Medway Estuary and Swale Shoreline Management Plan SMP

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	N Pontee
	1	Amendments following public consultation and QRG review	31/10/08	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, the Environment Agency, 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	92
G4	PROPOSED POLICY OPTIONS AND PREFERRED POLICY SCENARIO	208

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). Here 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.

			Theme & page number		
	Policy Unit	Shoreline Response	Objective Appraisal	Proposed Policy Options	Preferred Policy Scenario
E4 01	Grain Tower to Colemouth Creek	3	93	208	216
E4 02	Colemouth Creek to Bee Ness Jetty	7	99	208	216
E4 03	Kingsnorth Power Station	12	104	208	216
E4 04	Kingsnorth Power Station to Cockham Wood	12	108	209	216
E4 05	Cockham Wood	16	112	209	216
E4 06	Lower Upnor to Medway Bridge	19	115	209	216
E4 07	Medway Bridge to North Halling	22	118	209	216
E4 08	North Halling to Snodland	28	121	209	217
E4 09	Snodland to Allington lock	31 & 34	125	209	217
E4 10	Allington Lock to North Wouldham	37 & 39	128	209	217
E4 11	Wouldham Marshes	39	133	210	217
E4 12	Medway Bridge to West St Mary's Island	43	135	210	217
E4 13	St Mary's Island to The Strand	45	137	210	217
E4 14	The Strand to west Motney Hill	48	140	210	217
E4 15	Motney Hill to Ham Green	52	143	210	218
E4 16	Ham Green to East of Upchurch	52	147	210	218
E4 17	East of Upchurch to East Lower Halstow	52	151	210	218
E4 18	Barksore Marshes	52	154	210	218
E4 19	Funton to Raspberry Hill	52	158	211	218
E4 20	Chetney Marshes	52	161	211	218
E4 21	Kingsferry Bridge to Milton Creek	61	164	211	218
E4 22	Milton Creek	66	168	211	218
E4 23	Murston Pits to Faversham	66	172	211 & 212	219
E4 24	Faversham to Nagden	66	178	212	219
E4 25	Shell Ness to Sayes Court	73	183	212	219
E4 26	Sayes Court to North Elmley Island	73	187	212	219
E4 27	North Elmley Island to Kingsferry Bridge	73	191	212	219
E4 28	Kingsferry Bridge to Rushenden	82	195	213	219
E4 29	Rushenden to Sheerness	88	200	213	219
E4 30	Medway Islands		205		220

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 Baseline 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: SEA Report	Presents the Strategic Environmental Assessment of the Plan.
L: Retrospective WFD Assessment	Presents a retrospective Water Framework Directive Assessment.

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 (Appendix C).

From this analysis, maps of predicted erosion zones have been produced to identify those features affected (Annex C2). The next stage was to appraise the achievement of objectives using this information. This has been recorded in the Issues and Objectives Table (Appendix E).

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 Options (Section G4.1) were identified and put to the Coastal Steering Group for discussion. The outcome of this discussion resulted in the identification of a Preferred Policy Scenario (Section G4.2) for the SMP frontage.

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 (Appendix F).

For each scenario, broad assumptions were made regarding implementation for each location. 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 identified policy to be assessed. Implications for defence requirements are also included.

G2.2 SCENARIO TESTING: SHORELINE INTERACTION AND RESPONSE

		Predicted Change For	
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
MEDWAY – NORTH/WI	EST BANK		
NORTH GRAIN VILLAG	GE TO COLEMOUTH CREEK		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Maintenance, improvement and/or replacement of	Replacement of groynes, and maintenance/	Further replacement, improvement (raising) and
	wooden groynes and concrete revetment at Grain will	improvement of concrete revetment at Grain will be	maintenance of all defences will be required to allow
	be required within this period (<20 years).	required to maintain the integrity of the beach.	for the combined effects of sea level rise and climate
	If the beach is lost, additional toe protection will be	Maintenance and improvement (raising) of earth	change.
	required to protect the concrete revetment.	embankments, revetments, concrete aprons and	
	Earth embankments with upper concrete block	concrete seawalls would be required during this epoch.	
	revetments, concrete aprons and lower rock		
	revetments around Grain Power Station would remain		
	(>20 years). Concrete seawalls around Grain		
	Container Terminal would remain (>20 years).		
	The exposed shingle beach at Grain near the estuary	The shingle beach at Grain is likely to undergo continued	In the Medway sediment supply is predicted to decrease
	mouth is likely to continue to experience coastal squeeze	coastal squeeze and narrowing during this epoch as sea	over this epoch, limiting accretion in the estuary.
	during this epoch. Depending on the rates of sediment	levels rise. Continual defence improvement, maintenance	If the beach at Grain remains, coastal squeeze of the
	supply, sediment loss, sea level rise and wave energy,	and replacement will be necessary to maintain the integrity	beach will be exacerbated with sea level rise.
	this is likely to result in further beach narrowing (the	of the beach and protect the backing defences.	With sea level rise, tidal prism within the estuary will
	beach currently narrows considerably towards the east,	If the beach narrows considerably and is eventually lost,	increase, resulting in increased flows through the narrow
	with very little shingle remaining in this section).	maintenance, improvement (raising) and /or replacement of	channel near the mouth. Mudflat erosion is therefore
	Consequently defences would become increasingly	concrete and rock revetment at Grain will be required.	likely to continue in these confined areas. In these
	exposed to wave and tidal action.	It is assumed that mudflat erosion would continue in the	locations and in areas where there is no foreshore,
	Replacement of groynes may be required to keep the	confined areas near the estuary mouth. Consequently	defences would become increasingly susceptible to toe
	integrity of the beach. Additional toe protection may be	defences would become increasingly susceptible to erosion	erosion; therefore additional defence protection will be

		Predicted Change For	
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	required to stop undermining of the concrete revetment	and toe scour in these locations. Any loss of designated	required.
	and toe scour as the beach narrows.	habitat may need to be compensated for elsewhere.	Maintaining the current defence line would fix the channel
	Over this epoch, the wide intertidal mudflat areas in front	Maintaining the current defence line would fix the channel	position, restricting natural channel processes.
	of the shingle beach at Grain are likely to remain. Mudflat	position, restricting natural channel processes.	The economic assets and infrastructure along the
	areas in the more confined channel areas around the	The economic assets and infrastructure along the frontage	frontage and low lying flood risk areas will remain
	estuary mouth, in front of defences around Grain Power	and low lying flood risk areas will continue to be protected.	protected.
	Station, are predicted to continue to erode as at present.		
	Consequently defences would become increasingly		
	susceptible to erosion in these locations.		
	Maintaining the current defence line would fix the channel		
	position, restricting natural channel processes.		
	The economic assets and infrastructure along the		
	frontage and low lying flood risk areas will continue to be		
	protected.		
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Infill and reclaim land between the new		allow for sea level rise.
	and former defences.		
	Advancing the defence line will narrow the channel further	Flow speeds through the narrow channel are assumed to	In the Medway sediment supply is predicted to decrease
	in an already constrained location, moving the estuary	increase and erosion of intertidal areas and defences will be	over this epoch, limiting accretion in the estuary.
	away from its ideal form. Consequently flow speeds	enhanced as sea levels rise.	With sea level rise, tidal prism within the estuary will
	through the constriction are likely to increase and erosion	Safe navigation of maritime traffic may become	increase.
	of present intertidal areas enhanced.	compromised due to the increased flow speeds.	Fast tidal flows resulting from the additional narrowing of
	There is potential to create new habitat landward of the	The channel will remain fixed in position, restricting natural	the channel by advancing the defence line are likely to
	defences or use land for development. Detrimental	estuary processes.	further increased. Mudflat erosion would consequently be

		Predicted Change For	
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	environmental impacts will occur with the loss of	Flood and erosion protection to the Isle of Grain's economic	amplified in these confined areas, resulting in complete
	designated habitats. Any loss of designated habitat may	and residential assets and infrastructure will continue.	foreshore loss in places and potential deepening of the
	need to be compensated for elsewhere.		main channel.
	The channel will be fixed in position, restricting natural		Consequently defences would become increasingly
	estuary processes.		susceptible to undermining in these locations.
	Flood and erosion protection to the Isle of Grain's		Safe navigation of maritime traffic may be compromised
	economic and residential assets and infrastructure will		further.
	continue.		The channel will continue to be fixed in position,
			restricting natural estuary processes.
			Flood and erosion protection to the Isle of Grain's
			economic and residential assets and infrastructure will be
			increased.
Scenario 3	Hold the Line	Managed Retreat	Managed Retreat

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
Maintenance, improvement and/or replacement of	New defences will need to be constructed landwards of	New landward defences would require maintenance,	
wooden groynes and concrete revetment at Grain will	the present defences.	improvement and / or eventual replacement during	
be required within this period (<20 years) along with		this epoch.	
beach recharge to retain the amenity value and			
defence properties of the beach.			
If the beach is lost, additional toe protection will be			
required to protect the concrete revetment.			
Earth embankments with upper concrete block			
revetments, concrete aprons and lower rock			
revetments around Grain Power Station would remain			
(>20 years). Concrete seawalls around Grain			
 Container Terminal would remain (>20 years).			
The exposed shingle beach at Grain near the estuary	Removal or relocation of existing infrastructure and	In the Medway sediment supply is predicted to decrease	
mouth is likely to continue to experience coastal squeeze	economic assets may be required dependant on the chosen	over this epoch, limiting accretion in the estuary.	
during this epoch. Depending on the rates of sediment	line of retreat.	The shingle beach at Grain is likely to continue to migrate	
supply, sediment loss, sea level rise and wave energy,	Managed retreat at Grain would allow the shingle beach to	landwards under rising sea levels until constrained by	
this is likely to result in further beach narrowing (the	naturally roll landward towards the higher land.	high land. In this case, the beach at Grain is predicted to	
beach currently narrows considerably towards the east,	Managed retreat opportunities around the majority of the	start to erode as it experiences coastal squeeze as sea	
with very little shingle remaining in this section).	Isle of Grain will be limited due to the existence of high land	levels rise.	
Consequently defences would become increasingly	around Grain village.	Habitat in realigned areas will become more established	
exposed to wave and tidal action.	Inundation of any low lying areas (frontage beside	throughout this epoch and new channels will become	
Replacement of groynes may be required to keep the	Colemouth Creek) seaward of a retreated defence line	more defined.	
integrity of the beach. Additional toe protection may be	would encourage the creation of new intertidal habitat which	Downstream flow speeds are likely to increase as the	
required to stop undermining of the concrete revetment	will develop over existing habitats. Any loss of designated	tidal prism increases due to a greater intertidal area at	
and toe scour as the beach narrows.	habitat may need to be compensated for elsewhere.	this location and as sea levels rise. Foreshore erosion will	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Over this epoch, the wide intertidal mudflat areas in front	Flows into and out of these intertidal areas are likely to	therefore be exacerbated towards the estuary mouth e.g.	
	of the shingle beach at Grain are likely to remain. Mudflat	create new channels or result in the expansion of the	at Sheerness.	
	areas in the more confined channel areas around the	existing creek network over time.	Remaining economic assets and infrastructure along the	
	estuary mouth, in front of defences around Grain Power	The new intertidal areas will effectively increase the width of	frontage and low lying flood risk areas will remain	
	Station, are predicted to continue to erode as at present.	the estuary at this confined location, moving it towards a	protected.	
	Consequently defences would become increasingly	more ideal form.		
	susceptible to erosion in these locations.	An increase in the width of the estuary will increase tidal		
	Maintaining the current defence line would fix the channel	prism, downstream flows and the potential for erosion in		
	position, restricting natural channel processes.	confined areas, e.g. at Sheerness.		
	The economic assets and infrastructure along the	Large scale retreat downstream, e.g. on the Isle of Grain,		
	frontage and low lying flood risk areas will continue to be	has the potential to increase tidal levels upstream in the		
	protected.	estuary.		
		Release of sediment may potentially reduce erosion rates or		
		increase rates of accretion elsewhere in the estuary.		
		Remaining economic assets and infrastructure along the		
		frontage and low lying flood risk areas will remain protected.		
COLEMOUTH CREEK	TO BEE NESS JETTY (Stoke Marshes)			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Earth embankment, some short sections revetted	Maintenance, improvement /and or replacement of earth	Replacement, improvement (raising) and	
	with stone would remain (> 20 years).	embankments and stone revetments would be required.	maintenance of defences will be required to allow for	
			the combined effects of sea level rise and climate	
			change.	
	The frontage consists of wide tidal mudflats and extensive	It is assumed that intertidal saltmarsh and mudflat evolution	In the Medway sediment supply is predicted to decrease	
	saltmarsh areas seaward of defences.	will continue in the same pattern as in the previous epoch	over this epoch, limiting accretion in the estuary.	
	Over this epoch, these intertidal mudflat and saltmarsh	where it is predicted that net saltmarsh accretion is likely to	As sea levels rise, tidal prism and tidal flows will increase.	

	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	areas are assumed to continue to evolve as at present	continue around Colemouth Creek and around Bee Ness	There is therefore likely to be an increased potential for
	where it is predicted that saltmarsh at Colemouth Creek	Jetty, and net erosion near Middle Stoke village.	coastal squeeze in areas where net erosion is prevalent
	and around Bee Ness Jetty would continue to experience	However, there may be a detrimental impact on	e.g. near to Middle Stoke village.
	net accretion and saltmarsh in the north near Middle	environmentally designated habitats due to the increased	This is likely to result in the loss of environmentally
	Stoke village would continue to experience erosion.	potential for coastal squeeze of intertidal habitats, in known	designated habitat. Any loss of designated habitat may
	Maintaining the current defence line would fix the	areas of erosion (e.g. at the seaward edge of marshes and	need to be compensated for elsewhere.
	shoreline position at the level of Mean High Water	near Middle stoke village) as sea levels rise.	Maintaining the current defence line would fix the
	Springs.	Any loss of designated habitat may need to be	shoreline position.
	The infrastructure, residential assets at Middle Stoke and	compensated for elsewhere.	Infrastructure, residential assets at Middle Stoke and
	freshwater habitats behind defences along the frontage	Maintaining the current defence line would fix the shoreline	freshwater habitats and low lying flood risk areas will
	and low lying flood risk areas will remain protected.	position.	continue to be protected.
		Infrastructure, residential assets at Middle Stoke and	
		freshwater habitats and low lying flood risk areas will remain	
		protected throughout this epoch.	
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Reclaim land between the new and		allow for sea level rise.
	former defences.		
	Advancing the defence line will narrow the channel in an	Any new habitat landward of defences will become more	In the Medway sediment supply is predicted to decrease
	area that is wider than the ideal form at this location. This	established.	over this epoch, limiting accretion in the estuary.
	is likely to reduce the tidal prism, potentially reduce	With sea level rise, tidal prism within the estuary will	Any new habitat will be established landward of the
	downstream erosion and move the estuary toward a more	increase, in turn potentially increasing flow speeds in the	defences.
	ideal form.	main channel.	Increased tidal prism, tidal flows and erosion of intertidal
	There is potential to create new freshwater and terrestrial	Advancing the defence line seawards will move defences	areas are likely to be exacerbated as sea levels rise.

		-	
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	habitat landward of the defences, or use the land for	towards the main Medway channel. The reduced width of	The channel will be fixed in position, at MHWS, restricting
	development. This however would develop over existing	foreshore in front of these defences is likely therefore to be	natural estuary processes.
	environmentally designated habitats. The intertidal	subject to increased erosion and potential coastal squeeze	Advanced defence line will provide flood and erosion
	habitats lost in this unit are very important to the whole	as sea levels rise.	protection to infrastructure, residential assets and
	designated site due to the local accretion rates	The channel will be fixed in position, at MHWS, restricting	freshwater habitats.
	counteracting coastal squeeze effects over the whole site.	natural estuary processes.	
	Loss of designated habitat may need to be compensated	Advanced defence lines will continue to provide flood and	
	for elsewhere.	erosion protection to infrastructure, residential assets and	
	The channel will be fixed in position, restricting natural	freshwater habitats.	
	estuary processes.		
	Advancing defence lines will provide flood and erosion		
	protection to infrastructure, residential assets at Middle		
	Stoke and freshwater habitats.		
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement
		epoch.	during this epoch.
	Removal or relocation of infrastructure may be required	Habitat formed in realigned areas will become more	In the Medway sediment supply is predicted to decrease
	dependant on the chosen line of retreat.	established throughout this epoch and new channels will	over this epoch, limiting accretion in the estuary.
	Inundation of low lying land seaward of the new defences	become more defined.	Increases in tidal prism, flow speeds and erosion in
	would encourage the creation of new intertidal habitat in	Downstream flow speeds are expected to increase as the	confined areas and locations downstream, due to sea
	the realigned areas.	tidal prism increases due to an increased intertidal area and	level rise, and a wide estuary mouth are likely to be
	Flows into and out of these new intertidal areas are likely	as sea levels rise. Foreshore erosion therefore, is likely to	exacerbated during this epoch. Consequently, new
	to create new channels or result in the expansion of the	be exacerbated towards the estuary mouth at Sheerness	channels and creeks formed in realigned areas are likely

	Predicted Change For	
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
existing creek network over time.	and at the mouth of Yantlet Creek, which is also likely to	to undergo erosion and expansion.
Realignment of defences at Colemouth Creek could	undergo channel expansion.	New habitats will be established in realigned areas.
potentially create a second estuary channel and mouth	Economic and residential assets, infrastructure and low	Economic and residential assets, infrastructure and low
(dependant on the policy for the open coast), by	lying flood risk areas will remain protected.	lying flood risk areas will remain protected.
connecting Yantlet Creek to the open coast. This would		
have the potential to increase the width of the estuary at		
the mouth, which is narrower than the ideal form at		
present. Creation of a second estuary mouth would		
therefore move the estuary towards a more ideal form.		
Large scale retreat downstream, e.g. at Stoke Saltings,		
has the potential to increase tidal levels upstream in the		
estuary.		
In the north east of the frontage, loss of designated		
freshwater habitats will result. Loss of designated habitat		
may need to be compensated for elsewhere. Retreat		
along the remaining frontage, between Middle Stoke and		
Bee Ness Jetty will potentially increase estuary width		
further (at this location the estuary is already wider than		
the ideal form) moving the estuary away from its ideal		
form.		
Resulting increases in tidal prism are likely to increase		
tidal flows and the potential for increased erosion in		
confined areas immediately downstream (i.e. at the		
mouth of the Medway, and the second mouth at Yantlet		
Creek).		

		Predicted Change For	
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Economic and residential assets, infrastructure and low		
	lying flood risk areas will remain protected.		
Scenario 4	No Active Intervention	No Active Intervention	No Active Intervention
	The earth embankment with some short sections	Earth embankment and stone revetment is expected to	No defences.
	revetted with stone (>20 years) would remain.	fail within this period (>20 years).	
	Over this epoch, the intertidal mudflat and saltmarsh	Failure of defences will be haphazard during this epoch,	In the Medway sediment supply is predicted to decrease
	areas are assumed to continue to evolve as at present	resulting in uncontrolled periodic flooding of low lying areas	over this epoch, limiting accretion in the estuary.
	where it is predicted that saltmarsh at Colemouth Creek	and to infrastructure.	With predicted increases in sea level rise, and eventual
	and around Bee Ness Jetty would continue to experience	In low lying areas, sporadic defence failure will create new	breaching of infrastructure, further inundation of low lying
	net accretion and saltmarsh in the north near Middle	transitional and intertidal habitats within the realigned areas.	areas is anticipated.
	Stoke village would continue to experience erosion.	Flows into and out of these new intertidal areas are likely to	A breach at Colemouth Creek, may potentially create a
	The infrastructure, residential assets at Middle Stoke and	create new channels or result in the expansion of the	second estuary channel and mouth, by connecting
	freshwater habitats behind defences along the frontage	existing creek network.	Yantlet Creek to the open coast (dependant on policy for
	and low lying flood risk areas will remain protected.	Eventual complete failure of defences could result in the	the open coast). This connection would have the potential
		estuary channel increasing in size as the shoreline realigns	to increase the width of the estuary at the mouth, which is
		towards the infrastructure. This will potentially move the	narrower than the ideal form at present. A second estuary
		estuary away from the ideal form in an already wide section	mouth would move the estuary towards a more ideal
		of the estuary.	form.
		Large scale inundation downstream, e.g. at Stoke Saltings,	The estuary system would benefit by becoming a more
		has the potential to increase tidal levels upstream in the	natural system through this epoch. New habitats and
		estuary.	creeks would become more established.
		Release of sediment may potentially reduce erosion rates or	Tidal prism and tidal flows are likely to increase as the

