Kelling to Lowestoft Ness Shoreline Management Plan

Appendix F: Policy Development and Appraisal

Appendix F: Policy Development and Appraisal

Contents

F1 Introduction

This Appendix outlines the key steps undertaken in the development and definition of policies. Policy scenarios have then been taken forward and appraised and the results of this appraisal are provided in Section F5. From this appraisal a preferred scenario has been developed, which is reported in Appendix G.

The recommended approach (Defra Guidance) for development of a sustainable plan is through the assessment of policy scenarios, rather than considering locations in isolation. The aim of this stage has therefore been to identify the appropriate combinations of policies to be appraised for the whole SMP frontage. This has involved the following activities:

- Identification of 'key policy drivers'
- Identification of potential policy options through the broad-level appraisal of the four generic Defra policy descriptors
- Development of policy scenarios for assessment.

It should be noted that the first two tasks have looked at individual locations in relative isolation, but wider-scale impacts of policies have been assessed during the policy scenario appraisal stage which has looked at the likely shoreline response and evolution both locally and along the SMP coast as a whole.

F2 Identification of 'key policy drivers'

F2.1 DEFINITION

A 'key policy driver' can be defined as a feature that has sufficient importance in terms of the benefits it provides that it potentially has an overriding influence upon policy selection at the wider SMP scale; this may be through either promoting a policy or discarding a policy for a particular location or locations.

F2.2 METHODOLOGY

The Issues and Objectives Table (see Appendix E) was used to initially identify key policy drivers for the coast. The Extended Steering Group (ESG) was then invited to review and comment (see Appendix B for further details) at the November 2003 workshop.

F2.3 KEY POLICY DRIVERS IDENTIFIED

From the workshop feedback (see Appendix B for summary note) the following policy drivers were identified for each section of coast:

(a) Kelling to Bacton

- Cromer and Sheringham were recognised as key drivers as they are the main service centres for the area.
- Mundesley was identified as an important asset, but not necessarily a long-term driver.
- Bacton Gas Terminal was recognised as a key driver, but timescales for this depend upon the life-time of the site.
- For the remaining sections of the coast, the environmental benefits, and in particular the need for a naturally functioning coast, were recognised as important considerations.

(b) Bacton to Winterton

- Along the majority of this coast between Bacton and Happisburgh there are no key drivers for protecting in the long-term.
- Between Happisburgh to Winterton a potential conflict was recognised between two identified key drivers: socio-economic assets of the low-lying hinterland and environmental biodiversity both of the open coast and broads.
- Along Winterton dunes the key driver was to maintain the natural functioning of the system and allow a dynamic dune system.

(c) Winterton to Great Yarmouth

- Few key drivers were recognised apart from the socio-economic assets at Great Yarmouth.
- The internationally-designated environmental site at North Denes was also recognised as a key driver.

(d) Gorleston to Lowestoft Ness

- The socio-economic assets at Gorleston and Lowestoft were recognised as long-term key drivers.
- Corton was also identified as important, but not necessarily a key driver.

F2.4 OVERARCHING OBJECTIVES

In addition to the key policy drivers identified above, four overarching SMP objectives have been defined by Defra guidance:

- Shoreline management policies should take due consideration of current Government sustainable development policies, any High Level Targets, regulations, statutes, and climate change guidelines associated with flood and coastal defence (Framework Objective).
- Shoreline management policies should seek to have no adverse effect on any physical processes that benefits rely upon (Technical Objective).
- Shoreline management policies should take due consideration of the need to maintain, restore or where possible enhance the total stock of natural and historic assets (Environmental Objective).
- Shoreline management policies should have regard to current regional development agency objectives and statutory planning policies (Socio-economic Objective).

F3 Identification of potential policy options

F3.1 METHODOLOGY

An initial brief review of all four generic Defra policy options was undertaken to determine which policies could be appropriate, considering not only the defined objectives but also their technical feasibility, and likely economic justification. In order to determine the latter, a broad assessment was made of assets potentially at risk under the baseline scenario No Active Intervention. This used the mapping produced as part of the baseline scenario assessment (see Appendix C). The possible benefits and opportunities arising from each policy option in relation to the objectives for a frontage were identified, for each of the three epochs. This process allowed identification of which policy options were viable for a particular feature and therefore taken forward for further scrutiny.

F3.2 CONCLUSIONS

The shoreline management policies considered are those defined by the latest Defra guidance:

- **Hold the line**: maintain or upgrade the level of protection provided by defences
- **Advance the line**: build new defences seaward of the existing defence line
- **Managed realignment**: allow retreat of the shoreline with monitoring and, if appropriate, management to limit or control movement
- **No active intervention**: a decision not to invest in providing or maintaining defences.

The following tables summarise for each policy unit the broad, high-level appraisal of the policies undertaken to assess potential benefits of implementing a policy.

6.01 KELLING HARD TO SHERINGHAM			
Mainly undeveloped stretch of coast characterised by low, undefended, undulating cliffs, rising in height to the east, and a shingle beach. The town of Weybourne is set back from the cliff edge although there is an important beach access and car park at the coast. No international conservation sites, but areas behind the shingle ridge are designated as County Wildlife Sites. This frontage is included within the North Norfolk AONB. Heritage interests are mainly related to wartime defences and some rare examples are at risk.			
	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	Few properties would be lost, together with heritage sites, therefore, despite risk to farmland, no *significant* benefits achieved by holding the line. The policy could also potentially be detrimental to natural landscape and conservation features.		
Advance the line	No benefits, and potentially significant environmental and landscape impacts, would result from providing new defences.		
Managed realignment	Except at the car park where the bund behind the shingle ridge could be retained in the very short term, no benefits, and potentially significant environmental impacts, would result from defending a set-back position in any particular time-period.		
No active intervention	**To be appraised:** will maintain landscape and environmental value of frontage.		

6.02 SHERINGHAM			
An important service centre for the Norfolk coastline, as well as an important holiday and tourist centre. There are a number of both residential and commercial properties potentially at risk. The town also features a number of heritage sites.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** will protect the economic assets of the frontage, although there are potential impacts from both technical and environmental perspectives.		
Advance the line	This would be detrimental to both coastal processes and environment.		
Managed realignment	No benefits, given that development extends to the cliff edge along majority of the frontage and this is considered a key service centre for the region.		
No active intervention	Although there would be technical and environmental benefits, the socio-economic issues are the key drivers at this location.		

6.03 SHERINGHAM TO CROMER			
Mainly undeveloped and land predominately used for agricultural purposes, but cliff-top caravan parks potentially at risk and there are important beach access points at East and West Runton Gaps. There are also a couple of archaeological sites noted as high importance. A key feature is the environmental characteristics of the coastline, which includes three SSSI-designated sites for the cliffs and foreshore.			
POLICY	**POLICY APPRAISAL (excluding the Gaps)**		
	From present day	**Medium-term**	**Long-term**
Hold the line	The technical and environmental interests outweigh the socio-economic benefits of implementing this option due to both the nationally-designated sites and the feed of sediment to the east.		
Advance the line	The technical and environmental interests outweigh the socio-economic benefits of implementing this option due to both the nationally-designated sites and the feed of sediment to the east. No benefit to existing objectives.		
Managed realignment	Some benefits to be gained from managing retreat, but impact on landscape and environmental value of frontage.		
No active intervention	**To be appraised:** will maintain landscape and environmental value of frontage.		
POLICY	**POLICY APPRAISAL (for West and East Runton Gaps)**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised**. In the short term, holding these short access points (until outflanking occurs) will provide benefits without affecting long-term vision.	The technical and environmental interests outweigh the social-economic benefits of implementing this option, although rebuilding of accesses may be required.	
Advance the line	The technical and environmental interests outweigh the socio-economic benefits of implementing this option. No benefit to existing objectives.		
Managed realignment	The technical and environmental interests outweigh the social-economic benefits of implementing this option.		
No active intervention	The benefits of holding access points outweigh the technical and environment gain in the short-term.	**To be appraised**: will maintain landscape and environmental value of frontage.	

6.04 CROMER			
Important coastal tourist resort, which features Victorian architecture and heritage sites including a Grade I church. Cromer is also an important service centre serving the local community and is linked to adjacent settlements via the main A149 road.			
	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** will protect the economic assets of the frontage, although there are potential impacts from both a technical and environmental perspective, particularly as this will impact on downdrift supply of sediment to the east.		
Advance the line	This would be detrimental to both coastal processes and environment.		
Managed realignment	No benefits, given that development extends to the cliff edge along majority of the frontage and this is considered a key service centre for the region.		
No active intervention	Although there would be technical and environmental benefits, the social issues are the key driver at this location.		

6.05 CROMER TO OVERSTRAND			
Mainly undeveloped coastline where the key policy driver is the environmental features and this stretch is the best example of soft cliff habitats in East Anglia and has been designated as a CSAC and SSSI. There are also CWSs along this frontage, which is included within the AONB. There are no high importance heritage sites, but the main use of this coastal strip is the Royal Cromer golf course.			
	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	The technical and environmental interests outweigh the socio-economic benefits of implementing this option, due to both the importance of downdrift feed and nationally-designated cliffs, which require cliffs to be actively eroding.		
Advance the line	This would be detrimental to both coastal processes and environment, due to both the importance of downdrift feed and nationally-designated cliffs, which require cliffs to be actively eroding.		
Managed realignment	There is limited economic justification for significant investment in defences along this frontage, although technical and environmental benefits could be realised.		
No active intervention	**To be appraised**: will maintain landscape and environmental value of frontage and allow sediment feed to downdrift beaches.		

6.06 OVERSTRAND			
Overstrand is a mainly residential, seaside village but does play a role in the tourist industry, with the beach and promenade being key features. There are also two Grade II listed buildings along the coast.			
	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	**To be appraised**: There are a number of assets immediately at risk, although there would be detrimental impacts on the coastal processes and in the longer term economic justification may become marginal.		
Advance the line	This would be detrimental to both coastal processes and environment; there would also be no benefits to existing assets.		
Managed realignment	The number of assets at risk immediately means that in the very short term the socio-economic factors outweigh the technical and environmental assets.	**To be appraised (in conjunction with NAI)**: Due to the number of assets at risk there may be justification for occasional intervention measures to slow (but not halt) erosion.	
No active intervention	The number of assets at risk immediately means that in the very short term the socio-economic	**To be appraised (in conjunction with MR)**: This will provide benefits to downdrift areas through allowing sediment transport.	

	factors outweigh the technical and environmental assets.	

6.07 OVERSTRAND TO MUNDESLEY			
The soft cliffs are a key policy driver and have been designated as SSSIs for both their geology and habitat. The predominant cliff top land use is agricultural, although the villages of Trimingham and Sidestrand are set back slightly from the cliff edge.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	The environmental assets are a key driver along this frontage in addition to the alongshore transport of sediment. Despite assets at risk at Trimingham and Sidestrand, there is not expected to be economic justification.		
Advance the line	This would be detrimental to both coastal processes and environment, due to both the importance of downdrift feed and nationally-designated cliffs, which require cliffs to be actively eroding. There would also be no benefits to existing assets.		
Managed realignment	The environmental assets are a key driver along this frontage in addition to the alongshore transport of sediment. Despite assets at risk at Trimingham and Sidestrand, there is not expected to be economic justification.		
No active intervention	**To be appraised:** Environmental and technical assets are key drivers along this frontage. However there will be loss of human and socio-economic assets as a result.		

6.08 MUNDESLEY			
Mundesley is a small holiday resort, which predominately attracts tourists to the beach and which contains a number of tourist accommodation and facilities. The cliffs and cliff top grassland along the town frontage are designated as a CWS, but the site lies adjacent to Mundesley Cliffs, which are designated a SSSI for their geological interest.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** There are a number of socio-economic assets at immediate risk. However, there will be detrimental impacts, in particularly on alongshore sediment supply which will impact on adjacent environmental sites. This impact will increase as the area becomes more of a promontory over time.		
Advance the line	The importance of alongshore transport means this policy is inappropriate, it would also provide no additional benefits.		
Managed realignment	The number of assets at risk immediately means that in the very short term the socio-economic factors outweigh the technical and environmental assets.	**To be appraised (in conjunction with NAI):** Although economic justification is likely, there are likely to be significant impacts on downdrift sediment feed, which in turn will impact on environmental sites and villages and towns downdrift. There are however a number of cliff top assets which could benefit from erosion-slowing measures.	
No active intervention	The number of assets at risk immediately means that in the very short term the socio-economic factors outweigh the technical and environmental assets.	**To be appraised (in conjunction with MR)**: Although economic justification is likely, there are likely to be significant impacts on downdrift sediment feed, which in turn will impact on environmental sites and villages and towns downdrift.	

6.09 MUNDESLEY TO BACTON GAS TERMINAL			
This is mainly characterised by cliff-top agricultural land, although it does include Mundesley Holiday Camp. The cliffs are designated a SSSI for their geology.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	The key driver is the environmental designations and importance of alongshore sediment feed to adjacent areas.		
Advance the line	No benefits to be gained from implementing policy.		
Managed realignment	Although this could reduce land losses, there are overriding economic and technical factors.		
No active intervention	**To be appraised:** will maintain landscape and environmental value of frontage and downdrift supply of sediment.		

6.10 BACTON GAS TERMINAL			
Bacton Gas Terminal is an important feature both in terms of infrastructure and local employment. The terminal consists of subsurface pipelines to offshore gas field and cliff top sites with gasometers and communication towers.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** There is likely to be economic justification for holding the line, but there will be detrimental impacts due to the interruption of alongshore sediment transport.		
Advance the line	No benefits to be gained from implementing policy.		
Managed realignment	Economic factors outweigh environmental and technical factors.	**To be appraised:** this would have technical benefits through allowing longshore transport, which in turn would affect environmental and socio-economic assets downdrift, but there would be implications with regard to site relocation.	
No active intervention	Economic factors outweigh environmental and technical factors.	**To be appraised:** this would have technical benefits through allowing longshore transport, which in turn would affect environmental and socio-economic assets downdrift, but there would be implications with regard to site relocation.	

6.11 BACTON, WALCOTT AND OSTEND			
Bacton, Walcott and Ostend are small settlements along this coastal stretch, which contain both residential and commercial properties. There is also a number of holiday developments and associated amenities spread along the main coastal road, the B1159, which runs along the coastal strip, with the beach being the main tourist attraction.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** There is likely to be economic justification for holding the line due to the number of shoreline assets, but there will be detrimental impacts due to the interruption of alongshore sediment transport.		
Advance the line	No benefits to be gained from implementing policy.		
Managed realignment	Economic factors outweigh environmental and technical factors.	**To be appraised:** There will be benefits from allowing some erosion, but managed of erosion will also result in socio-economic benefits. However the long-term cost of providing and enhancing defences may not be justified.	

No active intervention	Economic factors outweigh environmental and technical factors.	**To be appraised:** Although there will be socio-economic losses, there will be benefits from allowing natural erosion and sediment transport to take place, particularly for downdrift areas where this feed may help slow erosion.

6.12 OSTEND TO ECCLES

Between Ostend and Happisburgh the cliff top is characterised by agricultural land. Happisburgh is a picturesque village, whose main centre is set back approximately a hundred metres from the cliff edge. It features listed properties of both heritage and community value. The cliffs are designated a SSSI.

	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	Although protection would be afforded to the small village of Happiburgh, this policy could be potentially be detrimental to natural landscape and conservation features.		
Advance the line	No benefits to be gained from implementing policy.		
Managed realignment	Although some limited protection would be afforded to the small village of Happiburgh, this policy could be potentially be detrimental to natural landscape and conservation features.		
No active intervention	**To be appraised:** Although there will be socio-economic losses, there is limited economic justification for any other policy. This policy will also have environmental and technical benefits.		

6.13 ECCLES TO WINTERTON BEACH ROAD

Vast low-lying hinterland vulnerable to inundation, characterised by a number of villages and isolated settlements as well as numerous heritage features. The area is also heavily protected both nationally and internationally due to the freshwater habitats.

	POLICY APPRAISAL		
POLICY	**From present day**	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** Will protect the considerable socio-economic and environmental assets of the frontage and low-lying hinterland.		
Advance the line	No benefits, and potentially significant environmental and landscape impacts, would result from providing new defences in advance of present position.		
Managed realignment	Due to the considerable assets at loss the socio-economic factors override the environmental factors in the short-term.	**To be appraised:** Although there are considerable assets (both environmental and socio-economic), there is a potential opportunity for environmental improvement through introducing a set back line.	
No active intervention	Uncontrolled flooding would not offer any benefits.		

6.14 WINTERTON-ON-SEA TO SCRATBY

There is a large dune belt and ness at Winterton, which is designated as a SSSI and SAC due to both the important habitats it supports and its geomorphology.

Winterton itself is a picturesque coastal village, featuring mainly residential properties and a few shops, with some tourist accommodation. The key attraction is the tranquillity and naturalness of the dunes and beach. Recreational walkers and ornithologists are also attracted here by the important birdlife.

At Newport and Hemsby the key purpose of the coastal strip is as a tourist destination, with a number of amusement arcades, pubs and restaurants running down to the coast and beachfront holiday accommodation. The beach is an important attraction and is easily accessed at this location.

At Scratby the residential and holiday properties are set back slightly from the coastal edge.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	There are no defences at present and the environmental factors are a key driver due to the international significance of the dunes.		
Advance the line	No benefits, and potentially significant environmental and landscape impacts, would result from providing new defences in advance of present position.		
Managed realignment	There are no defences at present and the area's environmental significance is dependent upon the natural functioning of the system.		
No active intervention	**To be appraised:** The key driver at this location is the environmental significance of the dunes and their natural functioning, although there could be loss of both dune area and properties through implementing the policy.		

6.15 CALIFORNIA TO CAISTER-ON-SEA

California is a small coastal town, which includes both residential and holiday accommodation along the cliff top and there are also recreational and leisure facilities. The coastal sand dunes and the cliff top habitats at California are designated as California Coastal Strip CWS. There is also a short stretch of agricultural land between California and Caister-on-Sea.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** This will protect the socio-economic assets close to the cliff edge, through incurring only maintenance costs. Benefits will also be felt at Caister.	In the longer-term it is likely to become more difficult to justify new defences and this could also have detrimental impacts on benefits at Caister, which rely on the feed of sediment from this area	
Advance the line	No benefits, and potentially significant environmental and downdrift impacts, would result from providing new defences in advance of present position.		
Managed realignment	The number of assets at risk immediately means that in the very short term the socio-economic factors outweigh the technical and environmental assets.	**To be appraised (in conjunction with NAI)**: Although there will be losses at California this will benefit downdrift areas and provide environmental benefits, through allowing downdrift sediment transport. There is a possibility of managing this erosion.	
No active intervention	The number of assets at risk immediately means that in the very short term the socio-economic factors outweigh the technical and environmental assets.	**To be appraised (in conjunction with MR)**: Although there will be losses at California this will benefit downdrift areas and provide environmental benefits, through allowing downdrift sediment transport.	

6.16 CAISTER-ON-SEA

Caister supports a large number of holiday properties and holiday developments along the seafront, including large caravan parks. The main commercial centre is several hundred metres inland and features both tourist facilities and local businesses. There are no environmental designations specifically along this section, although this is an important sediment pathway to the internationally-designated dunes and denes to the south.

POLICY	POLICY APPRISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** This will protect the large number of seafront socio-economic assets, however, there will be environmental impacts due to potential interruption of alongshore sediment transport.		
Advance the line	There would be limited benefits and significant impacts on internationally-designated areas downdrift.		
Managed realignment	Due to large numbers of socio-economic assets at risk, this policy is inappropriate in the short and medium term.		**To be appraised (in conjunction with NAI):** There are potential downdrift environmental (and socio-economic) benefits from implementing this option, although there would be property loss.
No active intervention	Due to large numbers of socio-economic assets at risk, this policy is inappropriate in the short and medium term.		**To be appraised (in conjunction with MR):** There are potential downdrift environmental (and socio-economic) benefits from implementing this option, although there would be property loss.

6.17 GREAT YARMOUTH

The key feature along the northern part of this frontage is the beach and dunes of Great Yarmouth North Denes, which are both nationally and internationally designated for the habitats they support and their geomorphological characteristics. Along the central and southern section, the town of Great Yarmouth is the key driver, with its multitude of residential and commercial properties and recreational assets. The beach is an important attraction together with the arcades along the promenade.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** this will protect the numerous economic assets along the frontage, although impacts on the internationally-designated site along the northern section must be considered.		
Advance the line	No benefits (NB the system to the north is naturally accreting at present).		
Managed realignment	No socio-economic or environmental benefits, given that development extends to the seafront along majority of the frontage and the area to the north is relatively stable or accreting.		
No active intervention	Due to the large number of socio-economic assets there would be no benefits of implementing this option.		

6.18 GORLESTON

Gorleston features a substantial, cliff top residential area as well as a number of tourist accommodation and attractions. The beach and promenade are key attractions.

There is also a pumping station and sewage works, which is buried within the promenade.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** this will protect and the socio-economic assets, including the pumping station and sewage works. However, there may be some detrimental impacts downdrift.		
Advance the line	There would be no benefits from implementing this policy.		
Managed realignment	Due to the large number of socio-economic assets, there would be no benefits from implementing this policy.		
No active intervention	Due to the large number of socio-economic assets, there would be no benefits from implementing this policy. There would also be limited downdrift benefits.		

