shell Ness and Deal could retreat forming a new estuary between Minnis Bay and Pegwell Bay; and, • Inundation on this scale could result in the flooding of up to 9500 hectares of low lying land and 1500 hectares of erosion (Reculver to Minnis Bay Scheme, 1998).
Sandown Castle (remains of) to Oldstairs Bay		
OPTION 1		
Hold the Line (0-100 Years)		

Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Between Sandown Castle (remains of) and Deal Castle the frontage is defended by groynes and a seawall. Between Deal Castle and Kingsdown there are no formal defences only a wide shingle beach, which under a policy of HTL will need to be monitored. Some maintenance of the defences at Kingsdown Village and Oldstairs Bay is also required.</p>	<p>Upgrade all the defence structures / management practises.</p>	<p>Maintain / upgrade all defence structures and management practises.</p>
<p>Under a policy of Hold the Line, the defences between Sandown Castle (remains of) and Deal Castle will need to be maintained. The wide shingle beach between Deal Castle and north of Kingsdown Village will continue to provide adequate protection to the backing assets during this epoch, as such beach monitoring is recommended.</p> <p>Despite the general volume of sediment distributed between Deal Castle and Oldstairs Bay and the sheltering effect of the Goodwin Sands (offshore banks which reduce onshore wave attack) certain locations are vulnerable to wave attack, one of which is Kingsdown. Thus under a scenario of Hold the Line it is envisaged that the beach will narrow (unless recharged) and maintenance of the defence structures would continue.</p> <p>It is envisaged that the net alongshore transportation of material northwards will continue, although it is recognised that drift reversals (on the east facing frontages) could still occur. In essence though, trends are predicted to remain similar to the present day, with transportation rates increasing</p>	<p>To continue implementing a Hold the Line policy, along this section of the coast, under a scenario of sea level rise (6mm/yr), increased management of the shoreline is envisaged. The shoreline between Sandown Castle (remains of) and Deal Castle is particularly vulnerable. Here, beach narrowing is predicted (unless recharge is implemented) , which will exert increasing pressure on the backing and perpendicular defences, as such maintenance and upgrading these structures is required.</p> <p>Between Deal and Walmer it is envisaged that the fronting shingle beach will narrow slightly, in response to the predicted rise in sea level (6mm/yr) and the net alongshore transportation of material northwards. During this epoch it is predicted that the backing assets are not at risk but regular monitoring of the shingle beach is recommended.</p> <p>During this epoch all the defences at Kingsdown Village and Oldstairs Bay will need to be upgraded to maintain a suitable standard of protection. The foreshore fronting Oldstairs Bay is</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level (6mm/yr) and increased storminess, as well as the predicted increase in nearshore wave energy. Thus, the following is predicted:</p> <ul style="list-style-type: none"> • The shingle beach along the entire frontage will narrow; due to continued and potentially accelerated coastal squeeze and the transportation of material alongshore. This will be particularly prolific between Sandown castle (remains of) and Deal Castle; • Beach amenities and associated activities could be affected; • Drawdown of beach material will become more frequent due to higher water levels propagating closer to the shore; • Overtopping events becoming more frequent, as well as over-washing and ponding of water on the backing

<p>towards the north due to a change in the coastline orientation.</p> <p>This frontage will continue to receive little/negligible feed from updrift frontages.. However, feed from this frontage has the potential to influence frontages downdrift (i.e. Sandwich bay Estate to Sandown castle remains of). Thus, management policies implemented here has the potential to impact frontages downdrift.</p>	<p>particularly vulnerable, due to a lack of foreshore cover and its history of volatility. It is envisaged that under a policy of hold the line the foreshore cover would reduce (unless recharged).</p> <p>Under rising sea levels the fixation of the high water mark coupled with landward recession of the low water mark will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p>	<p>infrastructure/amenities;</p> <ul style="list-style-type: none"> • Alongshore coastal process impacts, due to defences (groynes) restricting sediment movement; and, • Further maintenance and upgrading of the defences is likely.
Sandown Castle (remains of) to Oldstairs Bay		
OPTION 2		
Hold the Line (0-20 Years) and Managed Realignment (20-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>The seawall and groynes between Sandown Castle (remains of) and Deal Castle will need to be maintained. Between Deal Castle and Kingsdown there are no formal defences, only a wide shingle beach, as such monitoring is recommended. The seawall and groynes at Kingsdown Village will require maintenance.</p>	<p>Implement beach monitoring / management Between Kingsdown Village and Oldstairs Bay a realigned defence will need to be constructed and / or beach recharge implemented.</p>	<p>Maintain / upgrade the existing management practises.</p>
<p>Under a policy of Hold the Line, the defences between Sandown Castle (remains of) and Deal Castle will need to be maintained. The wide shingle beach between Deal Castle and north of Kingsdown Village will continue to provide adequate protection to the backing assets during this epoch, as such beach monitoring is recommended.</p>	<p>To implement a policy of managed realignment a combination of approaches along this section of coast may be required.</p> <p>At north Deal the shingle beach is narrow and the backing hinterland low, thus to manage flood risk and to implement managed realignment, a secondary flood defence would be most appropriate, combined with beach management. There may</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at an accelerated rate, due to the predicted rise in sea level, the predicted increase in storminess and an increase in nearshore wave energy. Therefore it is envisaged that:</p> <p>The net alongshore transportation of material (northwards)</p>

<p>Despite the general volume of sediment distributed between Deal Castle and Oldstairs Bay and the sheltering effect of the Goodwin Sands (offshore banks which reduce onshore wave attack) certain locations are vulnerable to wave attack, one of which is Kingsdown. Thus under a scenario of Hold the Line it is envisaged that the beach will narrow (unless recharged) and maintenance of the defence structures would continue.</p> <p>It is envisaged that the net alongshore transportation of material (northwards) will continue, although it is recognised that drift reversals (on the east facing frontages) can still occur. In essence though, transportation trends are predicted to remain similar to the present day i.e. net alongshore transportation rates increasing north due to a change in the coastlines orientation (WS Atkins, 2001) and less sheltering (from the South Foreland/ Oldstairs Bay headland).</p>	<p>however, be a loss of assets.</p> <p>Between Deal and Kingsdown (north) the shingle beach is wide and therefore little management along this section is required; simply allowing the ridge to respond and roll back to the forcing factors is deemed sufficient.</p> <p>At Kingsdown village, a policy of Managed Realignment could involve defence structures translating landwards. In doing this there is the potential for the shingle beach here to respond at a rate of between 0.5m to 1m/year. However, as flood risk here is low, due to the backing hinterland being relatively high (+5m OD) then this landwards migration of the shoreline could be acceptable (although there may be some assets lost).</p> <p>The beach at Oldstairs Bay has a history of volatility and erosion. Thus, under a scenario of sea level rise (6mm/yr) the predicted rate of erosion is likely to accelerate. Defence structures and beach management may need to be implemented to manage the migration of the shoreline.</p> <p>It has been assumed that the prevailing wave direction remains the same; sediment inputs will continue to come from the south. Although it is recognised that drift reversals could take place.</p>	<p>will continue; although it has been assumed that drift reversals (on the east facing frontages could still take place.</p> <p>The shingle beach at north Deal will narrow further (unless recharged)</p> <p>The shingle beach between Deal Castle and Kingsdown has the potential to remain relatively similar to its present day form, due to the predicted input of alongshore feed. However, it is likely that it will experience some transgression via roll-back;</p> <p>At Kingsdown Village and Oldstairs Bay further erosion of the beach is predicted (unless it is recharged). There is the potential, at Oldstairs Bay, for the realigned structures to come under wave attack.</p>
Sandown Castle (remains of) to Oldstairs Bay		
OPTION 3		
No Active Intervention (0-100 Years)		

Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Between Sandown Castle (remains of) and Deal Castle the frontage is defended by groynes and a seawall. Between Deal Castle and Kingsdown there are no formal defences only a wide shingle beach. No maintenance of the defences between Kingsdown Village (south) and Oldstairs Bay.</p>	<p>Groynes at Kingsdown are predicted to fail early during this epoch, whilst the remaining defences (seawalls, revetments) will fail before the close of this epoch.</p>	<p>No defences</p>
<p>Under a scenario of No Active Intervention, beach management at Kingsdown would immediately cease, but the hard defences at Kingsdown and Oldstairs Bay would continue to afford some erosion protection. Until their failure, it is predicted that:</p> <p>Beach narrowing at Kingsdown would increase as would the risk of overtopping. Site observations and OS mapping illustrates that this area stands slightly more proud than the adjacent sections of coast and is therefore more exposed to wave action.</p> <p>Along the remainder of frontage it is predicted that the foreshore will remain relatively stable, due to the volume of sediment and the sheltering effect of the Goodwin Sands (offshore banks which reduce onshore wave attack).</p> <p>There will be continued transportation of material from south to north (although localised drift reversals could occur) with rates increasing north due to a change in the coasts orientation and limited feed from the south.</p>	<p>All groynes will fail relatively early during this epoch. Their failure will result in a rapid re-adjustment of the shoreline, a consequence of it previously being held seawards of its natural alignment, thus:</p> <p>At the north of Deal flood inundation is predicted (a consequence of the hinterland being low-lying). The flood cell here inter-connects with the 'Wantsum Channel' flood cell thus large scale flood inundation is predicted. South of Deal Museum down to Oldstairs Bay erosion is predicted. Between Deal Castle and Walmer Castle little erosion is predicted, whilst at Kingsdown the shingle beach could erode at an approximate rate of 0.5-1m.yr. This would lead to an increase in overtopping and the seawall coming under increased wave attack, resulting in its subsequent failure. At Oldstairs Bay erosion rates are predicted to be low.</p> <p>Following the collapse of the defences at Kingsdown a position more commensurate with the forcing factors will be established, the backing hinterland will not be at risk from flooding, due to its height, being in the region of +5m OD) although under extreme events and with no defences in place, the potential for flood inundation remains a possibility.</p>	<p>With no defences in place, the coastline will function naturally:</p> <p>Permanent flooding in the north of Deal is anticipated (which could influence frontages updrift)</p> <p>Along the majority of the frontage i.e. Deal Castle to Kingsdown the shingle beach will continue to roll back. The rate is likely to be greater due to the predicted rise in sea level (from 4mm/yr to 6mm/yr).</p> <p>There is the potential for an increased amount of beach material to be drawn down, under storm conditions and transported to the nearshore.</p> <p>Material will continue to be transported northwards transporting material to frontages downdrift.</p> <p>There is the potential for a breach at Kingsdown Village.</p> <p>Thus, it is envisaged that the northern section of Deal will be flooded on a permanent basis, the beach will erode between</p>

	Assuming the prevailing wave direction remains the same then sediment inputs from the south and outputs to the north will continue.	Deal Castle and Kingsdown, the village of Kingsdown will become increasingly vulnerable and assets at Oldstairs Bay may become at risk.
Oldstairs Bay to St Margaret's		
OPTION 1		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
A largely undefended section of coast, with the exception of the seawall around the MoD Rifle Ranges.	All defences will fail early during this epoch	No defences
<p>It is predicted that along the undefended sections, the chalk cliffs will continue to erode at a relatively low rate 0.1 to 0.5m/yr (Futurecoast, 2002). Episodic landslide events are also predicted to occur at a frequency of approximately <10m in 10 years (Futurecoast, 2002).</p> <p>Where the cliffs are defended (MoD Rifle Range), erosion of the cliff toe will be prevented, thus fixing the plan-form position and arresting further geological exposures.</p> <p>The volume of shingle, at the toe of cliffs, resting on the chalk platform is predicted to remain similar to the present day.</p> <p>The fronting chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion</p>	<p>During this epoch it is predicted that the undefended sections will continue to erode at a relatively low rate (0.1-0.5m/yr plus landslide events).</p> <p>The seawall which protects the MoD rifle range is expected to fail before of this epoch; until it does it will continue to fix the plan form position of the shoreline at the HWM. However, following defence failure the artificial promontory will be lost (material contained within this promontory could be hazardous) and reactivation of the backing cliffs would commence. It is predicted that the rate will be analogous with the undefended section i.e. 0.1-0.5m/yr. There is the possibility, during this epoch that the chalk cliffs could fail, if this were to occur then this could contribute to <0.2 ha in a single event. Erosion of the chalk cliffs will yield very little beach building material</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at a slightly accelerated rate, due to the predicted rise in sea level, the potential for increased storminess, an increase in nearshore wave energy and an increased probability of cliff failure.</p> <p>The rate of chalk cliff recession (and chalk platform lowering) could increase, along with the probability of cliff failure; contributing <0.2ha per event, as sea levels rise.</p> <p>As previously eluded erosion of the chalk cliffs will yield very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low</p>

<p>(wave action), however erosion rates are predicted to remain low (Futurecoast, 2002).</p>	<p>(the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>The chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002)</p> <p>It is predicted that a small volume of material (shingle) will continue to be transported northwards (towards Kingsdown).</p>	<p>water, as the chalk cliffs will not erode fast enough for the system to translate in position.</p>
St Margaret's		
OPTION 1		
Hold the Line (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
<p>Vertical concrete seawall with a groyned shingle beach</p>	<p>Upgrade all the defences / recharge the beach</p>	<p>Maintain / upgrade the defences and recharge the beach</p>
<p>The present management practises are sufficient to continue holding the plan form position of the shoreline.</p> <p>The groynes at St Margaret's Bay will continue to hold the predominantly shingle beach in place, whilst the seawall will continue to prevent erosion of the cliff toe and eliminate a</p>	<p>It is envisaged that the shingle beach will narrow in response to the predicted rise in sea level (6mm/yr) and the static position of the backshore, which will encourage deeper wave attenuation due to the landward recession of the low water mark leading to an increase in nearshore wave energy.</p> <p>As the beach narrows (unless it is recharged) greater pressure on</p>	<p>During this epoch a continuation of previous trends is anticipated, thus:</p> <p>Defences will need further maintenance and potentially upgrading;</p> <p>Under rising sea levels (6mm/yr) the fixation of the high</p>

<p>landwards transgression of the plan form.</p> <p>Sediment movement along this frontage and feed into this frontage, from the south, will remain low due to the impact of downdrift structures and an insufficient contemporary sediment supply.</p>	<p>the backing defence structures will be experienced. Thus to maintain their integrity, defence structures will need to be upgraded.</p> <p>Sediment movement along this frontage and feed into this frontage, from the south, will remain low throughout this epoch, due to the impact of downdrift structures and an insufficient contemporary sediment supply.</p> <p>The chalk platforms will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002)</p> <p>Under a policy of Hold the Line it is predicted that the geological integrity of the cliffs will continue to be affected.</p>	<p>water mark coupled with the landward recession of the low water mark will decrease the width of the inter-tidal zone (a phenomenon known as coastal squeeze). Consequently, the mixed sand and shingle beach will narrow (unless recharged).</p> <p>If the beach narrows substantially, there is the possibility that the groyne may become redundant (as very little sediment is retained).</p> <p>Sediment movement along this frontage and feed into this frontage, from the south, will remain low throughout this epoch, due to the impact of downdrift structures and an insufficient contemporary sediment supply.</p> <p>Under a policy of Hold the Line it is predicted that the geological integrity of the cliffs will continue to be affected.</p>
St Margaret's		
OPTION 2		
Hold the Line (0-20 Years) and Managed Realignment (20-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)

Vertical concrete seawall with a groyned shingle beach.	Implement / construct alternative defence structures.	Monitor / maintain the realigned defence structures.
<p>The present management practises are sufficient to continue holding the plan form position of the shoreline.</p> <p>The groynes at St Margaret's Bay will continue to hold the majority of the mixed sand and shingle beach, whilst the seawall will continue to prevent erosion of the cliff toe and eliminate a landwards transgression of the plan form</p> <p>Sediment movement and fed into this frontage, from the south, will remain low due to the impact of downdrift structures and an insufficient contemporary sediment supply.</p> <p>Under rising sea levels the fixation of the high water mark coupled with the recession of the low water mark will lead to a decrease in the width of the inter-tidal zone (coastal squeeze).</p>	<p>To implement a policy of Managed Realignment alternative management approaches would need to be implemented, for example constructing a rock bund, at the cliff toe, would allow the cliffs to erode albeit at reduced and managed rate. A rock bund would also enable material from the cliffs, predominantly nano and microfossils and a small volume of flints to be released. However, it is acknowledged that this will provide the fronting beach with little material.</p> <p>Under a policy of Managed Realignment it is envisaged that the groynes will not be maintained and the (narrow) fronting beach will respond accordingly. Initially it is envisaged that the beach will narrow; a consequence of it being held seawards of its natural alignment and sediment being transported alongshore, in a net northwards direction.</p> <p>Under a policy of Managed realignment erosion along the frontage could be in the region of 0.1 to 0.5m/yr (Futurecoast, 2002) thus encouraging the geological exposures.</p> <p>The chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action).</p>	<p>During this epoch a continuation of previous trends is predicted. Thus the frontage will undergo further retreat, albeit at a managed rate.</p> <p>Rising sea levels and increased storminess, coupled with a landward recession of the low water mark will lead to an increase in nearshore wave energy and therefore increased wave attack at the cliff.</p> <p>Maintenance of the realigned line (and associated defences or management practises) would be required during this epoch, in response to sea level rise (6mm/yr).</p> <p>During this epoch there is the possibility of cliff failure (to limit this, sub-aerial weathering would also need to be managed). A failure could render <0.2ha in a single event. Again this will yield mainly nano and microfossils to the system, along with a small volume of flint and as such only a very small volume of beach building material will be added to the sediment budget (Futurecoast, 2002).</p> <p>By close of this epoch properties and recreational assets,</p>