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
		increase rates of accretion elsewhere in the estuary.	Medway widens further and sea levels rise, resulting in	
		Tidal prism and tidal flows are likely to increase as the	the potential for downstream erosion, e.g. at the mouth of	
		Medway widens and sea levels rise, resulting in the	the Medway, and the second mouth at Yantlet Creek.	
		potential for downstream erosion, e.g. at the mouth of the	Release of sediment may potentially reduce erosion rates	
		Medway.	or increase rates of accretion elsewhere in the estuary.	
		Over the long term, the loss of designated freshwater		
		habitats will potentially result in the north east of the		
		frontage. Loss of designated habitat may need to be		
		compensated for elsewhere.		
BEE NESS JETTY TO HOO MARINA				
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Earth embankment (some sections revetted with	Maintenance and improvement of all defences along	Replacement, improvement (raising) and	
	rock) around Kingsnorth Power Station would remain	this frontage would be required during this epoch.	maintenance of defences will be required to allow for	
	(>20 years). Earth embankments along undeveloped		the combined effects of sea level rise and climate	
	sections of frontage will remain (>20 years). Concrete		change.	
	seawall, steel sheet piling and rock revetments along			
	the Hoo Marina frontage would remain (>20 years).			
	This section of the estuary comprises of wide tidal	It is assumed that intertidal saltmarsh and mudflat evolution	In the Medway sediment supply is predicted to decrease	
	mudflats and areas of saltmarsh in sheltered locations.	will continue in the same pattern as in the previous epoch	over this epoch, limiting accretion in the estuary.	
	Over this epoch, the saltmarsh areas in front of defences	where it is predicted that net saltmarsh erosion is likely to	As sea levels rise, tidal prism and tidal flows are predicted	
	are likely to continue to respond as at present; Oakham	continue around Oakham Marsh, along Hoo St Werburg	to increase. There will therefore be increased potential for	
	Marsh (connected to the mainland by Oakham Ness	frontage and on the eastern tip of Hoo Saltmarsh Island.	coastal squeeze in areas where net erosion is prevalent	
	Jetty) would continue to suffer marsh erosion,	This erosion and potential for coastal squeeze will	and in constrained sections of the channel e.g. around	
	consequently defences on this island will be increasingly	potentially be exacerbated with sea level rise and may have	Oakham Marsh, along Hoo St Werburg frontage and on	
	subject to erosion.	a detrimental effect on environmentally designated habitats.	the eastern tip of Hoo Saltmarsh Island.	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Saltmarsh along the Hoo St Werburg frontage and at the	Loss of designated habitat may need to be compensated for	This is likely to result in the loss of environmentally	
	eastern tip of Hoo Saltmarsh Island are expected to	elsewhere.	designated habitat. Loss of designated habitat may need	
	continue to suffer erosion.	Maintaining the current defence line would fix the channel	to be compensated for elsewhere.	
	Mudflat erosion may also be experienced in the narrow	position, restricting natural channel processes.	Maintaining the current defence line would fix the channel	
	channel between Hoo Marina and Hoo Saltmarsh Island.	Economic, residential and commercial assets, and	position, restricting natural channel processes.	
	Defences would therefore be subject to increased erosion	freshwater habitats behind defences along the frontage, as	Economic, residential and commercial assets, and	
	and undermining at this location during this epoch.	well as low lying flood risk areas will remain protected.	freshwater habitats behind defences along the frontage,	
	Maintaining the current defence line would fix the channel		as well as low lying flood risk areas will remain protected.	
	position, restricting natural channel processes.			
	Economic, residential and commercial assets, and			
	freshwater habitats behind defences along the frontage,			
	as well as low lying flood risk areas will remain protected.			
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Reclaim land between the new and		allow for sea level rise.	
	former defences.			
	Advancing the defence line will narrow the channel in an	Any new habitat landward of defences will become more	In the Medway sediment supply is predicted to decrease	
	area that is wider than the ideal form at this location. This	established.	over this epoch, limiting accretion in the estuary.	
	will potentially reduce the tidal prism and downstream	With sea level rise, tidal prism within the estuary is likely to	New habitat will be established landward of the defences.	
	erosion and move the estuary toward a more ideal form.	increase, in turn increasing flow speeds in the main channel.	Tidal prism, tidal flows and erosion of intertidal areas are	
	There is potential to create new habitat landward of the	Advancing the defence line seawards will move defences	expected to increase as sea levels rise.	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	defences or use land for development. This however	towards the main Medway channel. The reduced width of	The channel will be fixed in position, restricting natural	
	would develop over existing environmentally designated	foreshore in front of these defences is likely therefore to be	estuary processes.	
	habitats. Loss of designated habitat may need to be	subject to increased erosion and potential coastal squeeze	Advancing defence lines will provide flood and erosion	
	compensated for elsewhere.	as sea levels rise.	protection to economic, residential and commercial	
	The channel will be fixed in position, restricting natural	The channel will be fixed in position, restricting natural	assets, freshwater habitats and low lying land.	
	estuary processes.	estuary processes.		
	Advancing defence lines will provide flood and erosion	Advancing defence lines will provide flood and erosion		
	protection to economic, residential and commercial	protection to economic, residential and commercial assets,		
	assets, freshwater habitats and low lying land.	freshwater habitats and low lying land		
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Removal or relocation of infrastructure and economic	New habitat in realigned areas will become more	In the Medway sediment supply is predicted to decrease	
	assets may be required dependant on the chosen line of	established throughout this epoch and new channels will	over this epoch, limiting accretion in the estuary.	
	retreat.	become more defined.	Increases in tidal prism, flow speeds and erosion in	
	Inundation of low lying land seaward of the new defences	Downstream flow speeds are expected to increase as the	confined areas and locations downstream, due to sea	
	would encourage the creation of new intertidal habitat in	tidal prism increases due to a larger intertidal area and as	level rise, and a wide estuary mouth are likely to be	
	the realigned areas.	sea levels rise. Foreshore erosion will potentially therefore	exacerbated during this epoch.	
	Flows into and out of these new intertidal areas are likely	be exacerbated towards the estuary mouth at Sheerness	New habitats will be established.	
	to create new channels or result in the expansion of the	and the Isle of Grain.	Economic, residential and commercial assets and low	
	existing creek network over time.	Economic, residential and commercial assets and low lying	lying flood risk areas will remain protected.	
	Release of sediment may potentially reduce erosion rates	flood risk areas will remain protected.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	or increase rates of accretion elsewhere in the estuary.		
	Realignment of defences would have the potential to		
	increase the width of the estuary at an already wide		
	location, which would move the estuary further away from		
	the ideal form.		
	Resulting increases in tidal prism are likely to increase		
	tidal flows and the potential for increased erosion in		
	confined areas downstream (i.e. at the mouth of the		
	Medway).		
	Loss of designated freshwater habitats, west of		
	Kingsnorth Power Station, may need to be compensated		
	for elsewhere.		
	Economic, residential and commercial assets and low		
	lying flood risk areas will remain protected.		
Scenario 4	Hold the Line	No Active Intervention	No Active Intervention
	Earth embankment (some sections revetted with	The earth embankments, rock revetments, steel sheet	No defences.
	rock) around Kingsnorth Power Station would remain	piling and concrete seawalls (>20 years) are expected to	
	(>20 years). Earth embankments along undeveloped	fail within this period.	
	sections of frontage will remain (>20 years). Concrete		
	seawall, steel sheet piling and rock revetments along		
	the Hoo Marina frontage would remain (>20 years).		
	This section of the estuary comprises of wide tidal	Failure of defences will be haphazard during this epoch,	In the Medway sediment supply is predicted to decrease
	mudflats and areas of saltmarsh in sheltered locations.	resulting in uncontrolled periodic flooding of low lying areas	over this epoch, limiting accretion in the estuary.
	Over this epoch, the saltmarsh areas in front of defences	and to economic, residential and commercial assets.	The estuary would move further away from its ideal form
	are likely to continue to respond as at present; Oakham	In low lying areas, sporadic defence failure would create	as defences fail. This, along with sea level rise, will

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Marsh (connected to the mainland by Oakham Ness	new transitional and intertidal habitats within the realigned	increase the tidal prism and the potential for downstream
	Jetty) would continue to suffer marsh erosion,	areas. Flows into and out of these new intertidal areas are	erosion in the estuary. Saltmarsh erosion trends as per
	consequently defences on this island will be increasingly	likely to create new channels or result in the expansion of	the previous epochs, will be exacerbated.
	subject to erosion.	the existing creek network.	Uncontrolled loss of economic, commercial and
	Saltmarsh along the Hoo St Werburg frontage and at the	Eventual complete failure of defences is likely to result in the	residential assets will occur.
	eastern tip of Hoo Saltmarsh Island are expected to	estuary channel increasing in size as the shoreline realigns.	Higher land on Hoo Salt Marsh Island would begin to
	continue to suffer erosion.	This will move the estuary further away from the ideal form	erode (approximately <0.5m/yr).
	Mudflat erosion may also be experienced in the narrow	in an already wide section of the estuary.	Release of sediment may potentially reduce erosion rates
	channel between Hoo Marina and Hoo Saltmarsh Island.	Release of sediment may potentially reduce erosion rates or	or increase rates of accretion elsewhere in the estuary.
	Defences would be subject to increased erosion and	increase rates of accretion elsewhere in the estuary.	The estuary system would become a more natural system
	undermining at this location during this epoch.	Tidal prism and tidal flows are likely to increase as the	through this epoch. New habitats and creeks would
	Maintaining the current defence line would fix the channel	Medway widens and sea levels rise, resulting in the	become more established.
	position, restricting natural channel processes.	potential for downstream erosion, e.g. at the mouth of the	
	Economic, residential and commercial assets, and	Medway. Saltmarsh erosion trends as per the previous	
	freshwater habitats behind defences along the frontage,	epoch will be expected to continue.	
	as well as low lying flood risk areas will remain protected.	Over the long term, loss of designated freshwater habitats	
		west of Kingsnorth Power Station may need to be	
		compensated for elsewhere.	
HOO MARINA TO LOV	VER UPNOR (Cockham Wood)		
Scenario 1	No Active Intervention	No Active Intervention	No Active Intervention
	Vertical concrete and masonry seawalls, sheet piling	Defences are expected to fail within this period.	No defences.
	and rock revetments would remain (>20 years).		
	The Cockham Wood frontage comprises a narrow natural	The shingle beach at Cockham Wood would be expected to	In the Medway sediment supply is predicted to decrease
	shingle beach fronted by narrow tidal mudflats and	narrow further under coastal squeeze as sea levels rise.	over this epoch, limiting accretion in the estuary.
	backed by clay cliffs.	Ultimately this is likely to result in the complete loss of this	Reactivated cliffs at Cockham Wood are assumed to

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	As sea levels rise, the shingle beach is likely to	feature. Consequently clay cliffs behind the beach may be	continue to erode.
	experience coastal squeeze as the hinterland cannot	reactivated and suffer erosion (approximately 0.5m/yr).	Release of sediment may potentially reduce erosion rates
	accommodate roll back. Historic map analysis indicates a	Release of sediment may potentially reduce erosion rates or	or increase rates of accretion elsewhere in the estuary.
	beach erosion rate of approximately 0.4m/yr.	increase rates of accretion elsewhere in the estuary.	Mudflat erosion trends as per the previous epochs, are
	Loss of designated habitat may need to be compensated	Intertidal mudflat erosion/accretion trends are assumed to	likely to be exacerbated due to an increased tidal prism
	for elsewhere.	continue as per the previous epoch, where frontages in	as sea levels rise.
	Intertidal mudflat areas in front of remaining defences are	confined areas around Lower Upnor would continue to	The estuary at this location would become a more natural
	likely to continue to respond as at present, frontages	undergo mudflat erosion.	system through this epoch.
	around Lower Upnor would expect to continue to undergo	No active intervention would not result in the estuary	
	mudflat erosion due to the confined nature of the channel	channel increasing significantly in size due to a high	
	at this location.	hinterland along the majority of this frontage.	
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Residential and commercial assets behind defences at		
	Lower Upnor will remain protected.		
Scenario 2 (Heritage	Hold the Line (Heritage features only)	Hold the Line (Heritage features only)	Hold the Line (Heritage features only)
Feature locations	New defences will need to be constructed around the	Defences will require maintenance and improvement	Defences will require maintenance, improvement and
only)	heritage feature.	over this epoch.	replacement over this epoch.
	The Cockham Wood frontage comprises a narrow natural	The shingle beach at Cockham Wood would be expected to	In the Medway sediment supply is predicted to decrease
	shingle beach fronted by narrow tidal mudflats and	narrow further under coastal squeeze as sea levels rise.	over this epoch, limiting accretion in the estuary.
	backed by clay cliffs.	Ultimately this is likely to result in the complete loss of this	Reactivated cliffs (where no defences) at Cockham Wood
	New defences will protect the heritage assets at	feature. Consequently clay cliffs behind the beach (where	are expected to continue to erode. Undermining of the
	Cockham Wood.	no defences exist) may be reactivated and suffer erosion	adjacent defences is likely to be ongoing; this will be
	As sea levels rise, the shingle beach is likely to	(approximately 0.5m/yr).	exacerbated with sea level rise.
	experience coastal squeeze adjacent to the defences as	Loss of designated habitat may need to be compensated for	Mudflat erosion trends as per the previous epoch, are

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	the hinterland cannot accommodate roll back. Historic	elsewhere.	likely to be exacerbated due to an increased tidal prism	
	map analysis indicates a beach erosion rate of	Coastal squeeze of the beach will undermine the adjacent	as sea levels rise.	
	approximately 0.4m/yr.	defences. Consequently these defences may require	Defences will continue to protect the heritage assets at	
	Intertidal mudflat areas in front of the new defences are	enlarging/extending to maintain the required standard of	Cockham Wood.	
	likely to undergo mudflat erosion due to coastal squeeze	protection to protect the heritage feature. This may become		
	as sea levels rise. This may begin to undermine the	increasingly unsustainable over time.		
	defences over time, requiring increased maintenance and	It is assumed that tidal mudflats in front of the defences will		
	improvement works.	narrow further with coastal squeeze as sea levels rise.		
		Defences will continue to protect the heritage assets at		
		Cockham Wood.		
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Limited opportunities exist for managed retreat along this	The shingle beach at Cockham Wood would be expected to	In the Medway sediment supply is predicted to decrease	
	frontage due to high land backing the shoreline.	narrow further under coastal squeeze as sea levels rise.	over this epoch, limiting accretion in the estuary.	
	There is no requirement to manage cliff retreat as there	Ultimately this is likely to result in the complete loss of this	Reactivated cliffs at Cockham Wood are expected to	
	are no assets at risk on the cliffs.	feature. Consequently clay cliffs behind the beach may be	continue to erode.	
	As sea levels rise, the shingle beach at Cockham Wood	reactivated and suffer erosion (approximately 0.5m/yr).	Release of sediment may potentially reduce erosion rates	
	is expected to experience coastal squeeze as the	There is no requirement to manage cliff retreat as there are	or increase rates of accretion elsewhere in the estuary.	
	hinterland cannot accommodate roll back. Historic map	no assets at risk on the cliffs.		
	analysis indicates a beach erosion rate of approximately	Release of sediment may potentially reduce erosion rates or		
	0.4m/yr.	increase rates of accretion elsewhere in the estuary.		
	Release of sediment may potentially reduce erosion rates			

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	or increase rates of accretion elsewhere in the estuary.			
	Loss of designated habitat may need to be compensated			
	for elsewhere.			
LOWER UPNOR TO M	LOWER UPNOR TO MEDWAY (M2) BRIDGE			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Between Lower and Upper Upnor concrete/masonry	All defences would require increased maintenance,	To allow for sea level rise and the effects of climate	
	walls, steel sheet piling and rock revetments will	improvement and replacement works during this epoch.	change, defences would require more frequent levels	
	remain (>20 years). Earth embankments and rock		of maintenance, improvement and replacement.	
	revetments at Whitewall Creek will remain (>20			
	years). Steel sheet piled walls between Whiltwall			
	Creek and Chatham Ness will remain (>20 years).			
	Timber and concrete walls and earth embankments			
	between Rochester Bridge and Medway Bridge would			
	require replacement within this period (<20 years).			
	In this location the estuary channel takes on a fluvial form	Sea level rise and the potential for increased fluvial flows	In the Medway sediment supply is predicted to decrease	
	with an almost constant width and limited area of intertidal	with climate change are likely to increase water levels and	over this epoch, limiting accretion in the estuary.	
	flats. Some saltmarsh patches are located in sheltered	pressure on existing defences. With sea level rise, tidal	With sea level rise, tidal prism within the estuaryis	
	embayments along this frontage.	prism will increase and the constrained channel may	expected to increase, resulting in increased flows through	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Over this epoch, the intertidal mudflat and saltmarsh	become subject to increased erosion. This may also	the narrow channel.
	areas in front of defences are likely to continue to	potentially lead to an increased likelihood of overtopping	Mudflat erosion is likely to continue in these confined
	respond as at present and existing channels and small	and scour of footings.	areas. In these locations and in areas where there is no
	pockets of saltmarsh would continue to be stable.	Such changes are likely to lead to the requirement for	foreshore, defences could become increasingly
	Maintaining the current defence line would fix the channel	increased defence maintenance and improvement works,	susceptible to toe erosion; therefore additional defence
	position, restricting natural channel processes.	which in turn may also increase the potential for erosion of	protection will be required.
	Will protect the economic assets of the frontage and low	the limited intertidal areas along this frontage.	Maintaining the current defence line would fix the channel
	lying flood risk areas from flooding and erosion.	Maintaining the current defence line would fix the channel	position, restricting natural channel processes.
		position, restricting natural channel processes.	Will protect the economic assets of the frontage and low
		Will protect the economic assets of the frontage and low	lying flood risk areas from flooding and erosion.
		lying flood risk areas from flooding and erosion.	
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Infill and reclaim land between the new		allow for sea level rise.
	and former defences.		
	Advancing the defence line will narrow the channel further	Flow speeds through the narrow channel are likely to	In the Medway sediment supply is predicted to decrease
	in an already constrained location, moving the estuary	increase and erosion of intertidal areas and defences will be	over this epoch, limiting accretion in the estuary.
	away from its ideal form. Consequently flow speeds	enhanced. This may also potentially lead to an increased	With sea level rise, tidal prism within the estuary is
	through the constriction are likely to increase and erosion	likelihood of overtopping and scour of footings.	predicted to increase.
	of present intertidal areas enhanced. Flood risk may be	Safe navigation of maritime traffic may become	Fast tidal flows resulting from the additional narrowing of
	increased due to reduced channel capacity.	compromised due to the increased flow speeds.	the channel by advancing the defence line may therefore
	There is potential to create new habitat landward of the	The channel will remain fixed in position, restricting natural	be exacerbated further. Mudflat erosion is likely to be
	defences or use land for development. Loss of intertidal	estuary processes.	amplified in these confined areas. Resulting in complete
	habitat will result from seaward movement of defences.	Flood and erosion protection to economic, commercial and	foreshore loss in places and potential deepening of the
	Loss of designated habitat may need to be compensated	residential assets and infrastructure will be maintained.	channel.

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	for elsewhere.		Consequently defences may become increasingly	
	The channel will be fixed in position, restricting natural		susceptible to undermining in these locations.	
	estuary processes.		Safe navigation of maritime traffic may be compromised	
	Flood and erosion protection to economic, commercial		further.	
	and residential assets and infrastructure will be		The channel will continue to be fixed in position,	
	maintained.		restricting natural estuary processes.	
			Flood and erosion protection to economic, commercial	
			and residential assets and infrastructure will be	
_			maintained.	
Scenario 3	Managed Retreat (Whitewall Creek)	Managed Retreat (Whitewall Creek)	Managed Retreat (Whitewall Creek)	
(Whitewall Creek)	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Managed retreat opportunities are limited as the	New habitat in realigned areas is likely to become more	In the Medway sediment supply is predicted to decrease	
	Whitewall Creek area is confined by important	established throughout this epoch and new channels will	over this epoch, limiting accretion in the estuary.	
	infrastructure on both sides of the creek. The new	become more defined.	Habitats in realigned areas and new channels will be	
	defence line constructed will be required to provide an	Downstream flow speeds are expected to increase as the	more established.	
	adequate standard of protection to protect the important	tidal prism increases as sea levels rise. Foreshore erosion	Increased tidal prism and associated intertidal erosion,	
	infrastructure (Medway Tunnel and A289 road).	will therefore be exacerbated in confined areas.	downstream and in confined areas, are likely to be	
	Inundation of the low lying area seaward of a retreated	Will protect the economic assets of the frontage and	exacerbated during this epoch with sea level rise and	
	defence line would encourage the creation of new	infrastructure from flooding and erosion.	climate change.	
	intertidal habitat in the realigned areas.		Will protect the economic assets of the frontage and	
	Loss of designated habitat may need to be compensated		infrastructure from flooding and erosion.	
	for elsewhere.			
	Flows into and out of these intertidal areas are likely to			

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
create new channels or result in the expansion of the		
existing creek network over time.		
Release of sediment may potentially reduce erosion rates		
or increase rates of accretion elsewhere in the estuary.		
Retreat is likely to result in localised increased flows in		
the creek mouth as well as increasing tidal prism and		
downstream flow speeds.		
Will protect the economic assets of the frontage and		
infrastructure from flooding and erosion.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
MEDWAY (M2) BRIDG	E TO NORTH HALLING (WEST BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Natural channel banks, flood embankments, concrete	Defences would need to be raised, improved and	All defences would require increased levels of
	and timber walls (<5 years) would require	replaced.	maintenance, improvement and replacement at
	improvements, maintenance, and/or replacement		varying times throughout this epoch due to the
	within the first 5 years of this period and throughout		combined effects of sea levels rise and climate
	this epoch.		change.
	In this location the channel is fluvial in form, and narrows	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary will
	in width as it moves inland. The foreshore is	with climate change are likely to increase water levels and	increase, resulting in faster flows through the narrow
	characterised by narrow intertidal mudflat.	pressure on existing defences, potentially leading to an	channel. The constrained channel will potentially
	Over this epoch, the intertidal areas in front of defences	increased likelihood of overtopping and scour of footings.	therefore become subject to increased erosion in
	are likely to continue to respond as at present where	This is likely to lead to the requirement for increased	confined areas (along the whole of this frontage) and on