GORLESTON TO HOPTON			
The main use of this coastal strip is the Gorleston golf course, which extends up to the cliff edge.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	There would be limited benefits of implementing this policy.		
Advance the line	There would be limited benefits of implementing this policy.		
Managed realignment	There would be limited benefits of implementing this policy.		
No active intervention	**To be appraised:** this will provide technical benefits through providing sediment feed to adjacent frontages.		

6.20 HOPTON			
Hopton is a popular holiday resort and the coastal strip is predominately holiday development, backed by the main residential and commercial properties.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** this will protect the cliff top economic assets of the frontage.	Potential long-term technical and environmental benefits outweigh the socio-economic benefits.	
Advance the line	No benefits, and potentially significant environmental impacts, would result from providing new defences.		
Managed realignment	Due to the assets immediately at risk, in the short-term the socio-economic assets outweigh the longer-term environmental and technical benefits.	**To be appraised (in conjunction with NAI):** will maintain landscape and environmental value of frontage and also have downdrift benefits, but with loss of properties along this frontage, therefore there may be scope for some management of this in the longer-term.	
No active intervention	Due to the assets immediately at risk, in the short-term the socio-economic assets outweigh the longer-term environmental and technical benefits.	**To be appraised (in conjunction with MR):** will maintain landscape and environmental value of frontage and also have downdrift benefits, but with loss of properties along this frontage.	

6.21 HOPTON TO CORTON
Largely undeveloped frontage with primary land-use being Grade 2 farmland; towards Corton there is a cliff-top holiday development.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	No benefits and potentially significant environmental impacts would result from providing new defences.		
Advance the line	No benefits and potentially significant environmental impacts would result from providing new defences.		
Managed realignment	Limited benefits and impact on landscape and environmental value of frontage.		
No active intervention	**To be appraised:** will maintain landscape and environmental value of frontage.		

6.22 CORTON

Corton is a popular holiday centre, where the beach and adjacent nature reserve are key attractions. The link road to Lowestoft is potentially at risk. Corton Cliffs are designated as SSSI for their geological exposures.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** this will protect the socio-economic assets of the villages.	**To be appraised:** potential socio-economic benefits locally, but potentially significant environmental and technical impacts, including downdrift, would result from providing new defences.	
Advance the line	No benefits, and potentially significant environmental impacts, would result from providing new defences.		
Managed realignment	In immediate term socio-economic benefits outweigh the longer-term environmental and technical.	**To be appraised (in conjunction with NAI):** will maintain landscape and enhance environmental value of frontage, with slight reduction in loss of socio-economic assets locally. Potentially benefits to downdrift areas.	
No active intervention	In immediate term socio-economic benefits outweigh the longer-term environmental and technical.	**To be appraised (in conjunction with MR):** will maintain landscape and enhance environmental value of frontage, but loss of socio-economic assets locally. Potentially benefits to downdrift areas.	

6.23 CORTON TO LOWESTOFT

The coastal strip is undeveloped and designated as a Local Nature Reserve. Further inland is the coastal road which links Corton to Lowestoft. This area is recognized as a 'strategic gap' between the towns of Corton and Lowestoft and there is also a potential risk of sewer exposure.

POLICY	POLICY APPRAISAL		
	From present day	**Medium-term**	**Long-term**
Hold the line	No benefits, and potentially significant environmental impacts, would result from providing new defences.		
Advance the line	No benefits, and potentially significant environmental impacts, would result from providing new defences.		
Managed realignment	**To be appraised (in conjunction with NAI):** will maintain landscape and environmental value of frontage, with some potential benefits to the Lowestoft frontage.		
No active intervention	**To be appraised (in conjunction with MR):** will maintain landscape and environmental value of frontage, with some potential benefits to the Lowestoft frontage.		

6.24 LOWESTOFT NORTH (TO NESS POINT)

Lowestoft is a large urban area which extends beyond the boundary of the SMP. At this northern end the primary land use is the light industry, but there are also holiday camps and recreation ground. At Ness Point there is a gas mains and gas holder. There is also sewerage infrastructure. Ness Point is also important as the most

easterly point in Britain.			
POLICY	**POLICY APPRAISAL**		
	From present day	**Medium-term**	**Long-term**
Hold the line	**To be appraised:** will protect the economic assets and infrastructure of the frontage and backing flood risk area.		
Advance the line	No benefits to existing objectives, and potential impacts, from a technical perspective, would result from seaward movement of defences.		
Managed realignment	No benefits, given that development extends to the beach edge particularly along the southern frontage.		
No active intervention	Limited potential process benefits, and uncontrolled loss of significant area of urban development to flooding and erosion.		

F4 Development of policy scenarios for assessment

F4.1 INTRODUCTION

Due to the very strong sediment linkages and interdependencies along this coast it is appropriate to assess the coast as a whole, rather than as a number of discrete sections of coast. Therefore, using the broad-level assessment of the appropriateness of the Defra generic policies, policy scenarios were developed which combined policy options along the various sections of shoreline.

Along this coast, the similarity of the spatial coastal characteristics, in terms of assets and benefits, enabled the development of three main scenarios, based upon placing different emphasis on socio-economic and environmental benefits: A, B and C. Scenario A was based upon feedback from the ESG identifying key drivers. The feedback also identified that the present management practice should be continued for the 0 to 20 year epoch, but there was less agreement for the medium and longer term, therefore scenarios B and C were developed as sensitivity analyses and were developed based upon the following principles:

- Scenario B - Key Drivers plus a more naturally functioning coast by year 100
- Scenario C - Key Drivers plus defence of other areas where substantial economic losses could occur, i.e. those areas where the initial assessment of the four generic policies had not totally discounted a 'Hold the Line' policy.

These policy scenarios were then taken forward to the next step: policy scenario assessment.

F4.2 DEFINITION OF POLICIES

Through the policy development it was decided that it was necessary to make assumptions regarding the *likely* implementation measures that would be used to achieve these policies, in order to sensibly assess potential shoreline response. Table F4.1 below therefore summarises the assumptions made for the three scenarios; this was reviewed and agreed by the Client Steering Group (CSG) prior to the policy assessment.

Table F4.1 Summary of assumptions made regarding policy implementation for three policy scenarios tested

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**
Kelling Hard to Sheringham	No defences (apart from low timber/ steel palisade at Weybourne retained to prevent breach and flooding).	(as A)	(as A)	No defences. (Natural Shingle Bank at Weybourne)	(as A)	(as A)	No defences. (Natural Shingle Bank at Weybourne)	(as A)	(as A)
Sheringham	Seawall, rock revetment and groynes maintained to prevent any erosion – with possible improvement of seawall along eastern stretch of Sheringham.	(as A)	(as A)	Seawall and groynes maintained to prevent any erosion.	(as A)	(as A)	Seawall and groynes maintained to prevent any erosion.	(as A)	(as A)
Sheringham to Cromer	Timber groynes and revetment between Sheringham and West Runton allowed to fail. Two short stretches of masonry wall at East and West Runton Gaps maintained.	(as A)	(as A)	Short stretches of masonry wall at East and West Runton Gaps allowed to fail. No defences along rest of frontage.	(as A)	(as A)	No defences.	(as A)	(as A)
Cromer	Seawall and groynes maintained to	(as A)	(as A)	Seawall and groynes maintained to	(as A)	(as A)	Seawall and groynes maintained to prevent any	(as A)	(as A)

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**
	prevent any erosion.			prevent any erosion.			erosion.		
Cromer to Overstrand	Revetments and timber groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Overstrand (North)	Seawall and groynes maintained.	(as A)	(as A)	Seawall and groynes allowed to deteriorate and fail.	(as A)	Seawall (and groynes until redundant) maintained to prevent any erosion.	No defences.	(as A)	Seawall maintained.
Overstrand (South)	Timber revetment and groynes maintained.	(as A)	(as A)	Timber revetment and groynes allowed to deteriorate and fail.	(as A)	Timber revetment replaced by seawall.	No defences.	(as A)	Seawall maintained.
Overstrand to Vale Road Beach Access	Much of frontage undefended; timber revetment and groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Vale Road Beach Access to Sea View Road	Timber revetment and groynes maintained/ replaced.	(as A)	(as A)	Timber revetment and groynes allowed to deteriorate and fail.	(as A)	(as A)	No defences.	(as A)	(as A)
Cliftonville	Timber revetment and groynes maintained/ replaced.	(as A)	(as A)	Timber revetment replaced by seawall.	Timber revetment and groynes allowed to deteriorate	(as A)	Seawall allowed to fail.	No defences.	Seawall maintained.

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**
					and fail.				
Mundesley South	Seawall and groynes maintained.	(as A)	(as A)	Seawall (and groynes until redundant) maintained.	Seawall and groynes allowed to fail.	Seawall (and groynes until redundant) maintained and extended to the south (c. 200m).	Seawall allowed to fail.	No defences	Seawall maintained.
Mundesley to Bacton Gas Terminal	Timber revetment and groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Bacton Gas Terminal	Timber revetment replaced by seawall and groynes maintained.	Timber revetment and groynes allowed to fail.	(as A)	Seawall and timber groynes maintained.	No defences.	(as A)	Seawall allowed to fail but measures to reduce erosion rate.	No defences.	Seawall maintained.
Bacton Gas Terminal to Ostend	Seawall and timber groynes maintained.	(as A)	(as A)	Seawall and timber groynes allowed to deteriorate and fail.	(as A)	Seawall (and groynes until redundant) maintained to prevent any erosion.	No defences.	(as A)	Seawall maintained.
Ostend to Happisburgh Village	Timber revetment and groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Happisburgh Village	Rock 'bund' retained but not enhanced.	(as A)	(as A)	Rock 'bund' allowed to deteriorate.	(as A)	(as A)	No defences.	(as A)	(as A)
Happisburgh	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**
Village South									
Cart Gap to south of Bramble Hill	Offshore breakwaters and seawall maintained, groynes replaced and continued beach recharge.	(as A)	(as A)	Offshore breakwaters maintained, seawall maintained throughout frontage, groynes replaced and continued beach recharge.	Retired defence line constructed (3 possible location options), and breakwaters, seawall and groynes allowed to fail.	Offshore breakwaters maintained, seawall maintained throughout frontage, groynes replaced and continued beach recharge.	Retired defence line (secondary flood embankment), and breakwaters, seawall and groynes allowed to deteriorate and fail.	Retired defence line (3 possible location options).	Seawall maintained and reefs remain.
South of Bramble Hill to Winterton-on-Sea (Winterton Dunes)	Seawall not maintained, but possible construction of flood embankment just behind dune belt (in advance of possible breach event).	(as A)	(as A)	Flood embankment maintained (if required), to prevent flooding, and dune management	Flood defences as part of retired defence line to north.	(as A)	Flood defences, as part of retired defence line to north.	Flood defences as part of retired defence line to north.	Flood embankment maintained (if required), to prevent flooding, and dune management
Winterton-on-Sea to California	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
California	Rock berm maintained.	(as A)	(as A)	Rock berm allowed to deteriorate.	(as A)	(as A)	Rock berm allowed to deteriorate.	(as A)	(as A)
Caister North	Seawall, reefs and groynes maintained.	(as A)	(as A)	Seawall, reefs and groynes maintained.	Seawall, reefs and groynes allowed to fail.	(as A)	Seawall, reefs and groynes allowed to deteriorate.	No defences.	Seawall, reefs and groynes maintained.

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	Policy Scenario B	Policy Scenario C	Policy Scenario A	Policy Scenario B	Policy Scenario C	Policy Scenario A	Policy Scenario B	Policy Scenario C
Caister South to Great Yarmouth (Pleasure Beach)	Set-back concrete wall retained.	(as A)	(as A)	Set-back concrete wall retained, but not maintained.	Set-back concrete wall retained to north of Caister CG, but not maintained. To south of Caister CG wall retained.	(as A)	Set-back concrete wall retained but not maintained. Possible secondary flood defence at 'Gt. Yarmouth and Caister' golf course.	Set-back concrete wall not maintained to North of CG Station. Possible flood defence at 'Gt. Yarmouth and Caister' golf course. Set-back concrete wall to south of CG retained.	(as A)
Great Yarmouth South Beach	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion.	(as A)	(as A)	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion.	(as A)	(as A)	Seawall, Harbour arm maintained to prevent erosion.	(as A)	(as A)
Gorleston-on-Sea	Seawall and Harbour arm maintained (or replaced) to prevent erosion	(as A)	(as A)	Seawall and Harbour arm maintained (or replaced) to prevent erosion	(as A)	(as A)	Seawall and Harbour arm maintained (or replaced) to prevent erosion	(as A)	(as A)
Gorleston-on-Sea to Hopton-on-Sea	Timber revetment and groynes maintained until failure.	(as A)	(as A)	Timber revetment and groynes allowed to deteriorate and fail.	(as A)	(as A)	No defences.	(as A)	(as A)
Hopton-on-Sea North	Timber revetment and groynes	(as A)	(as A)	Timber revetment and	(as A)	(as A)	No defences.	(as A)	(as A)

Location	Years 0 – 20 (2025)			Years 20 – 50 (2055)			Years 50 – 100 (2105)		
	Policy Scenario A	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**	**Policy Scenario A**	**Policy Scenario B**	**Policy Scenario C**
	maintained until failure (i.e. not rebuilt).			groynes allowed to deteriorate and fail.					
Hopton-on-Sea South	Seawall and groynes maintained.	(as A)	(as A)	Seawall and groynes allowed to deteriorate and fail.	(as A)	(as A)	No defences.	(as A)	(as A)
South of Hopton-on-Sea	Seawall and groynes maintained.	(as A)	(as A)	Seawall and groynes allowed to deteriorate and fail.	(as A)	(as A)	No defences.	(as A)	(as A)
Hopton-on-Sea to Corton	Timber revetment and groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Corton	Seawall and rock revetment maintained.	(as A)	(as A)	Seawall and rock revetment allowed to deteriorate and fail.	(as A)	Seawall and rock revetment maintained.	No defences.	(as A)	Seawall and rock revetment maintained.
Gunton Warren	Timber groynes allowed to fail.	(as A)	(as A)	No defences.	(as A)	(as A)	No defences.	(as A)	(as A)
Lowestoft North (to Ness Point)	Seawall maintained to prevent erosion.	(as A)	(as A)	Seawall maintained to prevent erosion.	(as A)	(as A)	Seawall maintained to prevent erosion.	(as A)	(as A)

F5 Policy Appraisal

F5.1 INTRODUCTION

There have been two main stages:

- assessment of shoreline interactions and response
- assessment of achievement of objectives.

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

The next stage was to appraise the achievement of objectives using this information and this has been recorded in the Issues and Objectives Table (see Section F5.3).

F5.2 POLICY SCENARIO SHORELINE RESPONSE ASSESSMENT

F5.2.1 Scenario A

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Kelling Hard to Sheringham	No defences (apart from low timber/ steel palisade at Weybourne retained to prevent breach and flooding) [as B and C]	No defences. (Natural Shingle Bank at Weybourne) [as B and C]	No defences. (Natural Shingle Bank at Weybourne) [as B and C]
	Cliff erosion will continue at similar rates to those experienced historically, with a net retreat of the cliff line of between 5 and 10m by year 2025. As the cliffs erode this will contribute some beach-building sediment (mainly sand), which will maintain beach at the toe of the cliffs, but there will be little other input of shingle to this frontage from alongshore due to the low sediment transport rates. Similarly there will be low transport from this area both to the east and west. There will be a slight beach build-up at the eastern end due to the defences at Sheringham; therefore cliff erosion may be slightly less at this end. If a palisade is maintained at Weybourne, this will prevent a breach in the shingle barrier at this location, but due to the beach narrowing in front, the barrier is likely to be overtopped with increasing frequency, resulting in localised flooding behind.	Cliff erosion will continue at an increased rate due to sea level rise, with a net change in cliff line position of between 15 and 30m by 2055. The cliffs will supply both sand and shingle to the beach, but under the increased energy conditions this volume may not be sufficient to build beaches, therefore the beaches are expected to narrow. At Weybourne, the shingle ridge will be allowed to retreat in line with the cliffs, but there will be a risk of breach with localised flooding of the small area of low-lying land behind.	There will be continued cliff erosion and shoreline retreat, accelerated by sea level rise, with a net change in cliff line position of 40 to 55m by 2105. It is likely that a beach will remain at the foot of the cliffs, but it is likely that this will be narrower than at present, unless the cliffs are able to keep pace with the rate of sea level rise. It is expected that a shingle barrier will remain at Weybourne, albeit one that is frequently overtopped and breached. There will therefore be frequent flooding of the localised low-lying area behind.
Sheringham	Seawall, rock revetment and groynes maintained to prevent any erosion – with possible	Seawall and groynes maintained to prevent any	Seawall and groynes maintained to prevent any

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	improvement of seawall along eastern stretch of Sheringham. [as B and C]	erosion. [as B and C]	erosion. [as B and C]
	There will be no change in cliff line position due to the defences. The limited beach that is currently present would not build due to (1) no local input due to protection of the cliffs; (2) little input to the area due to low drift rates; and (3) increased exposure of the beach as the promontory becomes more pronounced. As the natural response of the shoreline is restricted, the beaches will steepen and narrow. Some beach stability will be maintained due to the rock groynes and these will restrict the amount of sediment that is transported eastwards. The defences will restrict the alongshore feed of sediment to the east and there will be no local input of beach material.	There will be no change in cliff line position along the northern section due to the defences and it is likely that the low seawall along East Sheringham may need to be enhanced to provide greater protection. These structures will prevent the natural response of the coast to retreat, in response to continued sea level rise. As a result there will be intertidal squeeze with the beach width significantly reduced, which will be exacerbated by the absence of direct feed from cliff erosion locally, although some material will be fed from the west. This section will become a more pronounced promontory, with beach loss to the west and east. The groynes will initially trap some littoral drift and it is likely that a narrow beach will be maintained along this frontage. As the beach becomes more exposed, the groynes will become increasingly ineffective in holding sediment and will eventually become redundant; it is expected that the beach will be close to disappearing by 2055. This will impact on areas to the east, for although some sediment will still be transported in the nearshore zone, there will be an increase in loss of sand sized (and finer) sediments offshore due to a change in the nearshore hydrodynamics.	The cliffs will continue to be held in their present position by the seawall, but there is unlikely to be any beach fronting the area, therefore the groynes will be redundant. Cutback of the adjacent shoreline will result in this area become increasingly pronounced and exposed to deeper wave conditions. Substantial works would probably be required to retain the seawalls. There may be nearshore sediment movement to the east, but sand and finer sediment will be swept offshore due to the prominence of this frontage into deeper water.
Sheringham to Cromer	Timber groynes and revetment between Sheringham and West Runton allowed to fail. Two short stretches of masonry wall at East and West	Short stretches of masonry wall at East and West Runton Gaps allowed to fail. No defences along	No defences. [as B and C]

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Runton Gaps maintained. [as B and C]	rest of frontage. [as B and C]	
	Between Sheringham and Cromer, without maintenance the defences will start to fail during this period. As the timber revetments fail there will be a period of rapid cliff retreat (probably within the first 5 years) followed by the establishment of a more regular annual recession rate; with episodic events separated by periods of low retreat. By 2025, the net amount of cliff erosion is likely to be between 5 and 20m, although a single, localised event may cause over 30m of erosion. Localised input from the cliff will maintain a beach in front of the cliffs, although there will be limited input from the west, due to the groynes at Sheringham. Where the masonry walls protect the beach access points at East and West Runton, there will be no change in cliff position. As the cliffs continue to erode either side of the short stretches of masonry wall, these will start to become outflanked, resulting in these structures becoming more difficult to maintain. There will be continued feed to beaches locally and downdrift.	The short stretches of masonry wall will be close to being outflanked near the start of the period and it is likely that they will fail quite early. When these fail there is likely to be rapid local erosion of the area immediately behind. The structures may temporarily interrupt alongshore drift, but this effect will reduce as the cliffs retreat. Along the remainder of the frontage cliff erosion will continue, at accelerated rates due to sea level rise. A retreat of 15 to 50m is expected by 2055, but a single event could potentially cause over 30m of erosion. Local cliff input should be sufficient to maintain a beach, but there is unlikely to be significant feed from the north, due to defences at Sheringham. There will be continued sediment feed to the east.	There will be continued cliff recession at a rate accelerated by sea level rise. This will, in part, be exacerbated by the lack of sediment input from the north, but cliff recession rates will ultimately be determined by the easily eroded nature of the cliffs. A net retreat of between 50 and 110m is expected by 2105, but there may be localised large-scale failures along this shoreline. The nature of the cliffs means that they are likely to keep pace with sea level rise therefore it is expected that due to local input of sediment, that a beach will be maintained along this frontage despite little or no input from updrift beaches. Due to the prominence of Sheringham there is unlikely to be significant sand or shingle supply to this frontage. Much of the sand at the southern end of this section is likely to be lost offshore, but a small accumulation of shingle may form at the northern end of the Cromer defences. There will be continued sediment feed to the east.
Cromer	Seawall and groynes maintained to prevent any erosion. [as B and C]	Seawall and groynes maintained to prevent any erosion. [as B and C]	Seawall and groynes maintained to prevent any erosion. [as B and C]
	The seawall will hold the cliffs in their present position. The beach will experience some	Erosion of the cliffs will be prevented by the seawall and as the adjacent shorelines are	Defence of the cliffs at Cromer will result in a well-defined promontory forming, with no beach being

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	narrowing due to the limited input of sand and shingle from alongshore, particularly whilst defences remain between Sheringham and Cromer and restricted input from the cliffs. Some stability will be provided by the groynes, which will restrict feed to adjacent beaches, although some nearshore sediment transport will still continue.	undefended and therefore will cut back, this area will become a more prominent frontage. As the promontory becomes more pronounced, beaches will narrow due to both limited sediment input (from either alongshore or locally) and increased exposure to greater wave energy. Although initially the groynes may help maintain a beach, by the end of the period exposure conditions will make them increasing ineffective at holding sediment and eventually redundant. Although there may still be some feed to beaches to the south, there is likely to be increase loss of sand-sized sediment offshore.	present; therefore the groynes will be redundant. As adjacent sections are undefended, substantial works would probably be required in order to prevent outflanking both to the east and the west. With this coastline becoming so prominent it is unlikely that any sediment will bypass to feed areas to the south and there will be increased sediment losses to offshore. It may also not be possible for sediment to move northwards past Cromer, during periods of drift reversal.
Cromer to Overstrand	Revetments and timber groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	There will be continued cliff erosion, but as the revetments fail this will accelerate along certain sections of coast. Along this section a net retreat of between 5 and 35m is expected by 2025. A shallow embayment is likely to start to form between Cromer and Overstrand as these two locations are held. Therefore erosion is likely to be greatest in the northern and central sections of this stretch. Despite a local input from cliff erosion, the beaches are not likely to build as sediment will continue to be transported eastwards (with fines moved offshore); this feed increasing once the groynes fail. There will also be a limited input from Cromer	Erosion of the cliffs will continue at an increased rate due to sea level rise, with a net retreat of 40 to 80m by 2055. The only sediment source for this area will be from the local cliff erosion, due to the interruption of drift as a result of the defences at Cromer. This will exacerbate the erosion problem, but the rate of cliff recession will mainly be driven by the easily eroded nature of the cliffs. Much of the sand released through cliff erosion is likely to be lost offshore, with a proportion moved alongshore, therefore only a narrow beach is expected to be retained along this frontage.	The cliffs will continue to erode at an accelerated rate due to sea level rise, but by this stage there will be very little or no input of sediment from the north due to the defences at Cromer resulting in offshore loss of sediment. Therefore the beach will depend upon the local supply of sediment from cliff erosion, but this is only likely to sustain a narrow beach, as there will be continued sediment transport to the south. The rate of cliff retreat will predominately be controlled by the geology of the cliffs and a net retreat of between 95 and 150m is expected by 2105.