	<p>Erosion rates are predicted to remain low (Futurecoast, 2002)</p> <p>By the close of this epoch there is the potential that some of the properties and recreational assets could be at risk or lost.</p>	will be lost.
St Margaret's		
OPTION 3		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
Allow the seawall and groyned shingle beach to fail.	No Defences	No Defences
<p>To implement a policy of No Active Intervention three options are possible: 1) to remove the defences immediately, 2) to not maintain the defences and remove what remains at the close of this epoch or 3) allow the defences to fail naturally (predicted to take place before the close of this epoch).</p> <p>In this instance not maintaining the defences and removing the defences before the close of this epoch has been selected. Thus, until failure the present day defences will continue to influence the plan-form position of the shoreline and influence the coastal processes.</p> <p>Following failure and removal of defences, there will be an</p>	<p>During this epoch it is anticipated that the shingle beach fronting the chalk cliffs will narrow significantly. This coupled with the predicted rise in sea level will see reactivation of the chalk cliffs. Erode via marine and sub-aerial processes could be in the region of 01 to 0.5m/yr (Futurecoast, 2002). There may also be the possibility for a cliff failure, which if it does could render <0.2 ha in a single event.</p> <p>Material derived from cliff erosion is composed of predominantly nano and microfossils, with a small volume of flint (the percentage of flint here and at South Foreland is believed to be slightly higher than that of North Foreland), nonetheless only a small volume of beach building material will be provided to the sediment budget</p>	<p>During this epoch a continuation of previous trends is envisaged, albeit at a slightly accelerated rate, due to the predicted rise in sea level, the potential increase in storminess and an increase in nearshore wave energy.</p> <p>The rate of chalk cliff recession may increase due to the predicted rise in sea level (6mm/yr). The probability of failure occurring will increase with time; yielding <0.2ha per episodic event. Erosion of the chalk cliffs and the episodic events will yield mainly nano and microfossils, which are not suitable for beach building, along with a small volume of flint, which will deposited in-situ and eroded via attrition.</p>

<p>adjustment of the shoreline's plan position, the amount of foreshore cover and alongshore coastal processes (transportation rates will increase).</p> <p>St Margaret's occupies a bay position and is less exposed than neighbouring It is unlikely that erosion of the chalk cliffs would commence during this epoch.</p>	<p>(Futurecoast, 2002).</p> <p>Sediment supply into the frontage, from South Foreland, is low due to a combination of factors: the contemporary sediment supply is very low (material is predominantly nano and microfossils and therefore not suitable for beach building), the natural configuration of the coastline – the South Foreland headlands limits inputs, as does the updrift defence structures such as Dover Harbour.</p> <p>The chalk platform will continue to respond to both chemical weathering (solution) and mechanical abrasion (wave action). Erosion rates are predicted to remain low (Futurecoast, 2002).</p> <p>By the close of this epoch there is the potential that some of the properties and recreational assets could be at risk or lost.</p>	<p>It has been assumed that the net movement of material will remain northwards (although it is recognised that the volume is very small).</p> <p>It is predicted that with acceleration in sea level, the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position. Thus the rate of platform lowering will become negligible.</p> <p>During this epoch there is the potential of property losses at St Margaret's.</p>
South Foreland		
OPTION 1		
No Active Intervention (0-100 Years)		
Years 0-20 (2025)	Years 20-50 (2055)	Years 50-100 (2105)
No Defences	No Defences	No Defences
Chalk cliffs dominate this section of the coast. It is predicted	Throughout this epoch the undefended chalk cliffs will continue to	The rate of chalk cliff recession could increase due to the

<p>that the chalk cliffs will continue to erode at a relatively low rate 0.1 to 0.5m/yr, with landslide events occurring at an approximate frequency of <1m in 10 years. Annual erosion will provide some beach building material (nano and microfossils which make up a large proportion will dissolve however, the small volume of flints will be deposited in-situ and erode via attrition).</p> <p>No significant change in response, from the present day, is envisaged during this epoch thus:</p> <p>Gravel and talus slopes will continue to rest on the narrow shore-platform.</p> <p>The fronting chalk platform will continue to respond to both chemical weathering (solution) However, it is acknowledged that erosion rates will remain low (Futurecoast, 2002).</p> <p>Sediment movement into the area will remain low to negligible, due to the natural configuration of the shoreline i.e. a headland, hard defence's updrift (i.e. Dover Harbour) and the contemporary lack of sediment supply.</p> <p>No loss of assets is predicted during this epoch.</p>	<p>erode, at a predicted rate of 0.1 to 0.5m/yr (Futurecoast, 2002) with small episodic landslide events.</p> <p>The fronting chalk platform will continue to respond to both chemical weathering (solution) However, it is acknowledged that erosion rates will remain low (Futurecoast, 2002).</p> <p>Very little beach building material will be added to the frontage due to the predominant proportion of nano and microfossils compared to the small volume of flints released.</p> <p>Sediment movement into the area will remain negligible, due to combination of natural geology (i.e. headlands), updrift defence structures and contemporary lack of sediment supply.</p>	<p>predicted rise in sea level (6mm/yr), the potential increase in storminess and an increase in nearshore wave energy.</p> <p>The probability of a failure occurring will also increase with time. However, these events coupled with 'annual' erosion will provide very little beach building material (the nano and microfossils, which contribute the predominant proportion will dissolve, leaving the small volume of flints to erode via attrition).</p> <p>It is predicted that with sea level rise (6mm/yr), the chalk platform will become submerged i.e. less exposed at low water, as the chalk cliffs will not erode fast enough for the system to translate in position.</p> <p>There will be some loss of assets during this epoch.</p>
---	---	--

G3 Objective Appraisal

Each scenario/policy has been appraised according to the extent to which each of the defined objectives⁸ for individual locations is achieved. In most instances, consideration of whether the objective is met is based upon the predicted position (e.g. the extent of retreat) and form (e.g. existence of a beach) of the shoreline.

Objectives were appraised using numerical compliance. This method was employed to clearly show the differences between policies and their acceptability. Where the policy achieved the objective it was assigned a Y (yes), where the policy did not achieve the objective it was assigned an N (no) and where the policy partially met the objective it was assigned a P (partial). The scores for each Y, N or P were then used to assess which policy met the most objectives along each frontage, for each epoch.

The following Objective Assessment Tables indicate whether the tested policies meet, partially meet or do not meet the objectives for each frontage. This is indicated with a Y, P or N, as well as a short statement of how the policy meets or does not meet the objective. The weighted score and numerical compliance totals are also shown at the end of each table.

⁸ See Appendix E.

Assessment of Objectives Table

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties on edge of Allhallows-on-Sea village	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Some residential properties maintained	Residential properties remain	Residential properties lost	Some residential properties maintained	Residential properties remain
Residential properties in Lower Stoke village	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses in Lower Stoke village	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	Y	Y	Y	Y	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village											
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities in Lower Stoke village (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained
Residential properties on edge of Middle Stoke village	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain
Major infrastructure e.g. A228, local roads, railway	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	Y	Y	Y	P	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
line, services and communications, electricity pylons			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	No infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											
Agricultural Land	C3	Prevent loss/ reduced potential of agricultural land from flooding	N	P	N	N	P (Depends on defence line)	Y	N	P (Depends on the defence line)	Y
			Loss of land	Some loss of land	No Loss of Land	Loss of land	Some loss of land	No loss of Land	Loss of land	Some loss of land	No Loss of Land
Intertidal Habitat	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	Y	P	Y	Y	N	Y	P (Depends on defence line)	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen
Coastal Grazing marsh habitat (including habitat on the flood defence embankments)	E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	Y	Y	Y	N	P (Depends on defence line)	Y	N	P (Depends on defence line)	Y
			Present habitat maintained	Bio-diversity opportunity for fresh and inter-tidal habitats	Present habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Present habitat maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
								restricted			
		Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	N	Y	Y	N	Y	Y	P	N
		No construction of flood risk management works	No construction of flood risk management works	Construction of flood risk management works	Construction of flood risk management works would not result in losses to coastal grazing marsh	No construction of flood risk management works	Construction and maintenance of flood risk management works	Construction of flood risk management works would not result in losses to coastal grazing marsh	No construction of flood risk management works	Construction and maintenance of flood risk management works	Construction of flood risk management works
Former oil refinery site	C1	Prevent loss/ damage/ disruption to site from flooding	Y	Y	Y	N	P	Y	N	P	Y
			Oil refinery site maintained	Oil refinery site maintained	Oil refinery site maintained	Oil refinery site lost	Maintenance depends on realignment line	Oil refinery site maintained	Oil refinery site lost	Maintenance depends on realignment line	Oil refinery site maintained
Grain Power station	C1	Prevent loss/ damage/ disruption to Grain Power station from flooding	Y	Y	Y	N	Y (Depends on defence line)	Y	N	Y (Depends on defence line)	Y
			Power Station Site Maintained	Power Station Site Maintained	Power Station Site Maintained	Power Station Site Lost	Power Station Site Maintained	Power Station Site Maintained	Power Station Site Lost	Power Station Site Maintained	Power Station Site Maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Thamesport (Chattenen to Grain)	F1	Prevent loss/ damage/ disruption to Thamesport from flooding	N	P	Y	N	P	Y	N	P	Y
			Facilities and development would be blighted	Thamesport could be maintained but would undergo a series of modifications	Thamesport would be remain operational	Facilities and development would be blighted / flooded	Thamesport could be maintained but would undergo a series of modifications	Thamesport would be remain operational	Facilities and development would be blighted / flooded	Thamesport could be maintained but would undergo a series of modifications	Thamesport would be remain operational
Slough Fort (set back from Allhallows village)	E4	Prevent loss/ damage to Slough Fort from flooding Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	P	Y	Y
			Fort not at risk from flooding	Fort not at risk from flooding	Fort not at risk from flooding	Fort not at risk from flooding	Fort not at risk from flooding	Fort not at risk from flooding	Fort may be at risk from flooding	Fort not at risk from flooding	Fort not at risk from flooding
		Prevent loss/ damage to Slough Fort from flood risk management works Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	Y	Y	P	Y
			No risk management works	Could be affected – depends on where the defences are constructed	Slough Fort not at risk	No risk management works	Could be affected – depends on where the defences are constructed	Slough Fort not at risk	No risk management works	Could be affected – depends on where the defences are constructed	Slough Fort not at risk
Non-statutory known and unknown heritage	G2	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	Y	N	P	Y
			Heritage maintained	Heritage maintained	Heritage maintained	Loss / damage of heritage assets	Realigning defences could affect integrity	Upgrading defences will maintain terrestrial heritage	Loss / damage of heritage assets	Realigning defences could affect integrity	Upgrading defences will maintain terrestrial heritage

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	P	N	Y	P	N
			Heritage maintained	Heritage maintained	Heritage maintained	No defence construction	Realigning defences could affect integrity	Upgrading defences could impact on heritage assets	No defence construction	Realigning defences could affect integrity	Upgrading defences could impact on heritage assets
Landscape of the estuary, marshes, village and industrial area, including existing flood defences	G4	Prevent degradation of landscape quality and visual amenity from flooding Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	Y	N	P	Y
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Some of the landscape maintained	Landscape maintained	Landscape degradation	Some of the landscape maintained	Landscape maintained
		Prevent degradation of landscape quality and visual amenity from flood risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	P	N	Y	P	N
			Landscape maintained	Landscape maintained	Landscape maintained	No defence construction	Realigning defences could affect integrity	Upgrading defences will impact on landscape	No defence construction	Realigning defences could affect integrity	Upgrading defences will impact on landscape
Facilities for recreation, and associated business, including Allhallows Holiday Park,	L2	Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Allhallows-on-Sea to north of Grain village			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
sailing club, access to beaches and foreshore (including for fishing and swimming) and River Thames			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities not maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities not maintained	Amenity facilities maintained	Amenity facilities not maintained
Public Footpaths, including along flood defence embankments south of A228.	L2	Prevent loss/ disruption to footpath from flooding and flood risk management works	Y	Y	Y	P	Y	Y	N	Y	Y
		Seek opportunities to enhance features where appropriate	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Meets Objectives			19	17	19	7	10	18	5	9	17
Partially Meets Objectives			0	3	1	2	10	0	1	12	0
Fails to Meet Objectives			2	1	1	12	1	3	15	0	4

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Residential properties in Sheerness, Queenborough and Rushenden and on the edge of Minster	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties in Sheerness, Queenborough and Rushenden and on the edge of Minster	C1	Prevent loss/ damage to commercial properties from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities in Sheerness, Queenborough and Rushenden	H	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
and on the edge of Minster (such as churches, pubs, shops, schools, village halls)			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained
Queenborough/ Rushenden regeneration	H2	Prevent loss to redevelopment area (residential, commercial and associated infrastructure) through flooding	N	Y	Y	N	P	Y	N	P	Y
			Area will be blighted	Redevelopment could be maintained (depending on 'line')	Redevelopment maintained	Area will be blighted / flooded	Redevelopment could be maintained (depending on 'line')	Redevelopment maintained	Area will be blighted / flooded	Redevelopment could be maintained (depending on 'line')	Redevelopment maintained
Sheerness Port	F1	Prevent loss/ damage/ disruption to Sheerness Port from flooding	Y	Y	Y	P	Y	Y	N	Y	Y
			Port maintained	Port maintained	Port maintained	Dependent on the residual life of the current defence	Port maintained	Port maintained	Port facilities lost	Port maintained	Port maintained

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Major infrastructure e.g. A249 and A250, local roads, railway line, services and communications, electricity pylons	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	Y	Y	Y	P	Y	Y	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Some infrastructure could be lost	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											
Richard Montgomery Wreck (off shore wreck with a large quantity of munitions still on board)											
Agricultural Land	C3	Prevent loss/ reduced potential of agricultural land from flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Agricultural land maintained	Agricultural land maintained	Agricultural land maintained	Agricultural land lost	Agricultural land maintained	Agricultural land maintained	Agricultural land lost	Agricultural land maintained	Agricultural land maintained
Public Footpaths and coastal path from Sheerness to Minster	R3	Prevent loss/ disruption to footpath from flooding and flood risk management works Seek opportunities to enhance features where	Y	Y	Y	P	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
		appropriate	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Garrison Point fort and associated fortifications Barton Point battery	G2	Prevent loss/ damage to SAMs and Barton Point battery from flooding Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	Y	N	Y	Y
			SAM maintained	SAM maintained	SAM maintained	Dependent on the residual life of the current defence	Present SAMs maintained	Present SAMs maintained	SAM lost due to flooding	Present SAMs maintained	Present SAMs maintained
		Prevent loss/ damage to SAMs and Barton Point battery from flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	P	Y	P	P	Y	P	P
			Present SAMs maintained	Present SAMs maintained	Upgrading the defences could impact on heritage assets	No defence construction	Upgrading the defences could impact on heritage assets	Upgrading the defences could impact on heritage assets	No defence construction	Upgrading the defences could impact on heritage assets	Upgrading the defences could impact on heritage assets
Sheerness Town and Dockyard	G2	Prevent loss/ damage to area from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	Y	N	Y	Y
			Town and docks maintained	Town and docks maintained	Town and docks maintained	Dependent on the residual life of the current defence	Town and docks maintained	Town and docks maintained	Town and dock will be lost	Town and docks maintained	Town and docks maintained
Queenborough	G2	Prevent loss/ damage to Conservation Area and	Y	Y	Y	N	Y	Y	N	P	P

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Conservation Area, including Queenborough Castle		SAM from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area lost due to flooding	Conservation area maintained (will also depends on policy implemented in MSFP)	Conservation area maintained (will also depends on policy implemented in MSFP)	Conservation area lost due to flooding	Conservation area maintained (will also depends on policy implemented in MSFP)	Conservation area maintained (will also depends on policy implemented in MSFP)
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	P	Y	Y	N	Y	Y
		Seek opportunities to enhance features where appropriate	Heritage maintained	Heritage maintained	Heritage maintained	Dependent on the residual life of the current defence	Heritage maintained	Heritage maintained	Heritage assets lost	Heritage maintained	Heritage maintained
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	Y	N	N	Y	N	N
		Seek opportunities to enhance features where appropriate	Heritage maintained	Heritage maintained	Heritage maintained	No defence construction	Upgrading the defences could impact on heritage assets	Upgrading the defences could impact on heritage assets	No defence construction	Upgrading the defences could impact on heritage assets	Upgrading the defences could impact on heritage assets
Facilities for recreation, and associated business, including yacht club, windsurfing,	R2	Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	P	N	Y	P

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
access to beaches and foreshore (including for fishing and swimming), camping and caravanning sites, public car parks, golf club			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Dependent on the residual life of the current defence	Amenity facilities maintained	Could be maintained (depending on 'line')	Current amenity facilities will be lost	Amenity facilities maintained	Could be maintained (depending on 'line')
Coastal Grazing marsh habitat (including habitat on the flood defence embankments)	E4	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding.	Y	P	Y	P	P	P	P	P	P
			Current habitat maintained	Bio-diversity opportunity for fresh and inter-tidal habitats	Current habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted
		Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	N	N	Y	N	N	Y	N	N
			Current habitat maintained	Defence construction could impact on grazing marsh	Upgrading the defences could impact on grazing marsh	No defence construction	Upgrading the defences could impact on grazing marsh	Upgrading the defences could impact on grazing marsh	No defence construction	Upgrading the defences could impact on grazing marsh	Upgrading the defences could impact on grazing marsh
Intertidal habitat	E2	Promote biodiversity opportunities and avoid loss/damage of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	Y	N	Y	N	N	Y	N	N

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Garrison Point to Minster (west)											
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Landscape of the coast, marshes and urban areas, including existing flood defences	L3	Prevent degradation of landscape quality and visual amenity from flooding Ensure consideration of existing defence features on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	Y	N	Y	Y
			Landscape maintained	Landscape maintained	Landscape maintained	Some landscape degradation envisaged	Landscape maintained	Landscape maintained	Landscape degradation	Landscape maintained	Landscape maintained
		Prevent degradation of landscape quality and visual amenity from flood risk management works Ensure consideration of existing defence features on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	N	Y	N	N	Y	N	N
			Landscape maintained	Landscape maintained	Advancing the line could impact on the landscape quality	No flood risk management works	Upgrading the defences could impact on the landscape quality	Upgrading the defences could impact on the landscape quality	No flood risk management works	Upgrading the defences could impact on the landscape quality	Upgrading the defences could impact on the landscape quality
Meets Objectives			19	18	16	5	13	13	5	12	12
Partially Meets Objectives			0	1	1	9	3	3	14	4	4

Feature	Rank	Objective	0-20			20-50			50-100		
Garrison Point to Minster (west)			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Fails to Meet Objectives			1	1	3	6	4	4	1	4	4