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	channels are assumed to be stable.	maintenance, improvement works and eventual replacement	the outside of meanders (e.g. North Halling and north
	The position of the channel would remain fixed due to the	of current defences with larger structures.	Cuxton).
	maintenance of the current defence line; consequently,	More substantial defences would result in increased erosion	Mudflat erosion would also continue in these confined
	natural channel meandering processes would be	of intertidal areas and deepening of the channel during	areas. In these locations and in areas where there is no
	restricted.	these epochs.	foreshore, defences would become increasingly
	Will protect the infrastructure and residential assets along	The position of the channel would remain fixed due to the	susceptible to toe erosion; therefore additional defence
	the frontage and backing flood risk areas.	maintenance of the current defence line; consequently,	protection may be required.
		natural channel meandering processes would be restricted.	Maintaining the current defence line would fix the channel
		Will protect the infrastructure and residential assets along	position, restricting natural channel processes.
		the frontage and backing flood risk areas.	Will protect the infrastructure and residential assets along
			the frontage and backing flood risk areas.
Scenario 2 (where	Managed Retreat	Managed Retreat	Managed Retreat
no railway – under	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
the Medway Bridge)	of the present defences to protect infrastructure.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement
		epoch.	during this epoch.
	Limited opportunities exist for managed retreat along this	New habitat in realigned areas will become more	Increases in tidal prism, flow speeds and erosion in
	frontage due to high land backing the shoreline and the	established throughout this epoch.	confined areas and locations downstream, due to sea
	railway line.	As sea levels rise tidal prism is expected to increase and	level rise, are likely to be exacerbated during this epoch.
	The frontage spanning from under the Medway Bridge to	consequently downstream flow speeds will also increase.	New habitats will be established.
	just north of Cuxton would present the only location	Foreshore erosion is likely therefore to be exacerbated in	Will allow more room for channel meandering and
	where managed retreat would be possible.	constrained channel reaches (e.g. along the whole frontage)	accommodation of flood waters.
	Inundation of this small area of low lying land would	and on the outside of meanders (North Halling and north of	Will continue to protect the infrastructure and residential
	encourage the creation of new intertidal habitat in the	Cuxton).	assets along the frontage and backing flood risk areas.
	realigned area. This would develop over existing habitats.	Will allow more room for channel meandering and	
	Loss of designated habitat may need to be compensated	accommodation of flood waters.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	for elsewhere.	Will continue to protect the infrastructure and residential	
	A small amount of sediment will be released back into the	assets along the frontage and backing flood risk areas.	
	estuary system, which may potentially reduce erosion		
	rates or increase rates of accretion elsewhere in the		
	estuary. Realignment would result in a small increase in		
	estuary width which would increase tidal prism and flows		
	immediately downstream of the realignment.		
	Over this epoch, the intertidal areas in front of defences		
	are likely to continue to respond as at present where they		
	are assumed to be stable.		
	Will allow more room for channel meandering and		
	accommodation of flood waters.		
	Will continue to protect the infrastructure and residential		
	assets along the frontage and backing flood risk areas.		
Scenario 3 (where	No Active Intervention	No Active Intervention	No Active Intervention
no railway– under	Flood embankments, concrete and timber walls (<5	No defences.	No defences.
the Medway Bridge)	years) would be expected to fail during the first half		
	of this period.		
	Failure of defences will be haphazard during this epoch,	Eventual complete failure of defences is likely to result in the	With predicted increases in sea level rise, and eventual
	resulting in uncontrolled periodic flooding of low lying	estuary channel increasing in size slightly as the shoreline	breaching of infrastructure, further inundation of low lying
	areas and to infrastructure.	realigns towards the infrastructure.	areas is anticipated.
	In low lying areas, sporadic defence failure will create	Failure of defences would result in a small increase in	Release of sediment may potentially reduce erosion rates
	new transitional and intertidal habitats within the realigned	estuary width which is likely to increase tidal prism and flows	or increase rates of accretion elsewhere in the estuary.
	areas. Flows into and out of these new intertidal areas	immediately downstream of defence failure.	Habitats will continue to become more established.
	are likely to create new channels.	Release of sediment may potentially reduce erosion rates or	Loss of designated habitat may need to be compensated

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Loss of designated habitat may need to be compensated	increase rates of accretion elsewhere in the estuary.	for elsewhere.
	for elsewhere.	New habitat in realigned areas will become more	Tidal prism and tidal flows are expected to increase with
	Release of sediment may potentially reduce erosion rates	established at the expense of existing habitats.	sea levels rise, resulting in the potential for downstream
	or increase rates of accretion elsewhere in the estuary.	Loss of designated habitat may need to be compensated for	erosion and increased erosion on the outside of
	Failure of defences would result in a small increase in	elsewhere.	meanders (north of Cuxton) and in confined sections of
	estuary width which is likely to increase tidal prism and	Tidal prism and tidal flows will increase with sea level rise,	channel (along this whole section).
	flows immediately downstream of defence failure.	resulting in the potential for downstream erosion and	Will allow more room for channel meandering and
		increased erosion on the outside of meanders (north of	accommodation of flood waters.
		Cuxton) and in confined sections of channel (along this	
		whole section).	
		Will allow more room for channel meandering and	
		accommodation of flood waters.	
Scenario 4	Hold the Line	Managed Retreat	Managed Retreat
	Natural channel banks, flood embankments, concrete	New defences will need to be constructed landwards of	New landward defences would require maintenance,
	and timber walls (<5 years) would require	the present defences.	improvement and / or eventual replacement during
	improvements, maintenance, and/or replacement		this epoch.
	within the first 5 years of this period and throughout		
	this epoch.		
	Over this epoch, the intertidal areas in front of defences	Limited opportunities exist for managed retreat along this	Habitat in realigned areas will become more established
	are likely to continue to respond as at present where	frontage due to high land backing the shoreline.	throughout this epoch.
	channels are assumed to be stable.	The frontage spanning from under the Medway Bridge to	As sea levels rise tidal prism is expected to increase and
	The position of the channel would remain fixed due to the	just north of Cuxton would present the only location where	consequently downstream flow speeds will also increase.
	maintenance of the current defence line; consequently,	managed retreat could be possible.	Foreshore erosion will therefore potentially be
	natural channel meandering processes would be	Managed retreat north of Cuxton would require removal or	exacerbated in constrained channel reaches (e.g. along
	restricted.	relocation of major infrastructure and residential and	the whole frontage) and on the outside of meanders

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Will protect the infrastructure and residential assets along	commercial assets.	(North Halling and north of Cuxton).
	the frontage and backing flood risk areas.	Inundation of these small areas of low lying land would	Will allow more room for channel meandering and
		encourage the creation of new intertidal habitat in the	accommodation of flood waters.
		realigned areas, this would develop over existing habitats.	Some residential assets and low lying flood risk areas will
		Loss of designated habitat may need to be compensated for	remain protected.
		elsewhere.	
		A small amount of sediment will be released back into the	
		estuary system, which may potentially reduce erosion rates	
		or increase rates of accretion elsewhere in the estuary.	
		Realignment would result in a small increase in estuary	
		width which would increase tidal prism and flows	
		immediately downstream of the realignment.	
		Over this epoch, the intertidal areas in front of defences are	
		likely to continue to respond as at present where they are	
		assumed to be stable.	
		Will allow more room for channel meandering and	
		accommodation of flood waters.	
		Some residential assets will remain protected.	
Scenario 5	Hold the Line	No Active Intervention	No Active Intervention
	Natural channel banks, flood embankments, concrete	Flood embankments, concrete and timber walls (<5	No defences.
	and timber walls (<5 years) would require	years) would expect to fail during the first half of this	
	improvements, maintenance, and/or replacement	period.	
	within the first 5 years of this period and throughout		
	this epoch.		

Predicted Change For		
 Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Over this epoch, the intertidal areas in front of defences	Failure of defences will be haphazard during this epoch,	Will result in the loss of infrastructure and residential and
are likely to continue to respond as at present where	resulting in uncontrolled periodic flooding of low lying areas	commercial assets.
channels are assumed to be stable.	and to major infrastructure, residential and commercial	Eventual complete failure of defences would result in the
The position of the channel would remain fixed due to the	assets. Potential for large increases in estuary width is	estuary channel increasing in size as the shoreline
maintenance of the current defence line; consequently,	limited by high land.	realigns towards the infrastructure. This is likely to result
natural channel meandering processes would be	In low lying areas, sporadic defence failure will create new	in an increased tidal prism and flows immediately
restricted.	transitional and intertidal habitats within the realigned areas	downstream of the realignment.
Will protect the infrastructure and residential assets along	which would develop over existing habitats. Loss of	Release of sediment may potentially reduce erosion rates
the frontage and backing flood risk areas.	designated habitat may need to be compensated for	or increase rates of accretion elsewhere in the estuary.
	elsewhere.	Natural channel meandering processes would be initiated
	Loss of designated habitat may need to be compensated for	allowing a more natural system to function.
	elsewhere.	Inundation of low lying areas will allow more room for
	Flows into and out of these new intertidal areas are likely to	accommodation of flood waters.
	create new channels.	Over the long term habitat in realigned areas will become
	A small amount of sediment will be released back into the	more established throughout this epoch at the expense of
	estuary system, which may potentially reduce erosion rates	existing habitats.
	or increase rates of accretion elsewhere in the estuary.	Loss of designated habitat may need to be compensated
	Failure of defences would result in a small increase in	for elsewhere.
	estuary width which is likely to increase tidal prism and flows	Tidal prism and tidal flows are expected to increase with
	immediately downstream of the realignment.	sea level rise, resulting in the potential for downstream
	Will allow more room for channel meandering and	erosion and increased erosion on the outside of
	accommodation of flood waters.	meanders (north of Cuxton and North Halling) and in
		confined sections of channel (along this whole section).

	Predicted Change For				
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)		
NORTH HALLING TO	NORTH HALLING TO SNODLAND (WEST BANK)				
Scenario 1	Hold the Line	Hold the Line	Hold the Line		
	Concrete walls (>20 years) at Halling would remain.	Concrete walls at Halling would require maintenance,	All defences would require increased levels of		
	Earth embankments (<5 years) between Halling and	improvement and replacement during this epoch.	maintenance, improvement and replacement at		
	Snodland would require maintenance, improvement	Embankments would also need to be raised, improved	varying times throughout this epoch due to the		
	and replacing within the first 5 years of this period.	and replaced.	combined effects of sea levels rise and climate		
			change.		
	In this location, the channel is fluvial in form and narrows	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary is		
	in width upstream.	with climate change are likely to increase water levels and	assumed to increase, resulting in faster flows through the		
	Over this epoch, the intertidal areas in front of defences	pressure on existing defences, potentially leading to an	narrow channel. The constrained channel will therefore		
	are likely to continue to respond as at present where	increased likelihood of overtopping and scour of footings.	become subject to increased erosion in confined locations		
	channels are assumed to be stable.	This is likely to lead to the requirement for increased	(along the whole of this frontage) and on the outside of		
	The position of the channel would remain fixed due to the	maintenance and improvement works. More substantial	meanders (e.g. Halling and Snodland).		
	maintenance of the current defence line, consequently,	defences would result in increased erosion of intertidal	Consequently defences would become increasingly		
	natural channel processes would be restricted.	areas and the deepening of the channel during these	susceptible to toe erosion; therefore additional defence		
	Will protect the residential assets at Halling and	epochs.	protection may be required.		
	Snodland, infrastructure, freshwater marshes and backing	The position of the channel would remain fixed due to the	Maintaining the current defence line would fix the channel		
	flood risk areas.	maintenance of the current defence line, consequently,	position, restricting natural channel processes.		
		natural channel processes would be restricted.	Will protect the residential assets at Halling and		
		Will protect the residential assets at Halling and Snodland,	Snodland, infrastructure freshwater marshes and backing		
		infrastructure, freshwater marshes and backing flood risk	flood risk areas.		
		areas.			

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Scenario 2	Managed Retreat	Managed Retreat	Managed Retreat
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
	of the present defences to protect the residential	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement
	assets at Halling and Snodland.	epoch.	during this epoch.
	Opportunities for retreat along this frontage include north	Habitat in realigned areas is likely to become more	Increases in tidal prism, flow speeds and erosion in
	of Halling (Halling Marshes) and south of Halling	established throughout this epoch and new channels will	confined areas and on outside of meanders, due to sea
	(Holborough Marshes).	become more defined.	level rise are likely to be exacerbated during this epoch.
	Retreated defences would be constructed to protect the	As sea levels rise tidal prism is assumed to increase and	New habitats will be established.
	villages of Halling and Snodland.	consequently downstream flow speeds will also increase,	Will allow more room for channel meandering and
	Inundation of low lying land seaward of the new defences	leading to potential for foreshore erosion to be exacerbated	accommodation of flood waters.
	would encourage the creation of new intertidal habitat in	in constrained channel reaches (e.g. along the whole	Will protect the residential assets at Halling and
	the realigned areas. Existing freshwater habitats would be	frontage) and on the outside of meanders (Halling and	Snodland, infrastructure and backing flood risk areas.
	lost.	Snodland).	
	Loss of designated habitat may need to be compensated	Will allow more room for channel meandering and	
	for elsewhere.	accommodation of flood waters.	
	Flows into and out of these new intertidal areas are likely	Will protect the residential assets at Halling and Snodland,	
	to create new channels or result in the expansion of the	infrastructure and backing flood risk areas.	
	existing creek network over time.		
	A small amount of sediment will be released back into the		
	estuary system, which may potentially reduce erosion		
	rates or increase rates of accretion elsewhere in the		
	estuary. Failure of defences would result in a small		
	increase in estuary width which is likely to increase tidal		
	prism and flows immediately downstream of the		
	realignment.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Will allow more room for channel meandering and		
	accommodation of flood waters.		
	Will protect the residential assets at Halling and		
	Snodland, infrastructure and backing flood risk areas.		
Scenario 3	No Active Intervention	No Active Intervention	No Active Intervention
	Earth embankments (<5 years) would be expected to	Concrete seawalls are expected to fail within this	No defences.
	fail during the first half of this period. Concrete	period.	
	seawalls (>20 years) would remain.		
	Failure of earth embankments will be haphazard during	Failure of concrete walls at Halling and Snodland will be	With predicted increases in sea level rise, further
	this epoch, resulting in uncontrolled periodic flooding of	haphazard during this epoch, resulting in uncontrolled	inundation of low lying areas is anticipated.
	low lying areas, which will threaten infrastructure along	flooding to the villages. All other defences are expected to	Sediment will be released back into the estuary system,
	the frontage and residential assets at Snodland.	have failed by this epoch and secondary defences at Halling	which may potentially reduce erosion rates or increase
	Secondary defences at Halling Marshes will confine	Marshes would also begin to fail.	rates of accretion elsewhere in the estuary.
	flooding in this location.	Eventual complete failure of defences is likely to result in the	Loss of designated habitat may need to be compensated
	Defences at Halling and Snodland will remain throughout	estuary channel increasing in size as the shoreline realigns,	for elsewhere.
	this epoch.	which is likely to increase tidal prism and flows immediately	Habitats in realigned areas will continue to become more
	In low lying areas, at Holborough Marshes and Halling,	downstream of the realignment. Potential for large scale	established. Their establishment will be governed by the
	sporadic defence failure will create new transitional and	inundation is however limited by sections of high land along	rate of sea level rise and the availability of sediment to
	intertidal habitats within the realigned areas which will	most of this frontage.	allow their vertical accretion within the tidal frame.
	develop over existing freshwater habitats. Flows into and	Sediment will be released back into the estuary system,	Tidal prism and tidal flows is assumed to increase with
	out of these new intertidal areas are likely to create new	which may potentially reduce erosion rates or increase rates	sea level rise, resulting in the potential for downstream
	channels and erode defences further.	of accretion elsewhere in the estuary.	erosion and increased erosion on the outside of
	Loss of designated habitat may need to be compensated	Over the long term habitat in realigned areas will become	meanders (Halling and Snodland) and in confined
	for elsewhere.	more established throughout this epoch at the expense of	sections of channel (along this whole section).
	Sediment will be released back into the estuary system,	existing freshwater habitats.	Defence failure will allow more room for accommodation

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	which may potentially reduce erosion rates or increase	Loss of designated habitat may need to be compensated for	of flood waters.	
	rates of accretion elsewhere in the estuary. Failure of	elsewhere.		
	defences is assumed to result in an increase in estuary	Tidal prism and tidal flows are assumed to increase with sea		
	width which is likely to increase tidal prism and flows	level rise, resulting in the potential for downstream erosion		
	immediately downstream of the realignment.	and increased erosion on the outside of meanders (Halling		
	The inundation of large areas will increase downstream	and Snodland) and in confined sections of channel (along		
	flows, leading to an increased potential for erosion in	this whole section).		
	confined areas.	Where defences constrain channel meanders, defence		
	Where defences constrain channel meanders, defence	failure would allow the reassertion of natural meandering		
	failure would allow the reassertion of natural meandering	behaviour.		
	behaviour, with erosion being concentrated on the outside	Defence failure will allow more room for accommodation of		
	of meanders.	flood waters.		
	In this section these processes would potentially increase			
	the likelihood of erosion at North Halling, Halling and			
	Snodland.			
	Defence failure will allow more room for accommodation			
	of flood waters.			
LEYBOURNE LAKES	(WEST BANK)			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Earth embankments (<5 years) would require	Defences would need to be replaced and maintained	All defences along this frontage would need further	
	maintenance and improvement / replacement within	during this epoch.	maintenance, improvement (raising) and replacement	
	the first 5 years of this period.		with sea level rise and climate change.	
	In this section the Medway channel is narrow and fluvial	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary is	
	in form.	with climate change are expected to increase water levels	assumed to increase, resulting in faster flows through the	
	Over this epoch, the intertidal areas in front of defences	and pressure on existing defences, potentially leading to an	narrow channel. The constrained channel will therefore	
	Predicted Change For			
------------	---	---	---	--
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	are likely to continue to respond as at present where	increased likelihood of overtopping and scour of footings.	become subject to increased erosion in confined locations	
	channels are assumed to be stable.	This is likely to lead to the requirement for increased	(along the whole of this frontage) and on the outside of	
	The position of the channel would remain fixed due to the	maintenance and improvement of defences.	meanders.	
	maintenance of the current defence line, consequently,	Improved defences are likely to result in increased erosion	Consequently defences would become increasingly	
	natural channel processes would be restricted.	of intertidal areas and the deepening of the channel.	susceptible to toe erosion; therefore additional defence	
	Will protect the freshwater lakes and backing flood risk	The position of the channel would remain fixed due to the	protection is likely to be required.	
	areas.	maintenance of the current defence line, consequently,	Maintaining the current defence line would fix the channel	
		natural channel processes would be restricted.	position, restricting natural channel processes.	
		Will protect the freshwater lakes and backing flood risk	Will protect the freshwater lakes and backing flood risk	
		areas.	areas.	
Scenario 2	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences to protect the residential	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
	assets at Snodland and New Hythe. The railway line	epoch.	during this epoch.	
	may be incorporated into the design of the new			
	defences.			
	The railway line may have to be relocated if not	New habitat in realigned areas will become more	Increases in tidal prism, flow speeds and erosion in	
	incorporated in the design of the new defences,	established throughout this epoch and new channels will be	confined areas and on the outside of meanders, due to	
	dependant on the chosen line of retreat.	more defined.	sea level rise and the increase in width of the channel are	
	Inundation of low lying land and lakes seaward of the new	As sea levels rise, tidal prism is assumed to increase, and	likely to be exacerbated during this epoch.	
	defences would encourage the creation of new intertidal	consequently downstream flow speeds will also increase.	New habitats will be established.	
	habitat in the realigned areas. Existing freshwater	Channel erosion will therefore be exacerbated in	Will allow more room for channel meandering and	
	habitats would be lost. Flows into and out of these new	constrained channel reaches (e.g. along the whole frontage)	accommodation of flood waters.	
	intertidal areas are likely to create new channels over	and on the outside of meanders.	Will protect the residential assets at Snodland and New	
	time.	Will allow more room for channel meandering and	Hythe, (infrastructure) and backing flood risk areas.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Loss of designated habitat may need to be compensated	accommodation of flood waters.	
	for elsewhere.	Will protect the residential assets at Snodland and New	
	Sediment will be released back into the estuary system,	Hythe, (infrastructure) and backing flood risk areas.	
	which may potentially reduce erosion rates or increase		
	rates of accretion elsewhere in the estuary.		
	Realignment of defences would have the potential to		
	increase the width of the channel as the lakes join with		
	the river channel. This would move the estuary away from		
	the ideal form, increase tidal prism, flow speeds and		
	therefore erosion in confined areas downstream.		
	Will allow more room for channel meandering and		
	accommodation of flood waters.		
	Will protect the residential assets at Snodland and New		
	Hythe, (infrastructure) and backing flood risk areas.		
Scenario 3	No Active Intervention	No Active Intervention	No Active Intervention
	Earth embankments (<5 years) would be expected to	No defences.	No defences.
	fail during the first half of this period.		
	Failure of earth embankments will be haphazard during	Uncontrolled flooding of Leybourne Lakes, the railway line	With predicted increases in sea level rise, further
	this epoch, resulting in uncontrolled inundation of lakes	and residential assets in Snodland and New Hythe.	inundation of low lying areas is anticipated.
	and low lying areas, the railway line and residential	Loss of designated habitat may need to be compensated for	Loss of designated habitat may need to be compensated
	assets at Snodland and New Hythe.	elsewhere.	for elsewhere.
	Sporadic defence failure will create new transitional and	Eventual complete failure of defences may result in the	Sediment will be released back into the estuary system,
	intertidal habitats within the realigned areas which will	inundation of a relatively large area which would increase	which may potentially reduce erosion rates or increase
	develop over existing freshwater habitats. Loss of	the width of the estuary and consequently increase flows	rates of accretion elsewhere in the estuary.
	designated habitat may need to be compensated for	and erosion downstream.	New habitats will continue to become more established.