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	and north of Cromer.		
Overstrand (North)	Seawall and groynes maintained. [as B and C]	Seawall and groynes allowed to deteriorate and fail. [as B]	No defences. [as B]
	The seawall will maintain the cliffs in their present position and the groynes will help hold the beach, although this will become increasingly difficult as this area becomes more exposed. There will be some sediment supply across this frontage, predominately from north to south, although local cliff feed will be prevented, so beaches may start to narrow.	The defences will start to fail, with breaches occurring along sections, resulting in rapid erosion of the cliffs behind. This will in turn accelerate failure of adjacent sections. A net retreat of 75 to 135m is expected by 2025, as the coastline has been held artificially seaward for decades. Some sediment will be supplied from the north and this, together with local cliff inputs, should maintain a beach along this stretch. There will be continued sediment transport to the south.	There will be continued cliff erosion with relatively linear retreat of this shoreline. A beach is likely to be maintained through local cliff erosion and from sediment supplied from the north. Net retreat during this period is likely to be between 140 and 175m by 2105. This will help feed beaches both locally and to the south.
Overstrand (South)	Timber revetment and groynes maintained. [as B and C]	Timber revetment and groynes allowed to deteriorate and fail. [as B]	No defences. [as B]
	The timber revetment will continue to slow, but not totally stop, cliff erosion, with erosion continuing at rates similar to those experienced today, with between 5 and 20m cliff line recession by 2025. The groynes will help maintain a beach, but there will be limited sediment supply from the north, particularly due to Overstrand increasingly forming a promontory to the north. There will also be transport to the south.	As the revetment fails, probably early during this period, there will be an initial surge in cliff erosion. Cliff erosion will then continue at a more steady rate, although greater than that experienced historically due to sea level rise. A net cliff line retreat of 30 to 75m by 2055 is likely. Sediment supply, both from alongshore and locally, will maintain a beach and there will be continued sediment feed to the south.	There will be continued cliff erosion, with a beach maintained through both local cliff erosion and alongshore supply of sediment. The net retreat expected by the end of this period is 75 to 120m. Sediment from this cliff erosion will help maintain beaches to the south.
Overstrand to Vale Road Beach Access	Much of frontage undefended; timber revetment and groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Along undefended sections, there will be continued cliff erosion both through both marine and groundwater processes. As defences fail along the remainder of the shoreline, the erosion will initially be rapid. A net change in cliff line position by the end of this period is expected to be between 5 and 30m, but this area is also susceptible to large-scale single-event failures, which may result in several metres of erosion in one go. There will be limited feed of sediment from the north, which is likely to maintain rather than build beaches along this section. Some of this will be supplied to downdrift beaches, particularly once the groynes fail.	There will be continued cliff erosion, increasing as a result of sea level rise, which will provide sediment to beach both locally and alongshore. There will also be sediment input from the north, although some of this will be lost offshore and some will feed beaches downdrift; it is likely that a beach will be maintained in front of the cliffs. A net retreat of between 30 and 75m by the end of this period is expected.	As for the adjacent section, there will be continued cliff retreat, despite increased sediment linkage along the coast, due to accelerated sea level rise. Net retreat expected by 2105 is between 85 and 150m. There will be a beach at the toe of the cliffs, which will be similar to today and there will be continued sediment feed to the south.
Vale Road Beach Access to Sea View Road	Timber revetment and groynes maintained/ replaced. [as B and C]	Timber revetment and groynes allowed to deteriorate and fail. [as B and C]	No defences. [as B and C]
	The timber revetment will continue to slow rather than stop cliff erosion, therefore the cliffs will continue to erode at similar rates to present. The groynes will help hold this local input of sediment along the beach and by the end of the period there may a slight increase in the input of sediment from the north, therefore a sand beach will be maintained here. The cliff retreat is likely to be between 5 and 15m by 2025.There will be continued sediment supply to the south, helping maintain beaches.	As the revetment fails, probably early during this period, there will be an initial surge in cliff erosion. Cliff erosion will then continue at a steadier rate, although greater than that experienced historically due to sea level rise. Erosion is likely to be greatest around Marl Point, where a slight promontory has formed due to the presence of defences over the last 30 to 70 years. A net retreat of 35 to 65m would be expected by the end of this period. Sediment supply both from alongshore and locally will maintain a beach, but this unlikely to	The rate of erosion will slow from that experienced immediately following defence failure. There will be little change in beach volume despite this extra input, due to alongshore and offshore movement of sand, therefore cliff retreat is expected to continue. The net retreat expected by 2105 is 75 to 105m.

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		significantly build due to the alongshore and offshore losses.	
Cliftonville	Timber revetment and groynes maintained/ replaced. [as B and C]	Timber revetment replaced by seawall. [as C]	Seawall allowed to fail.
	Continued maintenance of the revetment and groynes will restrict cliff erosion to a similar rate as present. Local sediment input and restricted input from updrift will maintain a narrow beach in front of the cliffs. There will be some transport of sediment to the south. Cliff retreat up to 2025 is expected to be up to 10m.	Cliff erosion will be prevented along this section due to the seawall and here, together with the adjacent section at Mundesley, will develop as a promontory. Despite the input of sediment from the north, increased exposure will mean that it will become more difficult to maintain a beach here due to deeper water at the shoreline. Sediment will continue to be moved southwards along this frontage, but the promontory will start to interrupt this drift and may result in increased offshore loss of sands and fines.	The seawall will probably fail quite rapidly towards the start of this period, with breaches forming along sections, resulting in rapid erosion behind and acceleration of the failure of the rest of the seawall and of the seawall in the adjacent stretch to the south. Cliff retreat immediately following failure will be rapid as large-scale realignment occurs. A rate more similar to that experienced pre-defences, with the added impact of sea level rise, is then expected. A net retreat of between 75 and 100m is expected by 2105. As a result of the cliff failure, there will be increased sediment input to the system, which will help build up a beach again in front of the cliffs and will also feed areas to the south.
Mundesley South	Seawall and groynes maintained. [as B and C]	Seawall (and groynes until redundant) maintained.	Seawall allowed to fail.
	There will be no change in cliff line position due to the seawall. The groynes will help maintain a beach, although this will start to become technically more difficult as the area increasingly becomes a promontory resulting in increased exposure of the beaches and deeper water at the	The seawall will hold the cliff line position, but this, and the section to the north, will increasingly become a promontory during this period, as areas to the north and south cut back. Despite a feed of sand from the north the increased exposure will mean that it will become	As for the adjacent section to the north, cliff retreat following failure of defences will initially be rapid. As the cliffs retreat, some of the sand released from the cliff will remain locally and help to build up beaches at the toe of the cliffs, but a proportion will also be transported southwards. A net retreat of

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	shoreline as the coastal system continues to retreat. Sediment feed to the south will be reduced due to interruption of feed from further north. There will also be limited input from the north due the continued maintenance of the groyne fields. There may be a risk of outflanking, although this will be limited to the north due to maintenance of the revetment along the adjacent section.	more difficult to hold a beach here and the natural response of the beach to retreat will be restricted. As the beaches narrow the groynes will start to become redundant and as a result of increased exposure the sediment transport rates may potentially increase, but actual transport will be limited by sediment availability. By the end of this period it is therefore likely that there will be no beach present and there will be increased offshore losses, therefore feed to the south will be much reduced.	between 75 and 150m is expected by the end of this period. Sediment linkages to the south will be improved once the shoreline becomes realigned to a more 'natural' position.
Mundesley to Bacton Gas Terminal	Timber revetment and groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	There will be erosion of the cliffs, initially at a similar rate to present, but as the defences fail the erosion rate will increase. It is likely that a slight embayment will start to form between the two fixed shorelines at Mundesley and Bacton Gas Terminal, which will result in erosion being greatest along the central section of the shoreline. The expected cliff retreat is between 10 and 30m during this period. There will also be a slightly greater throughput of sand as the groynes fail, although this will be countered by the slight stabilising effect as the embayment develops.	There will be continued erosion of the cliff at rates more similar to those experienced pre-defences, but with some increase due to rising sea levels. There will be very limited sediment feed into this area due to defences at Mundesley, which will exacerbate the cliff erosion. The sediment supplied from the cliff erosion may retain a narrow beach at the toe of the cliffs. There will be continued transport to the south, although possibly at a slightly slower rate as the embayment develops. A net retreat of between 40 and 75m is expected by 2055.	Cliff erosion will continue at enhanced rates, due to sea level rise, although there will be increased sediment from cliff erosion to the north which will help offset this. Due to this feed and cliff inputs locally, a beach will be maintained in front of the cliffs. Net retreat of the cliffs is expected to be 90 to 120m by the end of this period, but with increased cutback immediately updrift of the defences at Bacton Gas Terminal.
Bacton Gas Terminal	Timber revetment replaced by seawall and groynes maintained. [as C]	Seawall and timber groynes maintained. [as C]	Seawall allowed to fail but measures to reduce erosion rate.

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	In order to prevent cliff erosion it is likely that the timber revetment will need to be replaced by a seawall; this will prevent cliff retreat. There may be some cutback along the adjacent section to the north, once the timber revetments and groynes fail here. The groynes will help to trap some of the sand supplied from the north, maintaining the beach in a similar form today. There will be reduced inputs from cliffs locally, but this does not represent a significant input to the system.	The cliff line position will be held by the seawall. There will be some continued supply of sand from the north, which will be transported along this frontage and to the south. This is likely to be reduced due to defences at Mundesley. There will also be no local sediment supply. It is therefore likely that beaches along this stretch will narrow as a result of sea level rise. This, together with cutback either side of the defences, will make the defences increasingly difficult to maintain over time.	Without maintenance, the seawall is expected to fail during this period, due to both increased exposure and outflanking on either side as undefended cliffs erode. The cliffs will be reactivated, but the rate will be slowed by any measures put in place. Without measures, the erosion could be up to 120m by 2105. A narrow beach is expected to be present in front of this stretch due sediment inputs from alongshore transport. There will be continued transport of sediment to the south.
Bacton Gas Terminal to Ostend	Seawall and timber groynes maintained. [as B and C]	Seawall and timber groynes allowed to deteriorate and fail. [as B]	No defences. [as B]
	The shoreline position will remain unchanged due to the defences. There will be some sand supplied from the north and some of this will be trapped by the groynes to maintain a beach similar to present. There will be continued sediment transport to the south. There is a risk of outflanking to the south once the defences between Ostend and Happisburgh fail.	Initially the shoreline position will be held by the seawall and timber groynes, but as these fail, possibly towards the middle of this period, there will be an initial surge in erosion, with 35 to 65m retreat by 2055. Although the cliffs will supply some sand, they are low in height so this supply will be limited and there is also limited supply of sediment from the north. It is therefore likely that only a narrow beach will be retained along this frontage, but this should probably be quite stable. Where the cliff line drops down to beach level, there is a high potential for inundation of the lower-	Erosion of the cliffs will slow slightly from that experienced immediately following failure, although there will be an increasing impact of accelerated sea level rise, which will place greater pressure on the system. There will be a limited input of sand from the cliffs as they are low in height but this area will also be fed from areas to the north. A net cliff retreat of between 60 and 110m is expected by 2105. There will be a high potential for inundation of the lower-lying land at Walcott. This inundation is unlikely to be permanent, as the supply of sediment should help maintain a low sand beach in front of the low-lying area, but this could be subject

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		lying land at Walcott.	to breach during storm events.
Ostend to Happisburgh Village	Timber revetment and groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	The cliff line will initially be held, but as defences fail there will be significant surge in cliff retreat, with the possibility of 80 to 100m of retreat by 2025. Input from the cliffs should be sufficient to maintain a small beach in front of the cliffs. Some of this sand will also be moved southwards to feed adjacent beaches and there will also be offshore losses. Sediment supply from the north will be limited due to defences both locally and further north restricting sediment supply from cliffs and alongshore transport.	During this period the erosion rates should start to slow as the coast tends towards a position more commensurate with wave energy conditions, with a net retreat of between 130 and 150m by 2055. The input from cliff erosion locally and that from alongshore should maintain a beach at the toe of the cliffs. There will be continued sand transport to the south.	There will be continued cliff erosion, and sand released from the cliffs, and from alongshore, which will help maintain a beach at this location. There will still be transport of sediment alongshore to adjacent beaches. A net retreat of 170 to 200m is expected by 2105.
Happisburgh Village	Rock 'bund' retained but not enhanced. [as B and C]	Rock 'bund' allowed to deteriorate. [as B and C]	No defences. [as B and C]
	The defences are unlikely to have a significant impact on cliff erosion and the cliffs are likely to experience significant erosion in excess of historical rates because the cliffs have historically been held seaward. A net retreat of up to 100m is possible by 2055. This will in part depend upon frequency of storms. This erosion will maintain a beach locally, but this is still likely to be narrow and will be prone to stripping during storms. There will be continued	The defences will have little or no impact on the rate of cliff retreat; therefore the cliffs are likely to continue to retreat at a rate greater than experienced historically until the coast reaches a position more commensurate with wave energy conditions. With input from the cliffs and alongshore it is possible that the beach will improve slightly from its present condition as the cliffs retreat. However, cliff retreat is expected to continue, driven by sea level	The bund will have no effect by this period and therefore cliff erosion will continue unabated. It is expected that the rate during this period will be slightly slower, despite sea level rise, as the coastline should have reached a position more commensurate with wave energy conditions. Between 170 and 200m of cliff retreat is expected by 2105.

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	sediment feed to the south.	rise. A retreat of up to 130 to 150m is expected by 2055.	
Happisburgh Village South	No defences. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	The cliffs will continue to erode at a rate greater than historic, but this is expected to slow slightly as the cliffs reach a position more commensurate with current wave energy. A net retreat of 20 to 50m is expected by 2025. There will be a continued throughput of sediment, but it should be noted that the beaches along this and adjacent sections are extremely volatile and susceptible to stripping during storms with the temporary exposure of the clay layer beneath.	The cliffs will continue to erode due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore, but this will probably be narrow, despite potential for increased sediment feed from the north as defences fail. At the southern end of this frontage, erosion of the cliffs may cause outflanking of the seawall along the adjacent section. A net cliff line retreat of 50 to 75m is expected by 2055.	The cliffs will continue to erode at an increased rate due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore. There will be continued sediment drift southwards. A net cliff line retreat of 75 to 125m is expected by 2105.
Cart Gap to south of Bramble Hill	Offshore breakwaters and seawall maintained, groynes replaced and continued beach recharge. [as B and C]	Offshore breakwaters maintained, seawall maintained throughout frontage, groynes replaced and continued beach recharge.	Retired defence line (secondary flood embankment), and breakwaters, seawall and groynes allowed to deteriorate and fail.
	The seawall will prevent any retreat of the foredunes and at Sea Palling a wide beach, possibly encouraging foredune accretion, will be maintained through the reefs (offshore breakwaters) and continued recharge. There will also be some sand input from cliff erosion to the north. The alongshore transport of the recharge material should enable reasonably healthy beaches to be maintained along this entire stretch, although exposure will gradually increase over time.	The seawall will continue to hold the shoreline in its present position, increasing forming a discontinuity between this frontage and the eroding cliff to the north. At Eccles, this may cause problems in retaining a beach as this area becomes more exposed. The reefs and recharge will maintain a healthy beach, although a beach may gradually become more difficult to maintain under continued sea level rise, along the Sea Palling frontage and the recharge sediment will also supply downdrift areas.	The reefs would probably remain, but their effectiveness would be reduced because of coastal system retreat. Failure of defences would therefore be slower in this area than areas to the south where defences, if not removed, would be likely to fail early during this period. Once a breach occurs in the defences, the dunes are not likely to be sustained, therefore there would be almost immediate inundation of the low-lying land up to the retired defence line. Tidal flooding over the entire area would only be

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Sand will continue to be transported southwards onto adjacent frontages.	As the reef bays fill there may be increased sediment transport to areas to the south helping to maintain beaches here. As sea level rises there may need to be increased sediment recharge in order to maintain beaches in a form similar to present. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*	during extreme storm events; therefore a gradated saltmarsh to brackish system may develop over the long term, possibly fronted by a low sand beach. Initially this area would probably act as a sediment sink, particularly for fines supplied from cliff erosion to the north although a sediment transport pathway would still be likely to exist within the nearshore zone. This is, however an area of high uncertainty as managed retreat on this scale has not be carried out elsewhere in the UK, therefore further studies are highly recommended. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*
South of Bramble Hill to Winterton-on-Sea (Winterton Dunes)	Seawall not maintained, but possible construction of flood embankment just behind dune belt (in advance of possible breach event). [as B and C]	Flood embankment maintained (if required), to prevent flooding, and dune management. [as C]	Flood defences, as part of retired defence line to north.
	There should be little net change in the position of the backshore dunes from present, although natural fluctuation with accretion and erosion occurring would be expected. Should the dune field narrow to such an extent that it is liable to breach, at any location, the need for a secondary defence should be investigated, but this is unlikely due to feed of recharge sediment. There may be a slight increase in sediment input from the north as the reef fields fill with sediment,	Due to the natural variability in the position of Winterton Ness and interactions with the offshore there is a great deal of uncertainty regarding its future evolution. Without the seawall in place there will be more natural response to sea level rise with some dune erosion and possibility of dune rollback. Along this frontage this should not result in any breach due to the width of the dune system, although the northern section, around Bramble Hill, will be most	Although there is uncertainty associated with the natural variation in the position of the ness, this area will be affected by inundation of the area to the north, which could initially cut off a sediment supply to this area. This is likely to cause a breach along this section, probably during a storm event and increased rates of erosion along the majority of the frontage. This is an area of high uncertainty and further studies are necessary to fully explore potential

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	but this will continue to be transported southwards.	vulnerable. There will be continued sediment transport to the south.	changes in sediment linkages with areas to the north.
Winterton-on-Sea to California	No defences. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution. The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage. This may result in erosion of up to 40m in places, but the net change in shoreline along the whole of this frontage is expected to be small. The width of the dunes in front of Winterton means that a full breach would be unlikely during this period. This area will also receive sediment from the beach recharge to the north. At Newport and Scratby there will be continued deterioration of the dunes, with 10 to 30m of retreat possible by year 2025. At Scratby this may result in the reactivation of the sand cliffs. During this period it is possible that a breach could occur at the southern end of Newport, but here flooding would be likely to be restricted to the low-lying 'valley' area. The beach will remain in a similar condition to today, with continued transport of sediment southwards.	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution. The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage. At Winterton, the reduction in natural sediment supply to this frontage may result in a net trend of dune erosion, which will supply beaches to the south. As the dunes retreat a beach of similar size to that currently present should remain in front of the dunes. A breach is though unlikely due to width of the dunes. At Newport and Scratby there will be continued deterioration of the dunes, with probable loss of the system by the end of this period. This will result in the reactivation of the sand cliffs at Scratby and more frequent flooding of the low-lying 'valley' area. The sand cliffs may not keep pace with sea level rise therefore the beaches along this stretch may start to narrow. A net retreat of between 35 and 60m is therefore anticipated by 2055.	Although the ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage, this area will also be affected by the inundation of the area to the north. Along the northern section there will be some backdoor flooding but this will be restricted further south by local topography. However, there may initially also be a reduction in the natural sediment supply to this frontage through littoral drift. This will exacerbate any erosion along this frontage and the volume of Winterton Ness is expected to decrease, although further studies are required to investigate the full impacts of a managed realignment policy. At Newport and Scratby there will be continued erosion of the sand cliffs and flooding of the low-lying 'valley' area. The cliffs will release some sediment to the beach system, but beaches are likely to narrow. Net retreat is likely to be between 45 and 100m by 2105.
California	Rock berm maintained. [as B and C]	Rock berm allowed to deteriorate. [as B and C]	Rock berm allowed to deteriorate. [as B and C]