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Minster Town (Chalet Park to Royal Oak Pub)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Cliff top residential properties at Minster and the eastern extent of East End,	H2	Prevent loss/ damage to residential properties from erosion or risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Some residential properties remain / some defence work	Residential properties remain	Residential properties lost	Some residential properties remain / some defence work	Residential properties remain
Cliff top commercial properties – including local businesses and caravan and camping sites	C3	Prevent loss/ damage to commercial properties from erosion or risk management works	N	P	Y	N	P	Y	N	P	Y
			Commercial properties lost	Some commercial properties lost	Commercial properties maintained	Commercial properties lost	Some commercial properties lost / some defence work	Commercial properties maintained	Commercial properties lost	Some commercial properties lost / some defence work	Commercial properties maintained
Community facilities at Minster and the eastern extent of East End (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss / damage due to erosion	N	P	Y	N	P	Y	N	P	Y
			Community facilities lost	Some community facilities lost	Current community facilities maintained	Community facilities lost	Some community facilities lost / some defence work	Current community facilities maintained	Community facilities lost	Some community facilities lost / some defence work	Community facilities maintained
		Prevent loss/ damage to community facilities from erosion or risk management works	Y	P	Y	Y	P	N	Y	P	N

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Minster Town (Chalet Park to Royal Oak Pub)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
			Current community facilities maintained	Realigning the defences could impact on the community	Current community facilities maintained	No defence works conducted	Realigning the defences could impact on the community	Upgrading the defences could impact on the community	No defence works conducted	Realigning the defences could impact on the community	Upgrading the defences could impact on the community
Infrastructure e.g. local roads, bridges and tracks, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion	Y	Y	Y	Y	Y	Y	Y	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											
Facilities for recreation on the foreshore and coastline	R3	Prevent loss/ damage/ disruption to recreation and associated business, including access to the foreshore, from erosion. Seek opportunities to enhance features where appropriate	N	P	Y	N	P	Y	N	P	Y
			Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained
		Prevent loss/ damage/ disruption to recreation and associated business, including access to the foreshore, from risk management works Seek opportunities to enhance features where appropriate	N	P	P	Y	P	P	Y	P	P
			Defence failure will restrict access	Defence construction could limit access	Maintaining defences could disrupt amenity facilities	No defence maintenance	Maintaining defences could disrupt amenity facilities	Maintaining defences could disrupt amenity facilities	No defence maintenance	Maintaining defences could disrupt amenity facilities	Maintaining defences could disrupt amenity facilities

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Minster Town (Chalet Park to Royal Oak Pub)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Public Footpaths	R3	Prevent loss/ disruption to footpath from erosion and risk management works	N	Y	Y	Y	P	P	N	Y	Y
		Seek opportunities to enhance features where appropriate	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Footpath maintained	Access to footpath could be interrupted	Footpath maintained although upgrading the defences could impact on access	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Sheppey Cliffs	E1	Promote biodiversity opportunities and prevent loss/ damage to designated sites from erosion risk management works	Y	P	N	Y	P	N	Y	P	N
			Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained	Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained	Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record	Y	p	Y	N	P	Y	N	P	Y
		Seek opportunities to enhance features where appropriate	Heritage maintained	Some heritage maintained	Heritage maintained	Heritage assets lost	Some heritage maintained	Heritage maintained	Heritage assets lost	Some heritage maintained	Heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	P	Y	Y	P	P	Y	P	P
		Seek opportunities to enhance features where appropriate	Current heritage assets maintained	Defence construction could damage heritage assets	Current heritage assets maintained	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets
Landscape of the coastline	L3	Prevent degradation of landscape quality and visual amenity from erosion.	Y	Y	Y	N	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Minster Town (Chalet Park to Royal Oak Pub)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
		Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation via erosion	Managed erosion therefore landscape maintained	Landscape maintained	Landscape degradation via erosion	Managed erosion therefore landscape maintained	Landscape maintained
		Prevent degradation of landscape quality and visual amenity from risk management works	Y	P	Y	Y	P	P	Y	P	P
		Seek opportunities to enhance features where appropriate	Present landscape maintained	Defence construction could degrade the landscape	Present landscape maintained	No defence construction	Maintaining defences could degrade the landscape	Maintaining defences could degrade the landscape	No defence construction	Maintaining defences could degrade the landscape	Maintaining defences could degrade the landscape
Meets Objectives			8	4	11	7	2	7	6	3	8
Partially Meets Objectives			0	9	1	0	11	4	0	10	3
Fails to Meet Objectives			5	0	1	6	0	2	7	0	2

Feature	Rank	Objective	0-20	20-50	50-100
Minster Slopes			NAI	NAI	NAI
Cliff top agricultural land	C3	Prevent loss/ reduced potential of agricultural land from erosion	N	N	N
			Some loss of agricultural land anticipated	Some loss of agricultural land anticipated	Some loss of agricultural land anticipated
Public Footpaths	R3	Prevent loss/ disruption to footpath from erosion Seek opportunities to enhance features where appropriate	N	N	N
			Footpath not maintained	Footpath not maintained	Footpath not maintained
		Prevent loss/ disruption to footpath from risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y
			No risk management works	No risk management works	No risk management works
Sheppey Cliffs	E1	Promote biodiversity opportunities and prevent loss/ damage to designated sites from erosion risk management works	Y	Y	Y
			Geological and diversity interests maintained	Geological and diversity interests maintained	Geological and diversity interests maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	P	P	P
			Some assets could be lost via erosion	Some assets could be lost via erosion	Some assets could be lost via erosion
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y
			No risk management works	No risk management works	No risk management works

Feature	Rank	Objective	0-20	20-50	50-100
Minster Slopes			NAI	NAI	NAI
Landscape of the coastline	L3	Prevent degradation of landscape quality and visual amenity from erosion and risk management works Seek opportunities to enhance features where appropriate	N	N	N
			Landscape degradation	Landscape degradation	Landscape degradation
Meets Objectives			3	3	3
Partially Meets Objectives			1	1	1
Fails to Meet Objectives			3	3	3

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Warden Point to Leysdown-on-Sea			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Cliff top residential properties at Warden	H2	Prevent loss/ damage to residential properties from erosion or risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Cliff top commercial properties – including local businesses and caravan and camping sites	C3	Prevent loss/ damage to commercial properties from erosion or risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained
Cliff top Community facilities at Warden (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from erosion or risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained
Residential properties in Warden, Leysdown-on-Sea and at Shellness	H2	Prevent loss/ damage to residential properties from flooding	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
		Prevent loss/ damage to residential properties from flood and erosion risk management works	Y	N	Y	Y	N	Y	Y	N	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Warden Point to Leysdown-on-Sea											
			Present residential properties maintained	Defence construction in a retreated position could involve residential losses	No damage to properties envisaged	No defence constriction	The realigned defences would not prevent loss	Upgrading the defences is not envisaged to damage properties	No defence constriction	The realigned defences would not prevent loss	Upgrading the defences is not envisaged to damage properties
Commercial properties in Warden and Leysdown-on-Sea including holiday villages and caravan and camping sites	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained
Community facilities in Warden and Leysdown-on-Sea (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding	Y	Y	Y	N	P	Y	N	P	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained
		Prevent loss/ damage to community facilities from flood risk management works	Y	Y	Y	Y	P	Y	Y	P	Y
			Present community facilities maintained	Alternative defences for managed realignment are not anticipated to result in community	Present community facilities maintained	No defence management works	Could involve losses	Upgrading the defences is not envisaged to damage or cause losses to community	No defence management works	Could involve losses	Upgrading the defences is not envisaged to damage or cause losses to community facilities

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Warden Point to Leysdown-on-Sea			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
				facility losses				facilities			
Infrastructure e.g. local roads, tracks, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion and flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											
Sheppey Cliffs	E2	Promote biodiversity opportunities and prevent loss/ damage to designated sites from erosion risk management works	Y	P	N	Y	P	N	Y	P	N
			Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained	Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained	Geological and diversity interests maintained	Geological and diversity interests will be managed	Geological and diversity interests will be restrained
Intertidal Habitat	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	P	N	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected
Coastal Grazing marsh habitat (including habitat on the flood defence embankments)	E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	Y	P	Y	P	P	P	P	P	P
			Current habitat maintained	Realigning will change the existing balance	Current habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Warden Point to Leysdown-on-Sea			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
	-	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	N	Y	Y	P	Y	P	P	N
			No flood management works	Flood management works could affect the coastal grazing marsh	Current habitat maintained	No flood management works	Flood management works could affect the coastal grazing marsh	Upgrading the defences is not envisaged to damage or cause losses to the coastal grazing marsh	No flood management works but coastal grazing marsh at risk from flooding	Flood management works could affect the coastal grazing marsh	Upgrading / extending the defences could damage or cause losses of the coastal grazing marsh
Facilities for recreation including car parks, public open space, access to the beach and foreshore	R3	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	Y	N	Y	Y
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities maintained
Public Footpaths, including along coastline	R3	Prevent loss/ disruption to footpath from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	Y	N	Y	Y
			Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	P	P	Y	N	P	Y
			Non-statutory and unknown heritage assets maintained	Some non-statutory and unknown heritage assets maintained	Non-statutory and unknown heritage assets maintained	Some non-statutory and unknown heritage assets maintained	Some non-statutory and unknown heritage assets maintained	Non-statutory and unknown heritage assets maintained	Non-statutory and unknown heritage assets are not	Some non-statutory and unknown heritage assets maintained	Non-statutory and unknown heritage assets maintained

Feature	Rank	Objective	0-20			20-50			50-100		
Warden Point to Leysdown-on-Sea			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
									maintained		
		Prevent loss/ damage to heritage from erosion/ flooding risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	P	Y	P	P
			Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	No flood / erosion management works undertaken	Flood / erosion management works could affect the heritage assets	Flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Flood / erosion management works could affect the heritage assets	Flood / erosion management works could affect the heritage assets
Landscape of the coast and marshes, including existing flood defences	L2	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	N	Y	Y	P	N	Y	P
			Landscape maintained	Landscape maintained	Landscape degradation	Landscape maintained	Landscape maintained	Landscape quality could degrade when defences are upgraded	Landscape will flood and erode	Landscape maintained	Landscape quality could degrade when defences are upgraded
Meets Objectives			18	11	15	7	4	13	5	4	12
Partially Meets Objectives			0	5	0	2	13	3	2	13	3

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Warden Point to Leysdown-on-Sea			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Fails to Meet Objectives			0	2	3	9	1	2	11	1	3

Feature	Rank	Objective	0-20			20-50			50-100		
Leysdown-on-Sea to Shell Ness			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Inter-tidal Habitat	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	Y	N	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected
Coastal Grazing marsh habitat (including habitat on the flood defence embankments)	E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	Y	P	Y	P	P	P	P	P	P
			Current habitat maintained	Bio-diversity opportunity for fresh and inter-tidal habitats	Current habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted
		Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	P	Y	Y	P	Y	Y	P	Y
			Current habitat maintained	Defence construction could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	No defence construction	Defence construction could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	No defence construction	Defence construction could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh
Facilities for recreation including car parks, public open space, Leysdown Country Park, access to the beach and foreshore	R3	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	Y	N	Y	Y
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities maintained

Feature	Rank	Objective	0-20			20-50			50-100			
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL	
Leysdown-on-Sea to Shell Ness												
Public Footpaths, including along coastline	R3	Prevent loss/ disruption to footpath from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	P	Y	N	P	Y	N	P	P	
		Footpath maintained Footpath may be disrupted Footpath maintained Footpath lost Access to footpath may be disrupted Footpath maintained Footpath lost Access to footpath may be disrupted Upgrading the defences may lead to footpath access being disrupted										
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	P	P	Y	P	P	P	P	P	P	
		Assets not affected by flood / erosion management works Asset loss managed Current assets maintained Assets not affected by flood / erosion management works Asset loss managed Assets may be affected by defence construction Assets not affected by flood / erosion management works Asset loss managed Assets may be affected by defence construction										
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	P	Y	P	P	
		Non-statutory and unknown heritage assets maintained Flood / erosion management works could affect the heritage assets Non-statutory and unknown heritage assets maintained No flood / erosion management works undertaken Flood / erosion management works could affect the heritage assets Flood / erosion management works could affect the heritage assets No flood / erosion management works undertaken Flood / erosion management works could affect the heritage assets										
Landscape of the coast and marshes, including existing flood defences	L2	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	P	N	Y	N	

Feature	Rank	Objective	0-20			20-50			50-100		
Leysdown-on-Sea to Shell Ness			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape maintained	Some impact on landscape	Landscape degradation	Landscape maintained	Landscape degradation predicted
Agricultural Land at Leysdown and Harty marshes	C3	Prevent loss/ reduced potential of agricultural land from flooding	Y	Y	Y	N	P	Y	N	P	Y
			No loss / reduction in agricultural land	No loss / reduction in agricultural land	No loss / reduction in agricultural land	Loss of agricultural land	Some loss of land	No loss / reduction in agricultural land	Loss of agricultural land	Some loss of land	No loss / reduction in agricultural land
Structures/ ancillary infrastructure abandoned through flooding											
Meets Objectives			8	4	8	2	2	4	3	2	3
Partially Meets Objectives			1	5	0	2	7	4	2	7	4
Fails to Meet Objectives			0	0	1	4	0	1	4	0	2

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Faversham Creek to Seasalter (Blue Anchor)														
Residential properties along Faversham Road	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses along the frontage including caravan park	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities in Seasalter and scattered in marsh area (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities maintained	Community facilities maintained	Community facilities maintained
Major infrastructure e.g. local roads, main railway line (Main Kent Railway line), electricity pylons, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding														
Agricultural Land at	C3	Prevent loss/ reduced potential of agricultural land	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Faversham Creek to Seasalter (Blue Anchor)														
Nagden, Graveney and Cleve marshes and at Seasalter Level		from flooding	No loss / reduction in agricultural land	No loss / reduction in agricultural land	No loss / reduction in agricultural land	No loss / reduction in agricultural land	Loss of agricultural land	Some loss of land	No loss / reduction in agricultural land	No loss / reduction in agricultural land	Loss of agricultural land	Some loss of land	No loss / reduction in agricultural land	No loss / reduction in agricultural land
Proposed offshore London Array windfarm off Graveney/ Seasalter	C2	Prevent damage to infrastructure from flooding/ risk management works and vice versa Provision of information regarding flood risk to enable best siting/ design	N	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Area will be blighted	Possible for development to continue, although modifications would be required	Site maintained	Site potentially enhanced	Area would be blighted / flooded	Possible for development to continue, although modifications would be required	Site maintained	Site potentially enhanced	Area would be blighted / flooded	Possible for development to continue, although modifications would be required	Site maintained	Site potentially enhanced
Shellfish beds on foreshore and associated business	C2	Prevent loss/ damage to shellfish beds and associated business from flooding or flood risk management works	P	P	Y	P	N	P	Y	P	N	P	P	P
			Area will be blighted	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds	Area would be blighted / flooded	Flood risk management works could affect the shellfish beds	Site conditions not too dissimilar from the present day	Flood risk management works could affect the shellfish beds	Area would be blighted / flooded	Flood risk management works could affect the shellfish beds	Flood risk management works could affect the shellfish beds	Flood risk management works could affect the shellfish beds
Intertidal Habitat	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	P	N	N	Y	P	N	N	Y	P	N	N
			Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	
Coastal Grazing marsh habitat (including habitat on the flood defence embankments)	E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	Y	P	Y	P	P	P	P	P	P	P	P	P
			Current habitats maintained	Bio-diversity opportunity for fresh and inter-tidal habitats	Current habitats maintained	Freshwater habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted	Freshwater habitat maintained	Fresh habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Fresh water habitat maintained, inter-tidal habitats restricted	
		Promote biodiversity	Y	P	Y	Y	Y	P	Y	Y	Y	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Faversham Creek to Seasalter (Blue Anchor)														
		opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Current habitat maintained	Defence construction could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	No defence construction	Maintaining defences could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	No defence construction	Maintaining defences could impact on grazing marsh	Upgrading the defences will not impact on grazing marsh	Upgrading the defences will not impact on grazing marsh
Public Footpaths, including Saxon Shore Way along flood defence embankments	R3	Prevent loss/ disruption to footpath from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Medieval Salterns near Monkshill (within agricultural land)	G2	Prevent loss/ damage to SAM from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			SAM maintained	SAM could be maintained	SAM maintained	SAM maintained	SAM lost via flooding	SAM could be maintained	SAM maintained	SAM maintained	SAM lost via flooding	SAM could be maintained	SAM maintained	SAM maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	N	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Area and heritage at risk from flooding	Some heritage maintained	Present conditions maintained	Advancing the line will prevent flooding	Area and heritage at risk from flooding	Some heritage maintained	Present conditions maintained	Advancing the line will prevent flooding	Area and heritage at risk from flooding	Some heritage maintained	Present conditions maintained	Advancing the line will prevent flooding
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	P	Y	P	P	P	Y	P	P	P
			No flood risk management works	Flood risk management works constructed could affect heritage	Present defences would need maintenance / upgrading	Heritage could be affected	No flood risk management works	Flood risk management works constructed could affect heritage	Maintaining flood risk management works could affect heritage	Heritage could be affected	No flood risk management works	Flood risk management works constructed could affect heritage	Maintaining flood risk management works could affect heritage	Heritage could be affected
Landscape of The Swale and	L2	Prevent degradation of landscape quality and visual	Y	Y	Y	P	P	P	P	P	P	P	P	

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Faversham Creek to Seasalter (Blue Anchor)														
marshes, including existing flood defences		amenity from flooding Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	
		Prevent degradation of landscape quality and visual amenity from flood risk management works	Y	P	Y	P	Y	P	Y	P	Y	P	N	N
		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	No flood risk management works	Less intrusive flood risk management works constructed	Present defences would need maintenance / upgrading	Landscape quality could be compromised	No flood risk management works	Less intrusive flood risk management works constructed	Present defences would need maintenance / upgrading	Landscape quality could be impinged upon	No flood risk management works	Less intrusive flood risk management works constructed	Landscape quality will be compromised	Landscape quality will be compromised
Facilities for recreation, including sailing club, access to the beach and foreshore	R3	Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained
Meets Objectives			14	8	16	11	4	0	13	11	5	0	11	11
Partially Meets Objectives			1	9	0	5	2	17	3	5	2	17	4	4
Fails to Meet Objectives			2	0	1	1	11	0	1	1	11	0	2	2