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	elsewhere.	Sediment will be released back into the estuary system,	Tidal prism and tidal flows will increase with sea level
	Flows into and out of these new intertidal areas are likely	which may potentially reduce erosion rates or increase rates	rise. This will result in the potential for downstream
	to create new channels and erode existing defences	of accretion elsewhere in the estuary.	erosion and increased erosion on the outside of
	further. Sediment will be released back into the estuary	Over the long term, habitat in realigned areas will become	meanders and in confined sections of channel.
	system, which may potentially reduce erosion rates or	more established throughout this epoch at the expense of	Defence failure will allow more room for accommodation
	increase rates of accretion elsewhere in the estuary.	freshwater habitats.	of flood waters.
	Failure of defences would have the potential to increase	Tidal prism and tidal flows will increase with sea level rise,	
	the width of the channel as the lakes join with the river	resulting in the potential for downstream erosion and	
	channel. This would move the estuary away from the	increased erosion on the outside of meanders and in	
	ideal form, increase tidal prism, flow speeds and therefore	confined sections of channel.	
	erosion in confined areas downstream.	Where defences constrain channel meanders, defence	
	Where existing defences constrain channel meanders,	failure would allow the reassertion of natural meandering	
	defence failure would allow the reassertion of natural	behaviour.	
	meandering behaviour, with erosion being concentrated	Defence failure will allow more room for accommodation of	
	on the outside of meanders.	flood waters.	
	At Snodland a new channel may form, cutting off the		
	existing meander.		
	Defence failure will allow more room for accommodation		
	of flood waters.		
NEW HYTHE TO ALLI	NGTON LOCK (WEST BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Steel sheet piling, gabions and concrete walls (<20	Earth embankments, timber walls and embankments	All defences along this frontage would need further
	years) between Aylesford Paper Mills and Aylesford	between Aylesford Train Station and Allington Lock	maintenance, improvement and replacement with sea
	Train Station would require maintenance,	would require increased maintenance, improvement	level rise and climate change.
	improvement and replacement towards the end of	and replacement works. Other defences would need to	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	this period. Earth embankments, timber walls and	be replaced and maintained during this epoch.	
	embankments (>20 years) between Aylesford Train		
	Station and Allington Lock would remain.		
	In this section the estuary is narrow and the channel is	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary is
	fluvial in form.	with climate change are likely to increase water levels and	expected to increase, resulting in faster flows through the
	During this epoch, the river channel is likely to continue to	pressure on existing defences, potentially leading to an	narrow channel. The constrained channel will therefore
	respond as at present where channels are assumed to be	increased likelihood of overtopping and scour of footings.	become subject to increased erosion in confined locations
	stable.	This is likely to lead to the requirement for increased	(along the whole of this frontage) and on the outside of
	The position of the channel would remain fixed due to the	maintenance and improvement works.	meanders.
	maintenance of the current defence line, consequently,	More substantial defences would result in increased erosion	Consequently defences would become increasingly
	natural channel processes would be restricted.	of the channel and consequently, deepening of the channel.	susceptible to toe erosion; therefore additional defence
	Will protect the residential, economic and heritage assets	The position of the channel would remain fixed due to the	protection may be required.
	of the frontage and backing flood risk areas.	maintenance of the current defence line, consequently,	Maintaining the current defence line would fix the channel
		natural channel processes would be restricted.	position, restricting natural channel processes.
		Will protect the residential, economic and heritage assets of	Will protect the residential, economic and heritage assets
		the frontage and backing flood risk areas.	of the frontage and backing flood risk areas.
Scenario 2	Hold the Line	Managed Retreat	Managed Retreat
	Steel sheet piling, gabions and concrete walls (<20	New defences will need to be constructed landwards of	New landward defences would require maintenance,
	years) between Aylesford Paper Mills and Aylesford	the present defences.	improvement and / or eventual replacement during
	Train Station would require maintenance,		this epoch.
	improvement and replacement towards the end of		
	this period. Earth embankments, timber walls and		
	embankments (>20 years) between Aylesford Train		

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
Station and Allington Lock would remain.			
In this section the estuary is narrow and the channel is	Limited opportunities exist for managed retreat along this	New habitat in realigned areas will become more	
fluvial in form.	frontage due to the high density of commercial and	established throughout this epoch.	
During this epoch, the river channel is likely to continue to	residential assets and close proximity of infrastructure to the	As sea levels rise tidal prism is expected to increase and	
respond as at present where channels are assumed to be	river channel.	consequently downstream flow speeds will also increase.	
stable.	The small area of land immediately west of Allington, (north	Foreshore erosion will therefore be exacerbated in	
The position of the channel would remain fixed due to the	of the M20) would present the only location where managed	constrained channel reaches (e.g. along the whole	
maintenance of the current defence line, consequently,	retreat could be possible.	frontage) and on the outside of meanders.	
natural channel processes would be restricted.	Realigned defences would be constructed seaward of the	Will allow more room for channel meandering and	
Will protect the residential, economic and heritage assets	railway line.	accommodation of flood waters.	
of the frontage and backing flood risk areas.	Inundation of this small area of low lying land would	Infrastructure and assets will remain protected.	
	encourage the creation of new intertidal habitat in the		
	realigned area, which would develop over existing habitat.		
	Loss of designated habitat may need to be compensated for		
	elsewhere.		
	Sediment will be released back into the estuary system,		
	which may potentially reduce erosion rates or increase rates		
	of accretion elsewhere in the estuary.		
	Realignment of defences would have the potential to		
	increase the width of the channel. This would move the		
	estuary away from the ideal form, increase tidal prism, flow		
	speeds and therefore erosion in confined areas		
	downstream. Will allow more room for channel meandering		
	and accommodation of flood waters.		
	Infrastructure and assets will remain protected.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Medway (east and sou	th bank)		
ALLINGTON LOCK TO	MILLHALL (EAST BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Concrete, masonry, timber, steel sheet piling and	Defences would require ongoing maintenance,	All defences would require increased levels of
	short lengths of natural embankment (<5 years)	improvement and periodic replacement within this	maintenance and improvement, as well as
	would require improvement and replacement within	epoch.	replacement at varying times throughout this epoch
	the first 5 years of this period, followed by		as sea levels rise and due to the effects of climate
	maintenance and improvement during the remainder		change.
	of the epoch.		
	In this section the river is fluvial in form and is	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary is likely
	considerably narrower than other sections.	with climate change are expected to increase water levels	to increase, resulting in faster flows through the narrow
	During this epoch, the river channel is likely to continue to	and pressure on existing defences, potentially leading to an	channel. The constrained channel will therefore become
	respond as at present where channels are assumed to be	increased likelihood of overtopping and scour of footings.	subject to increased erosion in confined locations (along
	stable.	This is likely to lead to the requirement for increased	the whole of this frontage) and on the outside of
	The position of the channel would remain fixed due to the	maintenance and improvement works.	meanders (e.g. Forstal and Aylesford).
	maintenance of the current defence line, consequently,	Improved defences may result in increased erosion of the	Consequently defences would become increasingly
	natural channel processes would be restricted.	channel and the deepening of the channel.	susceptible to toe erosion; therefore additional defence
	Will protect the residential, economic and heritage assets	The position of the channel would remain fixed due to the	protection may be required.
	of the frontage and backing flood risk areas.	maintenance of the current defence line, consequently,	Maintaining the current defence line would fix the channel
		natural channel processes would be restricted.	position, restricting natural channel processes.
		Will protect the residential, economic and heritage assets of	Will protect the residential, economic and heritage assets
		the frontage and backing flood risk areas.	of the frontage and backing flood risk areas.

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
Scenario 2	Hold the Line	Managed Retreat	Managed Retreat	
	Concrete, masonry, timber, steel sheet piling and	New defences will need to be constructed landwards of	New landward defences would require maintenance,	
	short lengths of natural embankment (<5 years)	the present defences.	improvement and / or eventual replacement during	
	would require improvement and replacement within		this epoch.	
	the first 5 years of this period, followed by			
	maintenance and improvement during the remainder			
	of the epoch.			
	In this section the river is fluvial in form and is	No opportunities exist for managed retreat along this	No opportunities exist for managed retreat along this	
	considerably narrower than other sections.	frontage as a whole due to the high density of commercial,	frontage as a whole due to the high density of	
	During this epoch, the river channel is likely to continue to	residential and heritage assets in close proximity of the river	commercial, residential and heritage assets in close	
	respond as at present where channels are assumed to be	channel.	proximity of the river channel.	
	stable.	However, small areas of land either side of the M20 and an		
	The position of the channel would remain fixed due to the	area of land between Forstal and Aylesford are potentially		
	maintenance of the current defence line, consequently,	the only locations where managed retreat could be possible		
	natural channel processes would be restricted.	(see Scenario 3).		
	Will protect the residential, economic and heritage assets			
	of the frontage and backing flood risk areas.			
Scenario 3 (discrete	Managed Retreat (discrete upstream locations)	Managed Retreat (discrete upstream locations)	Managed Retreat (discrete upstream locations)	
upstream locations)	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Small areas of land either side of the M20 and an area of	New habitat in realigned areas will become more	Increases in tidal prism, flow speeds and erosion in	
	land between Forstal and Aylesford are potentially the	established throughout this epoch and new channels will	confined areas and on outside of meanders, due to sea	
	only locations where managed retreat could be possible.	become more defined.	level rise and the increase in width of the channel are	
	Inundation of these small areas of low lying land would	As sea levels rise tidal prism is expected to increase and	likely to be exacerbated during this epoch.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	encourage the creation of new intertidal habitat in the	consequently downstream flow speeds will also increase.	New habitats will be established.
	realigned area, which would develop over existing habitat.	Channel erosion will therefore be exacerbated in	Will allow more room for channel meandering and
	Loss of designated habitat may need to be compensated	constrained channel reaches (e.g. Aylesford) and on the	accommodation of flood waters.
	for elsewhere.	outside of meanders (e.g. Forstal and Aylesford).	Infrastructure and residential, commercial and heritage
	Sediment will be released back into the estuary system,	Will allow more room for channel meandering and	assets, and flood risk areas will remain protected.
	which may potentially reduce erosion rates or increase	accommodation of flood waters.	
	rates of accretion elsewhere in the estuary.	Infrastructure and residential, commercial and heritage	
	Widening of the channel at this location may potentially	assets, and flood risk areas will remain protected.	
	cause faster flows and therefore increased erosion in		
	confined channels downstream.		
	Over this epoch, the channels are likely to continue to		
	respond as at present where channels are assumed to be		
	stable.		
	Infrastructure and residential, commercial and heritage		
	assets, and flood risk areas will remain protected.		
MILLHALL TO MEDW	AY BRIDGE (EAST BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Natural and earth embankments (<20 years) along the	Defences would require ongoing maintenance,	All defences would require increased levels of
	frontage would require maintenance, improvement	improvement and periodic replacement within this	maintenance and improvement, as well as
	and eventually replacement towards the end of the	epoch.	replacement at varying times throughout this epoch
	period. Concrete walls (<20 years) opposite		as sea levels rise and due to the effects of climate
	Holborough Marshes and at Wouldham would also		change.
	need maintenance, improvement and possible		
	replacement works during this epoch.		
	In this section the channel is fluvial in form. The channel	Sea level rise and the potential for increased fluvial flows	With sea level rise, tidal prism within the estuary is

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	in the southern reach of the river is narrow, but widens as	with climate change are likely to increase water levels and	assumed to increase, resulting in faster flows through the	
	it moves towards the Medway Bridge.	pressure on existing defences, potentially leading to an	narrow channel. The constrained channel will therefore	
	Over this epoch, the intertidal areas in front of defences	increased likelihood of overtopping and scour of footings.	become subject to increased erosion in confined locations	
	are likely to continue to respond as at present where	This is likely to lead to the requirement for increased	(along the whole of this frontage) and on the outside of	
	channels are assumed to be stable with no/little change.	maintenance and improvement works.	meanders (e.g. Burham Court and Wouldham).	
	The position of the channel would remain fixed due to the	Improved defences may result in increased erosion of	Consequently defences would become increasingly	
	maintenance of the current defence line, consequently,	intertidal areas and the deepening of the channel during	susceptible to toe erosion; Additional defence protection	
	natural channel processes would be restricted.	these epochs.	may therefore be required.	
	Will protect the residential and agricultural assets along	The position of the channel would remain fixed due to the	Maintaining the current defence line would fix the channel	
	the frontage, freshwater marshes and backing flood risk	maintenance of the current defence line, consequently,	position, restricting natural channel processes.	
	areas.	natural channel processes would be restricted.	Will protect the residential and agricultural assets along	
		Will protect the residential and agricultural assets along the	the frontage, freshwater marshes and backing flood risk	
		frontage, freshwater marshes and backing flood risk areas.	areas.	
Scenario 2	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Managed retreat along the whole of the frontage would	New habitat in realigned areas will become more	Increases in tidal prism, flow speeds and erosion in	
	mean the loss / removal of residential and commercial	established throughout this epoch and new channels will	confined areas and on outside of meanders, due to sea	
	assets, for example at Wouldham and Burham Court, and	become more defined.	level rise are likely to be exacerbated during this epoch.	
	infrastructure, dependant on the chosen position of the	As sea levels rise tidal prism is expected to increase and	New habitats in realigned areas will be established.	
	retreated line. Retreat along the whole frontage would	consequently downstream flow speeds will also increase.	Will allow more room for channel meandering and	
	encompass a large area, essentially widening the river	Foreshore erosion will therefore be exacerbated in	accommodation of flood waters.	
	estuary along approximately 9km of the river. This would	constrained channel reaches and on the outside of	Will protect residential and agricultural assets and	

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
have negative impacts on the estuary as a whole,	meanders (Wouldham and Burham Court).	backing flood risk areas.
increasing tidal prism and therefore significantly	Will allow more room for channel meandering and	
increasing tidal flows and erosion immediately	accommodation of flood waters.	
downstream of the realignment, i.e. along the constrained	Will protect residential and agricultural assets and backing	
channel section north of the Medway Bridge.	flood risk areas.	
Smaller opportunities for retreat along this frontage		
include Wouldham Marshes and discrete areas along the		
frontage south of Wouldham. Retreat along these		
sections of frontage may require removal of infrastructure		
/ loss of properties dependant on the chosen line of		
retreat. Widening of the channel in discrete areas along		
this frontage may also potentially cause faster flows and		
therefore increased erosion in confined channels		
downstream.		
Inundation of low lying land seaward of the new defences		
would encourage the creation of new intertidal habitat in		
the realigned areas. Existing freshwater habitats would be		
lost.		
Loss of designated habitat may need to be compensated		
for elsewhere.		
Flows into and out of these new intertidal areas are likely		
to create new channels over time.		
Sediment will be released back into the estuary system,		
which may potentially reduce erosion rates or increase		
rates of accretion elsewhere in the estuary.		

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Will allow more room for channel meandering and			
	accommodation of flood waters.			
	Will protect residential and agricultural assets and			
	backing flood risk areas, dependant on the position of the			
	retreated line.			
Scenario 3	No Active Intervention	No Active Intervention	No Active Intervention	
	Natural and earth embankments (<20 years) and	No defences.	No defences.	
	concrete walls (<20 years) opposite Holborough			
	Marshes and at Wouldham would expect to fail			
	towards the end of this period.			
	Failure of defences will be haphazard during this epoch,	Uncontrolled flooding to residential, agricultural and	With predicted increases in sea level rise, further	
	resulting in uncontrolled periodic flooding of low lying	freshwater assets.	inundation of low lying areas is anticipated.	
	areas, residential and agricultural assets and freshwater	Loss of designated habitat may need to be compensated for	Loss of designated habitat may need to be compensated	
	marshes.	elsewhere.	for elsewhere.	
	In low lying areas, sporadic defence failure will create	Sediment will be released back into the estuary system,	Sediment will be released back into the estuary system,	
	new transitional and intertidal habitats within the realigned	which may potentially reduce erosion rates or increase rates	which may potentially reduce erosion rates or increase	
	areas, which will develop over existing freshwater	of accretion elsewhere in the estuary.	rates of accretion elsewhere in the estuary.	
	habitats.	Over the long term, habitat in realigned areas will become	Habitats will continue to become more established.	
	Loss of designated habitat may need to be compensated	more established throughout this epoch resulting in long	Tidal prism and tidal flows are assumed to increase with	
	for elsewhere.	term freshwater habitat loss.	sea level rise, resulting in the potential for downstream	
	Flows into and out of these new intertidal areas are likely	Eventual complete failure of defences would result in the	erosion and increased erosion on the outside of	
	to create new channels over time and erode defences	estuary channel increasing in size. This in conjunction with	meanders (Burham Court and Wouldham) and in	
	further.	sea level rise is likely to increase tidal prism, flows	confined sections of channel (along this whole section).	
	Sediment will be released back into the estuary system,	downstream and erosion, downstream and on the outside of	Defence failure will allow more room for accommodation	
	which may potentially reduce erosion rates or increase	meanders (Burham Court and Wouldham).	of flood waters.	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	rates of accretion elsewhere in the estuary.	Where defences constrain channel meanders, defence		
	The inundation of large areas will increase immediate	failure would allow the reassertion of natural meandering		
	downstream flows.	behaviour.		
	Where defences constrain channel meanders, defence	Defence failure will allow more room for accommodation of		
	failure would allow the reassertion of natural meandering	flood waters.		
	behaviour, with erosion being concentrated on the outside			
	of meanders.			
	Potential erosion hot spots may therefore occur at			
	Burham Court and Wouldham. The meander at Burham			
	may potentially close, cutting off the current meander			
	completely.			
	Intertidal mudflat and saltmarsh areas in front of			
	defences, north of Wouldham, are likely to continue to			
	respond as at present where intertidal areas are expected			
	to be stable in regards to erosion and accretion.			
	Defence failure will allow more room for accommodation			
	of flood waters.			
		Predicted Change For		
	Years 0 - 20	Years 20 - 50	Years 50 - 100	
MEDWAY (M2) BRIDG	E TO EAST OF ST MARY'S ISLAND			
Scenario 1	Hold the line	Hold the line	Hold the line	
	Vertical defences along this frontage will require	Vertical defences along this frontage will require	Vertical defences along this frontage will require	
	maintenance and improvement during this epoch.	maintenance, improvement and replacement during this	increased maintenance, improvement (raising) and	
		epoch.	replacement as sea levels rise.	
	In this location the estuary channel has a fluvial form with	Sea level rise and the potential for increased fluvial flows	In the Medway, sediment supply is predicted to decrease	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	an almost constant width and either no or limited areas of	with climate change are likely to increase water levels and	over this epoch, limiting accretion in the estuary.	
	intertidal flats. However, a small isolated patch of	pressure on existing defences.	With sea level rise, tidal prism within the estuary is	
	saltmarsh exists at Borstal, just north of the Medway	With sea level rise, tidal prism is expected to increase and	assumed to increase, resulting in increased flows through	
	Bridge.	the constrained channel will become subject to increased	the narrow channel.	
	Over this epoch, the intertidal mudflat and saltmarsh in	erosion. This may also potentially lead to an increased	Mudflat and saltmarsh erosion would continue in these	
	front of defences are assumed to be stable.	likelihood of overtopping and scour of footings.	confined areas, with the potential for total loss in the long	
	Maintaining the current defence line would fix the channel	Such changes are likely to lead to the requirement for	term. In these locations and in areas where there is no	
	position, restricting natural channel processes.	increased defence maintenance and improvement works.	foreshore, defences would become increasingly	
	Will protect the economic and heritage assets of the	Maintaining the current defence line would fix the channel	susceptible to toe erosion; therefore additional defence	
	frontage and low lying flood risk areas from flooding and	position, restricting natural channel processes.	protection may be required.	
	erosion.	Will protect the economic and heritage assets of the	Maintaining the current defence line would fix the channel	
		frontage and low lying flood risk areas from flooding and	position, restricting natural channel processes.	
		erosion.	Will protect the economic and heritage assets of the	
			frontage and low lying flood risk areas from flooding and	
			erosion.	
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Infill and reclaim land between the new		allow for sea level rise.	
	and former defences.			
	Advancing the defence line will narrow the channel further	Flow speeds through the narrow channel will increase and	In the Medway, sediment supply is predicted to decrease	
	in an already constrained location, moving the estuary	erosion of intertidal areas and defences will be enhanced as	over this epoch, limiting accretion in the estuary.	
	away from its ideal form. Consequently flow speeds	sea levels rise.	With sea level rise, tidal prism within the estuary will	
	through the constriction are likely to increase and erosion	Flood risk may be increased due to reduced channel	increase. Resulting faster tidal flows are likely to be	
	of present intertidal areas will be enhanced.	capacity.	exacerbated further. Flood risk may be increased due to	
	Flood risk may be increased due to reduced channel	Safe navigation of maritime traffic may become	reduced channel capacity.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	capacity.	compromised due to the increased flow speeds.	Mudflat erosion may be amplified in confined areas.
	There is potential to create new habitat landward of the	The channel will remain fixed in position, restricting natural	Resulting in complete foreshore loss in places and
	defences or use land for development.	estuary processes.	potential deepening of the channel.
	Loss of intertidal habitat will result from seaward	Flood and erosion protection to economic, commercial and	Consequently defences would become increasingly
	movement of defences. Loss of designated habitat may	residential assets and infrastructure will be maintained.	susceptible to erosion in these locations and will require
	need to be compensated for elsewhere.		increased maintenance.
	The channel will be fixed in position, restricting natural		Safe navigation of maritime traffic may be compromised
	estuary processes.		further.
	Flood and erosion protection to economic, commercial		The channel will continue to be fixed in position,
	and residential assets and infrastructure will be		restricting natural estuary processes.
	maintained.		Flood and erosion protection to economic, commercial
			and residential assets and infrastructure will be
			maintained.
ST MARY'S ISLAND T	O THE STRAND		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Vertical defences along this frontage will require	Vertical defences along this frontage will require	Vertical defences along this frontage will require
	maintenance and improvement during this epoch.	maintenance, improvement and replacement during this	increased maintenance, improvement (raising) and
		epoch.	replacement as sea levels rise.
	The estuary begins to widen along this section. The	Sea level rise and the potential for increased fluvial flows	In the Medway, sediment supply is predicted to decrease
	foreshore is typified by narrow intertidal mudflats, as the	with climate change is expected to increase water levels	over this epoch, limiting accretion in the estuary.
	main channel is close to the shoreline along this frontage.	and pressure on existing defences.	With sea level rise, tidal prism within the estuary is
	Over this epoch, the intertidal mudflat areas in front of	Tidal prism will increase which may potentially lead to an	expected to increase, resulting in increased flows in the
	defences are assumed to remain stable.	increased likelihood of overtopping and scour of footings.	main channel. Increased potential for erosion of intertidal
	Maintaining the current defence line would fix the channel	Such changes are likely to lead to the requirement for	areas will result.
	position, restricting natural channel processes.	increased defence maintenance and improvement works.	In locations where there is little or no intertidal mudflat,