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Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	There will be continued erosion, although the rock berm will help to maintain the rate of erosion at its current rate, with a net retreat of up to 5m by 2025. This local supply of sediment, together with input from the north, will maintain a beach in front of the bund, but this will narrow, due to increased exposure, during this period. There will be continued feed from the north and some of this may be trapped behind the bund.	The effectiveness of the rock berm will reduce as it both deteriorates in condition and becomes more detached from the cliffs, as cliff erosion will continue. Therefore over this period the amount of cliff erosion is expected to increase and a net retreat of 30 to 50m is expected by 2055. The increased sediment feed will help maintain beaches.	The rock berm is expected to have failed by the start of this period and therefore will have very little effect on the rate of cliff erosion along this frontage. This will mean increased cliff erosion rates, and the area will become less of a promontory. A net retreat of between 80 and 100m by 2105. A healthier beach is likely to develop in a retreated position although there is likely to be an impact of large-scale realignment to the north.
Caister North	Seawall, reefs and groynes maintained. [as B and C]	Seawall, reefs and groynes maintained. [as C]	Seawall, reefs and groynes allowed to deteriorate.
	The groynes and reefs will continue to trap sand supplied from the north and the beach will be maintained along this section. Along the majority of the frontage the beach will remain quite wide and healthy, although this is in part dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point. Even where the beach is narrow, the seawall will prevent any coastal retreat. Some stability to this frontage will be provided by the influence of the reefs and Caister Ness to the south. There will be continued feed to the south, although the reefs and groynes will partially restrict this.	There will be no change in the backshore position, as this will continue to be held by the seawall. As a result of sea level rise there will be some beach narrowing, but the beach is likely to remain quite wide and healthy, particularly as there will be slightly increased feed from the north. This is, however, in part dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point, although the reefs will help to reduce beach volatility. Sediment transport will still take place to the south, along the nearshore bar.	This area will have increasingly have become a promontory and by this stage will stand several tens of metres seaward of the adjacent shoreline to the north. As a result of accelerated sea level rise there will be increased exposure of this frontage, which will put increased pressure on the reefs and groynes. The reefs and rock groynes will probably remain as the beach has been healthy, but their effectiveness is likely to reduce, resulting in beach loss and increased sediment transport to the south. The seawall will fail during this period, resulting in an increased risk of outflanking on either side of the reefs; here there will be 50 to 100m retreat by 2105.
Caister South to Great Yarmouth (Pleasure Beach)	Set-back concrete wall retained. [as B and C]	Set-back concrete wall retained, but not maintained. [as C]	Set-back concrete wall retained but not maintained. Possible secondary flood defence at 'Gt. Yarmouth and Caister' golf course. [as C]

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	The seawall will maintain the coastline position, but there is likely to be some fluctuation in the width of the dunes and beach in front, due to natural changes in the position of Caister Ness. The net change in dune position is likely to be ± 20 to 30m by 2025. Sediment feed to the area will partly be affected by reefs and groynes, but should be sufficient to maintain similar beaches to today.	The seawall will hold the shoreline position, but there will be fluctuation of the width of the dunes and beach in front, which will depend on changes in the position of Caister Ness. With accelerated sea level rise the general trend expected is one of beach narrowing and possible dune erosion, particularly as some sediment transport southwards will be restricted by the reefs and the rock groynes along the adjacent section to the north, although there will still be transport along the nearshore bar.	Along much of the frontage, due to the fronting beach and dunes, the seawall will remain unexposed and will hold the shoreline position. There will, however, be fluctuation in the width of the dunes and beach in front, which will depend on changes in the position of Caister Ness. There may be a slightly increased feed of sand to this area as the effectiveness of the groynes and reefs along the adjacent section reduces. The most vulnerable area is along the northern section, where the groynes are narrowest and here the seawall is at a high risk a breach, which may necessitate the construction of a secondary flood defence at the 'Great Yarmouth and Caister' golf course.
Great Yarmouth South Beach	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as B and C]	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as B and C]	Seawall, Harbour arm maintained to prevent erosion. [as B and C]
	The seawall will prevent any change in the shoreline position (as defined by the seawall). There may however be some narrowing of the beach in front of the seawall, particularly along the central section of coast and therefore some deterioration in the condition of the remaining dunes. There will be continued transport of sand to the beaches across the Yare to the south, via the nearshore bar.	The seawall will remain and prevent backshore retreat and inundation of the hinterland. Despite sand input from the north, there will, however, be continued beach narrowing in front of the seawall, with associated deterioration of the dunes due to increased exposure and deeper water as a result of sea level rise. This will place increased pressure on the wall.	The seawall will remain and prevent backshore retreat and inundation of the hinterland. The beach is likely to disappear along the southern section due to sea level rise and increased exposure. This will mean increased expenditure will be necessary to maintain the seawall. There will be continued beach narrowing and loss of dunes along the northern section of this shoreline. Sediment transport, via the offshore bar, will continue to adjacent areas to the south.
Gorleston-on-	Seawall and Harbour arm maintained (or replaced)	Seawall and Harbour arm maintained (or replaced)	Seawall and Harbour arm maintained (or replaced)

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Sea	to prevent erosion. [as B and C]	to prevent erosion [as B and C]	to prevent erosion. [as B and C]
	There will be no change in the position of the shoreline or mouth of the Yare, due to defences. This frontage will continue to receive sand from the Great Yarmouth frontage, via the nearshore bar. There will be a continued sediment supply to adjacent beaches, particularly via the nearshore bar, therefore there is a risk of beach narrowing unless beach control structures are in place.	There will be no change in either the cliff line or entrance of the River mouth due to maintenance of existing structures. There will be a continued sediment supply to adjacent beaches particularly via the nearshore bar.	There will be no change in cliff line position due to defences and the mouth of the river will remain the same. Due to sea level rise and deeper water closer to the coast there will be some beach narrowing along this section.
Gorleston-on-Sea to Hopton-on-Sea	Timber revetment and groynes maintained until failure. [as B and C]	Timber revetment and groynes allowed to deteriorate and fail. [as B and C]	No defences. [as B and C]
	The timber revetment will continue to help slow cliff erosion and therefore for much of this period there will be little change in cliff line position. The groynes will trap some of the sand supplied both from the local cliff erosion and from the north. There may be some slight improvement in the beaches as a result of the beach recharge along the adjacent section to the north. Once the revetment fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. The net retreat during this period is therefore likely to be between 5 and 25m, dependent upon the exact timing of revetment failure. Sediment feed both to the north and south will continue from this frontage.	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along localised stretches as the defences fail. By 2055 there will be a net retreat of 40 to 65m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	There will be continued cliff erosion at an accelerated rate due to sea level rise. There could be some increase in the sand supplied from the north but predominately this stretch will rely on local inputs from cliff erosion, which should be sufficient to maintain a narrow beach along this frontage. There will also be continued sediment transport to the south. A net retreat of 80 to 130m is expected by 2105.

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Hopton-on-Sea North	Timber revetment and groynes maintained until failure (i.e. not rebuilt). [as B and C]	Timber revetment and groynes allowed to deteriorate and fail. [as B and C]	No defences. [as B and C]
	The timber revetment will continue to help slow cliff erosion and therefore initially there will be little change in cliff line position. The groynes will trap some of the sand supplied both from local cliff erosion and from the north. Once the revetment fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. Net cliff line retreat during this period is therefore likely to be between 5 and 25m, depending upon the exact timing of revetment failure. Sediment alongshore transport will continue, feeding areas to the south. There may be a slight accretion zone immediately updrift of the seawall section to the south.	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along localised stretches as the defences fail. By 2055 there will be a net retreat of 45 to 70m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	There will be continued cliff erosion at an accelerated rate due to sea level rise. This, together with input from the north, should be sufficient to maintain a narrow, relatively stable, beach along this frontage. There will also be continued sediment transport to the south. A net retreat of between 90 and 130m is expected by 2105. There will also be continued sediment transport to adjacent beaches.
Hopton-on-Sea South	Seawall and groynes maintained. [as B and C]	Seawall and groynes allowed to deteriorate and fail. [as B and C]	No defences. [as B and C]
	The cliffs will be held in their present position by the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transported alongshore. This, and the adjacent areas to the south, will develop as a promontory. There will still be some sediment transport to the south.	Initially the cliff line will be held by the seawall, but this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is expected to occur as the shoreline	Cliff erosion will continue with a net retreat of 90 to 130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and along shore sediment transport. Transport to the south will continue.

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		reaches a position more commensurate with energy conditions. A net retreat of 45 to 70m is expected by 2055.	
South of Hopton-on-Sea	Seawall and groynes maintained. [as B and C]	Seawall and groynes allowed to deteriorate and fail. [as B and C]	No defences. [as B and C]
	The cliffs will be held in their present position by the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transport alongshore. This, and the adjacent areas to north and south, will develop as a promontory. There will still be some sediment transport to the south.	Initially the cliff line will be held by the seawall, but this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is likely to occur as the shoreline reaches a position more commensurate with energy conditions. A net cliff line retreat of 45 to 70m is expected by 2055.	Cliff erosion will continue with a net retreat of 90 to 130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and alongshore sediment transport.
Hopton-on-Sea to Corton	Timber revetment and groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	Initially the timber revetment will slow the rate of cliff erosion but as these fail there will initially be a period (approximately 5 years) of relatively rapid erosion. A net retreat of between 10 and 25m would be expected by 2025. Some of the sand released from the cliffs will be moved southwards; this throughput will increase as the groynes fail. Some of this may be trapped	There will be continued cliff erosion at slightly increased rates due to sea level rise and a net retreat of between 45 and 70m is expected by 2055. A beach will be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion.	There will be continued cliff erosion at slightly increased rates due to sea level rise and a net retreat of between 90 and 130m is expected by 2105. A beach should be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion.

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	updrift of the defences at Corton.		
Corton	Seawall and rock revetment maintained. [as B and C]	Seawall and rock revetment allowed to deteriorate and fail. [as B]	No defences. [as B]
	The seawall will prevent any cliff retreat, but it is unlikely that a beach will be retained here, apart from along the southern section, despite a possible increase of sediment input from the north. This is due to the increased exposure of the site as it becomes more prominent, with deeper water at the seawall. Sediment transport from north to south is likely to diminish due to the prominence of this area as alongshore drift is interrupted and more sediment is lost offshore.	It is likely that by mid period the effect of the rock revetment will deteriorate resulting in failure of the seawall behind. Both these structures are likely to help reduce the wave attack and therefore cliff erosion initially, but cliff erosion following failure will still be relatively rapid. The seawall will start to fail in sections but due to erosion of the cliffs behind this will accelerate failure of adjacent areas. Sediment released from the cliffs will be unlikely to initially build beaches significantly in these areas because during the period the beach is likely to be too exposed, particularly taking into account sea level rise. However, a more substantial beach is likely to form once the cliffs have retreated to a position more commensurate with wave energy conditions. There will also be sediment transport to feed beaches downdrift. Net retreat of the cliffs of between 50 and 100m is expected by the end of this period.	Erosion of the cliffs will continue, but at a slower rate than experienced immediately following defence failure. A net retreat of between 85 and 170m is expected by 2105. A beach should be maintained at the toe of the cliffs and there will continued sediment transport southwards.
Gunton Warren	Timber groynes allowed to fail. [as B and C]	No defences. [as B and C]	No defences. [as B and C]
	There will be a decreased input of sand from the north due to the defences at Corton; therefore the beach along this section is likely to narrow resulting in deterioration of the dunes backing this section. The dunes are expected to retreat by 10 to 30m, therefore the cliffs behind are not expected to	There will be continued erosion of the dunes and beach narrowing due to sea level rise and the backshore position is likely to retreat by 40 to 90m by 2055, with the loss of the dunes and erosion of the sand cliffs behind.	There will be erosion of the sand cliffs, but it is likely that a beach will be present in front of the cliffs, fed by cliff erosion to the north. There is likely to be more severe cutback at the southern end of the frontage, where the cliffs meet

SCENARIO REF: SCENARIO A			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	be reactivated. There will be a slightly increased throughput of sediment once the groynes fail.	There will be beaches present, fed by dune and cliff erosion locally and also from the Corton frontage once defences fail, and from further north.	the seawall at Lowestoft. Net erosion of between 90 and 190m is expected by 2105.
Lowestoft North (to Ness Point)	Seawall maintained to prevent erosion. [as B and C]	Seawall maintained/ improved to prevent erosion and flooding. [as B and C]	Seawall maintained/ improved to prevent erosion and flooding. [as B and C]
	The shoreline position (as defined by the seawall) will remained unchanged and the seawall will prevent any erosion or inundation of the hinterland. However, due to the high exposure of the shoreline to wave attack, and limited sediment input, despite a slight increase in feed from the north (which is predominately sand-sized), the beaches along the northern section will continue to narrow and along the southern section the shingle beach is expected to have disappeared by 2025.	The seawall will continue to prevent flooding and will hold the backshore position, however, there will be continued beach narrowing and along much of this frontage there will be no beach present despite sediment feed from the north. Any beach sediment will be lost offshore into deeper water.	There will be no beach present along this frontage and this will mean that significant work may be required to maintain the integrity of the seawall. Any beach sediment transported to this frontage is likely to be lost offshore into deeper water.