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Seasalter (Blue Anchor) to Whitstable Golf Course			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Residential properties at Seasalter and Whitstable	H1	Prevent loss/damage to residential properties from erosion or erosion risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses at Seasalter and Whitstable	C1	Prevent loss/damage to commercial properties from erosion / risk management works	N	Y	Y	Y	P	P	Y	Y	N	P	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities at Seasalter and Whitstable (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/damage to community facilities from erosion/ risk management works	N	Y	Y	Y	P	P	Y	Y	N	P	Y	Y
			Community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities maintained	Some community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Seasalter (Blue Anchor) to Whitstable Golf Course			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Shellfish beds on foreshore and associated business	C2	Prevent loss/damage to shellfish beds and associated business from erosion or erosion risk management works	N	P	Y	P	N	P	Y	P	N	P	Y	P
			Business at risk from flooding / area blighted	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds	Area would be blighted / flooded	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds	Area will be flooded	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds
Major infrastructure e.g. local roads, main railway line, services and communications	F2	Prevent loss/damage/ disruption to infrastructure from erosion	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding														
Public footpaths, including the Saxon Shore Way	R3	Prevent loss/ disruption to footpath from erosion Seek opportunities to enhance features where appropriate	Y	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Footpath maintained	Some disruption to footpath predicted	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath could be maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath could be maintained	Footpath maintained	Footpath maintained
		Prevent loss/ disruption to footpath from risk management works Seek opportunities to enhance features where appropriate	Y	P	Y	P	Y	P	P	P	Y	P	P	P
			Present footpath maintained	Some disruption to footpath predicted	Present footpath maintained	Some disruption to footpath predicted	No risk management works	Some disruption to footpath predicted	Some disruption to footpath predicted	Some disruption to footpath predicted	No risk management works	Some disruption to footpath predicted	Some disruption to footpath predicted	Some disruption to footpath predicted
Facilities for recreation	R2	Prevent loss/damage/ disruption	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
Seasalter (Blue Anchor) to Whitstable Golf Course			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
including moorings, yacht club, golf course, car parks, public open spaces, access to the beach and foreshore		to recreation and associated business from erosion/ risk management works Seek opportunities to enhance features where appropriate	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	P	P	P	P	P	P	P	P	P
			Heritage maintained	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from erosion risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	P	Y	P	P	P	Y	P	P	P
			Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets
Landscape of the towns and coastline, including existing	L3	Prevent degradation of landscape quality and visual amenity from erosion	P	P	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
Seasalter (Blue Anchor) to Whitstable Golf Course			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
flood defences		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Landscape at risk from flooding	Some of the present landscape maintained	Present landscape maintained / flooding prevented	Flooding prevented	Present landscape flooded	Some of the present landscape maintained	Present landscape maintained / flooding prevented	Flooding prevented	Present landscape flooded	Some of the present landscape maintained	Flooding prevented	Flooding prevented
		Prevent degradation of landscape quality and visual amenity from erosion risk management works	Y	P	Y	P	Y	P	Y	P	Y	P	N	N
		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	No flood risk management works	Less intrusive flood risk management works constructed	Present defences would need maintenance / upgrading	Landscape quality could be compromised	No flood risk management works	Less intrusive flood risk management works constructed	Present defences would need maintenance / upgrading	Landscape quality could be impinged upon	No flood risk management works	Less intrusive flood risk management works constructed	Landscape quality will be compromised	Landscape quality will be compromised
Intertidal Habitat along this frontage	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and flood risk management works	Y	P	N	N	Y	P	N	N	Y	P	N	N
			Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Meets Objectives			9	6	12	7	4	0	9	7	4	0	8	7

Feature	Rank	Objective	0-20				20-50				50-100			
Seasalter (Blue Anchor) to Whitstable Golf Course			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Partially Meets Objectives			1	7	0	5	3	12	3	5	1	12	3	4
Fails to Meet Objectives			3	0	1	1	6	1	1	1	8	1	2	2

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Town (Golf Course NE corner to Whitstable Harbour – eastern extent)														
Residential properties at Whitstable	H1	Prevent loss/ damage to residential properties from flooding or flood risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses at Whitstable	C1	Prevent loss/ damage to commercial properties from erosion/ flooding/ risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Whitstable Harbour and associated facilities and businesses	C2	Prevent loss/ damage/ disruption to Harbours from flooding	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	Y
			Harbour and facilities maintained	Harbour and facilities maintained	Harbour and facilities maintained	Harbour and facilities maintained	Harbour and facilities lost	Harbour and facilities lost	Harbour and facilities maintained	Harbour and facilities maintained	Harbour and facilities lost	Harbour and facilities lost	Harbour and facilities maintained	Harbour and facilities maintained
Community facilities at	H1	Prevent loss/ damage to community facilities from	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Town (Golf Course NE corner to Whitstable Harbour – eastern extent)			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable, Tankerton, (such as churches, pubs, shops, schools, village halls)		erosion/ flooding/ risk management works	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained
Shellfish beds on foreshore and associated business	C2	Prevent loss/ damage to shellfish beds and associated business from flooding or flood risk management works	N	P	Y	P	N	P	Y	P	N	P	Y	P
			Business at risk from flooding / area blighted	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds	Area would be blighted / flooded	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds	Area would be blighted / flooded	Flood risk management works could affect the shellfish beds	Present site conditions maintained	Flood risk management works could affect the shellfish beds
Intertidal habitat	E1	Promote biodiversity opportunities and avoid loss/ damage of intertidal habitat and associated species from coastal squeeze and risk management works	Y	Y	N	N	Y	P	N	N	Y	P	N	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Major infrastructure e.g. local roads, main railway line, , services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding														
Whitstable Town Conservation Area	G2	Prevent loss/ damage to Conservation Area from flooding and flood risk management works.	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100				
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	
Whitstable Town (Golf Course NE corner to Whitstable Harbour – eastern extent)															
		Seek opportunities to enhance features where appropriate.	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area lost	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained	Conservation area lost	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained	
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record. Seek opportunities to enhance features where appropriate.	Y	P	Y	P	P	P	P	P	P	P	P	P	
			Heritage maintained	Some heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record. Seek opportunities to enhance features where appropriate.	Y	P	Y	P	Y	P	P	P	Y	P	P	P	P
			Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets
Landscape of the towns and coastline, including existing flood defences	L4	Prevent degradation of landscape quality and visual amenity from flooding and flood risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	P	N	P	P	P	N	P	P	P	
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	
Intertidal Habitat along this frontage	E1	Promote biodiversity opportunities and avoid net loss	Y	P	N	N	Y	P	N	N	Y	P	N	N	

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Town (Golf Course NE corner to Whitstable Harbour – eastern extent)														
		of intertidal habitat and associated species from coastal squeeze and flood risk management works	Inter-tidal habitats maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitats maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitats maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Public footpaths, including the Saxon Shore Way	R3	Prevent loss/ disruption to footpath from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	P	N	P	P	P	N	P	P	P
			Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath
Facilities for recreation including moorings, yacht club, golf course, car parks, public open spaces, access to the beach and foreshore	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding/ risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	P	N	P	P	P	N	P	P	P
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Some amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Some amenity facilities maintained	Some amenity facilities maintained
Meets Objectives			12	9	11	5	3	0	6	5	3	0	6	5
Partially Meets Objectives			0	4	0	6	1	13	2	6	1	13	5	6
Fails to Meet Objectives			1	0	2	2	9	0	5	2	9	0	2	2

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe														
Residential properties at Whitstable	H1	Prevent loss/ damage to residential properties from erosion or erosion risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses at Whitstable	C1	Prevent loss/ damage to commercial properties from erosion / risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities at Whitstable, Tankerton, (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from erosion / risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities maintained

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe														
Whitstable Harbour and associated facilities and businesses	C2	Prevent loss/ damage/ disruption to Harbours from erosion	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	Y
			Harbour and associated facilities maintained	Harbour and associated facilities maintained	Harbour and associated facilities maintained	Harbour and associated facilities maintained	Harbour and associated facilities lost	Harbour and associated facilities lost	Harbour and associated facilities maintained	Harbour and associated facilities maintained	Harbour and associated facilities lost	Harbour and associated facilities lost	Harbour and associated facilities maintained	Harbour and associated facilities maintained
Shellfish beds on foreshore and associated business	C2	Prevent loss/ damage to shellfish beds and associated business from erosion	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			The present defences will continue to prevent erosion	The present defences will continue to prevent erosion	The present defences will continue to prevent erosion	Advancing the line will prevent erosion	Erosion may affect the shellfish beds and will affect associated businesses	Realigning the line could affect the shellbeds and associated businesses	The present defences will continue to prevent erosion	Advancing the line will prevent erosion	Erosion may affect the shellfish beds and will affect associated businesses	Realigning the line could affect the shellbeds and associated businesses	The present defences will continue to prevent erosion	Advancing the line will prevent erosion
		Prevent loss/ damage to shellfish beds and associated business from erosion risk management works	Y	Y	Y	N	Y	N	P	N	Y	N	N	N
			No maintenance of risk management structures	No maintenance of risk management structures	Maintenance of risk management structures unlikely to affect shellfish beds	Advancing the line could affect the shellfish beds	No maintenance of risk management structures	Realigning the line could affect the businesses associated with the shellfish beds	Maintenance of risk management structures may affect shellfish beds	Advancing the line could affect the shellfish beds	No maintenance of risk management structures	Realigning the line could affect the businesses associated with the shellfish beds	Maintenance of risk management structures will affect shellfish beds	Advancing the line could affect the shellfish beds
Intertidal habitat	E1	Promote biodiversity opportunities and avoid loss/ damage of intertidal habitat and associated species from coastal squeeze and risk management works	Y	Y	N	N	Y	P	N	N	Y	P	N	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Major infrastructure e.g. local roads, main railway line, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from erosion	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding														
Tankerton Slopes	E1	Promote biodiversity opportunities and prevent loss/ damage to designated site from erosion	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Erosion prevented due to residual life of present defences	Erosion prevented due to residual life of present defences	Erosion prevented due to present defences	Erosion prevented due to advanced defences	Cliff erosion reactivated	Controlled cliff erosion reactivated	Erosion prevented due to defences	Erosion prevented due to advanced defences	Cliff erosion reactivated	Controlled cliff erosion reactivated	Erosion prevented due to defences	Erosion prevented due to advanced defences
		Promote biodiversity opportunities and prevent loss/ damage to designated site from risk management works	Y	Y	Y	N	Y	P	P	N	Y	P	N	N
			No maintenance of risk management works	No maintenance of risk management works	No maintenance of risk management works	New risk management works envisaged	No maintenance / failure of risk management works	A reduced standard of risk management protection	Maintenance of risk management may affect the designated site	New / maintenance of new risk management works envisaged	No maintenance / failure of risk management works	A reduced standard of risk management protection	Maintenance / upgrading the risk management works predicted	New risk / maintenance of new management works envisaged
Long Rock, Tankerton	E3	Prevent loss/ damage to designated site from erosion	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
		Seek opportunities to enhance features where appropriate	Erosion prevented due to	Erosion prevented due to	Erosion prevented due to	Erosion prevented due to	Cliff erosion reactivated	Controlled cliff erosion reactivated	Erosion prevented due to	Erosion prevented due to	Cliff erosion reactivated	Controlled cliff erosion reactivated	Erosion prevented due to	Erosion prevented due to advanced

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe														
		Prevent loss/ damage to designated site from risk management works Seek opportunities to enhance features where appropriate	residual life of present defences	residual life of present defences	present defences	advanced defences			defences	advanced defences			defences	defences
			Y	Y	Y	N	Y	P	P	N	Y	P	N	N
			No maintenance of risk management works	No maintenance of risk management works	No maintenance of risk management works	New risk management works envisaged	No maintenance / failure of risk management works	Realigning the line could affect the designated site	Maintenance of risk management may affect the designated site	New / maintenance of new risk management works envisaged	No maintenance / failure of risk management works	Realigning the line could affect the designated site	Maintenance / upgrading the risk management works predicted	New risk / maintenance of new management works envisaged
Whitstable Town Conservation Area	G2	Prevent loss/ damage to Conservation Area from flooding and flood risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
		Seek opportunities to enhance features where appropriate	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area lost	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained	Conservation area lost	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	P	N	P	P	P	N	P	P	P
		Seek opportunities to enhance features where appropriate	Heritage maintained	Heritage maintained	Heritage maintained	Some heritage maintained	Heritage lost	Some heritage maintained	Some heritage maintained	Some heritage maintained	Heritage lost	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from erosion risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	P	Y	P	Y	P	P	P	Y	P	P	P
		Seek opportunities to enhance features where appropriate	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe														
Landscape of the towns and coastline, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion and erosion risk management works	Y	Y	Y	N	N	Y	P	N	N	P	N	N
		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation
Intertidal Habitat along this frontage	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and erosion risk management works	Y	Y	N	N	Y	P	N	N	Y	P	N	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Public footpaths, including the Saxon Shore Way	R3	Prevent loss/ disruption to footpath from erosion Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y
			Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Footpath maintained
		Prevent loss/ disruption to footpath from risk management works	Y	P	Y	P	Y	P	P	P	Y	P	P	P
		Seek opportunities to enhance features where appropriate	Present footpath maintained	Some disruption to footpath predicted	Present footpath maintained	Some disruption to footpath predicted	No risk management works	Some disruption to footpath predicted	Some disruption to footpath predicted	Some disruption to footpath predicted	No risk management works	Some disruption to footpath predicted	Some disruption to footpath predicted	Some disruption to footpath predicted
Facilities for recreation	R2	Prevent loss/ damage/ disruption to recreation and associated business	P	P	Y	P	N	P	Y	P	N	P	Y	P

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Whitstable Harbour (eastern extent) to Swalecliffe														
including moorings, yacht club, golf course, car parks, public open spaces, access to the beach and foreshore		from erosion risk management works Seek opportunities to enhance features where appropriate	Some amenity facilities maintained	Some amenity facilities maintained	Amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Some amenity facilities maintained
Meets Objectives			19	17	18	10	13	2	11	10	7	1	11	10
Partially Meets Objectives			1	3	0	4	0	16	7	4	0	17	3	4
Fails to Meet Objectives			0	0	2	6	7	2	2	6	13	2	6	6

Feature	Rank	Objective	0-20				20-50				50-100			
			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Swalecliffe to Herne Bay Breakwater			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
Landscape of the towns and coastline, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from flooding / erosion and flood / erosion risk management works	Y	Y	Y	N	N	Y	P	N	N	P	N	N
		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation
Coastal habitat at Swalecliffe	E1	Promote biodiversity opportunities and prevent loss/ damage to designated site from flooding/ risk management works	P	Y	P	P	P	Y	P	P	P	Y	P	P
		Freshwater habitat lost, inter-tidal habitat extends	Freshwater habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Freshwater habitat maintained	Freshwater habitat maintained	Freshwater habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Freshwater habitat maintained	Freshwater habitat maintained	Freshwater habitat lost, inter-tidal habitat extends	Bio-diversity opportunity for fresh and inter-tidal habitats	Freshwater habitat maintained	Freshwater habitat maintained
Intertidal Habitat along this frontage	E1	Promote biodiversity opportunities and avoid net loss of intertidal habitat and associated species from coastal squeeze and erosion / flood risk management works	Y	P	N	N	Y	P	N	N	Y	P	N	N
		Inter-tidal habitat maintained	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from flooding and erosion and risk management works or implement appropriate mitigation measures, including preservation of evidence by record	N	P	Y	P	N	P	P	P	N	P	P	P
		Heritage lost	Heritage lost	Some heritage maintained	Heritage maintained	Some heritage maintained	Heritage lost	Some heritage maintained	Some(terrestrial) heritage maintained	Some heritage maintained	Heritage lost	Some heritage maintained	Some(terrestrial) heritage maintained	Some (terrestrial) heritage maintained
		Seek opportunities to enhance features where appropriate	Y	P	Y	P	Y	P	P	P	Y	P	P	P
		Prevent loss/ damage to heritage from flooding and erosion and risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets

Feature	Rank	Objective	0-20				20-50				50-100					
Swalecliffe to Herne Bay Breakwater			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL		
Herne Bay Conservation Area	G2	Prevent loss/ damage to Conservation Area from flooding / erosion	Y	Y	Y	Y	P	P	Y	Y	N	P	Y	Y		
		Seek opportunities to enhance features where appropriate	Conservation area not at risk from flooding	Conservation area not at risk from flooding	Conservation area maintained	Conservation area maintained	Conservation area at risk from flooding	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained	Conservation area lost	Parts of the conservation could be maintained	Conservation area maintained	Conservation area maintained		
		Prevent loss/ damage to Conservation Area from erosion / flood risk management works	Y	N	Y	P	Y	N	P	P	Y	N	P	P		
		Seek opportunities to enhance features where appropriate	No flood risk management works	Constructing new realigned management works will affect the conservation area	No / little maintenance to risk management structures envisaged	Constructing advance the line risk management structures may not impinge on the conservation area	No flood risk management works	Constructing new realigned management works will affect the conservation area	Maintenance / upgrading defences could affect conservation area	Constructing advance the line risk management structures may not impinge on the conservation area	No flood risk management works	Constructing new realigned management works will affect the conservation area	Maintenance / upgrading defences could affect conservation area	Constructing advance the line risk management structures may not impinge on the conservation area		
Facilities for recreation including moorings, parking, public open spaces, access to the beach and foreshore	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding/ risk management works	N	P	Y	P	N	P	Y	P	N	P	P	P		
		Seek opportunities to enhance features where appropriate	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Some amenity facilities maintained	Some amenity facilities maintained		
Public footpaths, including the Saxon Shore Way	R3	Prevent loss/ disruption to footpath from erosion/ flooding	Y	Y	Y	Y	P	Y	Y	Y	N	Y	Y	Y		
		Seek opportunities to enhance features where appropriate	Footpath not at risk during this epoch	Footpath not at risk during this epoch	Footpath maintained	Footpath maintained	Footpath at risk in some places	Footpath maintained (albeit at a realigned position)	Footpath maintained	Footpath maintained	Loss of footpath	Footpath maintained (albeit at a realigned position)	Footpath maintained	Footpath maintained		
		Prevent loss/ disruption to footpath from risk management works	Y	Y	Y	P	Y	N	P	P	Y	N	P	P		
		Seek opportunities to enhance features where appropriate														