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Will protect the economic, residential and recreational	Any loss of designated habitat may need to be	defences would become increasingly susceptible to toe	
	assets of the frontage and low lying flood risk areas from	compensated for elsewhere.	erosion; therefore additional defence protection may be	
	flooding and erosion.	Maintaining the current defence line would fix the channel	required.	
		position, restricting natural channel processes.	Any loss of designated habitat may need to be	
		Will protect the economic, residential and recreational	compensated for elsewhere.	
		assets of the frontage and low lying flood risk areas from	Maintaining the current defence line would fix the channel	
		flooding and erosion.	position, restricting natural channel processes.	
			Will protect the economic, residential and recreational	
			assets of the frontage and low lying flood risk areas from	
			flooding and erosion.	
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Infill and reclaim land between the new		allow for sea level rise.	
	and former defences.			
	Advancing the defence line will narrow the channel further	Flow speeds through the narrowed channel are likely to	In the Medway, sediment supply is predicted to decrease	
	in an already constrained location (due to Hoo Saltmarsh	increase and erosion of intertidal areas and defences will be	over this epoch, limiting accretion in the estuary.	
	island), moving the estuary away from its ideal form.	enhanced.	With sea level rise, tidal prism and flow speeds within the	
	Consequently flow speeds through the constriction are	Flood risk may be increased due to reduced channel	estuary will increase. This in combination with a narrow	
	assumed to increase and erosion of present intertidal	capacity.	channel is expected to amplify mudflat erosion in confined	
	areas, areas immeadiately downstream and of Hoo	Any loss of designated habitat may need to be	areas and immediately downstream. Complete foreshore	
	Saltmarsh Island enhanced.	compensated for elsewhere.	loss in places and potential deepening of the channel is	
	Flood risk may be enhanced due to reduced channel	Safe navigation of maritime traffic may become	likely to result.	
	capacity.	compromised due to the increased flow speeds.	Flood risk may be enhanced due to reduced channel	
	There is potential to create new habitat landward of the	The channel will remain fixed in position, restricting natural	capacity.	
	defences or use land for development. However, loss of	estuary processes.	Any loss of designated habitat may need to be	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	intertidal habitat will result from seaward movement of	Protection to economic, residential and recreational assets	compensated for elsewhere.	
	defences.	of the frontage and low lying flood risk areas from flooding	Consequently defences would become increasingly	
	Any loss of designated habitat may need to be	and erosion will be maintained.	susceptible to erosion in these locations.	
	compensated for elsewhere.		Safe navigation of maritime traffic may be compromised	
	The channel will be fixed in position, restricting natural		further.	
	estuary processes.		The channel will continue to be fixed in position,	
	Protection to economic, residential and recreational		restricting natural estuary processes.	
	assets of the frontage and low lying flood risk areas from		Flood and erosion protection to economic, commercial	
	flooding and erosion will be maintained.		and residential assets and infrastructure will be	
			maintained.	
Scenario 3	Hold the Line	Hold the Line	Managed Retreat	
	Vertical defences along this frontage will require	Vertical defences along this frontage will require	New defences will need to be constructed landwards	
	maintenance and improvement during this epoch.	maintenance, improvement and replacement during this	of the present defences.	
		epoch.		
	The estuary begins to widen along this section. The	Sea level rise and the potential for increased fluvial flows	In the Medway, sediment supply is predicted to decrease	
	foreshore is typified by narrow intertidal mudflats, as the	with climate change is expected to increase water levels	over this epoch, limiting accretion in the estuary.	
	main channel is close to the shoreline along this frontage.	and pressure on existing defences.	Removal or relocation of economic, residential and	
	Over this epoch, the intertidal mudflat areas in front of	Tidal prism will increase which may potentially lead to an	recreational assets will be required.	
	defences are assumed to remain stable.	increased likelihood of overtopping and scour of footings.	Limited opportunities exist for managed retreat along this	
	Maintaining the current defence line would fix the channel	Such changes are likely to lead to the requirement for	frontage due to a narrow flood zone and high land	
	position, restricting natural channel processes.	increased defence maintenance and improvement works.	backing the shoreline.	
	Will protect the economic, residential and recreational	Maintaining the current defence line would fix the channel	Inundation of the narrow strip of low lying land seaward of	
	assets of the frontage and low lying flood risk areas from	position, restricting natural channel processes.	the new defences would encourage the creation of new	
	flooding and erosion.	Will protect the economic, residential and recreational	intertidal habitat in the realigned areas, which would	
		assets of the frontage and low lying flood risk areas from	develop over existing habitats.	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
		flooding and erosion.	Any loss of designated habitat may need to be	
			compensated for elsewhere.	
			Flows into and out of these new intertidal areas are likely	
			to create new channels or result in the expansion of	
			existing creek networks over time.	
			Release of sediment may potentially reduce erosion rates	
			or increase rates of accretion elsewhere in the estuary.	
			Realignment of defences would have the potential to	
			increase the width of the estuary at an already wider than	
			ideal location, which, would move the estuary further	
			away from the ideal form.	
			Resulting increases in tidal prism, combined with sea	
			level rise, are assumed to increase tidal flows and the	
			potential for increased erosion in confined areas	
			downstream (i.e. at the mouth of the Medway).	
			Will protect the infrastructure from flooding and erosion.	
THE STRAND TO WES	T OF MOTNEY HILL			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Stone revetted banks (>20 years) would remain.	Stone revetted banks would require maintenance,	Sea level rise combined with the effects of climate	
		improvement and eventual replacement during this	change would result in the need for increased	
		epoch.	frequency of defence maintenance, improvement and	
			replacement.	
	The estuary widens considerably along this section. The	During these epochs there is uncertainty regarding the	In the Medway, sediment supply is predicted to decrease	
	frontage differs from those upstream, as it has extensive	evolution of mudflats and saltmarsh in this area. It is	over this epoch, limiting accretion in the estuary.	
	intertidal and saltmarsh areas and marsh islands.	assumed however, that intertidal saltmarsh and mudflat	As sea levels rise, tidal prism and tidal flows are predicted	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Over this epoch, the intertidal mudflat and saltmarsh	evolution will continue in the same pattern as in the previous	to increase. There will therefore be increased potential for	
	areas in front of defences are assumed to continue to	epoch.	coastal squeeze in areas where net erosion is prevalent	
	respond as at present. Erosion at the seaward edge of	Sea level rise is expected to exacerbate erosion in	e.g. Nor Marsh and Rainham Creek.	
	marshes at Nor Marsh and Rainham Creek would	environmentally designated areas such as Nor Marsh and	This will result in the loss of environmentally designated	
	continue, however the remaining areas of saltmarsh	Rainham Creek, while it is assumed that accretion would	habitat, which may need to be compensated for	
	would continue to accrete and/or be relatively stable.	continue to keep pace with sea level rise in other areas.	elsewhere.	
	Erosion of marshes along Rainham Creek would result in	The loss of designated habitats may need to be	Maintaining the current defence line would fix the channel	
	the undermining and erosion of landward defences in this	compensated for elsewhere.	position, restricting natural channel processes at MHWS	
	area.	Maintaining the current defence line would fix the channel	level.	
	Maintaining the current defence line would fix the channel	position, restricting natural channel processes at MHWS	Will protect the recreational and residential assets and	
	position, restricting natural channel processes at MHWS	level.	agricultural land of the frontage and backing flood risk	
	level.	Will protect the recreational and residential assets and	areas from flooding and erosion.	
	Will protect the recreational and residential assets and	agricultural land of the frontage and backing flood risk areas		
	agricultural land of the frontage and backing flood risk	from flooding and erosion.		
	areas from flooding and erosion.			
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Reclaim land between the new and		allow for sea level rise.	
	former defences.			
	Advancing the defence line will narrow the channel in an	Any new habitat landward of defences will become more	In the Medway, sediment supply is predicted to decrease	
	area that is wider than the ideal form at this location. This	established.	over this epoch, limiting accretion in the estuary.	
	will reduce the tidal prism, potentially reduce downstream	With sea level rise, tidal prism within the estuary is expected	New habitat will be established landward of the defences.	
	erosion and move the estuary toward a more ideal form.	to increase, in turn increasing flow speeds in the main	Increased tidal prism, tidal flows and erosion of intertidal	
	There is potential to create new habitat landward of the	channel and increasing the erosion potential in	areas and undermining of defences are assumed to be	
	defences or use land for development. This would	environmentally designated areas such as Nor Marsh and	exacerbated as sea levels rise.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	develop over existing environmentally designated	Rainham Creek. Loss of designated habitat may need to be	The channel will be fixed in position, restricting natural
	habitats. Habitat loss may need to be compensated for	compensated for elsewhere.	estuary processes.
	elsewhere.	It is assumed that accretion would continue to keep pace	Advancing defence lines will provide continued flood and
	The channel will be fixed in position, restricting natural	with sea level rise in other areas.	erosion protection to recreational, residential and
	estuary processes.	The channel will be fixed in position, restricting natural	agricultural assets.
	Advancing defence lines will provide continued flood and	estuary processes at MHWS level.	
	erosion protection to recreational, residential and	Advancing defence lines will provide continued flood and	
	agricultural assets.	erosion protection to recreational, residential and	
		agricultural assets.	
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement
		epoch.	during this epoch.
	Removal or relocation of recreational and residential	Habitat in realigned areas will become more established	In the Medway, sediment supply is predicted to decrease
	assets may be required, dependant on the chosen line of	throughout this epoch and new channels will become more	over this epoch, limiting accretion in the estuary.
	retreat.	defined.	It is assumed that Increases in tidal prism, flow speeds
	The flood plain is narrow along this frontage as land rises	Downstream flow speeds are assumed to increase as the	and erosion in confined areas downstream (at the estuary
	quickly away from the shoreline, therefore any managed	tidal prism increases due to a wider estuary channel and as	mouth at Sheerness) and in contemporary erosion hot
	retreat scheme would be relatively small.	sea levels rise.	spots, due to sea level rise, and a wider estuary, will be
	Inundation of low lying land seaward of the new defences	Foreshore erosion will therefore be exacerbated towards the	exacerbated during this epoch.
	would encourage the creation of new intertidal habitat in	estuary mouth at Sheerness. Known areas of erosion in	New habitats will be established in realigned areas.
	the realigned areas, this would develop over existing	environmentally designated areas will also potentially be	Infrastructure and agricultural assets will remain
	habitats.	increased, such as Nor Marsh and Rainham Creek. It is	protected.
	Any loss of designated habitat may need to be	assumed that accretion would continue to keep pace with	
	compensated for elsewhere.	sea level rise in other areas.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Flows into and out of these new intertidal areas may	Infrastructure and agricultural assets will remain protected.	
	create new channels or result in the expansion of existing		
	creek networks over time.		
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Retreat along the frontage will increase estuary width		
	further at an already wide section of estuary, moving it		
	further away from its ideal form.		
	Resulting increases in tidal prism are likely to increase		
	tidal flows and the potential for erosion in confined areas		
	immediately downstream (i.e. at the mouth of the		
	Medway).		
	Over this epoch, the intertidal mudflat and saltmarsh		
	areas in front of defences are assumed to continue to		
	respond as at present. Erosion at the seaward edge of		
	marshes at Nor Marsh and Rainham Creek would		
	continue, however the remaining areas of saltmarsh		
	would continue to accrete and/or be relatively stable.		
	Infrastructure and agricultural assets will remain		
	protected.		
Scenario 4	No Active Intervention	No Active Intervention	No Active Intervention
	Stone revetted banks (>20 years) would remain.	Stone revetted banks are expected to fail during this	No defences.
		period.	
	Over this epoch, the intertidal mudflat and saltmarsh	Failure of defences will be haphazard during this epoch,	In the Medway, sediment supply is predicted to decrease
	areas in front of defences are assumed to continue to	resulting in uncontrolled periodic flooding of low lying areas,	over this epoch, limiting accretion in the estuary.

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	respond as at present. Erosion at the seaward edge of	infrastructure and recreational, residential and agricultural	The estuary would move further away from its ideal form
	marshes at Nor Marsh and Rainham Creek would	assets.	as defences fail. This, along with sea level rise, will
	continue, however the remaining areas of saltmarsh	In low lying areas, sporadic defence failure would create	potentially increase the tidal prism and downstream
	would continue to accrete and/or be relatively stable.	new transitional and intertidal habitats within the realigned	erosion in the estuary. Saltmarsh erosion trends, e.g. at
	Erosion of marshes along Rainham Creek would result in	areas, which would develop over existing habitats. Any loss	Nor Marsh and Rainham Creek, will be exacerbated.
	the undermining and erosion of landward defences in this	of designated habitat may need to be compensated for	The estuary system would become a more natural system
	area.	elsewhere.	through this epoch. New habitats and creeks would
	Recreational and residential assets and agricultural land	Flows into and out of these new intertidal areas are likely to	become more established.
	of the frontage and backing flood risk areas will remain	create new channels or result in the expansion of the	Release of sediment may potentially reduce erosion rates
	protected from flooding and erosion during this epoch.	existing creek network.	or increase rates of accretion elsewhere in the estuary.
		Release of sediment may potentially reduce erosion rates or	Long term uncontrolled loss of agricultural and
		increase rates of accretion elsewhere in the estuary.	recreational land.
		Tidal prism and tidal flows are expected to increase as the	Loss of designated habitat may need to be compensated
		Medway widens and sea levels rise, resulting in the	for elsewhere.
		potential for downstream erosion, e.g. at the mouth of the	
		Medway. Saltmarsh erosion trends as per the previous	
		epoch, will be expected to continue.	
	GSFERRY BRIDGE	L	
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Stone revetted banks (<20 years) at Barksore,	All defences would require maintenance, improvement	Increased frequency of maintenance, improvement
	Chetney and Ferry Marshes would require	and or replacement at various times during this epoch.	and replacement of defences would be necessary due
	maintenance/upgrading within this period. Defences		to the combined effects of sea levels rise and climate
	(>20 years) along the rest of the frontage would		change.

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
 remain.		
This section of the Medway estuary is very wide and has	During these epochs there is uncertainty regarding the	In the Medway, sediment supply is predicted to decrease
extensive intertidal and saltmarsh areas and marsh	evolution of mudflats and saltmarsh in this area. It is	over this epoch, limiting accretion in the estuary. In the
islands. The channel of the Swale, between	assumed however, that intertidal saltmarsh and mudflat	Swale, sediment supply is predicted to be sufficient to
Queenborough and the Kingsferry Bridge, is however	evolution is assumed to continue in the same pattern as in	continue accretion patterns in wider estuary locations,
narrower and more fluvial in form.	the previous epoch.	over this epoch.
Over this epoch, the intertidal mudflat and saltmarsh	With sea level rise, tidal prism will increase which would	As sea levels rise, tidal prism and tidal flows are expected
areas in front of defences are assumed to continue to	exacerbate erosion in areas such as Burntwick Island,	to increase. There will therefore be increased potential for
respond as at present. It is predicted that Burntwick	Deadmans Island, Ham Green and Greenborough marshes.	coastal squeeze in areas where net erosion is prevalent
Island, Deadmans Island, Ham Green and Greenborough	However, it is assumed that accretion would continue to	e.g. Burntwick Island, Deadmans Island, Ham Green and
marshes would continue to experience marsh erosion.	keep pace with sea level rise in other areas such as along	Greenborough marshes.
Saltmarsh at Millfordhope Marsh would continue to be	the western shoreline of Chetney Marshes and at Bedlams	This may result in the loss of environmentally designated
relatively stable over this period. Saltmarsh accretion	Bottom.	habitat, which may need to be compensated for
would continue in sheltered areas and along the west	The loss designated habitats may need to be compensated	elsewhere.
shoreline of Chetney Marshes and at Bedlams Bottom.	for elsewhere.	Maintaining the current defence line would fix the Swale
North of Kingsferry Bridge the Swale channel is assumed	Maintaining the current defence line would fix the channel	channel position, restricting natural channel processes.
to be stable over this period. The position of the channel	positions in the Swale, restricting natural channel	Will protect the natural freshwater, agricultural and
would remain fixed due to the maintenance of the current	processes.	residential assets of the frontage and backing flood risk
defence line, which in turn would restrict natural channel	Will protect the natural freshwater, agricultural and	areas.
processes.	residential assets of the frontage and backing flood risk	
Maintaining the current defence line would fix the channel	areas.	
position of the Swale, restricting natural channel		
processes.		
Will protect the natural freshwater, agricultural and		
residential assets of the frontage and backing flood risk		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	areas.		
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Reclaim land between the new and		allow for sea level rise.
	former defences.		
	Advancing the defence line will narrow the channel in an	Any new habitat landward of defences will become more	In the Medway, sediment supply is predicted to decrease
	area that is wider than the ideal form in the Medway. This	established.	over this epoch, limiting accretion in the estuary. In the
	is likely to reduce the tidal prism, potentially reduce	It is assumed that with sea level rise, tidal prism within the	Swale, sediment supply is predicted to be sufficient to
	downstream erosion and move the estuary toward a more	estuary is expected to increase, in turn increasing flow	continue accretion patterns in wider estuary locations,
	ideal form.	speeds in the main channel and therefore increasing the	over this epoch.
	In the Swale however, advancing the defence line will	erosion potential in environmentally designated areas such	It is assumed that with sea level rise, tidal prism within the
	narrow the channel further in an already constrained	as Stangate Creek, West Swale and Long Reach (Swale).	estuary will increase, resulting in exacerbated erosion of
	section of channel. This will potentially move the Swale	Designated habitat loss may need to be compensated for	intertidal areas as per the previous epoch.
	channel away from its ideal form, increase flow speeds	elsewhere.	Fast tidal flows resulting from the additional narrowing of
	and the potential for erosion. Flood risk may be increased	It is assumed that accretion would continue to keep pace	the channel (especially in the Swale) by advancing the
	due to a reduced channel capacity.	with sea level rise in sheltered areas.	defence line are assumed to be exacerbated further.
	There is potential to create new habitat landward of the	Flow speeds through the narrow channel of the Swale are	Mudflat erosion would be amplified in these confined
	defences or use the reclaimed land for development. This	likely to increase and erosion of intertidal areas and	areas. Resulting in complete foreshore loss in places and
	however would be at the expense of existing	defences will be enhanced. Hence, safe navigation of	potential deepening of the main channel.
	environmentally designated habitats. Designated habitat	maritime traffic may become compromised due to the	Consequently defences would become increasingly
	loss may need to be compensated for elsewhere.	increased flow speeds through this channel.	susceptible to erosion in these locations.
	The shoreline will be fixed in position, restricting natural	The shoreline will be fixed in position at MHWS level,	Safe navigation of maritime traffic may be compromised
	estuary processes.	restricting natural estuary processes.	further.
	Advancing defence lines will maintain flood and erosion	Advancing defence lines will maintain flood and erosion	Habitat will be established landward of the defences.
	protection to freshwater marshes, agricultural land and	protection to recreational, residential and agricultural assets.	The shoreline will be fixed in position at MHWS level,

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	villages.		restricting natural estuary processes.	
			Will continue to provide flood and erosion protection to	
			freshwater marshes, agricultural land and villages.	
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement (raising) and / or eventual replacement	
		epoch.	during this epoch.	
	Managed retreat along this section has the potential for	Habitat in realigned areas will become more established	In the Medway, sediment supply is predicted to decrease	
	inundation of significantly large areas of low lying land.	throughout this epoch and new channels and creeks will	over this epoch, limiting accretion in the estuary. In the	
	This will, to a certain extent, also be dependent on the	become more defined.	Swale, sediment supply is predicted to be sufficient to	
	management policies adopted in the Swale (i.e. a	Downstream flow speeds are expected to increase as the	continue accretion patterns in wider estuary locations,	
	management policy of retreat to the west of Sheppey	tidal prism increases due to a wider estuary channel and as	over this epoch.	
	would increase estuary width even further).	sea levels rise. Foreshore erosion is assumed therefore to	Sea level rise and a wider estuary are likely to exacerbate	
	Removal or relocation of residential and commercial	be exacerbated towards the estuary mouth at Sheerness.	increases in tidal prism, flow speeds and erosion in	
	assets may be required, dependant on the chosen line of	Known areas of erosion in environmentally designated	confined areas downstream (at the estuary mouth at	
	retreat.	areas will also potentially be increased, such as Burntwick	Sheerness) and in current erosion hot spots.	
	Inundation of low lying land seaward of the new defences	Island, Deadmans Island, Ham Green and Greenborough	New habitats will be established in realigned areas.	
	would encourage the creation of new intertidal habitat in	marshes. It is assumed that accretion would continue to	Will protect agricultural land and villages.	
	the realigned areas, which would develop over existing	keep pace with sea level rise in other areas.		
	freshwater habitats.	Will protect agricultural land and villages.		
	Designated habitat loss may need to be compensated for			
	elsewhere.			
	Flows into and out of these new intertidal areas are likely			
	to create new channels or result in the expansion of			
	existing creek networks over time.			