F5.2.2 Scenario B

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Kelling Hard to Sheringham	No defences (apart from low timber/ steel palisade at Weybourne retained to prevent breach and flooding). [as A and C]	No defences. (Natural Shingle Bank at Weybourne) [as A and C]	No defences. (Natural Shingle Bank at Weybourne) [as A and C]
	Cliff erosion will continue at similar rates to those experienced historically, with a net retreat of the cliff line of between 5 and 10m by year 2025. As the cliffs erode this will contribute some beach-building sediment (mainly sand), which will maintain beach at the toe of the cliffs, but there will be little other input of shingle to this frontage from alongshore due to the low sediment transport rates. Similarly there will be low transport from this area both to the east and west. There will be a slight beach build-up at the eastern end due to the defences at Sheringham; therefore cliff erosion may be slightly less at this end. If a palisade is maintained at Weybourne, this will prevent a breach in the shingle barrier at this location, but due to the beach narrowing in front, the barrier is likely to be overtopped with increasing frequency, resulting in localised flooding behind.	Cliff erosion will continue at an increased rate due to sea level rise, with a net change in cliff line position of between 15 and 30m by 2055. The cliffs will supply both sand and shingle to the beach, but under the increased energy conditions this volume may not be sufficient to build beaches, therefore the beaches are expected to narrow. At Weybourne, the shingle ridge will be allowed to retreat in line with the cliffs, but there will be a risk of breach with localised flooding of the small area of low-lying land behind.	There will be continued cliff erosion and shoreline retreat, accelerated by sea level rise, with a net change in cliff line position of 40 to 55m by 2105. It is likely that a beach will remain at the foot of the cliffs, but it is likely that this will be narrower than at present, unless the cliffs are able to keep pace with the rate of sea level rise. It is expected that a shingle barrier will remain at Weybourne, albeit one that is frequently overtopped and breached. There will therefore be frequent flooding of the localised low-lying area behind.
Sheringham	Seawall, rock revetment and groynes maintained to prevent any erosion – with possible improvement of seawall along eastern stretch of	Seawall and groynes maintained to prevent any erosion. [as A and C]	Seawall and groynes maintained to prevent any erosion. [as A and C]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Sheringham. [as A and C]		
	There will be no change in cliff line position due to the defences. The limited beach that is currently present would not build due to (1) no local input due to protection of the cliffs; (2) little input to the area due to low drift rates; and (3) increased exposure of the beach as the promontory becomes more pronounced. As the natural response of the shoreline is restricted, the beaches will steepen and narrow. Some beach stability will be maintained due to the rock groynes and these will restrict the amount of sediment that is transported eastwards. The defences will restrict the alongshore feed of sediment to the east and there will be no local input of beach material.	There will be no change in cliff line position along the northern section due to the defences and it is likely that the low seawall along East Sheringham may need to be enhanced to provide greater protection. These structures will prevent the natural response of the coast to retreat, in response to continued sea level rise. As a result there will be intertidal squeeze with the beach width significantly reduced, which will be exacerbated by the absence of direct feed from cliff erosion locally, although some material will be fed from the west. This section will become a more pronounced promontory, with beach loss to the west and east. The groynes will initially trap some littoral drift and it is likely that a narrow beach will be maintained along this frontage. As the beach becomes more exposed, the groynes will become increasingly ineffective in holding sediment and will eventually become redundant; it is expected that the beach will be close to disappearing by 2055. This will impact on areas to the east, for although some sediment will still be transported in the nearshore zone, there will be an increase in loss of sand sized (and finer) sediments offshore due to a change in the nearshore hydrodynamics.	The cliffs will continue to be held in their present position by the seawall, but there is unlikely to be any beach fronting the area, therefore the groynes will be redundant. Cutback of the adjacent shoreline will result in this area become increasingly pronounced and exposed to deeper wave conditions. Substantial works would probably be required to retain the seawalls. There may be nearshore sediment movement to the east, but sand and finer sediment will be swept offshore due to the prominence of this frontage into deeper water.
Sheringham to Cromer	Timber groynes and revetment between Sheringham and West Runton allowed to fail. Two short stretches of masonry wall at East and West Runton Gaps maintained. [as A and C]	Short stretches of masonry wall at East and West Runton Gaps allowed to fail. No defences along rest of frontage. [as A and C]	No defences. [as A and C]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Between Sheringham and Cromer, without maintenance the defences will start to fail during this period. As the timber revetments fail there will be a period of rapid cliff retreat (probably within the first 5 years) followed by the establishment of a more regular annual recession rate; with episodic events separated by periods of low retreat. By 2025, the net amount of cliff erosion is likely to be between 5 and 20m, although a single, localised event may cause over 30m of erosion. Localised input from the cliff will maintain a beach in front of the cliffs, although there will be limited input from the west, due to the groynes at Sheringham. Where the masonry walls protect the beach access points at East and West Runton, there will be no change in cliff position. As the cliffs continue to erode either side of the short stretches of masonry wall, these will start to become outflanked, resulting in these structures becoming more difficult to maintain. There will be continued feed to beaches locally and downdrift.	The short stretches of masonry wall will be close to being outflanked near the start of the period and it is likely that they will fail quite early. When these fail there is likely to be rapid local erosion of the area immediately behind. The structures may temporarily interrupt alongshore drift, but this effect will reduce as the cliffs retreat. Along the remainder of the frontage cliff erosion will continued, at accelerated rates due to sea level rise. A retreat of 15 to 50m is expected by 2055, but a single event could potentially cause over 30m of erosion. Local cliff input should be sufficient to maintain a beach, but there is unlikely to be significant feed from the north, due to defences at Sheringham. There will be continued sediment feed to the east.	There will be continued cliff recession at a rate accelerated by sea level rise. This will, in part, be exacerbated by the lack of sediment input from the north, but cliff recession rates will ultimately be determined by the easily eroded nature of the cliffs. A net retreat of between 50 and 110m is expected by 2105, but there may be localised large-scale failures along this shoreline. The nature of the cliffs means that they are likely to keep pace with sea level rise therefore it is expected that due to local input of sediment, that a beach will be maintained along this frontage despite little or no input from updrift beaches. Due to the prominence of Sheringham there is unlikely to be significant sand or shingle supply to this frontage. Much of the sand at the southern end of this section is likely to be lost offshore, but a small accumulation of shingle may form at the northern end of the Cromer defences. There will be continued sediment feed to the east.
Cromer	Seawall and groynes maintained to prevent any erosion. [as A and C]	Seawall and groynes maintained to prevent any erosion. [as A and C]	Seawall and groynes maintained to prevent any erosion. [as A and C]
	The seawall will hold the cliffs in their present position. The beach will experience some narrowing due to the limited input of sand and shingle from alongshore, particularly whilst	Erosion of the cliffs will be prevented by the seawall and as the adjacent shorelines are undefended and therefore will cut back, this area	Defence of the cliffs at Cromer will result in a well-defined promontory forming, with no beach being present; therefore the groynes will be redundant.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	defences remain between Sheringham and Cromer and restricted input from the cliffs. Some stability will be provided by the groynes, which will restrict feed to adjacent beaches, although some nearshore sediment transport will still continue.	will become a more prominent frontage. As the promontory becomes more pronounced, beaches will narrow due to both limited sediment input (from either alongshore or locally) and increased exposure to greater wave energy. Although initially the groynes may help maintain a beach, by the end of the period exposure conditions will make them increasing ineffective at holding sediment and eventually redundant. Although there may still be some feed to beaches to the south, there is likely to be increase loss of sand-sized sediment offshore.	As adjacent sections are undefended, substantial works would probably be required in order to prevent outflanking both to the east and the west. With this coastline becoming so prominent it is unlikely that any sediment will bypass to feed areas to the south and there will be increased sediment losses to offshore. It may also not be possible for sediment to move northwards past Cromer, during periods of drift reversal.
Cromer to Overstrand	Revetments and timber groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	There will be continued cliff erosion, but as the revetments fail this will accelerate along certain sections of coast. Along this section a net retreat of between 5 and 35m is expected by 2025. A shallow embayment is likely to start to form between Cromer and Overstrand as these two locations are held. Therefore erosion is likely to be greatest in the northern and central sections of this stretch. Despite a local input from cliff erosion, the beaches are not likely to build as sediment will continue to be transported eastwards (with fines moved offshore); this feed increasing once the groynes fail. There will also be a limited input from Cromer	Erosion of the cliffs will continue at an increased rate due to sea level rise, with a net retreat of 40 to 80m by 2055. The only sediment source for this area will be from the local cliff erosion, due to the interruption of drift as a result of the defences at Cromer. This will exacerbate the erosion problem, but the rate of cliff recession will mainly be driven by the easily eroded nature of the cliffs. Much of the sand released through cliff erosion is likely to be lost offshore, with a proportion moved alongshore, therefore only a narrow beach is expected to be retained along this frontage.	The cliffs will continue to erode at an accelerated rate due to sea level rise, but by this stage there will be very little or no input of sediment from the north due to the defences at Cromer resulting in offshore loss of sediment. Therefore the beach will depend upon the local supply of sediment from cliff erosion, but this is only likely to sustain a narrow beach, as there will be continued sediment transport to the south. The rate of cliff retreat will predominately be controlled by the geology of the cliffs and a net retreat of between 95 and 150m is expected by 2105.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	and north of Cromer.		
Overstrand (North)	Seawall and groynes maintained. [as A and C]	Seawall and groynes allowed to deteriorate and fail. [as A]	No defences. [as A]
	The seawall will maintain the cliffs in their present position and the groynes will help hold the beach, although this will become increasingly difficult as this area becomes more exposed. There will be some sediment supply across this frontage, predominately from north to south, although local cliff feed will be prevented, so beaches may start to narrow.	The defences will start to fail, with breaches occurring along sections, resulting in rapid erosion of the cliffs behind. This will in turn accelerate failure of adjacent sections. A net retreat of 75 to 135m is expected by 2025, as the coastline has been held artificially seaward for decades. Some sediment will be supplied from the north and this, together with local cliff inputs, should maintain a beach along this stretch. There will be continued sediment transport to the south.	There will be continued cliff erosion with relatively linear retreat of this shoreline. A beach is likely to be maintained through local cliff erosion and from sediment supplied from the north. Net retreat during this period is likely to be between 140 and 175m by 2105. This will help feed beaches both locally and to the south.
Overstrand (South)	Timber revetment and groynes maintained. [as A and C]	Timber revetment and groynes allowed to deteriorate and fail. [as A]	No defences. [as A]
	The timber revetment will continue to slow, but not totally stop, cliff erosion, with erosion continuing at rates similar to those experienced today, with between 5 and 20m cliff line recession by 2025. The groynes will help maintain a beach, but there will be limited sediment supply from the north, particularly due to Overstrand increasingly forming a promontory to the north. There will also be transport to the south.	As the revetment fails, probably early during this period, there will be an initial surge in cliff erosion. Cliff erosion will then continue at a more steady rate, although greater than that experienced historically due to sea level rise. A net cliff line retreat of 30 to 75m by 2055 is likely. Sediment supply, both from alongshore and locally, will maintain a beach and there will be continued sediment feed to the south.	There will be continued cliff erosion, with a beach maintained through both local cliff erosion and alongshore supply of sediment. The net retreat expected by the end of this period is 75 to 120m. Sediment from this cliff erosion will help maintain beaches to the south.
Overstrand to Vale Road Beach Access	Much of frontage undefended; timber revetment and groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Along undefended sections, there will be continued cliff erosion both through both marine and groundwater processes. As defences fail along the remainder of the shoreline, the erosion will initially be rapid. A net change in cliff line position by the end of this period is expected to be between 5 and 30m, but this area is also susceptible to large-scale single-event failures, which may result in several metres of erosion in one go. There will be limited feed of sediment from the north, which is likely to maintain rather than build beaches along this section. Some of this will be supplied to downdrift beaches, particularly once the groynes fail.	There will be continued cliff erosion, increasing as a result of sea level rise, which will provide sediment to beach both locally and alongshore. There will also be sediment input from the north, although some of this will be lost offshore and some will feed beaches downdrift; it is likely that a beach will be maintained in front of the cliffs. A net retreat of between 30 and 75m by the end of this period is expected.	As for the adjacent section, there will be continued cliff retreat, despite increased sediment linkage along the coast, due to accelerated sea level rise. Net retreat expected by 2105 is between 85 and 150m. There will be a beach at the toe of the cliffs, which will be similar to today and there will be continued sediment feed to the south.
Vale Road Beach Access to Sea View Road	Timber revetment and groynes maintained/ replaced. [as A and C]	Timber revetment and groynes allowed to deteriorate and fail. [as A and C]	No defences. [as A and C]
	The timber revetment will continue to slow rather than stop cliff erosion, therefore the cliffs will continue to erode at similar rates to present. The groynes will help hold this local input of sediment along the beach and by the end of the period there may a slight increase in the input of sediment from the north, therefore a sand beach will be maintained here. The cliff retreat is likely to be between 5 and 15m by 2025.There will be continued sediment supply to the south, helping maintain beaches.	As the revetment fails, probably early during this period, there will be an initial surge in cliff erosion. Cliff erosion will then continue at a steadier rate, although greater than that experienced historically due to sea level rise. Erosion is likely to be greatest around Marl Point, where a slight promontory has formed due to the presence of defences over the last 30 to 70 years. A net retreat of 35 to 65m would be expected by the end of this period. Sediment supply both from alongshore and locally will maintain a beach, but this unlikely to	The rate of erosion will slow from that experienced immediately following defence failure. There will be little change in beach volume despite this extra input, due to alongshore and offshore movement of sand, therefore cliff retreat is expected to continue. The net retreat expected by 2105 is 75 to 105m.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		significantly build due to the alongshore and offshore losses.	
Cliftonville	Timber revetment and groynes maintained/ replaced. [as A and C]	Timber revetment and groynes allowed to deteriorate and fail.	No defences.
	Continued maintenance of the revetment and groynes will restrict cliff erosion to a similar rate as present. Local sediment input and restricted input from updrift will maintain a narrow beach in front of the cliffs. There will be some transport of sediment to the south. Cliff retreat up to 2025 is expected to be up to 10m.	Without maintenance and repair, the revetment and groynes are likely to fail towards the middle of this period. Therefore, initially the cliff position would be held, but as this area becomes increasingly exposed this would put more pressure on the defences and accelerate their failure. As defences fail there will be recommencement of cliff erosion along this shoreline. It is likely that initially this erosion would be at a rate greater than experienced historically, as the coastline has been held artificially seaward. After approximately 5 to 10 years this rate would be expected to slow, although there would be affects of accelerated sea level rise. Cliff retreat during this period is therefore expected to be between 35 and 65m. This cliff erosion would provide beach material both to the local beach and downdrift area and there would also be a feed of sediment from areas to the north. However, the beach volume would not be expected to increase significantly due to the continuous transport of sand and shingle southwards and loss of fine sand offshore. Some of this sediment may be trapped at the southern end of this frontage due to defences at Mundesley, but this is only likely to affect the	There will be continued cliff retreat and a net retreat of between 75 and 100m is expected by 2105. A beach will remain at the toe of the beach, supplied by local cliff erosion and from alongshore. There will also be continued supply of sediment to the south.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		immediate area.	
Mundesley South	Seawall and groynes maintained. [as A and C]	Seawall and groynes allowed to fail.	No defences
	There will be no change in cliff line position due to the seawall. The groynes will help maintain a beach, although this will start to become technically more difficult as the area increasingly becomes a promontory resulting in increased exposure of the beaches and deeper water at the shoreline as the coastal system continues to retreat. Sediment feed to the south will be reduced due to interruption of feed from further north. There will also be limited input from the north due the continued maintenance of the groyne fields. There may be a risk of outflanking, although this will be limited to the north due to maintenance of the revetment along the adjacent section.	Without maintenance, the groynes are likely to fail towards the middle of the period, with the seawall failing towards the latter part of the period. Therefore, initially the seawall will hold the cliff line position, but this section will increasingly become a promontory during this period, as areas to the north and south cut back at faster rates than during years 0-20. This increased exposure and beach loss, due to both increased wave energy and failure of groynes, may accelerate failure of the seawall. Once the seawall fails, cliff erosion along this section will be very rapid as the coast has been held artificially seaward. Once the cliff retreats to a position more commensurate with wave energy conditions, this retreat rate is expected to slow. Feed from the cliffs and from updrift should maintain a beach in front of the cliffs, but this is likely to be quite narrow due to offshore loss of fine sands and continued transport southwards of the sand (and shingle). Net retreat of this shoreline by 2055 is expected to be between 75 and 100m.	There will be continued cliff erosion, but this is likely to be at rates slower than experienced immediately following defence failure, even taking into account sea level rise effects. There will be a supply of predominately sand from the north and this, together with cliff erosion inputs, will maintain a beach at the toe of the cliffs. A net retreat of between 100 and 140m is expected to have taken place by 2105. There will be a continued transport of sediment to the south.
Mundesley to Bacton Gas	Timber revetment and groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Terminal			
	There will be erosion of the cliffs, initially at a similar rate to present, but as the defences fail the erosion rate will increase. It is likely that a slight embayment will start to form between the two fixed shorelines at Mundesley and Bacton Gas Terminal, which will result in erosion being greatest along the central section of the shoreline. The expected cliff retreat is between 10 and 30m during this period. There will also be a slightly greater throughput of sand as the groynes fail, although this will be countered by the slight stabilising effect as the embayment develops.	There will be continued erosion of the cliff at rates more similar to those experienced pre-defences, but with some increase due to rising sea levels. There will be a feed of sediment from Mundesley, which is likely to increase towards the end of this period as the defences along the Mundesley stretch fail. This, together with the sand input through cliff erosion, will maintain a beach at the toe of the cliffs and may reduce the rate of cliff recession slightly, although this is predominately driven by the easily-eroded nature of the cliffs. A net retreat of between 40 and 75m is expected by 2055.	Cliff erosion will continue at enhanced rates, due to sea level rise, although feed from the north should reduce rates of retreat. This feed from the north and cliff inputs locally, a beach will be maintained in front of the cliffs. Net retreat of the cliffs is expected to be 90 to 120m by the end of this period.
Bacton Gas Terminal	Timber revetment and groynes allowed to fail.	No defences.	No defences.
	Initially the existing revetments will slow the cliff erosion locally, but the revetments and groynes are likely to fail towards the start of this period, particularly as adjacent areas will be undefended. The expected cliff retreat is between 10 and 30m during this period. There will also be a slightly greater throughput of sand as the groynes fail, which will provide a greater feed of sediment to the south.	Erosion of the cliffs along this section will continue, at slightly accelerated rates due to sea level rise. There will be continued supply of sand from the north to be transported along this frontage and to the south, this may increase slightly due to failure of defences at Mundesley, but this is unlikely to have a significant effect on cliff erosion rates over these time scales, but will help maintain beaches along this stretch. The net retreat by the end of this period is likely to be 35 to 50m.	There will be continued erosion during this period, despite the increased sediment linkages with adjacent sections of shoreline. These sediment inputs should maintain a narrow beach in front of the cliffs, reducing the retreat rate slightly. The net retreat by the end of 2105 is expected to be in the region of 85 to 110m.
Bacton Gas Terminal to	Seawall and timber groynes maintained. [as A and C]	Seawall and timber groynes allowed to deteriorate and fail. [as A]	No defences. [as A]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Ostend			
	The shoreline position will remain unchanged due to the defences. There will be some sand supplied from the north and some of this will be trapped by the groynes to maintain a beach similar to present. There will be continued sediment transport to the south. There is a risk of outflanking to the south once the defences between Ostend and Happisburgh fail.	Initially the shoreline position will be held by the seawall and timber groynes, but as these fail, possibly towards the middle of this period, there will be an initial surge in erosion, with 35 to 65m retreat by 2055. Although the cliffs will supply some sand, they are low in height so this supply will be limited, but there will be some supply of sediment from the north. It is therefore likely that a narrow, but stable beach will be retained along this frontage. Where the cliff line drops down to beach level, there is a high potential for inundation of the lower-lying land at Walcott.	Erosion of the cliffs will slow slightly from that experienced immediately following failure, although there will be an increasing impact of accelerated sea level rise, which will place greater pressure on the system. There will be a limited input of sand from the cliffs as they are low in height but this area will also be fed from areas to the north. A net cliff retreat of between 60 and 110m is expected by 2105. There will be a high potential for inundation of the lower-lying land at Walcott. This inundation is unlikely to be permanent, as the supply of sediment should help maintain a low sand beach is front of the low-lying area, but this could be subject to breach during storm events.
Ostend to Happisburgh Village	Timber revetment and groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	The cliff line will initially be held, but as defences fail there will be significant surge in cliff retreat, with the possibility of 80 to 100m of retreat by 2025. Input from the cliffs should be sufficient to maintain a small beach in front of the cliffs. Some of this sand will also be moved southwards to feed adjacent beaches and there will also be offshore losses. Sediment supply from the north will be limited due to defences both locally and further	During this period the erosion rates should start to slow as the coast tends towards a position more commensurate with wave energy conditions, with a net retreat of between 130 and 150m by 2055. The input from cliff erosion locally and that from alongshore should maintain a beach at the toe of the cliffs. There will be continued sand transport to the south.	There will be continued cliff erosion, and sand released from the cliffs, and from alongshore, which will help maintain a beach at this location. There will still be transport of sediment alongshore to adjacent beaches. A net retreat of 170 to 200m is expected by 2105.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	north restricting sediment supply from cliffs and alongshore transport.		
Happisburgh Village	Rock 'bund' retained but not enhanced. [as A and C]	Rock 'bund' allowed to deteriorate. [as A and C]	No defences. [as A and C]
	The defences are unlikely to have a significant impact on cliff erosion and the cliffs are likely to experience significant erosion in excess of historical rates because the cliffs have historically been held seaward. A net retreat of up to 100m is possible by 2055. This will in part depend upon frequency of storms. This erosion will maintain a beach locally, but this is still likely to be narrow and will be prone to stripping during storms. There will be continued sediment feed to the south.	The defences will have little or no impact on the rate of cliff retreat; therefore the cliffs are likely to continue to retreat at a rate greater than experienced historically until the coast reaches a position more commensurate with wave energy conditions. With input from the cliffs and alongshore it is possible that the beach will improve slightly from its present condition as the cliffs retreat. However, cliff retreat is expected to continue, driven by sea level rise. A retreat of up to 130 to 150m is expected by 2055.	The bund will have no effect by this period and therefore cliff erosion will continue unabated. It is expected that the rate during this period will be slightly slower, despite sea level rise, as the coastline should have reached a position more commensurate with wave energy conditions. Between 170 and 200m of cliff retreat is expected by 2105.
Happisburgh Village South	No defences. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	The cliffs will continue to erode at a rate greater than historic, but this is expected to slow slightly as the cliffs reach a position more commensurate with current wave energy. A net retreat of 20 to 50m is expected by 2025. There will be a continued throughput of sediment, but it should be noted that the beaches along this and adjacent sections are extremely volatile and susceptible to stripping during storms with the temporary exposure of the clay layer beneath.	The cliffs will continue to erode due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore, but this will probably be narrow, despite potential for increased sediment feed from the north as defences fail. At the southern end of this frontage, erosion of the cliffs may cause outflanking of the seawall along the adjacent section. A net cliff line retreat of 50 to 75m is expected by 2055.	The cliffs will continue to erode at an increased rate due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore. There will be continued sediment drift southwards. A net cliff line retreat of 75 to 125m is expected by 2105.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Cart Gap to south of Bramble Hill	Offshore breakwaters and seawall maintained, groynes replaced and continued beach recharge. [as A and C]	Retired defence line constructed (3 possible location options), and breakwaters, seawall and groynes allowed to fail.	Retired defence line (3 possible location options).
	The seawall will prevent any retreat of the foredunes and at Sea Palling a wide beach, possible encouraging foredune accretion, will be maintained through the reefs (offshore breakwaters) and continued recharge. There will also be some sand input from cliff erosion to the north. The alongshore transport of the recharge material should enable reasonably healthy beaches to be maintained along this entire stretch, although exposure will gradually increase over time. Sand will continue to be transported southwards onto adjacent frontages.	The reefs would probably remain, but their effectiveness would be reduced because of coastal system retreat. Failure of defences would therefore be slower in this area than areas to the south where defences, if not removed, would be likely to fail early during this period. Once a breach occurs in the defences, the dunes are not likely to be sustained, therefore there would be almost immediate inundation of the low-lying land up to the retired defence line. Tidal flooding over the entire area would only be during extreme storm events. This is, however an area of high uncertainty as managed retreat on this scale has not be carried out elsewhere in the UK, therefore further studies are recommended to investigate the types of system that could develop and the possibility of a tidal inlet development to the south. Initially this area would probably act as a sediment sink, although a sediment transport pathway would still be likely to exist within the nearshore zone. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*	During this period there would be further development of the area in front of the retired defence line with further deposition of fines likely. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*
South of Bramble Hill to Winterton-on-	Seawall not maintained, but possible construction of flood embankment just behind dune belt (in	Flood defences as part of retired defence line to north.	Flood defences as part of retired defence line to north.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Sea (Winterton Dunes)	advance of possible breach event). [as A and C]		
	There should be little net change in the position of the backshore dunes from present, although natural fluctuation with accretion and erosion occurring would be expected. Should the dune field narrow to such an extent that it is liable to breach, at any location, the need for a secondary defence should be investigated, but this is unlikely due to feed of recharge sediment. There may be a slight increase in sediment input from the north as the reef fields fill with sediment, but this will continue to be transported southwards.	Due to the natural variability in the position of Winterton Ness and interactions with the offshore there is a great deal of uncertainty regarding its future evolution. Although there is uncertainty associated with the natural variation in the position of the ness, this area will be affected by inundation of the area to the north, which could initially cut off a sediment supply to this area. This is likely to cause a breach along this section, probably during a storm event and increased rates of erosion along the majority of the frontage. This is an area of high uncertainty and further studies are necessary to fully explore potential changes in sediment linkages with areas to the north. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*	There is much uncertainty with regard to the future development of this area, which will be significantly affected by changes in policy to the north. Loss of some of the ness volume is expected, but any changes depend upon the establishment of sediment linkages across the retired line frontage and further studies are necessary, before any conclusions can be drawn. *[Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*
Winterton-on-Sea to California	No defences. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution. The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution, particularly should a retired line option be implemented to the north. Further studies are	Although the ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage, this area will also be affected by the inundation of the area to the north. Along the northern section there