Feature	Rank	Objective	0-20				20-50				50-100			
Swalecliffe to Herne Bay Breakwater			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
			No risk management works	No flood / erosion risk management works predicted during this epoch	Risk management works will not affect footpath	Potential disruption of footpath when advancing the line	No risk management works	Disruption of footpath envisaged	Risk management works could affect footpath	Disruption / loss of footpath	No risk management works	Disruption of footpath envisaged	Risk management works could affect footpath	Potential disruption of footpath when advancing the line
Major infrastructure e.g. local roads, main railway line, Swalecliffe Sewage Treatment works, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	N	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding														
Herne Bay Breakwater and associated facilities and businesses	C2	Prevent loss/ damage/ disruption to breakwater from flooding / erosion	N	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Breakwater remains but associated facilities blighted	Some associated facilities maintained	Breakwater and associated facilities maintained	Breakwater and associated facilities maintained	Breakwater remains but associated facilities blighted	Some associated facilities maintained	Breakwater and associated facilities maintained	Breakwater and associated facilities maintained	Area flooded and eroded	Some associated facilities maintained	Breakwater and associated facilities maintained	Breakwater and associated facilities maintained
Residential properties at Swalecliffe, Studd Hill and Herne Bay	H1	Prevent loss/ damage to residential properties from flooding / erosion or risk management works	N	P	Y	Y	N	P	Y	Y	N	P	Y	Y
			Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties remain
Cliff top residential	H1	Prevent loss/ damage to residential properties from erosion or risk	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y

Feature	Rank	Objective	0-20				20-50				50-100			
Swalecliffe to Herne Bay Breakwater			NAI	MR	HTL	ATL	NAI	MR	HTL	ATL	NAI	MR	HTL	ATL
properties at Studd Hill and Herne Bay		management works	Properties remains	Properties remains	Properties remains	Properties remains	Properties lost	Some properties remain	Properties remains	Properties remains	Properties lost	Some properties remain	Properties remains	Properties remains
Commercial properties – businesses at Swalecliffe, Studd Hill and Herne Bay	C1	Prevent loss/ damage to commercial properties from erosion/ flooding/ risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties maintained
Community facilities at Swalecliffe, Studd Hill and Herne Bay (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from erosion/ flooding/ risk management works	Y	Y	Y	Y	N	P	Y	Y	N	P	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities remain	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities remain	Community facilities maintained	Community facilities maintained
Meets Objectives			10	8	14	8	4	3	9	8	1	2	8	8
Partially Meets Objectives			1	7	1	6	3	11	6	6	4	12	6	6
Fails to Meet Objectives			5	1	1	2	9	2	1	2	11	2	2	2

Feature	Rank	Objective	0-20			20-50			50-100		
Herne Bay Breakwater to Bishopstone Manor			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties	H1	Prevent loss/ damage to residential properties from erosion or erosion risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Cliff/slope residential properties	H1	Prevent loss/ damage to residential properties from erosion or risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Some residential properties lost	Residential properties remain	Residential properties lost	Some residential properties lost	Residential properties remain
Commercial properties	C1	Prevent loss/ damage to commercial properties from erosion / risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Some commercial properties lost	Commercial properties maintained	Commercial properties lost	Some commercial properties lost	Commercial properties maintained
Community facilities (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from erosion / risk management works	Y	Y	Y	N	P	Y	N	P	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained
Intertidal habitat	E1	Promote biodiversity opportunities and avoid loss/ damage of intertidal habitat and associated species from coastal squeeze and risk management works	Y	Y	N	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected
Major infrastructure	F2	Prevent loss/ damage/ disruption to infrastructure from erosion/	Y	Y	Y	N	P	Y	N	P	Y

Feature	Rank	Objective	0-20			20-50			50-100		
Herne Bay Breakwater to Bishopstone Manor			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
e.g. local roads, main railway line, Swalecliffe Sewage Treatment works, services and communications			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through erosion											
Public footpaths, including the Saxon Shore Way and Wantsum walk along coastline	R3	Prevent loss/ disruption to footpath from erosion	Y	Y	Y	N	P	Y	N	P	Y
		Seek opportunities to enhance features where appropriate	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption of footpath	Footpath maintained	Disruption / loss of footpath	Disruption of footpath	Footpath maintained
		Prevent loss/ disruption to footpath from risk management works	Y	N	Y	Y	N	P	Y	N	P
		Seek opportunities to enhance features where appropriate	No risk management works	Realigning the risk management structures will result in disruption / potential loss of the path	Maintenance to present risk management works will not cause disruptions	No risk management works	Realigning the risk management structures will result in disruption / potential loss of the path	Maintenance to present risk management works may cause some disruptions	No risk management works	Realigning the risk management structures will result in disruption / potential loss of the path	Maintenance to present risk management works may cause some disruptions
Herne Bay Conservation Area	G2	Prevent loss/ damage to Conservation Area from erosion	Y	Y	Y	P	P	Y	P	P	Y
		Seek opportunities to enhance features where appropriate	Conservation area not at risk from erosion	Conservation area not at risk from erosion	Conservation area maintained	Conservation area at risk from erosion	Parts of the conservation could be maintained	Conservation area maintained	Conservation area at risk from erosion	Parts of the conservation could be maintained	Conservation area maintained
		Prevent loss/ damage to Conservation Area from erosion risk management works	Y	Y	Y	Y	N	P	Y	N	P
		Seek opportunities to enhance features where appropriate	No flood risk management works	Conservation area not at risk from flooding	Conservation area maintained	No flood risk management works	Constructing new realigned management	Maintenance / upgrading defences could affect	No flood risk management works	Constructing new realigned management	Maintenance / upgrading defences could affect

Feature	Rank	Objective	0-20			20-50			50-100		
Herne Bay Breakwater to Bishopstone Manor			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
							works will affect the conservation area	conservation area		works will affect the conservation area	conservation area
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	P	P	P	P	P	P
			Heritage maintained	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from erosion risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	P	Y	P	P
			Non-statutory and unknown heritage assets maintained	Flood / erosion management works could affect the heritage assets	Non-statutory and unknown heritage assets maintained	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets	No flood / erosion management works undertaken	Maintaining flood / erosion management works could affect the heritage assets	Maintaining flood / erosion management works could affect the heritage assets
Landscape of the towns and coastline, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion and erosion risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	N	Y	Y	N	Y	P
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape maintained	Landscape maintained	Landscape degradation	Landscape maintained	Landscape degradation
Meets Objectives			13	11	12	4	1	8	4	1	7
Partially Meets Objectives			0	1	0	2	10	4	2	10	5
Fails to Meet Objectives			0	1	1	7	2	1	7	2	1

Feature	Rank	Objective	0-20	20-50	50-100
Reculver Country Park			NAI	NAI	NAI
Agricultural Land at Wade marsh and Chislet marshes	C3	Prevent loss/ reduced potential of agricultural land from erosion	N	N	N
			Agricultural land lost	Agricultural land lost	Agricultural land lost
Recreation facilities and associated business, including Reculver Country Park, car parking, access to the beach and foreshore	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	P
			Amenity facilities maintained	Amenity facilities maintained	Some amenity facilities lost
Chislet marshes	G2	Prevent loss of area from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y
			No loss to the marshes	No loss to the marshes	No loss to the marshes
Infrastructure e.g. A299, local roads, railway line, electricity pylons, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from erosion	P	P	P
			Disruption of some infrastructure possible	Disruption of some infrastructure possible	Disruption of some infrastructure possible
Public footpaths, including Saxon Shore Way and Wantsum Walk along coastline	R3	Prevent loss/ disruption to footpath from erosion and erosion risk management works Seek opportunities to enhance features where appropriate	P	P	N
			Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath

Feature	Rank	Objective	0-20	20-50	50-100
Reculver Country Park			NAI	NAI	NAI
Intertidal and Coastal Habitat	E1	Promote biodiversity opportunities and avoid net loss of intertidal and coastal habitat and associated species from coastal squeeze and risk management works	Y	Y	Y
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	P
			Heritage maintained	Some heritage may be lost / exposed via erosion	Some heritage may be lost / exposed via erosion
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y
			Non-statutory and unknown heritage assets maintained	No flood / erosion management works undertaken	No flood / erosion management works undertaken
Landscape of the coastline	L3	Prevent degradation of landscape quality and visual amenity from erosion/ risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y
			Landscape maintained	Landscape maintained	Landscape maintained
Meets Objectives			6	5	4
Partially Meets Objectives			2	2	3

Feature	Rank	Objective	0-20	20-50	50-100
Reculver Country Park			NAI	NAI	NAI
Fails to Meet Objectives			1	1	2

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Reculver Towers to Minnis Bay			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties at Reculver and at the edge of villages in marsh area	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	P	P	Y	N	P	Y	N	P	Y
			Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Commercial properties – businesses at Reculver and caravan and camping sites	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	P	P	Y	N	P	Y	N	P	Y
			Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained
Seasalter Shellfish Hatchery/ Nursery on Sea Wall at Reculver	C2	Prevent loss/ damage to shellfish hatchery/ nursery from flooding or risk management works	P	P	Y	N	P	P	N	P	P
			Shellfish industry at risk (flooding)	Shell fish industry could be affected by risk management	Shellfish industry maintained	Shellfish industry at risk (flooding)	Shell fish industry could be affected by risk management	Shell fish industry could be affected by risk management	Shellfish industry at risk (flooding)	Shell fish industry could be affected by risk management	Shell fish industry could be affected by risk management

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Reculver Towers to Minnis Bay											
				works			works	works		works	works
Community facilities at Reculver and scattered in marsh area (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding or flood risk management works	P	P	Y	N	P	Y	N	P	Y
			Some community facilities maintained	Some community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities maintained	Community facilities maintained
Agricultural Land at Wade marsh and Chislet marshes	C3	Prevent loss/ reduced potential of agricultural land from flooding	P	P	Y	N	P	Y	N	P	Y
			Some loss of land	Some loss of land	Agricultural land maintained	Agricultural land lost	Some loss of land	Agricultural land maintained	Agricultural land lost	Some loss of land	Agricultural land maintained
Major infrastructure e.g. A299, local roads, railway line, electricity pylons, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	P	P	Y	N	P	Y	N	P	Y
			Disruption of some infrastructure	Disruption of some infrastructure	Infrastructure maintained	Infrastructure lost	Disruption of some infrastructure	Infrastructure maintained	Infrastructure lost	Disruption of some infrastructure	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Reculver Towers to Minnis Bay											
Recreation facilities and associated business, including Reculver Country Park, car parking, access to the beach and foreshore	R2	Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works Seek opportunities to enhance features where appropriate	P	P	Y	N	P	Y	N	P	Y
			Amenity assets at risk	Some amenity assets lost	Amenity facilities maintained	Amenity assets lost	Some amenity assets lost	Amenity facilities maintained	Amenity assets lost	Some amenity assets lost	Amenity facilities maintained
Public footpaths, including Saxon Shore Way and Wantsum Walk along coastline	R3	Prevent loss/ disruption to footpath from flooding Seek opportunities to enhance features where appropriate	P	P	Y	N	P	Y	N	P	Y
			Footpath at risk from flooding	If realigned the footpath may / may not be reinstated	Footpath maintained	Footpath lost	If realigned the footpath may / may not be reinstated	Footpath maintained	Footpath lost	If realigned the footpath may / may not be reinstated	Footpath maintained
		Prevent loss/ disruption to footpath from flood risk management works Seek opportunities to enhance features where appropriate	Y	P	P	Y	P	P	Y	P	P
			No flood risk management works	Disruption of footpath	Maintenance of the footpath could disrupt the footpath	No flood risk management works (although large scale flooding is predicted)	Disruption of footpath	Maintenance of the footpath could disrupt the footpath	No flood risk management works (although large scale flooding is predicted)	Disruption of footpath / maintenance of realigned line	Maintenance of the footpath could disrupt the footpath
Intertidal and Coastal Habitat	E1	Promote biodiversity opportunities and avoid net loss of inter-tidal and coastal habitat and associated species from coastal squeeze and flood risk management works	Y	P	N	Y	P	N	Y	P	N
			No maintenance of flood risk management works	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Defence failure will result in expansion of inter-tidal area	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Defence failure will result in expansion of inter-tidal area	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Reculver Towers to Minnis Bay			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Coastal Grazing marsh habitat	E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	P	P	Y	N	P	Y	N	P	Y
			Grazing marsh could be at risk (extreme events)	Some of the grazing marsh will be lost	Grazing marsh maintained	Grazing marsh lost	Some of the grazing marsh will be lost	Grazing marsh maintained	Grazing marsh lost	Some of the grazing marsh will be lost	Grazing marsh maintained
		Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	N	P	Y	N	P	Y	N	P
			No flood risk management works (although marshes at risk from flooding)	Realigning risk management structures will affect the grazing marshes	Maintaining risk management structures will have a small impact on the coastal marshes	No flood risk management works (although marshes at risk from flooding)	Realigning risk management structures will affect the grazing marshes	Maintaining risk management structures will have a small impact on the coastal marshes	No flood risk management works (although marshes at risk from flooding)	Realigning risk management structures will affect the grazing marshes	Maintaining risk management structures will have a small impact on the coastal marshes
Reculver SAM	G2	Prevent loss/ damage to Conservation Area and SAM from erosion and erosion risk management works	N	N	Y	N	N	Y	N	N	Y
		Seek opportunities to enhance features where appropriate	Conservation area and SAM lost	Unlikely that SAM would be maintained	Conservation area and SAM maintained	Conservation area and SAM lost	Unlikely that SAM would be maintained	Conservation area and SAM maintained	Conservation area and SAM lost	Unlikely that SAM would be maintained	Conservation area and SAM maintained
		Prevent loss/ damage to Conservation Area and SAM from erosion risk management works	Y	Y	Y	Y	N	Y	Y	N	P
		Seek opportunities to enhance features where appropriate	No maintenance to current risk management works	No maintenance to current risk management works	Maintenance of risk management structures unlikely to adversely affect the SAM	No risk management works (SAM at risk)	Realigning risk management structures will affect the SAM	Maintenance of risk management structures unlikely to adversely affect the SAM	No risk management works (SAM at risk)	Realigning risk management structures will affect the SAM	Maintenance of risk management structures may affect the SAM
Non-statutory known and	G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of	P	P	Y	P	P	P	P	P	P

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Reculver Towers to Minnis Bay			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
unknown heritage		evidence by record Seek opportunities to enhance features where appropriate	Some heritage maintained	Some heritage maintained	Heritage maintained	Heritage not affected by flood risk management works	Some heritage maintained	Some heritage maintained	Heritage not affected by flood risk management works	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	Y	P	P	Y	P	P
		Seek opportunities to enhance features where appropriate	No maintenance to current risk management works	No maintenance to current risk management works	Little maintenance of risk management structures therefore present heritage assets maintained	No maintenance to current risk management works (present assets at risk)	Realigning will result in some losses but it may expose new assets	Maintenance of risk management structures may affect the heritage assets	No maintenance to current risk management works (present assets at risk)	Realigning will result in some losses but it may expose new assets	Maintenance of risk management structures may affect the heritage assets
Meets Objectives			5	2	13	5	0	10	5	0	9
Partially Meets Objectives			10	12	2	1	13	5	1	13	6
Fails to Meet Objectives			1	2	1	10	3	1	10	3	1

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
Minnis Bay to Westgate on Sea								
Residential properties	H2	Prevent loss/ damage to residential properties from erosion or erosion risk management works	Y	Y	N	Y	N	Y
			Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties remain
Commercial properties	C3	Prevent loss/ damage to commercial properties from erosion or erosion risk management works	Y	Y	N	Y	N	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties maintained
Community (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from erosion or erosion risk management works	Y	Y	N	Y	N	Y
			Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities lost	Community facilities maintained

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
Minnis Bay to Westgate on Sea								
Structures/ ancillary infrastructure abandoned through flooding								
Major infrastructure e.g. A28, local roads, railway line, electricity pylons, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from erosion	Y	Y	N	Y	N	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure lost	Infrastructure maintained
Public footpaths, including Saxon Shore Way	R3	Prevent loss/ disruption to footpath from erosion Seek opportunities to enhance features where appropriate	Y	Y	N	Y	N	Y
			Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Disruption / loss of footpath	Footpath maintained
		Prevent loss/ disruption to footpath from erosion risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y
			No risk management works	Risk management works will not disrupt footpath	No risk management works	Risk management works will not disrupt footpath	No risk management works	Risk management works will not disrupt footpath
Recreation facilities and associated business, car parking, access to the beach and foreshore	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion and erosion risk management works Seek opportunities to enhance features where appropriate	Y	Y	N	Y	N	Y
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained
Inter-tidal and Coastal Habitat	E1	Promote biodiversity opportunities and avoid net loss of inter-tidal and coastal habitat and associated species from coastal squeeze and flood risk management works	Y	P	N	Y	P	N

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
Minnis Bay to Westgate on Sea								
			Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Impact will depend on the line and the defences chosen	Inter-tidal habitats adversely affected
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	P	Y	P	P
			Present heritage assets maintained	Present heritage assets maintained	Some heritage assets could be lost	Present heritage assets maintained	Some heritage assets could be lost	Some heritage assets could be affected
		Prevent loss/ damage to heritage from erosion risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	P
			No risk management works	Maintenance of risk management structures unlikely to adversely affect heritage assets	No risk management works (although some terrestrial assets could be at risk)	Maintenance of risk management structures unlikely to adversely affect heritage assets	No risk management works (although some terrestrial assets could be at risk)	Maintenance / upgrading risk management works could affect the present heritage assets
Landscape of the coastline, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion/risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	P	Y	P	Y	P	P
			Landscape degradation	Landscape maintained	Landscape degradation	Landscape maintained	Landscape degradation	Landscape degradation
Meets Objectives			10	10	2	11	2	7

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
Minnis Bay to Westgate on Sea			NAI	HTL	NAI	HTL	NAI	HTL
Partially Meets Objectives			1	1	2	0	3	3
Fails to Meet Objectives			0	0	7	0	6	1