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Large scale retreat along the Medway frontage will		
increase estuary width considerably at an already wide		
section of estuary, moving it further away from its ideal		
form.		
Retreat along the Swale frontage will also increase		
estuary width in a narrow section of the estuary, moving it		
towards a more ideal form. However, large scale retreat		
will move the estuary away from the ideal form.		
Large scale retreat downstream, e.g. at Barksore and		
Chetney Marshes, has the potential to increase tidal		
levels upstream in the estuary.		
Release of sediment may potentially reduce erosion rates		
or increase rates of accretion elsewhere in the estuary.		
Resulting increases in tidal prism, especially with large		
scale retreat, are likely to significantly increase tidal flows		
and the potential for erosion in confined areas		
immediately downstream (i.e. at the mouth of the		
Medway).		
Over this epoch, the intertidal mudflat and saltmarsh		
areas in front of defences are likely to continue to		
respond as at present. It is assumed that in the Medway,		
Burntwick Island, Deadmans Island, Ham Green and		
Greenborough marshes would continue to suffer marsh		
erosion. Saltmarsh at Millfordhope Marsh would continue		
to be relatively stable over this period. Saltmarsh		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	accretion would continue in sheltered areas and along the west shoreline of Chetney Marshes and at Bedlams		
	Bottom.		
 Scenario 4	Hold the Line	Hold the Line	No Active Intervention
	Stone revetted banks (<20 years) at Barksore,	All defences would require maintenance, improvement	Defences would expect to fail within this period.
	Chetney and Ferry Marshes would require	and or replacement at various times during this epoch.	
	maintenance/upgrading within this period. Defences		
	(>20 years) along the rest of the frontage would		
	remain.		
	This section of the Medway estuary is very wide and has	During these epochs there is uncertainty regarding the	In the Medway, sediment supply is predicted to decrease
	extensive intertidal and saltmarsh areas and marsh	evolution of mudflats and saltmarsh in this area. It is	over this epoch, limiting accretion in the estuary. In the
	islands. The channel of the Swale, between	assumed however, that intertidal saltmarsh and mudflat	Swale, sediment supply is predicted to be sufficient to
	Queenborough and the Kingsferry Bridge, is however	evolution is assumed to continue in the same pattern as in	continue accretion patterns in wider estuary locations,
	narrower and more fluvial in form.	the previous epoch.	over this epoch.
	Over this epoch, the intertidal mudflat and saltmarsh	With sea level rise, tidal prism will increase which would	Failure of defences will be haphazard during this epoch,
	areas in front of defences are assumed to continue to	exacerbate erosion in areas such as Burntwick Island,	resulting in uncontrolled periodic flooding of large
	respond as at present. It is predicted that Burntwick	Deadmans Island, Ham Green and Greenborough marshes.	expanses of low lying areas, freshwater marshes,
	Island, Deadmans Island, Ham Green and Greenborough	However, it is assumed that accretion would continue to	infrastructure and residential and agricultural assets.
	marshes would continue to experience marsh erosion.	keep pace with sea level rise in other areas such as along	Long term loss of agricultural land and freshwater
	Saltmarsh at Millfordhope Marsh would continue to be	the western shoreline of Chetney Marshes and at Bedlams	habitats.
	relatively stable over this period. Saltmarsh accretion	Bottom.	Designated freshwater habitat loss may need to be
	would continue in sheltered areas and along the west	The loss designated habitats may need to be compensated	compensated for elsewhere.
	shoreline of Chetney Marshes and at Bedlams Bottom.	for elsewhere.	In low lying areas, sporadic defence failure will create
	North of Kingsferry Bridge the Swale channel is assumed	Maintaining the current defence line would fix the channel	new transitional and intertidal habitats within the realigned

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
to be stable over this period. The position of the channel	positions in the Swale, restricting natural channel	areas. Flows into and out of these new intertidal areas
would remain fixed due to the maintenance of the current	processes.	are likely to create new channels or result in the
defence line, which in turn would restrict natural channel	Will protect the natural freshwater, agricultural and	expansion of existing creek networks.
processes.	residential assets of the frontage and backing flood risk	Release of sediment may potentially act to reduce
Maintaining the current defence line would fix the channel	areas.	erosion rates or increase rates of accretion elsewhere in
position of the Swale, restricting natural channel		the estuary.
processes.		In the long term, failure of defences would result in the
Will protect the natural freshwater, agricultural and		Medway and Swale estuary significantly increasing in size
residential assets of the frontage and backing flood risk		as the shoreline realigns. This however would move the
areas.		Medway estuary away from its ideal form. Unless
		significantly large areas are inundated, the Swale estuary
		would potentially move towards a more ideal form.
		It is assumed that tidal prism and tidal flows will increase
		as sea levels rise and the estuary increases in size,
		resulting in the potential for downstream erosion, e.g. at
		the mouth of the Medway.
		Large scale inundation downstream, e.g. at Barksore and
		Chetney Marshes, has the potential to increase tidal
		levels upstream in the estuary.
		In areas where meanders are naturally constrained by
		high land, e.g. Motney Hill and Chetney Hill, defence
		failure would result in erosion governed by the fluvial and
		tidal flows.
		Where defences constrain channel meandering in the
		Swale, defence failure would allow the reassertion of

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
			natural meandering behaviour, with erosion being
			concentrated on the outside of meanders, such as along
			the Swale channel at Chetney Marshes.
			Intertidal mudflat and saltmarsh erosion/accretion trends,
			which are assumed to continue as per the previous
			epoch, would be exacerbated with rising sea levels and
			climate change, however behaviour of intertidal areas
			becomes subject to greater levels of uncertainty through
			this epoch.
Scenario 5	Managed Retreat	Managed Retreat	No Active Intervention
	New defences will need to be constructed landwards	New landward defences would require maintenance,	All defences would eventually fail within this epoch.
	of the present defences.	improvement and / or eventual replacement during this	
		epoch.	
	Managed retreat along this section has the potential for	Habitat in realigned areas will become more established	In the Medway, sediment supply is predicted to decrease
	inundation of significantly large areas of low lying land.	throughout this epoch and new channels and creeks will	over this epoch, limiting accretion in the estuary. In the
	This will, to a certain extent, also be dependent on the	become more defined.	Swale, sediment supply is predicted to be sufficient to
	management policies adopted in the Swale (i.e. a	Downstream flow speeds are expected to increase as the	continue accretion patterns in wider estuary locations,
	management policy of retreat to the west of Sheppey	tidal prism increases due to a wider estuary channel and as	over this epoch.
	would increase estuary width even further).	sea levels rise. Foreshore erosion is assumed therefore to	Failure of retreated defences will be haphazard during
	Removal or relocation of residential and commercial	be exacerbated towards the estuary mouth at Sheerness.	this epoch, resulting in uncontrolled periodic flooding of
	assets may be required, dependant on the chosen line of	Known areas of erosion in environmentally designated	remaining low lying areas, infrastructure and residential
	retreat.	areas will also potentially be increased, such as Burntwick	and agricultural assets.

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Inundation of low lying land seaward of the new defences	Island, Deadmans Island, Ham Green and Greenborough	Any designated freshwater habitat loss may need to be
would encourage the creation of new intertidal habitat in	marshes. It is assumed that accretion would continue to	compensated for elsewhere.
the realigned areas, which would develop over existing	keep pace with sea level rise in other areas.	In low lying areas, sporadic defence failure may create
freshwater habitats.	Will continue to protect agricultural land and villages.	new transitional and intertidal habitats within the
Designated habitat loss may need to be compensated for		inundated areas. Flows into and out of these new
elsewhere.		intertidal areas are likely to create new channels or result
Flows into and out of these new intertidal areas are likely		in the expansion of the existing creek network.
to create new channels or result in the expansion of		Release of sediment may potentially reduce erosion rates
existing creek networks over time.		or increase rates of accretion elsewhere in the estuary.
Large scale retreat along the Medway frontage will		In the long term, failure of defences would result in the
increase estuary width considerably at an already wide		Medway and Swale estuary increasing further in size as
section of estuary, moving it further away from its ideal		the shoreline realigns. This is assumed to move both
form.		estuaries away from their ideal forms.
Retreat along the Swale frontage will also increase		It is assumed that tidal prism and tidal flows will increase
estuary width in a narrow section of the estuary, moving it		as sea levels rise and the estuary increases in size
towards a more ideal form. However, large scale retreat		further, resulting in the potential for downstream erosion,
will move the estuary away from the ideal form.		e.g. at the mouth of the Medway.
Large scale retreat downstream, e.g. at Barksore and		Intertidal mudflat and saltmarsh erosion trends, which are
Chetney Marshes, has the potential to increase tidal		assumed to continue as per the previous epoch, would be
levels upstream in the estuary.		exacerbated with rising sea levels and climate change,
Release of sediment may potentially reduce erosion rates		however behaviour of intertidal areas becomes subject to
or increase rates of accretion elsewhere in the estuary.		greater levels of uncertainty through this epoch.
Resulting increases in tidal prism, especially with large		
scale retreat, are likely to significantly increase tidal flows		
and the potential for erosion in confined areas		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	immediately downstream (i.e. at the mouth of the		
	Medway).		
	Over this epoch, the intertidal mudflat and saltmarsh		
	areas in front of defences are likely to continue to		
	respond as at present. It is assumed that in the Medway,		
	Burntwick Island, Deadmans Island, Ham Green and		
	Greenborough marshes would continue to suffer marsh		
	erosion. Saltmarsh at Millfordhope Marsh would continue		
	to be relatively stable over this period. Saltmarsh		
	accretion would continue in sheltered areas and along the		
	west shoreline of Chetney Marshes and at Bedlams		
	Bottom.		
	Continued protection to agricultural land and villages.		
Swale (south bank)			
	TO MILTON CREEK (SOUTH BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Earth embankment and rock revetment (>20 years)	Earth embankment and rock revetment would require	Defences would require increased levels of
	would remain.	maintenance, improvement and replacement during this	maintenance, improvement and replacement with sea
		epoch.	levels rise and the effects of climate change.
	The channel of the Swale, between Kingsferry Bridge and	With sea level rise, tidal prism and tidal flows are assumed	Over this epoch, sediment supply in the Swale is
	Milton Creek is fluvial in form.	to increase, resulting in the potential for coastal squeeze of	predicted to be sufficient to continue accretion patterns in
	Narrow Intertidal mudflat and saltmarsh areas in front of	designated intertidal areas along constrained channels as	locations where the channel is wide.
	defences are assumed to continue to respond as at	defences constrain landward migration of habitat.	However, constrained channels are more likely to
	present. 'The Lillies' islands at the mouth of Milton Creek	Any designated habitat loss may need to be compensated	experience an increased potential for erosion of
	will continue to accrete. Larger areas of saltmarsh and	for elsewhere.	designated intertidal habitats, due to an increase in tidal

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	mudflat along this frontage should continue to be stable.	In wider channel locations e.g. at the mouth of the Milton	prism and tidal flows as sea levels rise.
	Maintenance of the current defence line will fix the	Creek, continued vertical saltmarsh growth is assumed as	Channels will be fixed in position, restricting natural
	channel in position and restrict natural channel	sediment supply is expected to meet demand within the	channel processes.
	processes.	estuary over this epoch.	Will continue to protect the natural freshwater assets,
	Will continue to protect the industrial assets,	Channels will be fixed in position, restricting natural channel	economic, residential and agricultural assets and backing
	infrastructure, freshwater marshes and backing flood risk	processes.	flood risk areas.
	areas.	Will continue to protect the industrial assets, infrastructure,	
		freshwater marshes and backing flood risk areas.	
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Infill and reclaim land between the new		allow for sea level rise.
	and former defences.		
	Advancing the defence line will narrow the channel further	Flow speeds through the narrow channel will increase and	With sea level rise, tidal prism and tidal flows within the
	in an already constrained section of the estuary.	erosion of intertidal areas and advanced defences are likely	estuary are assumed to increase further.
	Consequently, narrowing the channel is expected to	to be enhanced as sea levels rise. Consequently, it is	Fast tidal flows resulting from the additional narrowing of
	increase flow speeds and erosion within the constrained	assumed that the foreshore will narrow considerably in	the channel by advancing the defence line are likely to be
	reaches and immeadiately downstream (e.g. towards the	constrained locations.	exacerbated further. It is assumed therefore that intertidal
	Medway mouth and where the Swale joins the Medway at	Loss of designated habitat may need to be compensated for	erosion would amplify in confined areas (essentially along
	Queenborough).	elsewhere.	the whole frontage).
	Flood risk may be increased due to reduced channel	The advanced defence line will continue to fix the channel	Loss of designated habitat may need to be compensated
	capacity.	position and restrict natural channel processes.	for elsewhere.
	There is potential to create new habitat landward of the	Flood protection to freshwater marshes, economic assets	The advanced defence line will continue to fix the channel
	defences or use land for development.	and backing flood risk areas will continue.	position and restrict natural channel processes. Defences
	Loss of intertidal habitat will result from seaward		would however become increasingly susceptible to

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	movement of defences. Loss of designated habitat may		erosion throughout this epoch.
	need to be compensated for elsewhere.		Flood protection to freshwater marshes, economic assets
	Will maintain flood protection to freshwater marshes,		and backing flood risk areas will continue.
	economic assets and backing flood risk areas.		
	Creating new defences seaward of the original defence		
	line will fix the channel in position and restrict natural		
	channel processes.		
_	_		
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
	of the present defences.	improvement and / or eventual replacement during this	improvement and / or eventual replacement during
		epoch.	this epoch.
	Removal or relocation of infrastructure and economic	Downstream flow speeds are expected to increase as the	Over this epoch, in the Swale, sediment supply is
	assets may be required dependant on the chosen line of	tidal prism increases due to an increased intertidal area and	predicted to be sufficient to continue accretion patterns in
	retreat.	with sea level rise.	locations where the channel is wide.
	Managed retreat could potentially increase the estuary	Foreshore erosion is therefore likely to be exacerbated in	Habitats in realigned areas and new channels will be
	width significantly This would occur in areas which are	confined channel locations and immediately downstream	more established.
	narrower than the ideal form, i.e. around Elmley Island	(e.g. the constrained channel around the Isle of Harty).	It is assumed that an increase in tidal prism and
	and towards Kingsferry Bridge, moving it towards a more	New habitat in realigned areas will become more	associated intertidal erosion downstream and in confined
	ideal form in these locations.	established and new channels will become more defined.	areas, will be exacerbated during this epoch with sea
	A wider channel is assumed to increase tidal prism and	Will continue to protect the backing flood risk areas and	level rise and climate change.
	tidal flows immediately downstream and in confined	economic assets.	Will continue to protect the backing flood risk areas and
	areas, resulting in the potential for increased erosion		economic assets.
	around the naturally constrained channels around Elmley		
	Hills and the Isle of Harty.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Inundation of low lying land seaward of retreated		
	defences would encourage the creation of new intertidal		
	habitat in the realigned areas, which would develop over		
	existing habitats.		
	Any designated habitat loss may need to be		
	compensated for elsewhere.		
	Flows into and out of these new intertidal areas are likely		
	to create new channels or result in the expansion of the		
	existing creek network over time.		
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Will continue to protect the backing flood risk areas and		
	economic assets.		
Scenario 4	Hold the Line	Hold the Line	No Active Intervention
	Earth embankment and rock revetment (>20 years)	Earth embankment and rock revetment would require	Defences are expected to fail within this period.
	would remain.	maintenance, improvement and replacement during this	
		epoch.	
	The channel of the Swale, between Kingsferry Bridge and	With sea level rise, tidal prism and tidal flows are assumed	Over this epoch, in the Swale, sediment supply is
	Milton Creek is channel in form.	to increase, resulting in the potential for coastal squeeze of	predicted to be sufficient to continue accretion patterns in
	Narrow Intertidal mudflat and saltmarsh areas in front of	designated intertidal areas along constrained channels as	locations where the channel is wide.
	defences are assumed to continue to respond as at	defences constrain landward migration of habitat.	Failure of defences will be haphazard, resulting in
	present. 'The Lillies' islands at the mouth of Milton Creek	Any designated habitat loss may need to be compensated	uncontrolled flooding of low lying areas, freshwater
	will continue to accrete. Larger areas of saltmarsh and	for elsewhere.	habitats, economic assets and residential areas at
	mudflat along this frontage should continue to be stable.	In wider channel locations e.g. at the mouth of the Milton	Sittingbourne.
	Maintenance of the current defence line will fix the	Creek, continued vertical saltmarsh growth is assumed as	It is assumed that failure of defences would eventually

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
channel in position and restrict natural channel	sediment supply is expected to meet demand within the	result in the estuary channel significantly increasing in	
processes.	estuary over this epoch.	size as the shoreline realigns, moving the estuary	
Will continue to protect the industrial assets,	Channels will be fixed in position, restricting natural channel	towards the ideal form in an originally constrained section	
infrastructure, freshwater marshes and backing flood risk	processes.	of the estuary.	
areas.	Will continue to protect the industrial assets, infrastructure,	Inundation of low lying land and a continual supply of	
	freshwater marshes and backing flood risk areas.	sediment would encourage the creation of new intertidal	
		habitat in the realigned areas, which would develop over	
		existing habitats. Flows into and out of these new	
		intertidal areas are likely to create new channels or result	
		in the expansion of the existing creek network.	
		Any designated habitat loss may need to be	
		compensated for elsewhere.	
		In the long term NAI will allow for the reassertion of	
		natural meandering. Release of sediment may potentially	
		reduce erosion rates or increase rates of accretion	
		elsewhere in the estuary.	
		As sea levels rise, and as the estuary increases in width,	
		it is assumed that tidal prism, flow speeds and erosion	
		downstream and on outside of meanders will increase.	
		If NAI occurs along the whole of the Swale (east of	
		Kingsferry Bridge) the estuary would find a new	
		equilibrium form, and in terms of width, the estuary would	
		conform to an ideal form.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
MILTON CREEK TO F	AVERSHAM CREEK (SOUTH BANK)		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Earth embankment and rock revetment (>20 years)	Earth embankment and rock revetment would require	Defences would require increased levels of
	would remain.	maintenance, improvement and replacement during this	maintenance, improvement and replacement with sea
		epoch.	levels rise and the effects of climate change.
	From Milton Creek to Faversham Creek the channel	With sea level rise, tidal prism and tidal flows are assumed	Over this epoch, in the Swale, sediment supply is
	widens and has large areas of intertidal mudflat, but	to increase, resulting in the potential for coastal squeeze of	predicted to be sufficient to continue accretion patterns in
	relatively small areas of saltmarsh, e.g. Fowley Island.	designated intertidal areas along constrained channel	locations where the channel is wide.
	The channel width is constant from Milton Creek towards	sections (around Elmley Island and the Isle of Harty) as	It is assumed however, that with sea level rise, tidal prism
	the Isle of Harty, and then gets wider towards the eastern	defences constrain landward migration of habitat.	and tidal flows will increase further. Constrained channels
	estuary mouth at Shell Ness.	Any designated habitat loss may need to be compensated	will therefore potentially become increasingly subject to
	Large areas of former saltmarsh have been enclosed and	for elsewhere.	coastal squeeze resulting in the erosion of designated
	reclaimed from the sea for agricultural use along this	In wider channel locations continued vertical saltmarsh	intertidal habitats as defences constrain natural landward
	frontage.	growth is assumed as sediment supply is expected to meet	migration.
	Intertidal mudflat and saltmarsh areas in front of defences	demand within the estuary over this epoch.	Any designated habitat loss may need to be
	are assumed to continue to respond as at present.	Channels will be fixed in position, restricting natural channel	compensated for elsewhere.
	Faversham Creek and 'The Lillies' islands at the mouth of	processes.	Channels will be fixed in position, restricting natural
	Milton Creek are likely to continue to accrete. In other	Will continue to protect the industrial assets, infrastructure,	channel processes.
	areas the channel is assumed to be stable.	freshwater marshes and backing flood risk areas.	Will continue to protect the industrial assets,
	It is assumed that constrained channel areas would		infrastructure, freshwater marshes and backing flood risk
	continue to experience erosion, e.g. where the channel		areas.
	narrows east of the mouth of Milton Creek and south west		
	of the Isle of Harty.		
	Will continue to protect the natural freshwater assets,		
	economic, residential and agricultural assets and backing		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	flood risk areas.		
	Detrimental impacts to environmental designations may		
	occur, due to the potential for coastal squeeze of intertidal		
	habitats and foreshore in constrained areas. Any		
	designated habitat loss may need to be compensated for		
	elsewhere.		
	Maintenance of the current defence line will fix the		
	channel in position and restrict natural channel		
	processes.		
Scenario 2	Advance the Line	Advance the Line	Advance the Line
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to
	defence line. Infill and reclaim land between the new		allow for sea level rise.
	and former defences.		
	Advancing defences will narrow the channel further in	Flow speeds through the narrow channel will increase and	With sea level rise, tidal prism and tidal flows within the
	already constrained locations (e.g. at Uplees). Narrowing	erosion of intertidal areas and advanced defences are likely	estuary are assumed to increase further.
	the channel is expected to increase flow speeds through	to be enhanced as sea levels rise. Consequently, it is	Fast tidal flows resulting from the additional narrowing of
	the channel and immediately downstream and therefore	assumed that the foreshore will narrow considerably in	the channel by advancing the defence line are likely to be
	increase erosion of intertidal mudflat and saltmarsh	constrained locations.	exacerbated further. It is assumed therefore that intertidal
	areas.	Loss of designated habitat may need to be compensated for	erosion would amplify in confined areas (essentially along
	Where the channel is too wide at present (in the middle	elsewhere.	the whole frontage).
	estuary), advancing the line is assumed to move the	The advanced defence line will continue to fix the channel	Loss of designated habitat may need to be compensated
	estuary towards a more ideal form and reduce tidal prism.	position and restrict natural channel processes.	for elsewhere.
	Flood risk may be increased due to reduced channel	Flood protection to freshwater marshes, economic assets	The advanced defence line will continue to fix the channel
	capacity.	and backing flood risk areas will continue.	position and restrict natural channel processes. Defences
	There is potential to create new habitat landward of the		would however become increasingly susceptible to
	Predicted Change For		
------------	--	---	--
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	defences or use land for development.		erosion throughout this epoch.
	Loss of intertidal habitat will result from seaward		Flood protection to freshwater marshes, economic assets
	movement of defences. Loss of designated habitat may		and backing flood risk areas will continue.
	need to be compensated for elsewhere.		
	Channels will be fixed in position by advancing the		
	defence line, restricting natural channel processes.		
	Will maintain flood protection to freshwater marshes,		
	economic, residential and agricultural assets and backing		
	flood risk areas.		
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,
	of the present defences.	improvement and / or eventual replacement during this	improvement and / or eventual replacement during
		epoch.	this epoch.
	Managed retreat along this section has the potential for	Downstream flow speeds are expected to increase as the	Over this epoch, in the Swale, sediment supply is
	inundation of significantly large areas of low lying land,	tidal prism increases due to a wider estuary channel and as	predicted to be sufficient to continue accretion patterns in
	dependant on the chosen line of retreat. This will, to a	sea levels rise.	locations where the channel is wide.
	certain extent, also be dependent on the management	Foreshore erosion is therefore likely to be exacerbated in	Habitats in realigned areas and new channels will be
	policies adopted on the north bank of the Swale (i.e. a	confined channel locations and immediately downstream of	more established.
	management policy of retreat to the south of Sheppey	the realignment.	Increased tidal prism and associated intertidal erosion,
	would increase estuary width further).	New habitat in realigned areas will become more	downstream and in confined areas will be exacerbated
	Where the estuary is already wider than the ideal form (in	established and new channels will become more defined.	during this epoch with sea level rise and climate change.
	the middle estuary), realignment will move the estuary	Will continue to protect the backing flood risk areas,	Will continue to protect the backing flood risk areas,
	away from its ideal form (especially with large scale	economic, residential and agricultural assets.	economic, residential and agricultural assets.
	retreat). Large scale realignment is likely to result in		
	significant increases in tidal prism, flow speeds and		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	erosion immediately downstream and in confined areas		
	(towards Faversham Creek).		
	In areas which are narrower than the ideal form at		
	present (e.g. at Uplees and near Milton Creek),		
	realignment is expected to increase the estuary width		
	moving it towards a more ideal form in these locations.		
	Large scale retreat downstream, e.g. south of the Swale		
	has the potential to increase tidal levels upstream in the		
	estuary.		
	Inundation of low lying land seaward of the new defences		
	would encourage the creation of new intertidal habitat in		
	the realigned areas, which would develop over existing		
	freshwater habitats.		
	Designated habitat loss may need to be compensated for		
	elsewhere.		
	Flows into and out of these new intertidal areas are likely		
	to create new channels or result in the expansion of		
	existing creek networks over time.		
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Will continue to protect the backing flood risk areas,		
	economic, residential and agricultural assets.		
Scenario 4	Hold the Line	Hold the Line	No Active Intervention
	Earth embankment and rock revetment (>20 years)	Earth embankment and rock revetment would require	Defences are expected to fail within this period.
	would remain.	maintenance, improvement and replacement during this	