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	along this frontage. This may result in erosion of up to 40m in places, but the net change in shoreline along the whole of this frontage is expected to be small. The width of the dunes in front of Winterton means that a full breach would be unlikely during this period. This area will also receive sediment from the beach recharge to the north. At Newport and Scratby there will be continued deterioration of the dunes, with 10 to 30m of retreat possible by year 2025. At Scratby this may result in the reactivation of the sand cliffs. During this period it is possible that a breach could occur at the southern end of Newport, but here flooding would be likely to be restricted to the low-lying 'valley' area. The beach will remain in a similar condition to today, with continued transport of sediment southwards.	therefore necessary. At Winterton, the reduction in natural sediment supply to this frontage may result in a net trend of dune erosion, which will supply beaches to the south. As the dunes retreat a beach of similar size to that currently present is expected to remain in front of the dunes. At Newport and Scratby there will be continued deterioration of the dunes, with probable loss of the system by the end of this period. This will result in the reactivation of the sand cliffs at Scratby and more frequent flooding of the low-lying 'valley' area. The sand cliffs may not keep pace with sea level rise therefore the beaches along this stretch may start to narrow.	will be some backdoor flooding but this will be restricted further south by local topography. However, there may initially also be a reduction in the natural sediment supply to this frontage through littoral drift. This will exacerbate any erosion along this frontage and the volume of Winterton Ness is expected to decrease. Further studies are necessary to determine the full impacts changes in policy to the north. At Newport and Scratby there will be continued erosion of the sand cliffs and flooding of the low-lying 'valley' area. The cliffs will release some sediment to the beach system, but beaches are likely to narrow.
California	Rock berm maintained. [as A and C]	Rock berm allowed to deteriorate. [as A and C]	Rock berm allowed to deteriorate. [as A and C]
	There will be continued erosion, although the rock berm will help to maintain the rate of erosion at its current rate, with a net retreat of up to 5m by 2025. This local supply of sediment, together with input from the north, will maintain a beach in front of the bund, but this will narrow, due to increased exposure, during this period. There will be continued feed from the north and some of this may be trapped behind the bund.	The effectiveness of the rock berm will reduce as it both deteriorates in condition and becomes more detached from the cliffs, as cliff erosion will continue. Therefore over this period the amount of cliff erosion is expected to increase and a net retreat of 30 to 50m is expected by 2055. The increased sediment feed will help maintain beaches.	The rock berm is expected to have failed by the start of this period and therefore will have very little effect on the rate of cliff erosion along this frontage. This will mean increased cliff erosion rates, and the area will become less of a promontory. A healthier beach is likely to develop in a retreated position, due to feed from erosion to the north (although this is partly dependent on the full impacts of a retired line option on this coast). A net retreat of between 80 and 100m is expected by 2105.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Caister North	Seawall, reefs and groynes maintained. [as A and C]	Seawall, reefs and groynes allowed to fail.	No defences.
	The groynes and reefs will continue to trap sand supplied from the north and the beach will be maintained along this section. Along the majority of the frontage the beach will remain quite wide and healthy, although this is in part dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point. Even where the beach is narrow, the seawall will prevent any coastal retreat. Some stability to this frontage will be provided by the influence of the reefs and Caister Ness to the south. There will be continued feed to the south, although the reefs and groynes will partially restrict this.	For much of the period the reefs and groynes will continue to hold a beach at this location, which should extend the life of the seawall. The groynes will continue to trap material transported from the north and the volume of sand arriving at the frontage is likely to increase slightly due to failure of defences updrift and therefore release of cliff sediments, although this area is also likely to be affected by a change in policy along the Happisburgh to Winterton frontage. The future evolution of this frontage is, in part, dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point, although the reefs will help to minimise beach volatility. Under increased sea level rise, and the development of this frontage as a promontory, the effectiveness of the reefs will decrease, so that towards the latter part of this period there is likely to be some beach loss behind the reefs and thus increased exposure of the seawall and possible failure towards the end of the period. Should the seawall fail during this period up to 40 to 50m of erosion could take place, as the shoreline would readjust to a location more commensurate with wave energy conditions. Sediment transport will still take place to the south, along the nearshore bar and beach.	This area will have increasingly have become a promontory and by this stage will stand several tens of metres seaward of the adjacent shoreline to the north. If the seawall has not already failed it is likely to towards the start of thus period, this will result in an increased risk of outflanking on either side of the reefs; here there is expected to be between 50 and 100m retreat by 2105. The reefs and groynes are likely to become ineffective due to coastal system retreat and therefore increased exposure conditions at the shoreline. There will therefore be increased throughput of sediment along the coast and narrower beaches.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Caister South to Caister CG	Set-back concrete wall retained. [as A and C]	Set-back concrete wall retained, but not maintained.	Set-back concrete wall not maintained to North of CG Station. Possible flood defence at 'Gt. Yarmouth and Caister' golf course.
	The seawall will maintain the coastline position, but there is likely to be some fluctuation in the width of the dunes and beach in front, due to natural changes in the position of Caister Ness. The net change in dune position is likely to be ± 20 to 30m by 2025. Sediment feed to the area will partly be affected by reefs and groynes, but should be sufficient to maintain similar beaches to today.	With accelerated sea level rise the general trend expected is one of beach narrowing and possible dune erosion, particularly as some sediment transport southwards will be partly restricted by the reefs and the rock groynes along the adjacent section to the north, although there will still be transport along the nearshore bar. The most vulnerable area is along the northern section, adjacent to the reefs, where the beach is narrowest and here the seawall is at the highest risk of breach. A breach here would result in erosion of the dunes behind, with a probable retreat of between 30 and 60m by 2055. To the south the dunes are wide enough to prevent a breach during this period and therefore the shoreline position will be maintained by the seawall, although dune erosion is expected, with a possible 30 to 50m by 2055.	The sediment feed to this area may increase slightly due to increased transport along the Caister frontage, as the reefs and groynes become less effective. There will, however, be continued dune erosion with the likely exposure of the seawall. For much of the frontage the seawall is likely to remain for the first part pf this period. It may be necessary, however, to construct a flood defence at the 'Great Yarmouth and Caister' golf course at the southern end of this stretch. By the end of the period, should the seawall remain exposed, there would be failure of the seawall in stages, which would increase pressure on any remaining sections of seawall. Along much of the frontage the seawall fronts dunes with rising ground behind. Where breaches occur, there is likely to be up to 80 to 110m of retreat by 2105. Sediment transport will continue to the south.
Caister CG Station to Great Yarmouth (Pleasure Beach)	Set-back concrete wall retained. [as A and C]	Set-back concrete wall retained.	Set-back concrete wall retained.
	The seawall will maintain the coastline position, but the dunes seaward of the wall are likely to fluctuate in position due to the natural shift in position of	The seawall will hold the shoreline position, but there will be fluctuation of the width of the dunes and beach in front, which will depend on changes	Along much of the frontage, due to the fronting beach and dunes, the seawall will remain unexposed and will hold the shoreline position.

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Caister Ness and Great Yarmouth North Denes. The net change in dune position is estimated to be ± 20 to 30m by the end of this period. There will be continued feed to this frontage from the north and continued sediment transport southwards.	in the position of Caister Ness. A healthy beach is likely to remain during this period due to feed from the north and recycling of sediment held within Caister Ness and the Denes.	There will, however, be fluctuation in the width of the dunes and beach in front, which will depend on changes in the position of Caister Ness. There may be a slightly increased feed of sand to this area as the effectiveness of the groynes and reefs along the adjacent section reduces. Even when exposed the seawall would be expected to remain for much of the period.
Great Yarmouth South Beach	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as A and C]	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as A and C]	Seawall, Harbour arm maintained to prevent erosion. [as A and C]
	The seawall will prevent any change in the shoreline position (as defined by the seawall). There may however be some narrowing of the beach in front of the seawall, particularly along the central section of coast and therefore some deterioration in the condition of the remaining dunes. There will be continued transport of sand to the beaches across the Yare to the south, via the nearshore bar.	The seawall will remain and prevent backshore retreat and inundation of the hinterland. Despite sand input from the north, there will, however, be continued beach narrowing in front of the seawall, with associated deterioration of the dunes due to increased exposure and deeper water as a result of sea level rise. This will place increased pressure on the wall.	The seawall will remain and prevent backshore retreat and inundation of the hinterland. The beach is likely to disappear along the southern section due to sea level rise and increased exposure. This will mean increased expenditure will be necessary to maintain the seawall. There will be continued beach narrowing and loss of dunes along the northern section of this shoreline. Sediment transport, via the offshore bar, will continue to adjacent areas to the south.
Gorleston-on-Sea	Seawall and Harbour arm maintained (or replaced) to prevent erosion [as A and C]	Seawall and Harbour arm maintained (or replaced) to prevent erosion. [as A and C]	Seawall and Harbour arm maintained (or replaced) to prevent erosion. [as A and C]
	There will be no change in the position of the shoreline or mouth of the Yare, due to defences. This frontage will continue to receive sand from the Great Yarmouth frontage, via the nearshore bar. There will be a continued sediment supply to	There will be no change in either the cliff line or entrance of the River mouth due to maintenance of existing structures. There will be a continued sediment supply to adjacent beaches particularly via the nearshore	There will be no change in cliff line position due to differences and the mouth of the river will remain the same. Due to sea level rise and deeper water closer to the coast there will be some beach narrowing

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	adjacent beaches, particularly via the nearshore bar, therefore there is a risk of beach narrowing unless beach control structures are in place.	bar.	along this section.
Gorleston-on-Sea to Hopton-on-Sea	Timber revetment and groynes maintained until failure. [as A and C]	Timber revetment and groynes allowed to deteriorate and fail. [as A and C]	No defences. [as A and C]
	The timber revetment will continue to help slow cliff erosion and therefore for much of this period there will be little change in cliff line position. The groynes will trap some of the sand supplied both from the local cliff erosion and from the north. There may be some slight improvement in the beaches as a result of the beach recharge along the adjacent section to the north. Once the revetment fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. The net retreat during this period is therefore likely to be between 5 and 25m, dependent upon the exact timing of revetment failure. Sediment feed both to the north and south will continue from this frontage.	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along localised stretches as the defences fail. By 2055 there will be a net retreat of 40 to 65m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	There will be continued cliff erosion at an accelerated rate due to sea level rise. There could be some increase in the sand supplied from the north but predominately this stretch will rely on local inputs from cliff erosion, which should be sufficient to maintain a narrow beach along this frontage. There will also be continued sediment transport to the south. A net retreat of 80 to 130m is expected by 2105.
Hopton-on-Sea North	Timber revetment and groynes maintained until failure (i.e. not rebuilt). [as A and C]	Timber revetment and groynes allowed to deteriorate and fail. [as A and C]	No defences. [as A and C]
	The timber revetment will continue to help slow cliff erosion and therefore initially there will be little change in cliff line position. The groynes will trap some of the sand supplied both from local cliff erosion and from the north. Once the revetment	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along	There will be continued cliff erosion at an accelerated rate due to sea level rise. This, together with input from the north, should be sufficient to maintain a narrow, relatively stable, beach along this frontage. There will also be

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. Net cliff line retreat during this period is therefore likely to be between 5 and 25m, depending upon the exact timing of revetment failure. Sediment alongshore transport will continue, feeding areas to the south. There may be a slight accretion zone immediately updrift of the seawall section to the south.	localised stretches as the defences fail. By 2055 there will be a net retreat of 45 to 70m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	continued sediment transport to the south. A net retreat of between 90 and 130m is expected by 2105. There will also be continued sediment transport to adjacent beaches.
Hopton-on-Sea South	Seawall and groynes maintained. [as A and C]	Seawall and groynes allowed to deteriorate and fail. [as A and C]	No defences. [as A and C]
	The cliffs will be held in their present position by the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transported alongshore. This, and the adjacent areas to the south, will develop as a promontory. There will still be some sediment transport to the south.	Initially the cliff line will be held by the seawall, but this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is expected to occur as the shoreline reaches a position more commensurate with energy conditions. A net retreat of 45 to 70m is expected by 2055.	Cliff erosion will continue with a net retreat of 90 to 130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and along shore sediment transport. Transport to the south will continue.
South of Hopton-on-Sea	Seawall and groynes maintained. [as A and C]	Seawall and groynes allowed to deteriorate and fail. [as A and C]	No defences. [as A and C]
	The cliffs will be held in their present position by	Initially the cliff line will be held by the seawall, but	Cliff erosion will continue with a net retreat of 90 to

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transport alongshore. This, and the adjacent areas to north and south, will develop as a promontory. There will still be some sediment transport to the south.	this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is likely to occur as the shoreline reaches a position more commensurate with energy conditions. A net cliff line retreat of 45 to 70m is expected by 2055.	130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and alongshore sediment transport.
Hopton-on-Sea to Corton	Timber revetment and groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	Initially the timber revetment will slow the rate of cliff erosion but as these fail there will initially be a period (approximately 5 years) of relatively rapid erosion. A net retreat of between 10 and 25m would be expected by 2025. Some of the sand released from the cliffs will be moved southwards; this throughput will increase as the groynes fail. Some of this may be trapped updrift of the defences at Corton.	There will be continued cliff erosion at slightly increased rates due to sea level rise and a net retreat of between 45 and 70m is expected by 2055. A beach will be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion.	There will be continued cliff erosion at slightly increased rates due to sea level rise and a net retreat of between 90 and 130m is expected by 2105. A beach should be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion.
Corton	Seawall and rock revetment maintained. [as A and C]	Seawall and rock revetment allowed to deteriorate and fail. [as A]	No defences. [as A]
	The seawall will prevent any cliff retreat, but it is unlikely that a beach will be retained here, apart from along the southern section, despite a possible	It is likely that by mid period the effect of the rock revetment will deteriorate resulting in failure of the seawall behind. Both these structures are likely to	Erosion of the cliffs will continue, but at a slower rate than experienced immediately following defence failure. A net retreat of between 85 and

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	increase of sediment input from the north. This is due to the increased exposure of the site as it becomes more prominent, with deeper waters at the seawall. Sediment transport from north to south is likely to diminish due to the prominence of this area.	help reduced the wave attack and therefore cliff erosion initially, but cliff erosion following failure will still be relatively rapid. The seawall will start to fail in sections but due to erosion of the cliffs behind this will accelerate failure of adjacent areas. Sediment released from the cliffs will be unlikely to initially build beach significantly in these areas because during the period the beach is likely to be too exposed, particularly taking into account sea level rise. However, a more substantial beach is likely to form once the cliffs have retreated to a position more commensurate with wave energy conditions. There will also be sediment transport to feed beaches downdrift. Net retreat of the cliffs of between 50 and 100m is expected by the end of this period.	170m is expected by 2105. A beach should be maintained at the toe of the cliffs and there will continued sediment transport southwards.
Gunton Warren	Timber groynes allowed to fail. [as A and C]	No defences. [as A and C]	No defences. [as A and C]
	There will be a decreased input of sand from the north due to the defences at Corton; therefore the beach along this section is likely to narrow resulting in deterioration of the dunes backing this section. The dunes are expected to retreat by 10 to 30m, therefore the cliffs behind are not expected to be reactivated. There will be a slightly increased throughput of sediment once the groynes fail.	There will be continued erosion of the dunes and beach narrowing due to sea level rise and the backshore position is likely to retreat by 40 to 90m by 2055, with the loss of the dunes and erosion of the sand cliffs behind. There will be beaches present, fed by dune and cliff erosion locally and also from the Corton frontage once defences fail, and from further north.	There will be erosion of the sand cliffs, but it is likely that a narrow beach will be present in front of the cliffs. There is likely to be more severe cutback at the southern end of the frontage, where the cliffs meet the seawall at Lowestoft. Net erosion of between 90 and 190m is expected by 2105.
Lowestoft North (to Ness Point)	Seawall maintained to prevent erosion. [as A and C]	Seawall maintained/ improved to prevent erosion and flooding. [as A and C]	Seawall maintained/ improved to prevent erosion and flooding. [as A and C]

SCENARIO REF: SCENARIO B			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	The shoreline position (as defined by the seawall) will remained unchanged and the seawall will prevent any erosion or inundation of the hinterland. However, due to the high exposure of the shoreline to wave attack, and limited sediment input, despite a slight increase in feed from the north (which is predominately sand-sized), the beaches along the northern section will continue to narrow and along the southern section the shingle beach is expected to have disappeared by 2025.	The seawall will continue to prevent flooding and will hold the backshore position, however, there will be continued beach narrowing and along much of this frontage there will be no beach present despite sediment feed from the north. Any beach sediment will be lost offshore into deeper water.	There will be no beach present along this frontage and this will mean that significant work may be required to maintain the integrity of the seawall. Any beach sediment transported to this frontage is likely to be lost offshore into deeper water.

F5.2.3 Scenario C

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Kelling Hard to Sheringham	No defences (apart from low timber/ steel palisade at Weybourne retained to prevent breach and flooding) [as A and B]	No defences. (Natural Shingle Bank at Weybourne) [as A and B]	No defences. (Natural Shingle Bank at Weybourne) [as A and B]
	Cliff erosion will continue at similar rates to those experienced historically, with a net retreat of the cliff line of between 5 and 10m by year 2025. As the cliffs erode this will contribute some beach-building sediment (mainly sand), which will maintain beach at the toe of the cliffs, but there will be little other input of shingle to this frontage from alongshore due to the low sediment transport rates. Similarly there will be low transport from this area both to the east and west. There will be a slight beach build-up at the eastern end due to the defences at Sheringham; therefore cliff erosion may be slightly less at this end. If a palisade is maintained at Weybourne, this will prevent a breach in the shingle barrier at this location, but due to the beach narrowing in front, the barrier is likely to be overtopped with increasing frequency, resulting in localised flooding behind.	Cliff erosion will continue at an increased rate due to sea level rise, with a net change in cliff line position of between 15 and 30m by 2055. The cliffs will supply both sand and shingle to the beach, but under the increased energy conditions this volume may not be sufficient to build beaches, therefore the beaches are expected to narrow. At Weybourne, the shingle ridge will be allowed to retreat in line with the cliffs, but there will be a risk of breach with localised flooding of the small area of low-lying land behind.	There will be continued cliff erosion and shoreline retreat, accelerated by sea level rise, with a net change in cliff line position of 40 to 55m by 2105. It is likely that a beach will remain at the foot of the cliffs, but it is likely that this will be narrower than at present, unless the cliffs are able to keep pace with the rate of sea level rise. It is expected that a shingle barrier will remain at Weybourne, albeit one that is frequently overtopped and breached. There will therefore be frequent flooding of the localised low-lying area behind.
Sheringham	Seawall, rock revetment and groynes maintained to prevent any erosion – with possible improvement of seawall along eastern stretch of	Seawall and groynes maintained to prevent any erosion. [as A and B]	Seawall and groynes maintained to prevent any erosion. [as A and B]

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Sheringham. [as A and B]		
	There will be no change in cliff line position due to the defences. The limited beach that is currently present would not build due to (1) no local input due to protection of the cliffs; (2) little input to the area due to low drift rates; and (3) increased exposure of the beach as the promontory becomes more pronounced. As the natural response of the shoreline is restricted, the beaches will steepen and narrow. Some beach stability will be maintained due to the rock groynes and these will restrict the amount of sediment that is transported eastwards. The defences will restrict the alongshore feed of sediment to the east and there will be no local input of beach material.	There will be no change in cliff line position along the northern section due to the defences and it is likely that the low seawall along East Sheringham may need to be enhanced to provide greater protection. These structures will prevent the natural response of the coast to retreat, in response to continued sea level rise. As a result there will be intertidal squeeze with the beach width significantly reduced, which will be exacerbated by the absence of direct feed from cliff erosion locally, although some material will be fed from the west. This section will become a more pronounced promontory, with beach loss to the west and east. The groynes will initially trap some littoral drift and it is likely that a narrow beach will be maintained along this frontage. As the beach becomes more exposed, the groynes will become increasingly ineffective in holding sediment and will eventually become redundant; it is expected that the beach will be close to disappearing by 2055. This will impact on areas to the east, for although some sediment will still be transported in the nearshore zone, there will be an increase in loss of sand sized (and finer) sediments offshore due to a change in the nearshore hydrodynamics.	The cliffs will continue to be held in their present position by the seawall, but there is unlikely to be any beach fronting the area, therefore the groynes will be redundant. Cutback of the adjacent shoreline will result in this area become increasingly pronounced and exposed to deeper wave conditions. Substantial works would probably be required to retain the seawalls. There may be nearshore sediment movement to the east, but sand and finer sediment will be swept offshore due to the prominence of this frontage into deeper water.
Sheringham to Cromer	Timber groynes and revetment between Sheringham and West Runton allowed to fail. Two short stretches of masonry wall at East and West Runton Gaps maintained. [as A and B]	Short stretches of masonry wall at East and West Runton Gaps allowed to fail. No defences along rest of frontage. [as A and B]	No defences. [as A and B]