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate											
Residential properties at Birchington, Margate	H1	Prevent loss/ damage to residential properties from erosion/ flooding or risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain
Commercial properties – businesses at Birchington, Margate	C2	Prevent loss/ damage to commercial properties from erosion/ flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Community facilities (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained	Community facilities maintained
Major infrastructure e.g. local roads, railway line, sewage treatment works, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained
Former Lloyds hoverport site	C3	Take account of potential pollution risks from former hoverport site Take account of potential habitat creation opportunities	N	Y	P	N	Y	P	N	P	P
			Not actively managing this section of the coast would lead to uncontrolled release of contaminants	Unlikely to require substantial maintenance	Advancing the line may disturb contamination	Not actively managing this section of the coast would lead to uncontrolled release of contaminants	Unlikely to require substantial maintenance	Advancing the line may disturb contamination	Not actively managing this section of the coast would lead to uncontrolled release of contaminants	Holding the line could disturb the contamination	Advancing the line may disturb contamination
Structures/ ancillary infrastructure abandoned through flooding											

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Thanet offshore windfarm export cable.	F2	Prevent damage to cable from erosion / flooding / risk management works.	Y	Y	P	P	Y	P	N	P	P
			No damage foreseen	No damage foreseen	Cable could be damaged as the line is advanced	Cable could be at risk from erosion / flooding	No damage foreseen	Cable could be damaged as the line is advanced	Cable will experience erosion / flooding	Cable could be damaged as the line is maintained	Cable could be damaged as the line is advanced
Public footpaths, cycleways, including Viking Coastal Trail	R3	Prevent loss/ disruption to footpath from erosion and flooding	Y	Y	Y	N	Y	Y	N	Y	Y
		Seek opportunities to enhance features where appropriate	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained
		Prevent loss/ disruption to footpath from risk management works	Y	Y	N	P	P	N	P	N	N
		Seek opportunities to enhance features where appropriate	No maintenance of risk management structures	Maintenance will not disrupt the footpath	Advancing the line will disrupt the footpath	No maintenance of risk management structures (although parts of the footpath could be lost)	Maintenance will not disrupt the footpath	Advancing the line will disrupt the footpath	No maintenance of risk management structures (although parts of the footpath could be lost)	Maintenance is likely to disrupt the footpath	Advancing the line will disrupt the footpath
Beaches	R1	Prevent loss/ damage/ disruption to beaches and associated facilities/ businesses from erosion/ flooding	Y	Y	N	P	Y	N	N	P	N
		Seek opportunities to enhance features where appropriate	Beach and associated facilities maintained	Beach and associated facilities maintained	It is unlikely that a beach will remain under an advance the line scenario	Some disruption / reduction to specific beaches (i.e. defence	Beaches will be maintained	It is unlikely that a beach will remain under an advance the line scenario	Beaches will experience erosion.	Beaches may be maintained	It is unlikely that a beach will remain under an advance the line scenario

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
						failure)					
		Prevent loss/ damage/ disruption to beaches and associated facilities/ businesses from risk management works Seek opportunities to enhance features where appropriate	Y	P	N	P	P	N	P	N	N
			No maintenance of risk management structures	Maintaining the beach could cause some disruption	Advancing the line will result in beach loss	No maintenance of risk management structures (beaches will reduce)	Some disruption to specific beaches (defence construction)	Advancing the line will result in beach loss	No maintenance of risk management structures (beaches will reduce)	Maintenance of risk management structures will disrupt the beach / it may be difficult to hold a beach during this epoch	Advancing the line will result in beach loss
Facilities for recreation and associated business, including cliff top amenity grassland, access to the beaches and foreshore, piers and esplanades, marinas and moorings at Margate Harbour	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	Y	P	Y	Y
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities reduced	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities reduced	Amenity facilities maintained	Amenity facilities maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Marine, Intertidal and associated Habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to marine, intertidal and associated habitats from coastal squeeze, flooding and flood/ erosion risk management works	Y	P	N	Y	N	N	Y	N	N
			Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitats adversely affected
Margate Old Town and Harbour	G2	Prevent loss/ damage to Conservation Area from erosion/ flooding and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	Y	N	P	Y
			Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation at risk (flooding and erosion)	Some of the conservation area maintained	Conservation area maintained	Conservation area at risk (flooding and erosion)	Some of the conservation area maintained	Conservation area maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	P	P	Y	P	P	P	P
			Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	N	Y	P	N	Y	P	N

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Margate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
		Seek opportunities to enhance features where appropriate	Current heritage assets maintained	Current heritage assets maintained	Defence construction could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets	Defence construction could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets	Defence construction could damage heritage assets
Landscape of the coastline and urban seafronts, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works	Y	Y	P	P	Y	P	P	P	P
		Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation
Meets Objectives			15	14	7	2	11	7	2	6	7
Partially Meets Objectives			0	2	4	7	4	4	5	7	4
Fails to Meet Objectives			1	0	5	7	1	5	9	3	5

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Cliftonville (Fulsam Rock to White Ness)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	P	P	P	P	P	P
			Heritage maintained	Some heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	P	Y	P	P
			Current heritage assets maintained	Defence construction could damage heritage assets	Current heritage assets maintained	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets
Marine, intertidal and associated Habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to marine, intertidal and associated habitats from coastal squeeze, flooding and flood/ erosion risk management works	Y	P	P	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Some impact on inter-tidal habitat	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected
Residential properties	H1	Prevent loss/ damage to residential properties from erosion/ flooding or risk management works	Y	Y	Y	Y	Y	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain

Feature	Rank	Objective	0-20			20-50			50-100		
Cliftonville (Fulsam Rock to White Ness)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Commercial properties	C2	Prevent loss/ damage to commercial properties from erosion/ flooding or flood risk management works	Y	Y	Y	Y	Y	Y	N	P	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained
Community facilities (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	Y	Y	Y	N	P	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Some community facilities maintained	Community facilities maintained
Major infrastructure e.g. local roads, railway line, sewage treatment works, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	Y	Y	Y	Y	N	P	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained
Public footpaths, cycleways, including Viking	R3	Prevent loss/ disruption to footpath from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	N	P	Y

Feature	Rank	Objective	0-20			20-50			50-100		
Cliftonville (Fulsam Rock to White Ness)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Coastal Trail			Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption / loss of footpath	Footpath maintained
Golf Course Roughs, Kingsgate	R1	Prevent loss / damage / disruption to the golf course	Y	Y	Y	N	N	Y	N	N	Y
			Golf course maintained	Golf course maintained	Golf course maintained	Disruption / loss of some of the golf course	Disruption / loss of some of the golf course	Golf course maintained	Disruption / loss of some of the golf course	Disruption / loss of some of the golf course	Golf course maintained
Beaches	R1	Prevent loss/ damage/ disruption to beaches and associated facilities/ businesses from erosion/ flooding and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	P	P	P
			Beach and associated facilities maintained	Beach and associated facilities maintained	Beach and associated facilities maintained	Beach and associated facilities maintained	Beach and associated facilities maintained	Beach and associated facilities maintained	Some disruption to specific beaches (no defences)	Some disruption to specific beaches (defence works)	Some disruption to specific beaches (defence works)
Landscape of the coastline and urban seafronts, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	N	P	Y
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape maintained
Meets Objectives			11	8	10	9	7	8	2	0	7

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Cliftonville (Fulsam Rock to White Ness)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Partially Meets Objectives			0	3	1	1	3	2	2	10	3
Fails to Meet Objectives			0	0	0	1	1	1	7	1	1

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
White Ness to Ramsgate Harbour			NAI	HTL	NAI	HTL	NAI	HTL
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion and risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	P	P	P
			Heritage maintained	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from erosion and risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	P	Y	P
			Current heritage assets maintained	Current heritage assets maintained	No defence construction	Maintaining defences could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets
Marine, intertidal and associated Habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to marine, intertidal and associated habitats from coastal squeeze, flooding and flood/ erosion risk management works	Y	P	Y	N	Y	N
			Current habitats will be maintained	Current habitats will be maintained	Inter-tidal habitats promoted	Potential impact on inter-tidal habitats	Inter-tidal habitats promoted	Potential impact on inter-tidal habitats
Residential properties	H1	Prevent loss/ damage to residential properties from erosion or risk management works	Y	Y	Y	Y	N	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
White Ness to Ramsgate Harbour			NAI	HTL	NAI	HTL	NAI	HTL
Commercial properties – businesses	C2	Prevent loss/ damage to commercial properties from erosion or risk management works	Y	Y	Y	Y	N	Y
			Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained
Community facilities (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from erosion or risk management works	Y	Y	Y	Y	N	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities lost	Community facilities maintained
Major infrastructure e.g. local roads, railway line, sewage treatment works, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion	Y	Y	P	Y	N	Y
			Infrastructure maintained	Infrastructure maintained	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained
Public footpaths, cycleways, including Viking Coastal Trail	R3	Prevent loss/ disruption to footpath from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	P	Y	N	Y
			Footpath maintained	Footpath maintained	Footpath may remain	Footpath maintained	Footpath lost	Footpath maintained

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
White Ness to Ramsgate Harbour			NAI	HTL	NAI	HTL	NAI	HTL
Beaches	R1	Prevent loss/ damage/ disruption to beaches and associated facilities/ businesses from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	P	P	P	P
			Beach and associated facilities maintained	Beach and associated facilities maintained	Some disruption to specific beaches (no defences)	Some disruption to specific beaches (defence works)	Some disruption to specific beaches (no defences)	Some disruption to specific beaches (defence works)
Landscape of the coastline and urban seafronts, including existing defences	L3	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y	P	N	P
			Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation
Broadstairs Conservation Area	G2	Prevent loss/ damage to Conservation Area from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	N	Y
			Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area maintained	Conservation area at risk	Conservation area maintained
Meets Objectives			11	10	8	6	2	6
Partially Meets Objectives			0	1	3	4	2	4
Fails to Meet Objectives			0	0	0	1	7	1

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Ramsgate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Ramsgate Port	F1	Prevent loss/ damage/ disruption to Ramsgate Port from erosion	Y	Y	Y	N	Y	Y	N	Y	Y
			Port and associated facilities maintained	Port and associated facilities maintained	Port and associated facilities enhanced	Port and associated facilities blighted	Port and associated facilities maintained	Port and associated facilities enhanced	Port and associated facilities lost	Port and associated facilities maintained	Port and associated facilities enhanced
Major infrastructure e.g. Ramsgate Harbour Access Tunnel	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	P	P	Y	P	P	P	P
		Seek opportunities to enhance features where appropriate	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	P	Y	P	P	Y	P	P
		Seek opportunities to enhance features where appropriate	Current heritage assets maintained	Current heritage assets maintained	Constructing defences could damage unknown heritage assets	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets	No defence construction	Maintaining defences could damage heritage assets	Maintaining defences could damage heritage assets
Ramsgate Conservation Area,	G2	Prevent loss/ damage to Conservation Area from erosion	Y	Y	Y	N	Y	Y	N	Y	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Ramsgate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
including Ramsgate Royal Harbour		Seek opportunities to enhance features where appropriate	Current conservation area maintained	Current conservation area maintained	Current conservation area maintained	Erosion could affect the conservation area (i.e. harbour)	Current conservation area maintained	Current conservation area maintained	Erosion would result in losses to the conservation area (i.e. harbour)	Current conservation area maintained	Current conservation area maintained
		Prevent loss/ damage to Conservation Area from risk management works	Y	Y	N	P	P	N	P	N	N
		Seek opportunities to enhance features where appropriate	Current conservation area maintained	Current conservation area maintained	New risk management works would need to be constructed	No risk management works, although harbour will be threatened	Maintaining the risk management works could affect the conservation area	Risk management works would need to be maintained	No risk management works, although harbour will be lost	Risk management works would need to be maintained	Risk management works would need to be maintained
Facilities for recreation and associated business, including piers and esplanades, marinas and moorings	R2	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding and risk management works	Y	Y	Y	N	Y	Y	N	Y	Y
		Seek opportunities to enhance features where appropriate	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities affected	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Amenity facilities maintained
Residential properties	H1	Prevent loss/ damage to residential properties from erosion/ flooding or risk management works	Y	Y	Y	Y	Y	Y	N	Y	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties remain	Residential properties remain

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Ramsgate			NAI	HTL	ATL	NAI	HTL	ATL	NAI	HTL	ATL
Community facilities at Ramsgate (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from flooding or flood risk management works	Y	Y	Y	Y	Y	Y	N	Y	Y
			Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Community facilities maintained	Commercial facilities lost	Community facilities maintained	Community facilities maintained
Major infrastructure e.g. local roads, railway line, sewage treatment works, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure affected	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure maintained
Public footpaths, cycleways, including Viking Coastal Trail	R3	Prevent loss/ disruption to footpath from erosion and risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	N	Y	Y
			Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Footpath maintained	Footpath maintained
Meets Objectives			11	11	8	4	9	8	1	8	8
Partially Meets Objectives			0	0	2	2	2	2	2	2	2
Fails to Meet Objectives			0	0	1	5	0	1	8	1	1

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
West Cliff (Western Harbour Arm to Cliffs End)			NAI	HTL	NAI	HTL	NAI	HTL
Pegwell Conservation Area (NNR)	G2	Prevent loss/ damage to Conservation Area from erosion/flooding	Y	Y	p	P	p	P
		Seek opportunities to enhance features (inter-tidal, chalk cliffs, platforms) where appropriate	Current conservation area maintained	Current conservation area maintained	Inter-tidal area expanded, freshwater habitat at risk of flooding	Risk management works could affect conservation area	Inter-tidal area expanded, freshwater habitat at risk of flooding	Risk management works could affect conservation area
	G2	Prevent loss/ damage to Conservation Area from risk management works	Y	Y	Y	N	Y	N
		Seek opportunities to enhance features where appropriate	Current conservation area maintained	Current conservation area maintained	No risk management works	Risk management works could affect conservation area	No risk management works	Risk management works could affect conservation area
Marine, Inter-tidal and associated Habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to marine, inter-tidal and associated habitats from coastal squeeze, flooding and flood/ erosion risk management works	Y	Y	Y	N	Y	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Inter-tidal habitats adversely affected
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding r implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	P	P	P	P
		Seek opportunities to enhance features where appropriate	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by	Y	Y	Y	P	Y	P

Feature	Rank	Objective	0-20		20-50		50-100	
			NAI	HTL	NAI	HTL	NAI	HTL
West Cliff (Western Harbour Arm to Cliffs End)			NAI	HTL	NAI	HTL	NAI	HTL
		record Seek opportunities to enhance features where appropriate	Current heritage assets maintained	Current heritage assets maintained	No defence construction	Maintaining / upgrading defences could damage unknown heritage assets	No defence construction	Maintaining / upgrading defences could damage unknown heritage assets
Pegwell Bay	E3	Prevent loss/ damage to designated site from erosion/ flooding and risk management works	Y	Y	P	P	N	P
		Seek opportunities to enhance features where appropriate	Current conservation area maintained	Current conservation area maintained	Area flooded	Risk management works could affect conservation area	Area flooded	Risk management works could affect conservation area
Beaches	R1	Prevent loss/ damage/ disruption to beaches and associated facilities/ businesses from erosion/ flooding and risk management works	N	Y	N	Y	N	P
		Seek opportunities to enhance features where appropriate	Some disruption to specific beaches (no defences)	Beach and associated facilities maintained	Some disruption to specific beaches (no defences)	Beach and associated facilities maintained	Some disruption to specific beaches (no defences)	Some disruption to specific beaches (defence works)
Major infrastructure e.g. Ramsgate Harbour Access Tunnel	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	Y	Y	N	Y	N	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Infrastructure maintained	Infrastructure lost	Infrastructure maintained
Commercial properties	C2	Prevent loss/ damage to commercial properties from erosion/ flooding or flood risk management works	Y	Y	N	Y	N	Y

Feature	Rank	Objective	0-20		20-50		50-100	
West Cliff (Western Harbour Arm to Cliffs End)			NAI	HTL	NAI	HTL	NAI	HTL
			Commercial properties maintained	Commercial properties maintained	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties maintained
Residential properties	H1	Prevent loss/ damage to residential properties from erosion/ flooding or risk management works	Y	Y	P	Y	P	Y
			Residential properties maintained	Residential properties maintained	Some properties maintained	Residential properties maintained	Some properties maintained	Residential properties maintained
Meets Objectives			9	10	3	4	3	3
Partially Meets Objectives			0	0	4	4	3	5
Fails to Meet Objectives			1	0	3	2	4	2

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties on edge of Cliffs End, in Sandwich and the Sandwich Bay estate	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Commercial properties – businesses on edge of Cliffs End and in Sandwich	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained
Community facilities on edge of Cliffs End and in Sandwich (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Industry along A256 and in Sandwich, including Pfizers and Richborough Port	C1	Prevent loss/ damage/ disruption to industrial areas from flooding	Y	Y	Y	N	Y	Y	N	Y	Y
			Industry maintained	Industry maintained	Industry maintained	Loss / damage to industries	Industry maintained	Industry maintained	Loss / damage to industries	Industry maintained	Industry maintained
Major infrastructure e.g. A256, A257, railway line and stations, local roads, Sewage Treatment works, electricity pylons, services and communications	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	Y	Y	Y	N	P	Y	N	P	Y
			Infrastructure maintained	Infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding											
Intertidal Habitat at Pegwell Bay, Sandwich Flats and along tidal River Stour	E1	Promote biodiversity opportunities and avoid net loss of inter-tidal habitat and associated species from coastal squeeze and flood risk management works	Y	Y	Y	Y	P	P	Y	P	N
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Some impact on inter-tidal habitat	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected
Sand dune habitat	E1 E1	Promote biodiversity opportunities and prevent loss/ damage to coastal grazing marsh and associated species from flooding	Y	P	Y	P	P	Y	N	P	P

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
			Habitat maintained	Habitat could be maintained if translated and supply continues	Habitat maintained	Habitat could be at risk of flooding	Habitat could be maintained if translated and supply continues	Habitat maintained	Habitat lost due to flooding	Habitat could be maintained if translated and supply continues	Habitat could be affected by risk management works / practises
		Promote biodiversity opportunities and prevent loss/ damage to coastal grazing marsh and associated species from flood risk management works	Y	N	Y	Y	N	P	Y	N	N
			Habitat maintained	Habitat affected by management works	Habitat maintained	No risk management works, although freshwater interests could be at risk	Habitat affected by management works	Habitat could be affected by risk management works / practises	No risk management works, although freshwater interests could be at risk	Habitat affected by management works	Habitat affected by management works
Grazing marsh habitat	E2 E2	Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flooding	Y	P	Y	P	P	Y	N	P	Y
			Habitat maintained	Some freshwater habitat lost	Habitat maintained	Habitat at risk from uncontrolled flooding	Some freshwater habitat lost	Habitat maintained	Freshwater habitat lost (large scale)	Some freshwater habitat lost	Habitat maintained
		Promote biodiversity opportunities and avoid net loss of coastal grazing marsh and associated species from flood risk management works	Y	N	Y	Y	N	Y	Y	N	Y
			Habitat maintained	Realigning risk management works will result in	Habitat maintained	No risk management works, although freshwater	Realigning risk management works will result in	Upgrading defences would not significantly impact on	No risk management works, although freshwater	No risk management works, although freshwater	Upgrading defences would not significantly impact on