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	epoch.		
From Milton Creek to Faversham Creek the channel	With sea level rise, tidal prism and tidal flows are assumed	Over this epoch, in the Swale, sediment supply is	
widens and has large areas of intertidal mudflat, but	to increase, resulting in the potential for coastal squeeze of	predicted to be sufficient to continue accretion patterns in	
relatively small areas of saltmarsh, e.g. Fowley Island.	designated intertidal areas along constrained channel	locations where the channel is wide.	
The channel width is constant from Milton Creek towards	sections (around Elmley Island and the Isle of Harty) as	Failure of defences will be haphazard, resulting in	
the Isle of Harty, and then gets wider towards the eastern	defences constrain landward migration of habitat.	uncontrolled flooding of extensive low lying areas and	
estuary mouth at Shell Ness.	Any designated habitat loss may need to be compensated	agricultural, residential and economic assets. Flooding	
Large areas of former saltmarsh have been enclosed and	for elsewhere.	would occur on every high tide.	
reclaimed from the sea for agricultural use along this	In wider channel locations continued vertical saltmarsh	Failure of defences would result in the estuary channel	
frontage.	growth is assumed as sediment supply is expected to meet	increasing significantly in size as the shoreline realigns,	
Intertidal mudflat and saltmarsh areas in front of defences	demand within the estuary over this epoch.	moving the estuary away from its ideal form, where the	
are assumed to continue to respond as at present.	Channels will be fixed in position, restricting natural channel	channel was already wide, and towards the ideal form in	
Faversham Creek and 'The Lillies' islands at the mouth of	processes.	constrained areas.	
Milton Creek are likely to continue to accrete. In other	Will continue to protect the industrial assets, infrastructure,	Large scale inundation downstream, e.g. south of the	
areas the channel is assumed to be stable.	freshwater marshes and backing flood risk areas.	Swale, has the potential to increase tidal levels upstream	
It is assumed that constrained channel areas would		in the estuary.	
continue to experience erosion, e.g. where the channel		Inundation of low lying land and a continual supply of	
narrows east of the mouth of Milton Creek and south west		sediment would encourage the creation of new intertidal	
of the Isle of Harty.		habitat in the realigned areas, which would develop over	
Detrimental impacts to environmental designations may		existing habitats. Flows into and out of these new	
occur, due to the potential for coastal squeeze of intertidal		intertidal areas are likely to create new channels or result	
habitats and foreshore in constrained areas. Any		in the expansion of the existing creek network.	
designated habitat loss may need to be compensated for		Any designated habitat loss may need to be	
elsewhere.		compensated for elsewhere.	
Maintenance of the current defence line will fix the		In the long term NAI will allow for the reassertion of	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	channel in position and restrict natural channel		natural meandering. Release of sediment may potentially	
	processes.		reduce erosion rates or increase rates of accretion	
	Will continue to protect the natural freshwater assets,		elsewhere in the estuary.	
	economic, residential and agricultural assets and backing		As sea levels rise, and as the estuary increases in width,	
	flood risk areas.		it is assumed that tidal prism, flow speeds and erosion	
			downstream and on outside of meanders will increase.	
			If NAI occurs along the whole of the Swale (east of	
			Kingsferry Bridge) the estuary would find a new	
			equilibrium form, and in terms of width, the estuary would	
			conform to an ideal form.	
Scenario 5	Managed Retreat	Managed Retreat	No Active Intervention	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	Defences are expected to fail within this period.	
	of the present defences.	improvement and / or eventual replacement during this		
		epoch.		
	Managed retreat along this section has the potential for	Downstream flow speeds are expected to increase as the	Over this epoch, in the Swale, sediment supply is	
	inundation of significantly large areas of low lying land.	tidal prism increases due to a wider estuary channel and as	predicted to be sufficient to continue accretion patterns in	
	This will, to a certain extent, also be dependent on the	sea levels rise.	locations where the channel is wide.	
	management policies adopted on the north bank of the	Foreshore erosion is therefore likely to be exacerbated in	Failure of realigned defences will be haphazard, resulting	
	Swale (i.e. a management policy of retreat to the south of	confined channel locations and immediately downstream of	in uncontrolled flooding of extensive low lying areas and	
	Sheppey would increase estuary width even further).	the realignment.	agricultural, residential and economic assets. Flooding	
	Where the estuary is already wider than the ideal form (in	New habitat in realigned areas will become more	would occur on every high tide.	
	the middle estuary), realignment will move the estuary	established and new channels will become more defined.	Failure of realigned defences would result in the estuary	
	away from its ideal form (especially with large scale	Will continue to protect the backing flood risk areas,	channel increasing further in size as the shoreline	
	retreat). Large scale realignment is likely to result in	economic, residential and agricultural assets.	realigns, again moving the estuary away further from its	
	significant increases in tidal prism, flow speeds and		ideal form.	

Predicted Change For		
 Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
erosion immediately downstream and in confined areas		Inundation of low lying land and a continual supply of
(towards Faversham Creek).		sediment could encourage the creation of new intertidal
In areas which are narrower than the ideal form at		habitat in the realigned areas, at the expense of existing
present (e.g. at Uplees and near Milton Creek),		habitats. Flows into and out of these new intertidal areas
realignment is expected to increase the estuary width		are likely to create new channels or result in the
moving it towards a more ideal form in these locations.		expansion of the existing creek network.
Large scale retreat downstream, e.g. south of the Swale,		Any designated habitat loss may need to be
has the potential to increase tidal levels upstream in the		compensated for elsewhere.
estuary.		In the long term NAI will allow for the reassertion of
Inundation of low lying land seaward of the new defences		natural meandering. Release of sediment may potentially
would encourage the creation of new intertidal habitat in		reduce erosion rates or increase rates of accretion
the realigned areas, which would develop over existing		elsewhere in the estuary.
freshwater habitats.		As sea levels rise, and as the estuary increases in width,
Designated habitat loss may need to be compensated for		it is assumed that tidal prism, flow speeds and erosion
elsewhere.		downstream and on outside of meanders will increase.
Flows into and out of these new intertidal areas are likely		If NAI occurs along the whole of the Swale (east of
to create new channels or result in the expansion of		Kingsferry Bridge) the estuary would find a new
existing creek networks over time.		equilibrium form, and in terms of width, the estuary would
Release of sediment may potentially reduce erosion rates		conform to an ideal form.
or increase rates of accretion elsewhere in the estuary.		
Will continue to protect the backing flood risk areas,		
economic, residential and agricultural assets.		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Swale (north bank)			
SHELL NESS TO KING	SFERRY BRIDGE		
Scenario 1	Hold the Line	Hold the Line	Hold the Line
	Earth embankments and revetments (<20 years)	Earth embankments and revetments would require	The combined effects of sea level rise and climate
	would require significant levels of maintenance,	increased levels of maintenance, improvement and	change would result in the increased need for
	improvement and replacement during this period.	replacement within this epoch.	maintenance, improvement and replacement of
			defences.
	The channel of the Swale, between Shell Ness and	With sea level rise, tidal prism and tidal flows are assumed	Over this epoch, in the Swale, sediment supply is
	Elmley Island is of a relatively constant width, with	to increase, resulting in the potential for coastal squeeze of	predicted to be sufficient to continue accretion patterns in
	extensive areas of saltmarsh and intertidal mudflats along	designated intertidal areas along constrained channel	locations where the channel is wide.
	the southern shoreline of the Isle of Sheppey. The	sections (around Elmley Island and the Isle of Harty) as	However, it is assumed that the supply of shells from the
	channel changes to a more fluvial form between Elmley	defences constrain landward migration of habitat.	offshore source would decline as the bank becomes
	Island and Kingsferry Bridge.	Any designated habitat loss may need to be compensated	drowned as sea levels rise. It is therefore assumed that
	The shell beach and spit at Shell Ness is assumed to	for elsewhere.	this will result in the spit and beach at Shell Ness
	continue to accrete as at present (analysis of historic	In wider channel locations continued vertical saltmarsh	narrowing and the spit becoming increasingly susceptible
	maps indicates an approximate accretion rate of 4.3m/yr	growth is assumed, as sediment supply is expected to meet	to breach. This would place increasing pressure on
	at present) assuming that a continual supply of sediment	demand within the estuary over this epoch.	landward defences in this area, reduce the natural
	from offshore sources is available.	The shell spit and beach at Shell Ness is expected to	protection to the habitats behind and widen the eastern
	Intertidal mudflat and saltmarsh areas in front of defences	continue to accrete as long as a sediment supply was	estuary mouth.
	are assumed to continue to respond as at present where	available.	This may result in a greater length of the southern
	mudflat and saltmarsh accretion would be expected to	Channels will be fixed in position, restricting natural channel	shoreline of the Swale being likely to become increasingly
	continue between Shell Ness and the Isle of Harty. Along	processes.	susceptible to open coast conditions (i.e. increased
	constrained channel frontages (e.g. between Elmley Hills	Will continue to protect the freshwater marshes and backing	erosion potential with climate change).
	and Kingsferry Bridge, and to the south west of the Isle of	flood risk areas.	Behaviour of these intertidal areas however, become
	Harty), intertidal habitats are likely to experience		subject to greater levels of uncertainty throughout this

	Predicted Change For				
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)		
	increased erosion.		epoch.		
	Detrimental impacts to environmental designations may		It is also assumed, that with sea level rise, tidal prism and		
	occur, due to the potential for coastal squeeze of intertidal		tidal flows will increase further. Constrained channels will		
	habitats and foreshore in constrained areas. Any		therefore potentially become increasingly subject to		
	designated habitat loss may need to be compensated for		coastal squeeze resulting in the erosion of designated		
	elsewhere.		intertidal habitats as defences constrain natural landward		
	Maintenance of the current defence line will fix the		migration.		
	channel in position and restrict natural channel		Any designated habitat loss may need to be		
	processes.		compensated for elsewhere.		
	Will continue to protect the freshwater marshes and		Channels will be fixed in position, restricting natural		
	backing flood risk areas.		channel processes.		
			Will continue to protect the freshwater marshes and		
			backing flood risk areas.		
Scenario 2	Advance the Line	Advance the Line	Advance the Line		
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to		
	defence line. Infill and reclaim land between the new		allow for sea level rise.		
	and former defences.				
	Advancing defences will narrow the channel further in	Flow speeds through the narrow channel will increase, and	With sea level rise, tidal prism and tidal flows within the		
	already constrained locations (e.g. around the Isle of	erosion of intertidal areas and advanced defences are likely	estuary are assumed to increase further.		
	Harty). Narrowing the channel is expected to increase	to be enhanced as sea levels rise. Consequently, it is	Fast tidal flows resulting from the additional narrowing of		
	flow speeds through the channel and immediately	assumed that the foreshore will narrow considerably in	the channel by advancing the defence line are likely to be		
	downstream and therefore increase erosion of intertidal	constrained locations.	exacerbated further. It is assumed therefore that intertidal		
	mudflat and saltmarsh areas.	Loss of designated habitat may need to be compensated for	erosion would amplify in confined areas (essentially along		
	Where the channel is too wide at present (at the eastern	elsewhere.	the whole frontage).		
	mouth and in the middle estuary), advancing the line is	The advanced defence line will continue to fix the channel	Loss of designated habitat may need to be compensated		

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	assumed to move the estuary towards a more ideal form	position and restrict natural channel processes.	for elsewhere.	
	and reduce tidal prism.	Flood protection to freshwater marshes and backing flood	The advanced defence line will continue to fix the channel	
	Flood risk may be increased due to reduced channel	risk areas will continue.	position and restrict natural channel processes. Defences	
	capacity.		would however become increasingly susceptible to	
	There is potential to create new habitat landward of the		erosion throughout this epoch.	
	defences or use land for development.		Flood protection to freshwater marshes, economic assets	
	Loss of intertidal habitat will result from seaward		and backing flood risk areas will continue.	
	movement of defences. Loss of designated habitat may			
	need to be compensated for elsewhere.			
	Channels will be fixed in position by advancing the			
	defence line, restricting natural channel processes.			
	Will maintain flood protection to freshwater marshes and			
	backing flood risk areas.			
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement and / or eventual replacement during	
		epoch.	this epoch.	
	Managed retreat along this section has the potential for	The shell spit and beach at Shell Ness would continue to	Over this epoch, in the Swale, sediment supply is	
	inundation of significantly large areas of low lying land,	accrete as long as a sediment supply was available.	predicted to be sufficient to continue accretion patterns in	
	dependant on the chosen line of retreat. This will, to a	Downstream flow speeds are expected to increase as the	locations where the channel is wide.	
	certain extent, also be dependent on the management	tidal prism increases due to an increased intertidal area and	With sea level rise, however, it is assumed that sediment	
	policies adopted on the south bank of the Swale (i.e. a	as sea levels rise.	supply from the offshore shell source would decline as it	
	management policy of retreat to the south of the Swale	Foreshore erosion is therefore likely to be exacerbated in	becomes drowned, resulting in the spit and beach at Shell	
	would increase estuary width further).	confined channel locations and immediately downstream of	Ness narrowing.	
	Secondary defences already exist in some places so	the realignment (around Elmley Island and the Isle of Harty).	Realigned defences would potentially allow the spit to	

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
costs of new defences may be minimised.	New habitat in realigned areas will become more	eventually breach and migrate landwards naturally. The
The beach and shell spit at Shell Ness are assumed to	established and new channels will become more defined.	decline of the spit is likely to reduce natural protection to
continue to accrete.	Will maintain flood protection to some freshwater marshes	the habitats behind and would widen the eastern Swale
The line of realignment will determine whether the option	and backing flood risk areas.	mouth.
will have a positive or negative effect on the estuary, for		The widening of the mouth is likely to result in a greater
example where the estuary is already wider than the ideal		length of the southern shoreline of the Swale becoming
form (in the middle estuary and at Shell Ness),		increasingly susceptible to open coast conditions (i.e.
realignment will move the estuary away from its ideal		increased erosion potential with climate change).
form (especially with large scale retreat). Large scale		Habitats in realigned areas and new channels will be
realignment is likely to result in significant increases in		more established.
tidal prism, flow speeds and erosion immediately		Increased tidal prism and associated intertidal erosion,
downstream and in confined areas (south west of the Isle		downstream and in confined areas will be exacerbated
of Harty and north of Elmley Island to Kingsferry Bridge).		during this epoch with sea level rise and climate change.
Large scale retreat downstream, e.g. north of the Swale,		Will maintain flood protection to some freshwater
also has the potential to increase tidal levels upstream in		marshes and backing flood risk areas.
the estuary.		
However, in areas which are narrower than the ideal form		
at present (e.g. around the Isle of Harty and Elmley Hills),		
realignment is expected to increase the estuary width		
moving it towards a more ideal form in these locations.		
Realignment may create a second mouth to the Swale		
around the Isle of Harty (dependant on the adopted policy		
on the open coast south of Leysdown-on-Sea) and a		
second channel around Elmley Island. These new		
channels would essentially widen the narrow sections of		

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	channel, moving the estuary towards a more ideal form.		
	Inundation of low lying land seaward of the new defences		
	would encourage the creation of new intertidal habitat in		
	the realigned areas, which would develop over existing		
	freshwater habitats.		
	Designated habitat loss may need to be compensated for		
	elsewhere.		
	Flows into and out of these new intertidal areas are likely		
	to create new channels or result in the expansion of		
	existing creek networks over time.		
	Release of sediment may potentially reduce erosion rates		
	or increase rates of accretion elsewhere in the estuary.		
	Will maintain flood protection to some freshwater		
	marshes and backing flood risk areas.		
Scenario 4	Hold the Line	Hold the Line	No Active Intervention
	Earth embankments and revetments (<20 years)	Earth embankments and revetments would require	No formal defences exist around the high land
	would require significant levels of maintenance,	increased levels of maintenance, improvement and	around the Isle of Harty.
	improvement and replacement during this period.	replacement within this epoch.	Earth embankments, revetments and groynes (<20
			years) will fail during this period.
	The channel of the Swale, between Shell Ness and	With sea level rise, tidal prism and tidal flows are assumed	The eventual failure of groynes along this frontage may
	Elmley Island is of a relatively constant width, with	to increase, resulting in the potential for coastal squeeze of	allow greater rates of long shore transport, As a result the
	extensive areas of saltmarsh and intertidal mudflats along	designated intertidal areas along constrained channel	beach may begin to narrow (assuming a reduced supply
	the southern shoreline of the Isle of Sheppey. The	sections (around Elmley Island and the Isle of Harty) as	of sediment from the offshore bank as it drowns under
	channel changes to a more fluvial form between Elmley	defences constrain landward migration of habitat.	sea level rise) and the tip of the spit would recurve
	Island and Kingsferry Bridge.	Any designated habitat loss may need to be compensated	landwards. Landward rollover of the beach is likely to

Predicted Change For		
 Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
The shell beach and spit at Shell Ness is assumed to	for elsewhere.	occur in exposed locations, as backing defences fail and
continue to accrete as at present (analysis of historic	In wider channel locations continued vertical saltmarsh	wave energy levels increase.
maps indicates an approximate accretion rate of 4.3m/yr	growth is assumed, as sediment supply is expected to meet	Decline of the spit is assumed to reduce natural
at present) assuming that a continual supply of sediment	demand within the estuary over this epoch.	protection to the habitats behind and widen the eastern
from offshore sources is available.	The shell spit and beach at Shell Ness is expected to	Swale mouth, rendering greater areas of the south shore
Intertidal mudflat and saltmarsh areas in front of defences	continue to accrete as long as a sediment supply was	of the Swale more exposed.
are assumed to continue to respond as at present where	available.	Failure of other defences will be haphazard, resulting in
mudflat and saltmarsh accretion would be expected to	Channels will be fixed in position, restricting natural channel	uncontrolled flooding of freshwater marshes, and
continue between Shell Ness and the Isle of Harty. Along	processes.	extensive low lying areas. A new channel may form
constrained channel frontages (e.g. between Elmley Hills	Will continue to protect the freshwater marshes and backing	around Elmley Island.
and Kingsferry Bridge, and to the south west of the Isle of	flood risk areas.	The existence of secondary defences however, may
Harty), intertidal habitats are likely to experience		restrict the area inundated, e.g. towards the south east of
increased erosion.		Sheppey, counterwalls and secondary defences are
Detrimental impacts to environmental designations may		assumed to contain inundation.
occur, due to the potential for coastal squeeze of intertidal		These secondary defences are likely to fail towards the
habitats and foreshore in constrained areas. Any		end of this epoch. The flooding of low lying land behind
designated habitat loss may need to be compensated for		these defences may potentially create a new channel of
elsewhere.		the Swale, separating the Isle of Harty from the Isle of
Maintenance of the current defence line will fix the		Sheppey. This channel may connect with the open coast
channel in position and restrict natural channel		north of Shell Ness, creating a third mouth to the Swale
processes.		(dependent on the adopted policy on the open coast for
Will continue to protect the freshwater marshes and		north Sheppey, this may cause significant impacts to
backing flood risk areas.		assets at Leysdown-on Sea).
		Large scale inundation downstream, e.g. north of the
		Swale, has the potential to increase tidal levels upstream

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
		in the estuary.
		In areas backed by high land, for example the London
		Clay Islands around Elmley Hills and the Isle of Harty,
		defence failure would result in low rates of erosion
		(approximately 0.5m/yr) governed by the channel and
		tidal flows.
		In the long term NAI will allow for the reassertion of
		natural meandering. Release of sediment may potentially
		reduce erosion rates or increase rates of accretion
		elsewhere in the estuary.
		Failure of defences would result in the estuary channel
		increasing in size as the shoreline realigns, moving the
		estuary away from its ideal form, where the channel was
		already wide, and towards the ideal form in constrained
		areas.
		Inundation of low lying land and a predicted continual
		supply of sediment to the Swale would encourage the
		creation of new intertidal habitat in the realigned areas,
		which would develop over existing habitats. Flows into
		and out of these new intertidal areas are likely to create
		new channels or result in the expansion of the existing
		creek network.
		Any designated habitat loss may need to be
		compensated for elsewhere.
		As sea levels rise, and as the estuary increases in width,

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
			it is assumed that tidal prism, flow speeds and erosion	
			downstream and on outside of meanders will increase.	
			If NAI occurs along the whole of the Swale (east of	
			Kingsferry Bridge) the estuary would find a new	
			equilibrium form, and in terms of width, the estuary would	
			conform to an ideal form.	
Scenario 5	Managed Retreat	Managed Retreat	No Active Intervention	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	No formal defences exist around the high land	
	of the present defences.	improvement and / or eventual replacement during this	around the Isle of Harty.	
		epoch.	Defences will fail during this period.	
	Managed retreat along this section has the potential for	The shell spit and beach at Shell Ness would continue to	The eventual failure of groynes along this frontage may	
	inundation of significantly large areas of low lying land,	accrete as long as a sediment supply was available.	allow greater rates of long shore transport, As a result the	
	dependant on the chosen line of retreat. This will, to a	Downstream flow speeds are expected to increase as the	beach may begin to narrow (assuming a reduced supply	
	certain extent, also be dependent on the management	tidal prism increases due to an increased intertidal area and	of sediment from the offshore bank as it drowns under	
	policies adopted on the south bank of the Swale (i.e. a	as sea levels rise.	sea level rise) and the tip of the spit would recurve	
	management policy of retreat to the south of the Swale	Foreshore erosion is therefore likely to be exacerbated in	landwards. Landward rollover of the beach is likely to	
	would increase estuary width even further).	confined channel locations and immediately downstream of	occur in exposed locations, as backing defences fail and	
	Secondary defences already exist in some places so	the realignment (around Elmley Island and the Isle of Harty).	wave energy levels increase.	
	costs of new defences may be minimised.	New habitat in realigned areas will become more	Decline of the spit is assumed to reduce natural	
	The beach and shell spit at Shell Ness are assumed to	established and new channels will become more defined.	protection to the habitats behind and widen the eastern	
	continue to accrete.	Will maintain flood protection to some freshwater marshes	Swale mouth, rendering greater areas of the south shore	
	The line of realignment will determine whether the option	and backing flood risk areas.	of the Swale more exposed.	
	will have a positive or negative effect on the estuary, for		Failure of realigned defences will be haphazard, resulting	
	example where the estuary is already wider than the ideal		in uncontrolled flooding of backing low lying areas.	
	form (in the middle estuary and at Shell Ness),		In areas backed by high land, for example the London	