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	Between Sheringham and Cromer, without maintenance the defences will start to fail during this period. As the timber revetments fail there will be a period of rapid cliff retreat (probably within the first 5 years) followed by the establishment of a more regular annual recession rate; with episodic events separated by periods of low retreat. By 2025, the net amount of cliff erosion is likely to be between 5 and 20m, although a single, localised event may cause over 30m of erosion. Localised input from the cliff will maintain a beach in front of the cliffs, although there will be limited input from the west, due to the groynes at Sheringham. Where the masonry walls protect the beach access points at East and West Runton, there will be no change in cliff position. As the cliffs continue to erode either side of the short stretches of masonry wall, these will start to become outflanked, resulting in these structures becoming more difficult to maintain. There will be continued feed to beaches locally and downdrift.	The short stretches of masonry wall will be close to being outflanked near the start of the period and it is likely that they will fail quite early. When these fail there is likely to be rapid local erosion of the area immediately behind. The structures may temporarily interrupt alongshore drift, but this effect will reduce as the cliffs retreat. Along the remainder of the frontage cliff erosion will continued, at accelerated rates due to sea level rise. A retreat of 15 to 50m is expected by 2055, but a single event could potentially cause over 30m of erosion. Local cliff input should be sufficient to maintain a beach, but there is unlikely to be significant feed from the north, due to defences at Sheringham. There will be continued sediment feed to the east.	There will be continued cliff recession at a rate accelerated by sea level rise. This will, in part, be exacerbated by the lack of sediment input from the north, but cliff recession rates will ultimately be determined by the easily eroded nature of the cliffs. A net retreat of between 50 and 110m is expected by 2105, but there may be localised large-scale failures along this shoreline. The nature of the cliffs means that they are likely to keep pace with sea level rise therefore it is expected that due to local input of sediment, that a beach will be maintained along this frontage despite little or no input from updrift beaches. Due to the prominence of Sheringham there is unlikely to be significant sand or shingle supply to this frontage. Much of the sand at the southern end of this section is likely to be lost offshore, but a small accumulation of shingle may form at the northern end of the Cromer defences. There will be continued sediment feed to the east.
Cromer	Seawall and groynes maintained to prevent any erosion. [as A and B]	Seawall and groynes maintained to prevent any erosion. [as A and B]	Seawall and groynes maintained to prevent any erosion. [as A and B]
	The seawall will hold the cliffs in their present position. The beach will experience some narrowing due to the limited input of sand and shingle from alongshore and restricted input from	Erosion of the cliffs will be prevented by the seawall and as the adjacent shorelines are undefended and therefore will cut back, this area	Defence of the cliffs at Cromer will result in a well-defined promontory forming, with no beach being present; therefore the groynes will be redundant.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	the cliffs. Some stability will be provided by the groynes, which will restrict feed to adjacent beaches.	will become a more prominent frontage. As the promontory becomes more pronounced, beaches will narrow due to both limited sediment input (from either alongshore or locally) and increased exposure to greater wave energy. Although initially the groynes may help maintain a beach, by the end of the period exposure conditions will make them increasing ineffective at holding sediment and eventually redundant.	As adjacent sections are undefended, substantial works would probably be required in order to prevent outflanking both to the east and the west. With this coastline becoming so prominent it is unlikely that any sediment will bypass to feed areas to the south and there will be increased sediment losses to offshore. It may also not be possible for sediment to move northwards past Cromer, during periods of drift reversal.
Cromer to Overstrand	Revetments and timber groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	There will be continued cliff erosion, but as the revetments fail this will accelerate along certain sections of coast. Along this section a net retreat of between 5 and 35m is expected by 2025. A shallow embayment is likely to start to form between Cromer and Overstrand as these two locations are held. Therefore erosion is likely to be greatest in the northern and central sections of this stretch. Despite a local input from cliff erosion, the beaches are not likely to build as sediment will continue to be transported eastwards (with fines moved offshore); this feed increasing once the groynes fail. There will also be a limited input from Cromer and north of Cromer.	Erosion of the cliffs will continue at an increased rate due to sea level rise, with a net retreat of 40 to 80m by 2055. The only sediment source for this area will be from the local cliff erosion, due to the interruption of drift as a result of the defences at Cromer. This will exacerbate the erosion problem, but the rate of cliff recession will mainly be driven by the easily eroded nature of the cliffs. Much of the sand released through cliff erosion is likely to be lost offshore, with a proportion moved alongshore, therefore only a narrow beach is expected to be retained along this frontage.	The cliffs will continue to erode at an accelerated rate due to sea level rise, but by this stage there will be very little or no input of sediment from the north due to the defences at Cromer. Therefore the beach will depend upon the local supply of sediment from cliff erosion. Due to the defences at Overstrand there will be an embayment formed between Overstrand and Cromer and this may become quite stable during this period, possibly resulting in some greater sediment retention, which should sustain beaches, similar to today, at the toe of the cliffs. A net retreat of between 80 and 130m is expected by 2105.
Overstrand (North)	Seawall and groynes maintained. [as A and B]	Seawall (and groynes until redundant) maintained to prevent any erosion.	Seawall maintained.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	The seawall will maintain the cliffs in their present position and the groynes will help hold the beach, although this will become increasingly difficult as this area become more exposed. There will be some sediment supply across this frontage, predominately from north to south, although local cliff feed will be prevented, so beaches may start to narrow.	The seawall will continue to hold the cliffs in their present position, but this frontage (together with the section to the south) will develop as a promontory as adjacent areas erode. The increased exposure of this shoreline will mean that it will become increasingly difficult to maintain a beach in front of the seawall, therefore by the end of this period the groynes will probably be redundant and it is possible that a beach will no longer exist. The increased exposure means that any sediment reaching this frontage from areas to the north will either quickly bypass the frontage or will be lost offshore. There could therefore be a reduction in sediment feed to areas to the south.	The seawall will maintain the cliffline position, but due to the exposure of this shoreline is likely that the structure will need to be improved and increased maintenance will be necessary in order to hold it in its current location. This may include extension of the structure to avoid outflanking to the north. The prominence of this stretch, and the frontage to the south, will mean that the sediment linkage from north to south will be broken.
Overstrand (South)	Timber revetment and groynes maintained. [as A and B]	Timber revetment replaced by seawall.	Seawall maintained.
	The timber revetment will continue to slow, but not totally stop, cliff erosion, with erosion continuing at rates similar to those experienced today, with between 5 and 20m cliff line recession by 2025. The groynes will help maintain a beach, but there will be limited sediment supply from the north, particularly due to Overstrand increasingly forming a promontory to the north. There will also be transport to the south.	In order to prevent a surge in cliff erosion, the timber revetment may need to be replaced by a seawall towards the start of this period. This will result in the cliff line being held. There will be limited sediment supply from the north, and no local supply, therefore it will become technically difficult to maintain a beach along this frontage, particularly as this location will also become increasingly exposed. Sediment transport from this area will continue to be transported southwards, further depleting the beaches along this frontage.	The seawall will hold the cliff line position, maintaining this shoreline is a more prominent position than areas to the south. The resultant increase in exposure may mean that these defences, as for those immediately to the north, may require improvements in the wall structure and more intensive maintenance. The prominence of this stretch and that to the north will mean that there is very little transport of sediment from the north of this frontage to the south, as there will be both interruption of drift and possible increase in offshore losses.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Overstrand to Vale Road Beach Access	Much of frontage undefended; timber revetment and groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	Along undefended sections, there will be continued cliff erosion both through both marine and groundwater processes. As defences fail along the remainder of the shoreline, the erosion will initially be rapid. A net change in cliff line position by the end of this period is expected to be between 5 and 30m, but this area is also susceptible to large-scale single-event failures, which may result in several metres of erosion in one go. There will be limited feed of sediment from the north, which is likely to maintain rather than build beaches along this section. Some of this will be supplied to downdrift beaches, particularly once the groynes fail.	There will be continued cliff erosion, increasing as a result of sea level rise, which will provide sediment to beach both locally and alongshore. There will be very little sediment input from the north, due to the defences at Overstrand, and continued sediment transport to the south, therefore, the beach will rely on local feed through cliff erosion. Some of this will be lost offshore, so it is likely that only a narrow beach will be maintained at the toe of the cliffs. A bay will develop between Overstrand and Mundesley (Cliftonville) and a net cliff retreat of between 40 and 95m by the end of this period is expected, with the greater rates at the centre of this section.	There will be continued cliff retreat, the rate of which will be increased both due to accelerated sea level rise and the lack of sediment input from the north. The local input of sediment from cliff erosion will help maintain a beach at the toe of the cliffs, but this is likely to be narrow due to lack of input from the north and continued transport to the south. A bay formation is likely to be well defined between Overstrand and Mundesley by this time. This may help to maintain a more stabile beach along this frontage in the long-term, through reducing the rate of alongshore drift. Net cliff retreat expected by 2105 is between 85 and 170m.
Vale Road Beach Access to Sea View Road	Timber revetment and groynes maintained/ replaced. [as A and B]	Timber revetment and groynes allowed to deteriorate and fail. [as A and B]	No defences. [as A and B]
	The timber revetment will continue to slow rather than stop cliff erosion, therefore the cliffs will continue to erode at similar rates to present. The groynes will help hold this local input of sediment along the beach and by the end of the period there may a slight increase in the input of sediment from the north, therefore a sand beach will be maintained here. The cliff retreat is likely to be between 5 and 15m by 2025.There will be	As the revetment fails, probably early during this period, there will be an initial surge in cliff erosion. Cliff erosion will then continue at a steadier rate, although greater than that experienced historically due to sea level rise. Erosion is likely to be greatest around Marl Point, where a slight promontory has formed due to the presence of defences over the last 30 to 70 years. A net retreat of 35 to 65m would be expected by the end of this	The rate of erosion will slow from that experienced immediately following defence failure. There will be little change in beach volume despite this extra input, due to alongshore and offshore movement of sand. Some stability may be provided by the influence of the defences at Cliftonville and Mundesley, between which a bay formation will be well defined, which could result in a slightly slower rate of erosion.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	continued sediment supply to the south, helping maintain beaches.	period. Sediment supply both from alongshore, although this will be partially limited by defences at Overstrand, and locally will maintain a beach, but this unlikely to significantly build due to the alongshore and offshore losses.	However, it is possible that the defences at Mundesley could result in more of the material eroded from this frontage being lost offshore rather than being transported southwards. The net cliffline retreat expected by 2105 is 75 to 105m.
Cliftonville	Timber revetment and groynes maintained/ replaced. [as A and B]	Timber revetment replaced by seawall. [as A]	Seawall maintained.
	Continued maintenance of the revetment and groynes will restrict cliff erosion to a similar rate as present. Local sediment input and restricted input from updrift will maintain a narrow beach in front of the cliffs. There will be some transport of sediment to the south. Cliff retreat up to 2025 is expected to be up to 10m.	Cliff erosion will be prevented along this section due to the seawall and here, together with the adjacent section at Mundesley, will develop as a promontory. Despite the input of sediment from the north, increased exposure will mean that it will become more difficult to maintain a beach here due to deeper water at the shoreline. Sediment will continue to be moved southwards along this frontage, but the promontory will start to interrupt this drift and may result in increased offshore loss of sands and fines.	Maintenance of the seawall will mean that there will be no change in shoreline position, although there will be problems of outflanking to the north, which may require extension of the defences. The exposure of this frontage, and the adjacent frontage at Mundesley, will mean that it will become very difficult to maintain any beach here and during this period it is not expected that a beach will exist in front of the seawall. The influences of these defences and those to the south could result in sediment being deflected offshore and not being transported to beaches to the south.
Mundesley South	Seawall and groynes maintained. [as A and B]	Seawall (and groynes until redundant) maintained and extended to the south (c. 200m).	Seawall maintained.
	There will be no change in cliff line position due to the seawall. The groynes will help maintain a beach, although this will start to become technically more difficult as the area increasingly becomes a promontory resulting in increased exposure of the beaches and deeper water at the	The seawall will hold the cliffline position, but this, and the section to the north, will increasingly become a promontory during this period, as areas to the north and south cut back. There will be a limited feed of sand from the north,	The cliff line position will be held by the seawall, although there will be a need for increased maintenance and probably extension of the existing structure in order to maintain its integrity. Measures will also be required to prevent

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	shoreline as the coastal system continues to retreat. Sediment feed to the south will be reduced due to interruption of feed from further north. There will also be limited input from the north due the continued maintenance of the groyne fields. There may be a risk of outflanking, although this will be limited to the north due to maintenance of the revetment along the adjacent section.	due to defences along the shoreline to the north and this, together with the increased exposure, will mean that it will become more difficult to hold a beach here and the natural response of the beach to retreat will be restricted. As the beaches narrow, the groynes will start to become redundant and as a result of increased exposure the sediment transport rates may potentially increase, but actual transport will be limited by sediment availability. By the end of this period it is therefore likely that there will be no beach present. It is also likely that the prominence of this stretch will result in increased loss of sediment offshore, which will impact on downdrift frontages.	outflanking to the south. There will be no beach present both due to lack of sediment input from the north and the exposure of the frontage. It is possible that this promontory will deflect sediment offshore thus restricting sediment bypassing and reaching beaches to the south.
Mundesley to Bacton Gas Terminal	Timber revetment and groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	There will be erosion of the cliffs, initially at a similar rate to present, but as the defences fail the erosion rate will increase. It is likely that a slight embayment will start to form between the two fixed shorelines at Mundesley and Bacton Gas Terminal, which will result in erosion being greatest along the central section of the shoreline. The expected cliff retreat is between 10 and 30m during this period. There will also be a slightly greater throughput of sand as the groynes fail, although this will be countered by the slight	There will be continued erosion of the cliff at rates more similar to those experienced pre-defences, but with some increase due to both rising sea levels and lack of sediment input from the north. The sediment supplied locally from the cliff erosion may retain a narrow beach at the toe of the cliffs. There will be continued transport to the south. A net retreat in the region of 75m is expected by 2055, exacerbated by reduced input of sediment from the north.	Cliff erosion will continue at enhanced rates, due to both sea level rise and the limited sediment feed from the north. Only a very narrow beach is likely to be present at the toe of the cliffs, supplied predominately from local cliff erosion, there will also be sediment transport to the south. Net retreat of the cliffs is expected to be up to 120m by the end of this period, but with increased cutback immediately updrift of the defences at Bacton Gas Terminal, exacerbated by the reduced feed from the north.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	stabilising effect as the embayment develops.		
Bacton Gas Terminal	Timber revetment replaced by seawall and groynes maintained. [as A]	Seawall and timber groynes maintained. [as A]	Seawall maintained.
	In order to prevent cliff erosion it is likely that the timber revetment will need to be replaced by a seawall; this will prevent cliff retreat. There may be some cutback along the adjacent section to the north, once the timber revetments and groynes fail here. The groynes will help to trap some of the sand supplied from the north, maintaining the beach in a similar form today. There will be reduced inputs from cliffs locally, but this does not represent a significant input to the system.	The cliff line position will be held by the seawall. There will be some continued supply of sand from the north, which will be transported along this frontage and to the south. This is likely to be reduced due to defences at Mundesley. There will also be no local sediment supply. It is therefore likely that beaches along this stretch will narrow as a result of sea level rise. This, together with cutback either side of the defences, will make the defences increasingly difficult to maintain over time.	The seawall will hold the shoreline position, but works will be required to prevent outflanking on the northern side as undefended cliffs erode. There will be some sediment supply from the north but this will be small and therefore little or no beach is expected to be present in front of the seawall, which may increase the cost of maintaining such a defence. Some bypassing to beaches to the south will probably take place.
Bacton Gas Terminal to Ostend	Seawall and timber groynes maintained. [as A and B]	Seawall (and groynes until redundant) maintained to prevent any erosion.	Seawall maintained.
	The shoreline position will remain unchanged due to the defences. There will be some sand supplied from the north and some of this will be trapped by the groynes to maintain a beach similar to present. There will be continued sediment transport to the south. There is a risk of outflanking to the south once the defences between Ostend and Happisburgh fail.	The shoreline position will be held by the seawall and the defences will prevent inundation of the lower-lying land at Walcott. There will be little feed to this area therefore beaches will reduce in volume and as this shoreline becomes more exposed, the groynes will start to become less effective. The beaches are likely to be more volatile and drop in net volume. This may necessitate further maintenance to	The seawall will hold the position of the low cliffs and prevent inundation of the low-lying land at Walcott. There will be little feed to this area and the increased exposure will mean that it is unlikely that there will be any beach present in front of the seawall. Therefore substantial works will be required to maintain the seawalls and to avoid outflanking to the south.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		maintain walls in their current position.	It is likely that some sediment will still be able to by-pass this area and although there will be offshore losses there will be some supply to beaches downdrift.
Ostend to Happisburgh Village	Timber revetment and groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	The cliff line will initially be held, but as defences fail there will be significant surge in cliff retreat, with the possibility of 80 to 100m of retreat by 2025. Input from the cliffs should be sufficient to maintain a small beach in front of the cliffs. Some of this sand will also be moved southwards to feed adjacent beaches and there will also be offshore losses. Sediment supply from the north will be limited due to defences both locally and further north restricting sediment supply from cliffs and alongshore transport.	During this period the erosion rates should start to slow as the coast tends towards a position more commensurate with wave energy conditions, with a net retreat of around 150m by 2055. There will be input from cliff erosion locally, but inputs from the north will be limited due to continued defence of the shoreline; therefore beaches will narrow and become more volatile.	There will be continued cliff erosion, and sand released from the cliffs, which will help maintain a beach at this location, but there will be limited input of sediment from the north. There will still be transport of sediment alongshore to adjacent beaches. A net retreat of more than 200m is expected by 2105.
Happisburgh Village	Rock 'bund' retained but not enhanced. [as A and B]	Rock 'bund' allowed to deteriorate. [as A and B]	No defences. [as A and B]
	The defences are unlikely to have a significant impact on cliff erosion and the cliffs are likely to experience significant erosion in excess of historical rates because the cliffs have historically been held seaward. A net retreat of up to 100m is possible by 2055. This will in part depend upon frequency of storms.	The defences will have little or no impact on the rate of cliff retreat; therefore the cliffs are likely to continue to retreat at a rate greater than experienced historically until the coast reaches a position more commensurate with wave energy conditions. With input from the cliffs and adjacent shoreline it	The bund will have no effect by this period and therefore cliff erosion will continue unabated. It is expected that the rate during this period will be slightly slower, despite sea level rise, as the coastline should have reached a position more commensurate with wave energy conditions. Between 170 and 200m of cliff retreat is expected

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	This erosion will maintain a beach locally, but this is still likely to be narrow and will be prone to stripping during storms. There will be continued sediment feed to the south.	is possible that the beach will improve slightly from its present condition as the cliffs retreat. However, cliff retreat is expected to continue, driven by sea level rise. A retreat of up to 130 to 150m is expected by 2055.	by 2105.
Happisburgh Village South	No defences. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	The cliffs will continue to erode at a rate greater than historic, but this is expected to slow slightly as the cliffs reach a position more commensurate with current wave energy. A net retreat of 20 to 50m is expected by 2025. There will be a continued throughput of sediment, but it should be noted that the beaches along this and adjacent sections are extremely volatile and susceptible to stripping during storms with the temporary exposure of the clay layer beneath.	The cliffs will continue to erode due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore, but this will probably be narrow, despite potential for increased sediment feed from the north as defences fail. At the southern end of this frontage, erosion of the cliffs may cause outflanking of the seawall along the adjacent section. A net cliff line retreat of 50 to 75m is expected by 2055.	The cliffs will continue to erode at an increased rate due to sea level rise. A beach should be retained due to the local input of sediment and sand supplied from alongshore. There will be continued sediment drift southwards. A net cliff line retreat of 75 to 125m is expected by 2105.
Cart Gap to south of Bramble Hill	Offshore breakwaters and seawall maintained, groynes replaced and continued beach recharge. [as A and B]	Offshore breakwaters maintained, seawall maintained throughout frontage, groynes replaced and continued beach recharge.	Seawall maintained and reefs remain.
	The seawall will prevent any retreat of the foredunes and at Sea Palling a wide beach, possible encouraging foredune accretion, will be maintained through the reefs (offshore breakwaters) and continued recharge. There will also be some sand input from cliff erosion to the north. The alongshore transport of the recharge material should enable reasonably healthy beaches to be maintained along this entire stretch,	The seawall will continue to hold the shoreline in its present position, increasing forming a discontinuity between this frontage and the eroding cliff to the north. At Eccles, this may cause problems in retaining a beach as this area becomes more exposed. The reefs and recharge will maintain a healthy beach along the Sea Palling frontage and the	The seawall will maintain the shoreline position and prevent flooding of the low-lying hinterland. At the northern end there may be severe problems of outflanking where the seawall abuts an area of unabated cliff erosion. Significant work will probably be required to ensure the integrity of the wall as a defence. Along the rest of the frontage the beach is likely to

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	although exposure will gradually increase over time. Sand will continue to be transported southwards onto adjacent frontages.	recharge sediment will also supply downdrift areas. As the reef bays fill there may be increased sediment transport to areas to the south. As sea level rises there may need to be increased sediment recharge in order to maintain beaches in a state similar to present. *Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*	diminish in size, even if recycling were undertaken at current levels, due to increased exposure and rising sea-levels. The reefs will reduce in their sediment-trapping efficiency due to rising sea levels, which is likely to result in increased beach volatility and may require strengthening of the wall between the reefs. Sediment transport will continue both to north and south. *Note: Further work is currently being carried out as part of the Happisburgh to Winterton Strategy Review]*
South of Bramble Hill to Winterton-on-Sea (Winterton Dunes)	Seawall not maintained, but possible construction of flood embankment just behind dune belt (in advance of possible breach event). [as A and B]	Flood embankment maintained (if required), to prevent flooding, and dune management. [as A]	Flood embankment maintained (if required), to prevent flooding, and dune management
	There should be little net change in the position of the backshore dunes from present, although natural fluctuation with accretion and erosion occurring would be expected. Should the dune field narrow to such an extent that it is liable to breach, at any location, the need for a secondary defence should be investigated, but this is unlikely due to feed of recharge sediment. There may be a slight increase in sediment input from the north as the reef fields fill with sediment, but this will continue to be transported southwards.	Due to the natural variability in the position of Winterton Ness and interactions with the offshore there is a great deal of uncertainty regarding its future evolution. Without the seawall in place there will be a more natural response to sea level rise with some dune erosion and possibility of dune rollback. Along this frontage this should not result in any breach due to the width of the dune system, although the northern section, towards Bramble Hill, will be most vulnerable and here it may be necessary to construct a flood embankment should a breach seem imminent. A maximum retreat of between 20	Due to the natural variability in the position of Winterton Ness and interactions with the offshore there is a great deal of uncertainty regarding its future evolution. A flood embankment may be necessary to prevent flooding such a breach occur, but otherwise the dune belt will be able to respond naturally to sea level rise which will probably result in some dune face erosion and redistribution of sediment. There may be diminished sediment supply to area from alongshore, due to defences, but there is uncertainty over how much sand is supplied to this area from the offshore. Between 45 and 100m of