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
				impact (spatial and construction)		interests could be at risk	impact (spatial and construction)	the coastal grazing marsh	interests could be at risk	interests could be at risk	the coastal grazing marsh
Agricultural Land, including Minster marshes	C3	Prevent loss/ reduced potential of agricultural land from flooding	Y	Y	Y	N	P	Y	N	P	Y
			Agricultural land maintained	Agricultural land maintained	Agricultural land maintained	Agricultural land lost	Some loss of land	Agricultural land maintained	Agricultural land lost	Some loss of land	Agricultural land maintained
Facilities for recreation and associated business, including moorings and slipways, access to foreshore and river (including for fishing)	R3	Prevent loss/ damage/ disruption to recreation and associated business from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	P	N	P	P
			Amenity facilities maintained	Amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Some amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Some amenity facilities maintained
Public footpaths, including Saxon Shore Way along shoreline	R3	Prevent loss/ disruption to footpath from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	P	N	P	P
			Footpath maintained	Footpath maintained	Footpath maintained	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath
Golf Links Courses	R1	Prevent loss/ damage/ disruption to golf courses from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	Y	N	P	Y

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
			Golf course links maintained	Golf course links maintained	Golf course links maintained	Golf course links lost	Some golf course links maintained	Golf course links maintained	Golf course links lost	Some golf course links maintained	Golf course links maintained
Sandwich Town	G2	Prevent loss/ damage to Conservation Area and SAMs from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	N	P	Y	N	P	Y
			Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area lost	Some of Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area lost	Some of Sandwich Town / Conservation area maintained	Sandwich Town / Conservation area maintained
Richborough Castle	G2	Prevent loss/ damage to SAM from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y	Y	Y	Y	P	Y	Y
			SAM not at risk from flooding	SAM maintained	SAM maintained	SAM not at risk from flooding	SAM maintained	SAM maintained	SAM could be at risk	SAM maintained	SAM maintained
Non-statutory known and unknown heritage	G4 G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y	P	P	P	P	P	P
			Heritage maintained	Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained

Feature	Rank	Objective	0-20			20-50			50-100		
			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Pegwell Bay (Cliffs End to Sandwich Bay Estate)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	Y	Y	P	P	Y	P	P
			Heritage maintained	Some assets could be affected by realigning defences	Heritage maintained	No risk management works	Some assets could be affected by realigning defences	Depends on degree of risk management works	No risk management works	Some assets could be affected by realigning defences	Depends on degree of risk management works
Landscape of the coast, estuary, marshes and open setting of the historic town of Sandwich, including existing defences	L2	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing flood defences on landscape and heritage grounds	Y	Y	Y	N	P	P	P	P	P
		Seek opportunities to enhance features where appropriate	Landscape maintained	Landscape maintained	Landscape maintained	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation
Meets Objectives			16	11	19	5	2	12	4	2	11
Partially Meets Objectives			0	6	0	3	15	7	3	15	6
Fails to Meet Objectives			3	2	0	11	2	0	12	2	2

Feature	Rank	Objective	0-20			20-50			50-100		
Sandwich Bay Estate (south) to Sandown Castle (remains of)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Golf Links Courses	R1	Prevent loss/ damage/ disruption to golf courses from flooding and flood risk management works	N	P	Y	N	P	Y	N	P	Y
		Seek opportunities to enhance features where appropriate	Golf course links lost	Some golf course links maintained	Golf links maintained	Golf course links lost	Some golf course links maintained	Golf links maintained	Golf course links lost	Some golf course links maintained	Golf links maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from flooding or implement appropriate mitigation measures, including preservation of evidence by record	N	P	Y	N	P	P	N	P	P
		Seek opportunities to enhance features where appropriate	Heritage lost	Some heritage maintained	Heritage maintained	Heritage lost	Some heritage maintained	Heritage maintained	Heritage lost	Some heritage maintained	Heritage maintained
		Prevent loss/ damage to heritage from flood risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	P	P	Y	P	P	Y	P	P
		Seek opportunities to enhance features where appropriate	No maintenance works implemented	Constructing realigned defences could adversely affect heritage assets	Upgrading the defences could affect the heritage assets	No maintenance works implemented	Constructing realigned defences could adversely affect heritage assets	Upgrading the defences could affect the heritage assets	No maintenance works implemented	Constructing realigned defences could adversely affect heritage assets	Upgrading the defences could affect the heritage assets
Landscape of the coast	L2	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works	N	P	P	N	P	P	N	P	P
		Ensure consideration of existing flood defences on landscape and heritage grounds	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation	Landscape degradation
Public footpaths, including Saxon Shore Way along shoreline	R3	Prevent loss/ disruption to footpath from flooding and flood risk management works	N	P	P	N	P	P	N	P	P
		Seek opportunities to enhance features where appropriate	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath	Disruption / loss of footpath

Feature	Rank	Objective	0-20			20-50			50-100		
Sandwich Bay Estate (south) to Sandown Castle (remains of)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties on from south of Sandwich Bay estate	H2	Prevent loss/ damage to residential properties from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Properties lost due to flooding	Some properties maintained	Present properties maintained	Properties lost due to flooding	Some properties maintained	Present properties maintained	Properties lost due to flooding	Some properties maintained	Present properties maintained
Commercial properties	C3	Prevent loss/ damage to commercial properties from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Properties lost due to flooding	Some properties maintained	Present properties maintained	Properties lost due to flooding	Some properties maintained	Present properties maintained	Properties lost due to flooding	Some properties maintained	Present properties maintained
Community facilities (such as churches, pubs, shops, schools, village halls)	H2	Prevent loss/ damage to community facilities from flooding or flood risk management works	N	P	Y	N	P	Y	N	P	Y
			Community facilities at risk / lost	Some community facilities maintained	Current community facilities maintained	Community facilities at lost	Some community facilities maintained	Current community facilities maintained	Community facilities at lost	Some community facilities maintained	Current community facilities maintained
Major infrastructure railway line, local roads,	F2	Prevent loss/ damage/ disruption to infrastructure from flooding	N	P	Y	N	P	Y	N	P	Y

Feature	Rank	Objective	0-20			20-50			50-100		
Sandwich Bay Estate (south) to Sandown Castle (remains of)			NAI	MR	HTL	NAI	MR	HTL	NAI	MR	HTL
sewage treatment works, electricity pylons, services and communications			Infrastructure at risk / lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained
Lydden Valley landscape, environmental and geological assets	E1	Prevent loss of Hacklinge Marsh (SSSI) Prevent loss of ornithological interest Prevent loss of geological assets Promote opportunities to enhance features where appropriate	N	P	Y	N	P	Y	N	P	Y
			Lydden Valley and associated assets at risk from flooding	Some of the present assets will be maintained	The present assets will be maintained	Lydden Valley and associated assets will be lost due to flooding	Some of the present assets will be maintained	The present assets will be maintained	Lydden Valley and associated assets will be lost due to flooding	Some of the present assets will be maintained	The present assets will be maintained
Inter-tidal Habitat	E1	Promote biodiversity opportunities and avoid net loss of inter-tidal habitat and associated species from coastal squeeze and flood risk management works	Y	P	P	Y	P	N	Y	P	N
			Following defence failure the inter-tidal area will expand	Realigning the present defences will expand the inter-tidal area	Maintaining the present defences would result in coastal squeeze	The inter-tidal area will expand and translate	Realigning the present defences will expand the inter-tidal area	Maintaining the present defences would result in coastal squeeze	The inter-tidal area will expand and translate	Realigning the present defences will expand the inter-tidal area	Maintaining the present defences would result in coastal squeeze
Meets Objectives			2	0	7	2	0	6	2	0	6
Partially Meets Objectives			0	11	4	0	11	4	0	11	4
Fails to Meet Objectives			9	0	0	9	0	1	9	0	1

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Sandown Castle (remains of) to Oldstairs Bay			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Residential properties at North Deal, Deal, Walmer, Kingsdown	H1	Prevent loss/ damage to residential properties from flooding/ erosion or risk management works	N	Y	N	P	Y	N	P	Y
			Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Community facilities at Deal, Walmer and Kingsdown (such as churches, pubs, shops, schools, village halls)	H1	Prevent loss/ damage to community facilities from flooding or flood risk management works	N	Y	N	P	Y	N	P	Y
			Community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained	Community facilities lost	Some community facilities lost	Community facilities maintained
Commercial properties – businesses at Deal, Walmer, Kingsdown	C2	Prevent loss/ damage to commercial properties from flooding/ erosion or risk management works	N	Y	N	P	Y	N	P	Y
			Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained	Commercial properties lost	Commercial properties lost	Commercial properties maintained

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Sandown Castle (remains of) to Oldstairs Bay			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Major infrastructure e.g. local roads, railway line and station, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion/ flooding	N	Y	N	P	Y	N	P	Y
			Infrastructure lost	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained	Infrastructure lost	Some infrastructure maintained	Infrastructure maintained
Structures/ ancillary infrastructure abandoned through flooding										
Landscape of the coast and seafronts, including existing defences	L1	Prevent degradation of landscape quality and visual amenity from erosion/ flooding and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	N	Y	N	P	P	N	P	P
			Landscape degradation	Landscape maintained	Landscape flooded	Flooding prevented but realigned defences constructed	Flooding prevented but current defences upgraded	Landscape flooded	Flooding prevented but realigned defences constructed	Flooding prevented but current defences upgraded
Intertidal and subtidal habitats	E2	Promote biodiversity opportunities and prevent loss/ damage to habitats from coastal squeeze and risk management works	Y	N	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected
Deal, Kingdown and Walmer Beaches	E3	Promote biodiversity opportunities and prevent loss/ damage to habitat from coastal squeeze and risk management works	Y	N	Y	P	P	P	P	N

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Sandown Castle (remains of) to Oldstairs Bay			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
			Beach and associated facilities maintained	Some disruption to specific beaches (no defences)	Beach and associated facilities maintained	Some disruption to the beaches (defence works)	Some disruption to the beaches (defence works)	Some beach facilities could be lost	Some disruption to the beaches (defence works)	Maintaining the present defences would result in coastal squeeze
Walmer and Kingsdown Golf Course	E4/ R3	Prevent loss/ damage to golf course and habitat from erosion and risk management works, promote biodiversity opportunities	Y	Y	N	P	Y	N	P	Y
			Golf course maintained	Golf course maintained	Golf course at risk / blighted	Some of the golf course maintained	Golf course maintained	Golf course lost	Some of the golf course maintained	Golf course maintained
Sandown, Deal and Walmer Castles	G2	Prevent loss/ damage to SAMs from erosion/ flooding and risk management works	P	Y	N	P	Y	N	P	Y
		Seek opportunities to enhance features where appropriate	SAM's at risk	SAMs protected	SAM lost	SAM's could be preserved	SAMs protected	SAM(s) flooded / eroded	SAM's could be preserved	SAMs protected
Deal Town, Walmer and seafront, Kingsdown	G2	Prevent loss/ damage to Conservation Areas from erosion/ flooding	N	Y	N	P	Y	N	P	Y
		Seek opportunities to enhance features where appropriate	Conversation area lost	Conversation area maintained	Conversation area lost	Some of the conservation area maintained	Conversation area maintained	Conversation area lost	Some of the conservation area maintained	Conversation area maintained
		Prevent loss/ damage to Conservation Areas from risk management works	Y	Y	Y	N	Y	Y	N	P
		Seek opportunities to enhance features where appropriate	No risk management works constructed (although assets at risk from flooding)	Upgrading the defences is not likely to affect the conservation assets	No risk management works constructed (although assets at risk from flooding)	Constructing realigned defences could adversely affect the Conservation assets	Upgrading the defences is not likely to affect the conservation assets	No risk management works constructed (although assets at risk from flooding)	Constructing realigned defences could adversely affect the Conservation assets	Upgrading the defences is not likely to affect the conservation assets

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Sandown Castle (remains of) to Oldstairs Bay			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion/ flooding or implement appropriate mitigation measures, including preservation of evidence by record	P	Y	N	P	Y	P	P	P
		Seek opportunities to enhance features where appropriate	Some heritage maintained	Heritage maintained	Heritage affected / lost	Some heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	N	P	Y	N	N
		Seek opportunities to enhance features where appropriate	No risk management works constructed	The present assets will be maintained	No risk management works constructed	Constructing realigned defences could adversely affect the heritage assets	Upgrading the defences could impact on the heritage assets	No risk management works constructed	Constructing realigned defences could adversely affect the heritage assets	Upgrading the defences is likely to impact on the heritage assets
Facilities for recreation and associated business, including marinas and watersports clubs, Deal Pier and promenade, golf courses, public open space, access to beaches and foreshore	R1	Prevent loss/ damage/ disruption to recreation and associated business from erosion/ flooding and risk management works	N	Y	N	P	Y	N	Y	P
		Seek opportunities to enhance features where appropriate	Amenity facilities lost	Amenity facilities maintained	Amenity facilities lost	Some amenity facilities maintained	Amenity facilities maintained	Amenity facilities lost	Amenity facilities maintained	Some amenity facilities maintained

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Sandown Castle (remains of) to Oldstairs Bay			NAI	HTL	NAI	MR	HTL	NAI	MR	HTL
Meets Objectives			5	12	4	0	10	3	1	7
Partially Meets Objectives			2	0	0	12	3	2	11	4
Fails to Meet Objectives			7	2	10	2	1	9	2	3

Feature	Rank	Objective	0-20	20-50	50-100
Oldstairs Bay to St Margaret's			NAI	NAI	NAI
Inter-tidal and sub-tidal habitats	E2	Promote biodiversity opportunities and prevent loss/ damage to habitats from coastal squeeze and risk management works	Y	Y	Y
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	P
			Present heritage assets will be maintained	Some of the present heritage assets could be at risk	Some of the present heritage assets could be at risk
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y
			No risk management works constructed	No risk management works constructed	No risk management works constructed
Landscape of the coast	L1	Prevent degradation of landscape quality and visual amenity from erosion and risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	Y	Y
			Landscape of the coast maintained	Landscape of the coast maintained	Landscape of the coast maintained
Infrastructure e.g. local roads, services and communications	F3	Prevent loss/ damage/ disruption to infrastructure from erosion	Y	Y	P
			Infrastructure maintained	Infrastructure maintained	Some infrastructure could be at risk
Golf Links Courses	R1	Prevent loss/ damage/ disruption to golf courses from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	Y	Y
			Golf course links maintained	Golf course links maintained	Golf course links maintained

Feature	Rank	Objective	0-20	20-50	50-100
Oldstairs Bay to St Margaret's			NAI	NAI	NAI
Public footpaths, including Saxon Shore Way along shoreline	R3	Prevent loss/ disruption to footpath from flooding and flood risk management works Seek opportunities to enhance features where appropriate	Y	P	N
			Public footpath maintained	Footpath could be at risk	Losses to the footpath likely
Meets Objectives			7	5	4
Partially Meets Objectives			0	2	2
Fails to Meet Objectives			0	0	1

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	NTL	NAI	MR	HTL
St Margaret's Bay										
Cliff top residential properties	H2	Prevent loss/ damage to residential properties from erosion or risk management works	Y	Y	Y	Y	Y	N	P	Y
			Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties remain	Residential properties lost	Residential properties lost	Residential properties remain
Cliff top Agricultural Land	C3	Prevent loss/ reduced potential of agricultural land from erosion	N	Y	N	N	Y	N	N	Y
			No loss of land	Loss of land	No loss of land	No loss of land	Loss of land	No loss of land	No loss of land	Loss of land
Landscape of the coast / seafronts, including existing defences	L1	Prevent degradation of landscape quality and visual amenity from erosion Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	P	Y	P	Y	P	P	Y	P
			Some landscape degradation (as defences fail) – landscape could change/improve over time	Present landscape maintained	Some landscape degradation (as defences fail) – landscape could change/improve over time	Balance between landscape and risk management structures	Landscape could be affected by risk management structures	Some landscape degradation (as defences fail) – landscape could change/improve over time	Balance between landscape and risk management structures	Landscape could be affected by risk management structures

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	NTL	NAI	MR	HTL
St Margaret's Bay										
		Prevent degradation of landscape quality and visual amenity from risk management works Ensure consideration of existing defences on landscape and heritage grounds Seek opportunities to enhance features where appropriate	Y	P	Y	P	N	Y	P	N
			No maintenance to risk management works	Present defences would need maintenance / upgrading	No maintenance to risk management works	Less intrusive flood risk management works constructed	Landscape quality could be compromised	No maintenance to risk management works	Less intrusive flood risk management works constructed	Landscape quality could be compromised
Cliff habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to designated sites from erosion risk management works	Y	N	Y	P	N	P	P	P
			Habitat maintained	Habitat adversely affected	Habitat maintained	Some heritage maintained	Inter-tidal habitats adversely affected	Some heritage maintained	Some heritage maintained	Some heritage maintained
Inter-tidal and sub-tidal habitats	E2	Promote biodiversity opportunities and prevent loss/ damage to habitats from coastal squeeze and risk management works	Y	N	Y	P	N	Y	P	N
			Inter-tidal habitat maintained	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected	Inter-tidal habitat maintained	Some impact on inter-tidal habitat	Inter-tidal habitats adversely affected
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	P	P	P	P	P	P
			Heritage maintained	Heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained	Some heritage maintained

Feature	Rank	Objective	0-20		20-50			50-100		
			NAI	HTL	NAI	MR	NTL	NAI	MR	HTL
St Margaret's Bay										
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record	Y	Y	Y	N	P	Y	N	P
		Seek opportunities to enhance features where appropriate	No maintenance of risk management structures	Present heritage assets maintained	No maintenance of risk management structures	Construction of risk management structures could adversely affect heritage assets	Upgrading risk management structures could impact on heritage assets	No maintenance of risk management structures	Construction of risk management structures could adversely affect heritage assets	Upgrading risk management structures could impact on heritage assets
Meets Objectives			6	5	5	2	3	3	1	2
Partially Meets Objectives			1	1	2	4	2	2	5	4
Fails to Meet Objectives			1	2	1	2	3	3	2	2

Feature	Rank	Objective	0-20	20-50	50-100
South Foreland			NAI	NAI	NAI
Public footpaths, including Saxon Shore Way and White Cliffs Country Trail	R3	Prevent loss/ disruption to footpath from erosion/ flooding and risk management works Seek opportunities to enhance features where appropriate	Y	P	N
			Footpath maintained	Footpath could be lost	Footpath lost
Cliff habitats	E1	Promote biodiversity opportunities and prevent loss/ damage to designated sites from erosion risk management works	Y	Y	Y
			Habitat maintained	Habitat maintained	Habitat maintained
Cliff top agricultural Land	C3	Prevent loss/ reduced potential of agricultural land from erosion	N	N	N
			Some loss of land	Some loss of land	Some loss of land
Non-statutory known and unknown heritage	G4	Prevent loss/ damage to heritage from erosion or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	P	P
			Heritage maintained	Some heritage maintained	Some heritage maintained
		Prevent loss/ damage to heritage from risk management works or implement appropriate mitigation measures, including preservation of evidence by record Seek opportunities to enhance features where appropriate	Y	Y	Y
			No management works conducted	No management works conducted	No management works conducted
Inter-tidal and sub-tidal habitats	E2	Promote biodiversity opportunities and prevent loss/ damage to habitats from coastal squeeze and risk management works	Y	Y	Y
			Inter-tidal habitat maintained	Inter-tidal habitat maintained	Inter-tidal habitat maintained

Feature	Rank	Objective	0-20	20-50	50-100
South Foreland			NAI	NAI	NAI
Meets Objectives			5	3	3
Partially Meets Objectives			0	2	1
Fails to Meet Objectives			1	1	2

G4 Proposed Policy Options and Preferred Policy Scenario

Proposed Policy Options were identified for each frontage through the assessment of Shoreline Interaction and Response for the policies tested, and through the Objectives Assessment. The Proposed Policy Options listed in the following table were issued to the Coastal Steering Group for discussion.