Predicted Change For		
 Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
realignment will move the estuary away from its ideal		Clay Islands around Elmley Hills and the Isle of Harty,
form (especially with large scale retreat). Large scale		defence failure would potentially result in low rates of
realignment is likely to result in significant increases in		erosion (approximately 0.5m/yr) governed by the channel
tidal prism, flow speeds and erosion immediately		and tidal flows.
downstream and in confined areas (south west of the Isle		In the long term NAI will allow for the reassertion of
of Harty and north of Elmley Island to Kingsferry Bridge).		natural meandering. Release of sediment may potentially
Large scale retreat downstream, e.g. north of the Swale,		reduce erosion rates or increase rates of accretion
also has the potential to increase tidal levels upstream in		elsewhere in the estuary.
the estuary.		Failure of defences would result in the estuary channel
In areas which are narrower than the ideal form at		increasing in size further, moving the estuary further away
present (e.g. around the Isle of Harty and Elmley Hills),		from its ideal form.
realignment is expected to increase the estuary width		Inundation of low lying land and a predicted continual
moving it towards a more ideal form in these locations.		supply of sediment to the Swale could encourage the
Realignment may create a second mouth to the Swale		creation of new intertidal habitat in the realigned areas, at
around the Isle of Harty (dependant on the adopted policy		the expense of existing habitats. Flows into and out of
on the open coast south of Leysdown-on-Sea) and a		these new intertidal areas are likely to create new
second channel around Elmley Island. These new		channels or result in the expansion of the existing creek
channels would essentially widen the narrow sections of		network.
channel, moving the estuary towards a more ideal form.		Any designated habitat loss may need to be
Inundation of low lying land seaward of the new defences		compensated for elsewhere.
would encourage the creation of new intertidal habitat in		As sea levels rise, and as the estuary increases further in
the realigned areas, which would develop over existing		width, it is assumed that tidal prism, flow speeds and
freshwater habitats.		erosion downstream and on outside of meanders will
Designated habitat loss may need to be compensated for		increase.
elsewhere.		If NAI occurs along the whole of the Swale (east of

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	Flows into and out of these new intertidal areas are likely		Kingsferry Bridge) the estuary would find a new	
	to create new channels or result in the expansion of		equilibrium form, and in terms of width, the estuary would	
	existing creek networks over time.		conform to an ideal form.	
	Release of sediment may potentially reduce erosion rates			
	or increase rates of accretion elsewhere in the estuary.			
	Will maintain flood protection to some freshwater			
	marshes and backing flood risk areas.			
KINGSFERRY BRIDGE	TO RUSHENDEN			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Earth embankments and seawall (<20 years) would	Defences would need to be maintained, improved and	Increasing levels of maintenance, improvement and	
	require maintenance, improvement and capital works	replaced within this epoch.	replacement will be required due to sea level rise and	
	within this period.		the effects of climate change.	
	The channel of the Swale, between the Kingsferry Bridge	It is assumed that the combined effects of sea level rise and	With sea level rise, tidal prism is expected to increase,	
	and Rushenden, is fluvial in form.	climate change would potentially increase tidal prism, tidal	along with tidal flows and the potential for further erosion	
	Over this epoch, erosion of intertidal areas is expected to	flows and intertidal mudflat and marsh erosion in confined	of intertidal habitats and defences, resulting in a	
	continue along the confined channel which in turn would	areas of channel.	detrimental impact on environmentally designated	
	put pressure on and increase undermining of defences in	Any designated habitat loss may need to be compensated	habitats.	
	this area.	for elsewhere.	Any designated habitat loss may need to be	
	The maintenance of the current defence line will fix the	The maintenance of the current defence line will fix the	compensated for elsewhere.	
	channel in position and restrict natural channel	channel in position and restrict natural channel processes.	The maintenance of the current defence line will fix the	
	processes.	Will continue to protect the economic assets at Rushenden,	channel in position and restrict natural channel	
	Will continue to protect the economic assets at	infrastructure, freshwater marshes and backing flood risk	processes.	
	Rushenden, infrastructure, freshwater marshes and	areas.	Will continue to protect the economic assets at	
	backing flood risk areas.		Rushenden, infrastructure, freshwater marshes and	
			backing flood risk areas.	

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Infill and reclaim land between the new		allow for sea level rise.	
	and former defences.			
	Advancing the defence line will narrow the channel further	Any new habitat landward of defences will become more	It is assumed that with sea level rise, tidal prism within the	
	in an already constrained section of channel. This will	established.	estuary will increase, resulting in exacerbated erosion of	
	potentially move the Swale channel away from its ideal	It is assumed that with sea level rise, tidal prism within the	constrained intertidal areas.	
	form, increase flow speeds and the potential for erosion	estuary will increase, in turn increasing flow speeds in the	Fast tidal flows resulting from the additional narrowing of	
	downstream. Flood risk may be increased due to a	main channel and therefore increasing the erosion potential	the channel are assumed to be exacerbated further.	
	reduced channel capacity.	in environmentally designated intertidal areas.	Mudflat erosion would be amplified in these confined	
	There is potential to create new habitat landward of the	Designated habitat loss may need to be compensated for	areas. Resulting in complete foreshore loss in places and	
	defences or use the reclaimed land for development. This	elsewhere.	potential deepening of the main channel.	
	however would develop over existing environmentally	Flow speeds through the narrow channel of the Swale are	Consequently defences would become increasingly	
	designated habitats. Designated habitat loss may need to	likely to increase and erosion of intertidal areas and	susceptible to undermining in these locations.	
	be compensated for elsewhere.	defences will be enhanced. Hence, safe navigation of	Safe navigation of maritime traffic may be compromised	
	The shoreline will be fixed in position, restricting natural	maritime traffic may become compromised due to the	further.	
	estuary processes.	increased flow speeds through this channel.	Habitat will be established landward of the defences.	
	Advancing defence lines will maintain flood and erosion	The shoreline will be fixed in position, restricting natural	The shoreline will be fixed in position, restricting natural	
	protection to Rushenden, infrastructure, freshwater	estuary processes.	estuary processes.	
	marshes and low lying flood risk areas.	Advancing defence lines will maintain flood and erosion	Advancing defence lines will maintain flood and erosion	
		protection to Rushenden, infrastructure, freshwater marshes	protection to Rushenden, infrastructure, freshwater	
		and low lying flood risk areas.	marshes and low lying flood risk areas.	
Scenario 3	Managed Retreat	Managed Retreat	Managed Retreat	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	New landward defences would require maintenance,	
	of the present defences.	improvement and / or eventual replacement during this	improvement and / or eventual replacement during	

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
	epoch.	this epoch.	
Removal or relocation of infrastructure and economic	Habitat in realigned areas will become more established	Sea level rise and a wider estuary are likely to exacerbate	
assets may be required, dependant on the chosen line of	throughout this epoch and new channels and creeks will	increases in tidal prism, flow speeds and erosion in	
retreat.	become more defined.	confined areas downstream (at the estuary mouth at	
Managed retreat along this section has the potential for	Downstream flow speeds are expected to increase as the	Sheerness).	
inundation of a large area of low lying land adjacent to the	tidal prism increases due to a wider estuary channel and as	New habitats will be established in realigned areas.	
Kingsferry Bridge.	sea levels rise. Foreshore erosion is assumed therefore to	Economic and residential assets at Rushenden,	
Retreat along the Swale frontage will increase estuary	be exacerbated towards the estuary mouth at Sheerness.	infrastructure and low lying flood risk areas will remain	
width in a narrow section of the estuary, moving it	Will continue to protect the economic assets at Rushenden,	protected.	
towards a more ideal form. This will, to a certain extent,	infrastructure and backing flood risk areas.		
also be dependent on the management policies adopted			
in the Medway, at Chetney Marshes (i.e. a management			
policy of retreat on Chetney Marshes would increase			
estuary width even further and therefore move the			
estuary away from the ideal form).			
Release of sediment may potentially reduce erosion rates			
or increase rates of accretion elsewhere in the estuary.			
Resulting increases in tidal prism are likely to increase			
tidal flows and the potential for increased erosion in			
confined areas immediately downstream (i.e .towards			
Queenborough).			
Inundation of low lying land seaward of the new defences			
would encourage the creation of new intertidal habitat in			
the realigned areas, which would develop over existing			
freshwater habitats.			

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
	Designated habitat loss may need to be compensated for		
	elsewhere.		
	Flows into and out of these new intertidal areas are likely		
	to create new channels or result in the expansion of		
	existing creek networks over time.		
	Will continue to protect the economic assets at		
	Rushenden, infrastructure and backing flood risk areas.		
Scenario 4	Hold the Line	Hold the Line	No Active Intervention
	Earth embankments and seawall (<20 years) would	Defences would need to be maintained, improved and	Earth embankments, seawalls and quay walls (<20
	require maintenance, improvement and capital works	replaced within this epoch.	years) are expected to fail during this period.
	within this period.		
	The channel of the Swale, between the Kingsferry Bridge	It is assumed that the combined effects of sea level rise and	Failure of defences will be haphazard during this epoch
	and Rushenden, is fluvial in form.	climate change would potentially increase tidal prism, tidal	resulting in uncontrolled flooding of low lying areas and to
	Over this epoch, erosion of intertidal areas is expected to	flows and intertidal mudflat and marsh erosion in confined	infrastructure and residential assets at Rushenden.
	continue along the confined channel which in turn would	areas of channel.	Designated habitat loss may need to be compensated for
	put pressure on and increase undermining of defences in	Any designated habitat loss may need to be compensated	elsewhere.
	this area.	for elsewhere.	High land at the Rushenden Disposal Tip is likely to begin
	The maintenance of the current defence line will fix the	The maintenance of the current defence line will fix the	to suffer low rates of erosion (approximately <0.5m/yr),
	channel in position and restrict natural channel	channel in position and restrict natural channel processes.	releasing potentially contaminated sediment into the
	processes.	Will continue to protect the economic assets at Rushenden,	estuary.
	Will continue to protect the economic assets at	infrastructure, freshwater marshes and backing flood risk	In low lying areas, sporadic defence failure will create
	Rushenden, infrastructure, freshwater marshes and	areas.	new transitional and intertidal habitats within the realigned
	backing flood risk areas.		areas. Flows into and out of these new intertidal areas
			are likely to create new channels or result in the
			expansion of existing creek networks.

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
			Release of sediment may potentially act to reduce	
			erosion rates or increase rates of accretion elsewhere in	
			the estuary.	
			It is assumed that eventual complete failure of defences	
			will result in the estuary channel increasing in size as the	
			shoreline realigns, moving the estuary towards a more	
			ideal form at this location.	
			Tidal prism and tidal flows are expected to increase as	
			the Swale channel widens and sea levels rise. This will	
			allow the reassertion of natural meandering.	
			Potential for increased downstream erosion (at the mouth	
			of the Medway), and erosion on the outside of meanders,	
			is likely to occur as tidal flow speeds increase.	
Scenario 5	Managed Retreat	Managed Retreat	No Active Intervention	
	New defences will need to be constructed landwards	New landward defences would require maintenance,	Defences are expected to fail during this period.	
	of the present defences.	improvement and / or eventual replacement during this		
		epoch.		
	Removal or relocation of infrastructure and economic	Habitat in realigned areas will become more established	Failure of realigned defences will be haphazard during	
	assets may be required, dependant on the chosen line of	throughout this epoch and new channels and creeks will	this epoch resulting in uncontrolled flooding of low lying	
	retreat.	become more defined.	areas and to infrastructure and residential assets at	
	Managed retreat along this section has the potential for	Downstream flow speeds are expected to increase as the	Rushenden.	
	inundation of a large area of low lying land adjacent to the	tidal prism increases due to a wider estuary channel and as	Designated habitat loss may need to be compensated for	
	Kingsferry Bridge.	sea levels rise. Foreshore erosion is assumed therefore to	elsewhere.	
	Retreat along the Swale frontage will increase estuary	be exacerbated towards the estuary mouth at Sheerness.	High land at the Rushenden Disposal Tip is likely to begin	
	width in a narrow section of the estuary, moving it	Will continue to protect the economic assets at Rushenden,	to suffer low rates of erosion (approximately <0.5m/yr),	

Predicted Change For			
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
towards a more ideal form. This will, to a certain extent,	infrastructure and backing flood risk areas.	releasing potentially contaminated sediment into the	
also be dependent on the management policies adopted		estuary.	
in the Medway, at Chetney Marshes (i.e. a management		In low lying areas, sporadic defence failure may create	
policy of retreat on Chetney Marshes would increase		new transitional and intertidal habitats within the realigned	
estuary width even further and therefore move the		areas. Flows into and out of these new intertidal areas	
estuary away from the ideal form).		are likely to create new channels or result in the	
Release of sediment may potentially reduce erosion rates		expansion of existing creek networks.	
or increase rates of accretion elsewhere in the estuary.		Release of sediment may potentially act to reduce	
Resulting increases in tidal prism are likely to increase		erosion rates or increase rates of accretion elsewhere in	
tidal flows and the potential for increased erosion in		the estuary.	
confined areas immediately downstream (i.e .towards		It is assumed that eventual complete failure of defences	
Queenborough).		will result in the estuary channel increasing further in size	
Inundation of low lying land seaward of the new defences		as the shoreline realigns, moving the estuary away from	
would encourage the creation of new intertidal habitat in		the ideal form at this location.	
the realigned areas, which would develop over existing		Tidal prism and tidal flows are expected to increase as	
freshwater habitats.		the Swale channel widens further and sea levels rise.	
Designated habitat loss may need to be compensated for		This will allow the reassertion of natural meandering.	
elsewhere.		Potential for increased downstream erosion (at the mouth	
Flows into and out of these new intertidal areas are likely		of the Medway), and erosion on the outside of meanders,	
to create new channels or result in the expansion of		is likely to occur as tidal flow speeds increase.	
existing creek networks over time.			
Will continue to protect the economic assets at			
Rushenden, infrastructure and backing flood risk areas.			

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
RUSHENDEN TO SHE	ERNESS			
Scenario 1	Hold the Line	Hold the Line	Hold the Line	
	Earth embankments and seawall (<20 years) would	Defences would need to be maintained, improved and	Increasing levels of maintenance, improvement and	
	require maintenance, improvement and capital works	replaced within this epoch.	replacement will be required due to sea level rise and	
	within this period.		the effects of climate change.	
	The channel of the Swale, between Rushenden and the	There is assumed to be an increased potential for mudflat	With sea level rise, tidal prisms are expected to increase,	
	second mouth of the Swale north of Queenborough, is	erosion in confined areas of the estuary channel, i.e. at the	resulting in faster flows through the confined channels	
	fluvial in form.	Medway estuary mouth at Sheerness and the Swale's	and increased potential of erosion of intertidal areas and	
	The mouth of the Medway estuary at Sheerness is	second mouth at Queenborough, resulting from faster flows	defences.	
	constrained in width compared to the middle estuary.	through these restricted channels, due to the combined	Increased potential for coastal squeeze and detrimental	
	Intertidal areas in the more confined channel areas	effects of sea level rise and climate change.	impacts on environmentally designated habitats around	
	around the Medway estuary mouth are assumed to	Potential for coastal squeeze and detrimental impacts on	Queenborough and Rushenden may result.	
	continue to erode, as at present. Consequently defences	environmentally designated habitats around Queenborough	Designated habitat loss may need to be compensated for	
	are likely to become increasingly susceptible to erosion in	and Rushenden may result.	elsewhere.	
	this location.	Designated habitat loss may need to be compensated for	Maintaining the current defence line would fix the channel	
	The channel of the Swale near to its second mouth at	elsewhere.	positions, restricting natural channel processes.	
	Queenborough, is assumed to continue to be stable over	Maintaining the current defence line would fix the channel	Economic, residential and heritage assets along the	
	this period.	positions, restricting natural channel processes.	frontage and backing flood risk areas will continue to be	
	Maintaining the current defence line would fix the channel	Economic, residential and heritage assets along the	protected.	
	positions, restricting natural channel processes.	frontage and backing flood risk areas will continue to be		
	Economic, residential and heritage assets along the	protected.		
	frontage and backing flood risk areas will continue to be			
	protected.			

	Predicted Change For			
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)	
Scenario 2	Advance the Line	Advance the Line	Advance the Line	
	Construct new defences seaward of the present	Maintain the new defences.	Maintain, improve and upgrade advanced defences to	
	defence line. Infill and reclaim land between the new		allow for sea level rise.	
	and former defences.			
	Advancing the defence line will narrow the channel further	Any new habitat landward of defences will become more	It is assumed that with sea level rise, tidal prism within the	
	in an already constrained location, moving the estuary	established.	estuary is expected to increase, resulting in exacerbated	
	away from its ideal form. Consequently flow speeds	It is assumed that with sea level rise, tidal prism within the	erosion of constrained intertidal areas. Flood risk may be	
	through the constriction are likely to increase and erosion	estuary will increase, in turn increasing flow speeds in the	increased due to a reduced channel capacity.	
	of present intertidal areas enhanced. Flood risk may be	main channel and therefore increasing the erosion potential	Fast tidal flows resulting from the additional narrowing of	
	increased due to a reduced channel capacity.	of intertidal habitats and undermining of defences. Flood risk	the channel are assumed to be exacerbated further.	
	There is potential to create new habitat landward of the	may be increased due to a reduced channel capacity.	Mudflat erosion would be amplified in these confined	
	defences or use land for development. Detrimental	Designated habitat loss may need to be compensated for	areas. Resulting in complete foreshore loss in places and	
	environmental impacts will occur with the loss of	elsewhere.	potential deepening of the main channel.	
	designated habitat north of Queenborough. Any loss of	Safe navigation of maritime traffic may become	Consequently defences would become increasingly	
	designated habitat may need to be compensated for	compromised due to the increased flow speeds through the	susceptible to undermining in these locations.	
	elsewhere.	channels.	Safe navigation of maritime traffic may be compromised	
	The channel will be fixed in position, restricting natural	The shoreline will be fixed in position, restricting natural	further.	
	estuary processes.	estuary processes.	Habitat will be established landward of the defences.	
	Flood and erosion protection to Sheerness's economic,	Flood and erosion protection to Sheerness's economic,	The shoreline will be fixed in position, restricting natural	
	residential and heritage assets and infrastructure will be	residential and heritage assets and infrastructure will be	estuary processes.	
	maintained.	maintained.	Flood and erosion protection to Sheerness's economic,	
			residential and heritage assets and infrastructure will be	
			maintained.	

	Predicted Change For		
	Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
Scenario 3	Hold the Line (Immediately north of Queenborough	Managed Retreat (Immediately north of Queenborough	Managed Retreat (Immediately north of
(Immediately north	ONLY)	ONLY)	Queenborough ONLY)
of Queenborough	Earth embankments and seawall (<20 years) would	New defences will need to be constructed landwards of	New landward defences would require maintenance,
ONLY)	require maintenance, improvement and capital works	the present defences.	improvement and / or eventual replacement during
	within this period.		this epoch.
	The channel of the Swale, between Rushenden and the	Retreat of defences in this section would require the	Downstream flow speeds are assumed to increase as the
	second mouth of the Swale north of Queenborough, is	removal or result in the loss of commercial assets.	tidal prism increases due an extra estuary mouth and as
	fluvial in form.	Inundation of low lying land seaward of the new defences	sea levels rise.
	The mouth of the Medway estuary at Sheerness is	would encourage the creation of new intertidal habitat in the	During this epoch, foreshore erosion is likely to be
	constrained in width compared to the middle estuary.	realigned areas, which would develop over existing habitat.	exacerbated towards the estuary mouth at Sheerness
	Intertidal areas in the more confined channel areas	Any loss of designated habitat may need to be	and the new channel mouth, east of Sheerness.
	around the Medway estuary mouth are assumed to	compensated for elsewhere.	Habitat in realigned areas will become more established
	continue to erode, as at present. Consequently defences	Flows into and out of these new intertidal areas are likely to	throughout this epoch and new channels will become
	are likely to become increasingly susceptible to erosion in	create new channels or result in the expansion of the	more defined.
	this location.	existing creek network over time.	Economic, residential and heritage assets at Sheerness
	The channel of the Swale near to its second mouth at	Realignment of the estuary will potentially increase the	and Queenborough would continue to be protected.
	Queenborough, is assumed to continue to be stable over	estuary width which is narrower than the ideal form at	
	this period.	present in this location.	
	Maintaining the current defence line would fix the channel	A second channel of the Medway could be created,	
	positions, restricting natural channel processes.	extending between north of Queenborough and east of	
	Economic, residential and heritage assets along the	Sheerness, connecting the Medway with the open coast.	
	frontage and backing flood risk areas will continue to be	This will effectively increase the width of the estuary mouth,	
	protected.	moving it towards a more ideal form. This however would be	
	Removal or relocation of infrastructure and economic	dependant on a managed retreat policy being adopted on	
	assets will be required to prepare for managed retreat in	the open coast between Sheerness and Scrapesgate, on	

Predicted Change For		
Years 0 – 20 (up to 2025)	Years 20 – 50 (up to 2055)	Years 50 – 100 (up to 2105)
the next epoch.	the north of Sheppey.	
	Release of sediment may potentially reduce erosion rates or	
	increase rates of accretion elsewhere in the estuary.	
	Resulting increases in tidal prism are assumed to increase	
	tidal flows and the potential for increased erosion in	
	confined areas immediately downstream (i.e. the Medway	
	mouth between Sheerness and the Isle of Grain). However	
	a new mouth east of Sheerness could potentially help	
	accommodate these flows.	
	Economic, residential and heritage assets at Sheerness and	
	Queenborough would continue to be protected.	