G4.1 PROPOSED POLICY OPTIONS

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
4a01	Allhallows-on-Sea to Grain	HTL	HTL/MR	HTL/MR	HTL is proposed for the short term, due to the number of objectives that it meets. However, in the medium and long term both HTL and MR are feasible. The latter would reduce the amount of coastal squeeze, create inter-tidal habitat and sustain a large number of other features e.g. farmland, coastal grazing marsh etc. To be discussed with the CSG.
4a02	Garrison Point to Minster (west – chalet park)	HTL	HTL	HTL	HTL is proposed for all the epochs. ATL meets a number of objectives, but has been discounted on environmental, coastal process and management (financial) grounds.
4a03	Minster Town (chalet park to Royal Oak Pub)	HTL	HTL	HTL	HTL is proposed for all the epochs, as it meets the most objectives and is technically (coastal processes / sediment budget) acceptable. There are localised opportunities (in the east) to incorporate managed into this policy unit / option. To be discussed with the CSG.
4a04	Minster Slopes	NAI	NAI	NAI	NAI is the only policy the CSG wanted to see tested for this frontage, as such this policy is proposed for all 3 epochs, on technical and environmental grounds. This will place a limited number of slope-top assets at risk. To be discussed with the CSG.
4a05	Warden Point to Leysdown-on- Sea	HTL	HTL	HTL/MR	HTL is proposed for all the epochs. However, it is acknowledged that there are localised opportunities for MR within this unit. It is recommended that these localised areas be considered in the longer term when the standard of flood protection provided by the fronting beach may have significantly decreased. To be discussed with the CSG.

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
4a06	Leysdown-on-Sea to Shell Ness	HTL	MR	MR	HTL is proposed for the short term to maintain the present landscape and to allow time to plan for medium and long term changes, under a proposed policy of MR. MR has been chosen on technical, managerial (financial / spatial flood risk management) and environmental grounds. MR also partially meets a high number of objectives. NAI has not been recommended because this would result in large-scale, uncontrolled flooding. To be discussed with the CSG.
4a07	Faversham Creek to Seasalter	HTL	HTL/MR	HTL/MR	HTL is proposed for the first epoch. Thereafter, both HTL and MR are feasible options, the former because it meets a high number of objectives, the latter because there are coastal process benefits and environmental opportunities (inter-tidal). ATL is not recommended on technical (coastal squeeze) and environmental (inter-tidal) grounds, whilst NAI is not recommended because this would result in large-scale, uncontrolled flooding. To be discussed with the CSG.
4a08	Seasalter to Whitstable Town	HTL	HTL	HTL	HTL is proposed for all three epochs because it meets the most objectives. As the frontage is densely populated MR has not been selected. ATL is not recommended because of technical reasons (coastal squeeze).
4a09	Whitstable Town to Whitstable Harbour	HTL/ATL	HTL/ATL	HTL/ATL	Both HTL and ATL are feasible for all three epochs because they meet a similar number of objectives. ATL is acceptable here because there is little feed from updrift frontages and alongshore transportation has already been interrupted by the harbour. To be discussed with the CSG.
4a10	Whitstable Harbour (east) to Swalecliffe	HTL	HTL	HTL	HTL is proposed for all three epochs. ATL is not recommended on technical (coastal squeeze, beach retention) managerial (financial) and environmental grounds.
4a11	Swalecliffe to Herne Bay Breakwater	HTL	HTL	HTL	Both HTL and ATL are feasible for all three epochs because they meet a similar number of objectives. Of the two HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable. To be discussed with the CSG.
4a12	Herne Bay Breakwater to Bishopstone Manor	HTL	HTL	HTL	Both HTL and ATL are feasible for all three epochs because they meet a similar number of objectives. Of the two HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable. In the east, where less assets are at risk, there are localised opportunities to implement MR. To be discussed with the CSG.

PROPOSED PREFERRED POLICIES					
(HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
4a13	Reculver Country Park	NAI	NAI	NAI	NAI is proposed, for all three epochs, due to over-riding technical, environmental and managerial interests. In the long term, a limited number of slope-top assets could be at risk. To be discussed with the CSG.
4a14	Reculver Towers to Minnis Bay	HTL/MR	HTL/MR	HTL/MR	HTL is proposed for the first epoch. Thereafter, both HTL and MR are feasible options, the former because it meets a high number of objectives, the latter because there are coastal process benefits, environmental opportunities (inter-tidal) and because it partially meets a high number of objectives. Should MR be chosen then it is recommended that the SAM be preserved. To be discussed with the CSG.
4a15	Minnis Bay to Westgate-on-Sea	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI – where there are no assets at risk. To be discussed with the CSG.
4a16	Margate	HTL	HTL	HTL	HTL is proposed for all three epochs, as it meets the most objectives. NAI and MR have not been selected because the frontage is a dense urban (socio-economic) area and technically MR would be difficult to implement. ATL has been discounted on environmental and landscape grounds (although on coastal process grounds such a policy would be acceptable).
4a17	Cliftonville (Fulsam Rock to White Ness)	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI – where there are no assets at risk.
4b18	White Ness to Ramsgate	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI where there are no assets at risk.
4b19	Ramsgate Harbour	HTL	HTL	HTL	HTL is proposed for all three epochs. However, in the medium and / or long term there is the potential to implement ATL. This is possible because sediment transportation alongshore (technical grounds) is already interrupted by the harbour and because ATL meets a similar number of (socio-economic) objectives as HTL. To be discussed with CSG.
4b20	West Cliff (Ramsgate western	HTL	HTL	HTL	HTL is proposed for all three epochs and has been selected for socio-economic and infrastructure reasons. However, it is acknowledged that in some localised sections, opportunities for MR exist and

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
	harbour arm to Cliffs End)				these should be investigated further. <i>To be discussed with the CSG.</i>
4b21	Pegwell Bay (Cliffs End to Sandwich Bay Estate – south)	HTL	HTL/MR	MR	HTL is the preferred policy for this frontage for Years 0-20. In the medium and long term (20-100 Years) HTL could continue to be implemented, as it meets the most number of objectives. However, on technical (coastal squeeze) and environmental (inter-tidal habitats) grounds, MR is feasible. <i>To be discussed with the CSG.</i>
4b22	Sandwich Bay Estate (south) to Sandown Castle (remains of)	HTL	HTL/MR	HTL/MR	HTL is the preferred policy for this frontage for Years 0-20. In the medium and long term (20-100 Years) HTL could continue to be implemented, as it meets the most number of objectives. However, on technical (coastal squeeze) and environmental (inter-tidal habitats) grounds, MR is feasible. <i>To be discussed with the CSG.</i>
4b23	Sandown Castle (remains of) to Oldstairs Bay	HTL	HTL	HTL	HTL is proposed for all three epochs, due to the high number of socio-economic and heritage assets close to the shoreline. It is acknowledged that HTL will become increasingly difficult and expensive to implement in the long term, the inter-tidal area will be squeezed and the coastal processes further affected.
4b24	Oldstairs Bay to St Margaret's	NAI	NAI	NAI	NAI is proposed for all three epochs, due to over-riding technical and environmental interests. There are limited cliff top assets at risk. <i>To be discussed with the CSG.</i>
4b25	St Margaret's	HTL	HTL	HTL	HTL is proposed for all 3 epochs The number of objectives this policy meets reduces with time. However, alternative options i.e. MR and NAI have both been discounted on socio-economic, technical, managerial and environmental (landscape) grounds.
4b26	South Foreland	NAI	NAI	NAI	NAI is most appropriate for this section of the coast (on technical and environmental grounds) and as such was the only policy option selected by the CSG.

G4.2 PREFERRED POLICY SCENARIO

Through discussion with the Coastal Steering Group, the Preferred Policy Scenario was identified for the Isle of Grain to South Foreland SMP frontage. The main changes from the Proposed Policy Options were:

- (1) To implement a combined policy of hold the line and managed realignment at Warden Point to Leysdown-on-Sea.
- (2) To introduce managed realignment, at Leysdown-on-Sea to Shell Ness, in the first epoch as opposed to the second and to ensure that the policy options for this frontage tie in with the estuarine unit Leysdown-on-Sea to Colemouth Creek.
- (3) Throughout the Thanet coastline opportunities for no active intervention should be sought where economically viable.
- (4) A boundary unit change, on the east coast, from Cliffs End to Sandwich Bay Estate – south to south of the River Stour to Sandwich Bay Estate north (4b21).
- (5) A change in the preferred policy for south of the River Stour to Sandwich Bay Estate north, from hold the line / managed realignment to no active intervention due to the high standard of protection the fronting dunes provide and the town of Sandwich being protected under the Stour Strategy study.
- (6) A boundary unit change, on the east coast, from Sandwich Bay Estate (south) to Sandown Castle (remains of) to Sandwich Bay Estate north to Sandown Castle (remains of) (4b22).

The following Preferred Policy Scenario Table identifies the policy options for each preferred policy unit agreed by the Coastal Steering Group to take forward to consultation.

G4.3 CLIENT STEERING GROUP AGREED POLICY OPTIONS

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
4a01	Allhallows-on-Sea to Grain	HTL	MR	MR	HTL is proposed for the short term, due to the number of objectives that it meets. However, in the medium and long term both HTL and MR are feasible. The latter would reduce the amount of coastal squeeze, create inter-tidal habitat and sustain a large number of other features e.g. farmland, coastal grazing marsh etc. To be agreed with Medway and Swale.
4a02	Garrison Point to Minster (west – chalet park)	HTL	HTL	HTL	HTL is proposed for all the epochs. ATL meets a number of objectives, but has been discounted on environmental, coastal process and management (financial) grounds.
4a03	Minster Town (chalet park to Royal Oak Pub)	HTL	HTL	HTL	HTL is proposed for all the epochs, as it meets the most objectives and is technically (coastal processes / sediment budget) acceptable. There are localised opportunities (in the east) to incorporate managed realignment into this policy unit / option.
4a04	Minster Slopes	NAI	NAI	NAI	NAI is the only policy the CSG wanted to see tested for this frontage, as such this policy is proposed for all 3 epochs, on technical and environmental grounds. This will place a limited number of slope-top assets at risk.
4a05	Warden Point to Leysdown-on- Sea	HTL/MR	HTL/MR	HTL/MR	HTL is proposed for all the epochs. However, it is acknowledged that there are localised opportunities for MR within this unit. It is recommended that these localised areas be considered in the medium to long term when the standard of flood protection provided by the fronting beach may have significantly decreased.
4a06	Leysdown-on-Sea to Shell Ness	MR	MR	MR	MR has been chosen on technical, managerial (financial / spatial flood risk management) and environmental grounds. MR also partially meets a high number of objectives. NAI has not been recommended because this would result in large-scale, uncontrolled flooding. To be agreed with Swale and Medway.
4a07	Faversham Creek to Seasalter	HTL	MR	MR	HTL is proposed for the first epoch. Thereafter, both HTL and MR are feasible options, the former because it meets a high number of objectives, the latter because there are coastal process benefits and environmental opportunities (inter-tidal). ATL is not recommended on technical (coastal squeeze) and environmental (inter-tidal) grounds, whilst NAI is not recommended because this would result in large-scale, uncontrolled flooding.

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
4a08	Seasalter to Whitstable Town	HTL	HTL	HTL	HTL is proposed for all three epochs because it meets the most objectives. As the frontage is densely populated MR has not been selected. HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable.
4a09	Whitstable Town to Whitstable Harbour	HTL	HTL	HTL	HTL is proposed for all three epochs. ATL not chosen because the CSG felt it did not add any value to the flood and erosion risk management. HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable.
4a10	Whitstable Harbour (east) to Swalecliffe	HTL	HTL	HTL	HTL is proposed for all three epochs. ATL is not recommended on technical (coastal squeeze, beach retention) managerial (financial) and environmental grounds.
4a11	Swalecliffe to Herne Bay Breakwater	HTL	HTL	HTL	HTL is proposed for all three epochs. ATL not chosen because the CSG felt it did not add any value to the flood and erosion risk management. HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable.
4a12	Herne Bay Breakwater to Bishopstone Manor	HTL	HTL	HTL	HTL is proposed for all three epochs. ATL not chosen because the CSG felt it did not add any value to the flood and erosion risk management. HTL is technically (the inter-tidal area will not be lost immediately and alongshore coastal processes will not be interrupted as much) and financially more acceptable.
4a13	Reculver Country Park	NAI	NAI	NAI	NAI is proposed, for all three epochs, due to over-riding technical, environmental and managerial interests. In the long term, a limited number of slope-top assets could be at risk.
4a14	Reculver Towers to Minnis Bay	HTL	MR	MR	HTL is proposed for the first epoch. MR is proposed thereafter. The CSG agreed that MR should be localized, to meet coastal process, environmental and objective benefits. The CSG recommended that the SAM be preserved for as long as possible (technically / economically).
4a15	Minnis Bay to Westgate-on-	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI – where there are no assets at risk.

PROPOSED PREFERRED POLICIES				
(HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)				
Proposed Policy Unit	Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
Sea				
4a16 Margate	HTL	HTL	HTL	HTL is proposed for all three epochs, as it meets the most objectives. NAI and MR have not been selected because the frontage is a dense urban (socio-economic) area and technically MR would be difficult to implement. ATL has been discounted on environmental and landscape grounds (although on coastal process grounds such a policy would be acceptable).
4a17 Cliftonville (Fulsam Rock to White Ness)	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI – where there are no assets at risk
4b18 White Ness to Ramsgate	HTL	HTL	HTL	HTL is proposed for all three epochs where there are cliff top assets and defences. Elsewhere there are localised opportunities to continue with / implement NAI where there are no assets at risk. It is acknowledged that HTL will become increasingly difficult and expensive to implement in the long term.
4b19 Ramsgate Harbour	HTL	HTL	HTL	HTL is proposed for all three epochs. This is recommended because sediment transportation alongshore (technical grounds) is already interrupted by the harbour and HTL meets the most number of (socio-economic) objectives. It is acknowledged that HTL will become increasingly difficult and expensive to implement in the long term.
4b20 West Cliff (Ramsgate western harbour arm to Cliffs End)	HTL	HTL	HTL	HTL is proposed for all three epochs and has been selected for socio-economic and infrastructure reasons. However, it is acknowledged that in some localised sections, opportunities for NAI exist and these should be investigated further.
4b21 South of the River Stour to Sandwich Bay Estate north	NAI	NAI	NAI	NAI is proposed on technical (coastal squeeze) and environmental (inter-tidal habitats) grounds and because the sand dunes afford a suitable standard of protection.
4b22 Sandwich Bay Estate north to	HTL	HTL	HTL	HTL is the preferred policy for this frontage for Years 0-20. In the medium and long term (20-100 Years) HTL could continue to be implemented, as it meets the most number of objectives. However, there would be technical (coastal squeeze) and environmental (inter-tidal habitats) implications. It is

PROPOSED PREFERRED POLICIES (HTL – Hold the Line, ATL – Advance the Line, MR – Managed Realignment, NAI – No Active Intervention)					
Proposed Policy Unit		Epoch 1 (0-20 years)	Epoch 2 (20-50 years)	Epoch 3 (50-100 years)	Comments / Justification
	Sandown Castle (remains of)				acknowledged that HTL will become increasingly difficult and expensive to implement in the long term.
4b23	Sandown Castle (remains of) to Oldstairs Bay	HTL	HTL	HTL	HTL is proposed for all three epochs, due to the high number of socio-economic and heritage assets close to the shoreline. It is acknowledged that HTL will become increasingly difficult and expensive to implement in the long term, the inter-tidal area will be squeezed and the coastal processes further affected.
4b24	Oldstairs Bay to St Margaret's	NAI	NAI	NAI	NAI is proposed for all three epochs, due to over-riding technical and environmental interests. There are limited cliff top assets at risk.
4b25	St Margaret's	HTL	HTL	HTL	HTL is proposed for all 3 epochs The number of objectives this policy meets reduces with time. However, alternative options i.e. MR and NAI have both been discounted on socio-economic, technical, managerial and environmental (landscape) grounds.
4b26	South Foreland	NAI	NAI	NAI	NAI is most appropriate for this section of the coast (on technical and environmental grounds) and as such was the only policy option selected by the CSG.