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
		and 40m is expected by 2055. There will be continued sediment transport to the south.	erosion could occur, but this is very uncertain.
Winterton-on-Sea to California	No defences. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution. The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage. This may result in erosion of up to 40m in places, but the net change in shoreline along the whole of this frontage is expected to be small. The width of the dunes in front of Winterton means that a full breach would be unlikely during this period. This area will also receive sediment from the beach recharge to the north. At Newport and Scratby there will be continued deterioration of the dunes, with 10 to 30m of retreat possible by year 2025. At Scratby this may result in the reactivation of the sand cliffs. During this period it is possible that a breach could occur at the southern end of Newport, but here flooding would be likely to be restricted to the low-lying 'valley' area. The beach will remain in a similar condition to today, with continued transport of sediment southwards.	Due to the natural variability in the position of the ness and its behaviour, there is a great deal of uncertainty regarding its future evolution. The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage. At Winterton, the reduction in natural sediment supply to this frontage may result in a net trend of dune erosion, which will supply beaches to the south. As the dunes retreat, a beach of similar size to that currently present will remain in front of the dunes. At Newport and Scratby there will be continued deterioration of the dunes, with probable loss of the system by the end of this period. This will result in the reactivation of the sand cliffs at Scratby and more frequent flooding of the low-lying 'valley' area. The sand cliffs may not keep pace with sea level rise therefore the beaches along this stretch may start to narrow. A net retreat of between 35 and 60m is therefore anticipated by 2055.	The ness is expected to continue to fluctuate in position with resultant changing trends of erosion and accretion along this frontage. Feed into this area will rely on recharge of the beaches to the north. At Newport and Scratby there will be continued erosion of the sand cliffs and flooding of the low-lying 'valley' area. The cliffs will release some sediment to the beach system, but beaches are likely to narrow. Net retreat is likely to be between 45 and 100m by 2105.
California	Rock berm maintained. [as A and B]	Rock berm allowed to deteriorate. [as A and B]	Rock berm allowed to deteriorate. [as A and B]

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	There will be continued erosion, although the rock berm will help to maintain the rate of erosion at its current rate, with a net retreat of up to 5m by 2025. This local supply of sediment, together with input from the north, will maintain a beach in front of the bund, but this will narrow, due to increased exposure, during this period. There will be continued feed from the north and some of this may be trapped behind the bund.	The effectiveness of the rock berm will reduce as it both deteriorates in condition and becomes more detached from the cliffs, as cliff erosion will continue. Therefore over this period the amount of cliff erosion is expected to increase and a net retreat of 30 to 50m is expected by 2055. The increased sediment feed will help maintain beaches.	The rock berm is expected to have failed by the start of this period and therefore will have very little effect on the rate of cliff erosion along this frontage. This will mean increased cliff erosion rates, and the area will become less of a promontory. A healthier beach is likely to develop in a retreated position. A net retreat of 80 to 100m is predicted by 2105.
Caister North	Seawall, reefs and groynes maintained. [as A and B]	Seawall, reefs and groynes maintained. [as A]	Seawall, reefs and groynes maintained.
	The groynes and reefs will continue to trap sand supplied from the north and the beach will be maintained along this section. Along the majority of the frontage the beach will remain quite wide and healthy, although this is in part dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point. Even where the beach is narrow, the seawall will prevent any coastal retreat. Some stability to this frontage will be provided by the influence of the reefs and Caister Ness to the south. There will be continued feed to the south, although the reefs and groynes will partially restrict this.	There will be no change in the backshore position, as this will continue to be held by the seawall. As a result of sea level rise there will be some beach narrowing, but the beach is likely to remain quite wide and healthy, particularly as there will be slightly increased feed from the north. This is, however, in part dependent upon natural fluctuation in the position of the small ness/ accumulation at Caister Point, although the reefs will help to reduce beach volatility. Sediment transport will still take place to the south, along the nearshore bar.	This area will increasingly have become a promontory and by this stage will stand several tens of metres seaward of the adjacent shoreline to the north. This shoreline position will continue to be held. However, as a result of accelerated sea level rise there will be increased exposure of this frontage, which will put increased pressure on the reefs and groynes. The reefs and rock groynes will continue to trap sediment, but their effectiveness is likely to be reduced, due to sea level rise. This will result in increased beach volatility and reduction in beach volumes and increased sediment transport to the south. However, the position of the reefs could be detrimental to continuity of sediment transport along the nearshore bar ands therefore this could have an impact on downdrift beaches.
Caister South to	Set-back concrete wall retained. [as A and B]	Set-back concrete wall retained, but not	Set-back concrete wall retained but not

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
Great Yarmouth (Pleasure Beach)		maintained. [as A]	maintained. Possible secondary flood defence at 'Gt. Yarmouth and Caister' golf course. [as A]
	The seawall will maintain the coastline position, but there is likely to be some fluctuation in the width of the dunes and beach in front, due to natural changes in the position of Caister Ness. The net change in dune position is likely to be ± 20 to 30m by 2025. Sediment feed to the area will partly be affected by reefs and groynes, but should be sufficient to maintain similar beaches to today.	The seawall will hold the shoreline position, but there will be fluctuation of the width of the dunes and beach in front, which will depend on changes in the position of Caister Ness. With accelerated sea level rise the general trend expected is one of beach narrowing and possible dune erosion, particularly as some sediment transport southwards will be restricted by the reefs and the rock groynes along the adjacent section to the north, although there will still be transport along the nearshore bar.	Along much of the frontage, due to the fronting beach and dunes, the seawall will remain unexposed and will hold the shoreline position. There will, however, be fluctuation in the width of the dunes and beach in front, which will depend on changes in the position of Caister Ness. There may be a slightly increased feed of sand to this area as the effectiveness of the groynes and reefs along the adjacent section reduces, although this may be offset by an interruption to the sediment transport along the nearshore bar. The most vulnerable area is along the northern section, where the groynes are narrowest and here the seawall is at a high risk a breach, which may necessitate the construction of a secondary flood defence at the 'Great Yarmouth and Caister' golf course
Great Yarmouth South Beach	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as A and B]	Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion. [as A and B]	Seawall, Harbour arm maintained to prevent erosion. [as A and B]
	The seawall will prevent any change in the shoreline position (as defined by the seawall). There may however be some narrowing of the beach in front of the seawall, particularly along the central section of coast and therefore some deterioration in the condition of the remaining dunes.	The seawall will remain and prevent backshore retreat and inundation of the hinterland. Despite sand input from the north, there will, however, be continued beach narrowing in front of the seawall, with associated deterioration of the dunes due to increased exposure and deeper water as a result of sea level rise. This will place increased pressure	The seawall will remain and prevent backshore retreat and inundation of the hinterland. The beach is likely to disappear along the southern section due to sea level rise and increased exposure. This will mean increased expenditure will be necessary to maintain the seawall. There will be continued beach narrowing and loss of dunes along the

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	There will be continued transport of sand to the beaches across the Yare to the south, via the nearshore bar.	on the wall.	northern section of this shoreline. Sediment transport, via the offshore bar, will continue to adjacent areas to the south.
Gorleston-on-Sea	Seawall and Harbour arm maintained (or replaced) to prevent erosion. [as A and B]	Seawall and Harbour arm maintained (or replaced) to prevent erosion. [as A and B]	Seawall and Harbour arm maintained (or replaced) to prevent erosion. [as A and B]
	There will be no change in the position of the shoreline or mouth of the Yare, due to defences. This frontage will continue to receive sand from the Great Yarmouth frontage, via the nearshore bar. There will be a continued sediment supply to adjacent beaches, particularly via the nearshore bar, therefore there is a risk of beach narrowing unless beach control structures are in place.	There will be no change in either the cliff line or entrance of the River mouth due to maintenance of existing structures. There will be a continued sediment supply to adjacent beaches particularly via the nearshore bar.	There will be no change in cliff line position due to differences and the mouth of the river will remain the same. Due to sea level rise and deeper water closer to the coast there will be some beach narrowing along this section.
Gorleston-on-Sea to Hopton-on-Sea	Timber revetment and groynes maintained until failure. [as A and B]	Timber revetment and groynes allowed to deteriorate and fail. [as A and B]	No defences. [as A and B]
	The timber revetment will continue to help slow cliff erosion and therefore for much of this period there will be little change in cliff line position. The groynes will trap some of the sand supplied both from the local cliff erosion and from the north. There may be some slight improvement in the beaches as a result of the beach recharge along the adjacent section to the north. Once the revetment fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. The net retreat during this period is therefore likely to be between 5 and 25m,	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along localised stretches as the defences fail. By 2055 there will be a net retreat of 40 to 65m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	There will be continued cliff erosion at an accelerated rate due to sea level rise. There could be some increase in the sand supplied from the north but predominately this stretch will rely on local inputs from cliff erosion, which should be sufficient to maintain a narrow beach along this frontage. There will also be continued sediment transport to the south. A net retreat of 80 to 130m is expected by 2105.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	dependent upon the exact timing of revetment failure. Sediment feed both to the north and south will continue from this frontage.		
Hopton-on-Sea North	Timber revetment and groynes maintained until failure (i.e. not rebuilt). [as A and B]	Timber revetment and groynes allowed to deteriorate and fail. [as A and B]	No defences. [as A and B]
	The timber revetment will continue to help slow cliff erosion and therefore initially there will be little change in cliff line position. The groynes will trap some of the sand supplied both from local cliff erosion and from the north. Once the revetment fails, however, there will initially be rapid cliff retreat for the first 5 years, before the rate slows slightly. Net cliff line retreat during this period is therefore likely to be between 5 and 25m, depending upon the exact timing of revetment failure. Sediment alongshore transport will continue, feeding areas to the south. There may be a slight accretion zone immediately updrift of the seawall section to the south.	Any remaining timber revetment will initially provide some protection to the cliffs, but these are likely to totally fail early during the period. There will therefore be continued cliff erosion during this period, which will become more rapid along localised stretches as the defences fail. By 2055 there will be a net retreat of 45 to 70m. A beach will probably be maintained at the toe of the beach, even when the groynes fail, due to feed both locally and from the north. There will also be sediment transport to adjacent beaches.	There will be continued cliff erosion at an accelerated rate due to sea level rise. This, together with input from the north, should be sufficient to maintain a narrow, relatively stable, beach along this frontage. There will also be continued sediment transport to the south. A net retreat of between 90 and 130m is expected by 2105. There will also be continued sediment transport to adjacent beaches.
Hopton-on-Sea South	Seawall and groynes maintained. [as A and B]	Seawall and groynes allowed to deteriorate and fail. [as A and B]	No defences. [as A and B]
	The cliffs will be held in their present position by the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transported alongshore. This, and the adjacent areas to the south, will develop as a	Initially the cliff line will be held by the seawall, but this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to	Cliff erosion will continue with a net retreat of 90 to 130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and along shore sediment transport. Transport to the south will continue.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	promontory. There will still be some sediment transport to the south.	occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is expected to occur as the shoreline reaches a position more commensurate with energy conditions. A net retreat of 45 to 70m is expected by 2055.	
South of Hopton-on-Sea	Seawall and groynes maintained. [as A and B]	Seawall and groynes allowed to deteriorate and fail. [as A and B]	No defences. [as A and B]
	The cliffs will be held in their present position by the seawall and a beach, albeit narrow, will be maintained through groynes trapping sediment being transport alongshore. This, and the adjacent areas to north and south, will develop as a promontory. There will still be some sediment transport to the south.	Initially the cliff line will be held by the seawall, but this will probably start to fail by the mid part of this period. During this time a narrower beach will be present due to intertidal squeeze. This will exacerbate seawall failure and failure is likely to occur in sections resulting in very rapid erosion behind, as this area has been held as a promontory for several decades. By the end of this period a more steady rate of erosion is likely to occur as the shoreline reaches a position more commensurate with energy conditions. A net cliff line retreat of 45 to 70m is expected by 2055.	Cliff erosion will continue with a net retreat of 90 to 130m expected by 2105. There should be a beach maintained at this location due to both local cliff erosion inputs and alongshore sediment transport.
Hopton-on-Sea to Corton	Timber revetment and groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	Initially the timber revetment will slow the rate of cliff erosion but as these fail there will initially be a period (approximately 5 years) of relatively rapid	There will be continued cliff erosion at slightly increased rates due to sea level rise and a net retreat of between 45 and 70m is expected by	There will be continued cliff erosion at slightly increased rates due to sea level rise; a net retreat of between 90 and 130m is expected by 2105.

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	erosion. A net retreat of between 10 and 25m would be expected by 2025. Some of the sand released from the cliffs will be moved southwards; this throughput will increase as the groynes fail. Some of this may be trapped updrift of the defences at Corton.	2055. A beach will be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion. There may be some localised accumulation immediately updrift of the defences at Corton.	A beach should be maintained at the toe of the cliffs due to alongshore transport of sand and input from local cliff erosion. Retention of beach material along this section may be helped by the presence of defences at Corton, which could have a slight stabilising influence, but is unlikely to significantly reduce cliff recession rates.
Corton	Seawall and rock revetment maintained. [as A and B]	Seawall and rock revetment maintained.	Seawall and rock revetment maintained.
	The seawall will prevent any cliff retreat, but it is unlikely that a beach will be retained here, apart from along the southern section, despite a possible increase of sediment input from the north. This is due to the increased exposure of the site as it becomes more prominent, with deeper water at the seawall. Sediment transport from north to south is likely to diminish due to the prominence of this area as alongshore drift is interrupted and more sediment is lost offshore.	The seawall will maintain the cliff in their present position. By this stage this section will be standing several tens of metres prominent of the adjacent undefended cliffs. With rising sea levels, this section of coast will therefore be more exposed to wave action and so work would be required to stabilise the defences and extension of the defences would be necessary to prevent outflanking. Sediment will be supplied through cliff erosion to the north but this is unlikely to remain on the beaches due to the exposure conditions and this site may become one of offshore transport. There will be no beach present in front of the seawall, and defences will affect alongshore transport of sediment to the adjacent beaches.	The seawall will hold the cliffline position, but will require significant works in order to maintain the integrity of the defences. With continued cliff erosion on either side this will become more of a promontory and the seawall would need to be extended to prevent outflanking both to north and south. There would be no beach present due to exposure conditions. This promontory may act as a shoreline control for adjacent area; helping to stabilise the shoreline immediately to the north and to the south.
Gunton Warren	Timber groynes allowed to fail. [as A and B]	No defences. [as A and B]	No defences. [as A and B]
	There will be a decreased input of sand from the north due to the defences at Corton; therefore the beach along this section is likely to narrow	There will be continued erosion of the dunes and beach narrowing due to sea level rise. This will be exacerbated by the diminishing feed of sediment	During this period there will be erosion of the sand cliffs (which are currently fronted by sand dunes), which will be increased due to sea level rise. There

SCENARIO REF: SCENARIO C			
Location	**Predicted Change for**		
	Years 0 – 20 (2025)	**Years 20 – 50 (2055)**	**Years 50 – 100 (2105)**
	resulting in deterioration of the dunes backing this section. The dunes are expected to retreat by 10 to 30m, therefore the cliffs behind are not expected to be reactivated. There will be a slightly increased throughput of sediment once the groynes fail.	from the north, due to defences at Corton. The backshore position is likely to retreat by 40 to 90m by 2055, with the loss of the dunes and erosion of the sand cliffs behind. Erosion is likely to be greatest towards the centre of the frontage due to the embayment forming between the held shorelines at Corton and Lowestoft, and could be in excess of 90m.	will be little sediment feed to and from this shoreline, but sediment input from these cliffs should maintain a narrow beach in front of the cliffs. The embayment between Corton and Lowestoft may help to stabilise this area towards the end of the period, and help to retain beach material, but this is unlikely to significantly reduce rates during this period. A net cliff retreat of between 90 and 200m is expected by 2105.
Lowestoft North (to Ness Point)	Seawall maintained to prevent erosion. [as A and B]	Seawall maintained/ improved to prevent erosion and flooding. [as A and B]	Seawall maintained/ improved to prevent erosion and flooding. [as A and B]
	The shoreline position (as defined by the seawall) will remained unchanged and the seawall will prevent any erosion or inundation of the hinterland. However, due to the high exposure of the shoreline to wave attack, and limited sediment input, despite a slight increase in feed from the north (which is predominately sand-sized), the beaches along the northern section will continue to narrow and along the southern section the shingle beach is expected to have disappeared by 2025.	The seawall will continue to prevent flooding and will hold the backshore position, however, there will be continued beach narrowing and along much of this frontage there will be no beach present. Any beach sediment will be lost offshore into deeper water.	There will be no beach present along this frontage and this will mean that significant work may be required to maintain the integrity of the seawall. The situation may be exacerbated by the defences at Corton. Any beach sediment transported to this frontage is likely to be lost offshore into deeper water.

F5.3 OBJECTIVE APPRAISAL

The following table indicated whether objectives are achieved under the three scenarios (A, B and C) and under No Active Intervention. Y indicates the objective is achieved, N indicates the objective is not achieved and P indicates the objective is partially achieved.

6.01 Kelling Hard to Sheringham

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*The short length of palisade along the shingle ridge fails in the first half of period.*		*No defences (apart from low timber/ steel palisade at Weybourne retained to prevent breach and flooding).*		*No defences (Natural shingle bank at Weybourne)*		*No defences. (Natural shingle bank at Weybourne)*		*(As A)*		*(As A)*		*No defences.*		*No defences. (Natural shingle bank at Weybourne)*		*(As A)*		*(As A)*	
Cliff top residential properties at Weybourne	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	Loss of most seaward Coastguard cottages	N	Loss of most seaward Coastguard cottage	N	Loss of half of area covered by Coastguard cottages	N	Loss of half of area covered by Coastguard cottages	N	(As A)	N	(As A)	N	Total loss of Coastguard cottages	N	Total loss of Coastguard cottages	N	(As A)	N	(As A)	N
Weybourne Priory	- Loss of the Priory to erosion - It is considered that there are unexcavated remains alongside the Priory and these will be at risk through continuing erosion	Yes	Prevent loss of Weybourne Priory to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y
Heritage sites	- Loss of a number of monument sites of high importance	Yes	Prevent loss of heritage sites	Some sites lost	N	Some sites lost	N	Further sites lost	N	Further sites lost	N	(As A)	N	(As A)	N	Further sites lost	N	Further sites lost	N	(As A)	N	(As A)	N
Agricultural land	- Potential loss of Grade 3 land through erosion. Much of National Trust land is in Stewardship/set aside	Yes	Prevent loss of farmland to erosion	Loss of farm land	N	Loss of farm land	N	Loss of farm land	N	Loss of farm land	N	(As A)	N	(As A)	N	Loss of farmland	N	Loss of farmland	N	(As A)	N	(As A)	N

Weybourne Cliffs SSSI	- Continual erosion of cliffs necessary to maintain a clear face for geological study	Yes	Continued erosion of cliffs to maintain exposures	Continued erosion therefore exposures maintained	Y	Continued erosion therefore exposures maintained	Y	Continued erosion therefore exposures maintained	Y	Continued erosion therefore exposures maintained	Y	(As A)	Y	(As A)	Y	Continued erosion therefore exposures maintained	Y	Continued erosion therefore exposures maintained	Y	(As A)	Y	(As A)	Y
Kelling Hard County Wildlife Site	- Loss of CWS site designated as unimproved, slightly calcareous and neutral grassland	Yes	Maintain the existing habitats	Minimum loss of Kelling Hard CWS	P	Minimum loss of Kelling Hard CWS	P	Less than 50% loss of Kelling Hard CWS	N	Less than 50% loss of Kelling Hard CWS	N	(As A)	N	(As A)	N	Partial loss of Kelling Hard CWS	N	Partial loss of Kelling Hard CWS	N	(As A)	N	(As A)	N
Beach Lane County Wildlife Site	- Loss of shingle beach which protects areas of grassland, reedswamp and brackish lagoons which have County Wildlife Status	Yes	Maintain the existing shingle habitats whilst allowing shingle ridge to roll back	Minimum loss of Beach Lane CWS but shingle ridge allowed to roll back	Y	Minimum loss of Beach Lane CWS but shingle ridge allowed to roll back	Y	Some loss of CWS but shingle ridge allowed to roll back	Y	Some loss of CWS but shingle ridge allowed to roll back	Y	(As A)	Y	(As A)	Y	Some loss of CWS but shingle ridge allowed to roll back	Y	Some loss of CWS but shingle ridge allowed to roll back	Y	(As A)	Y	(As A)	Y
Beach and Foreshore	- Concern over beach condition	Yes	Maintain a beach suitable for recreation purposes	Beach similar to present	Y	Beach similar to present	Y	Beach similar to present	Y	Beach similar to present	Y	(As A)	Y	(As A)	Y	Beach present	Y	Beach present	Y	(As A)	Y	(As A)	Y
	- Dredging of offshore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																					
Car park and beach access at Beach Lane	- Potential loss of car park	Yes	Maintain car park facilities	Minimum loss	Y	Minimum loss	Y	50% car park lost, but low lying-land therefore car park could be moved landwards	N	50% car park lost, but low lying-land therefore car park could be moved landwards	N	(As A)	N	(As A)	N	Total loss of car park, but could be relocated	N	Total loss of car park, but could be relocated	N	(As A)	N	(As A)	N
	- Potential loss of access to beach	Yes	Maintain access to the beach	No loss of beach access	Y	No loss of beach access	Y	No loss of beach access	Y	No loss of beach access	Y	(As A)	Y	(As A)	Y	No loss of beach access	Y	No loss of beach access	Y	(As A)	Y	(As A)	Y
Sheringham Golf Links	- Loss of golf course through erosion	Yes	Prevent loss of golf course to erosion	Loss of golf course land	N	Loss of golf course land	N	Further loss of golf course land	N	Further loss of golf course land	N	(As A)	N	(As A)	N	Further loss of golf course land	N	Further loss of golf course land	N	(As A)	N	(As A)	N

National Trail	- Potential loss of Trail through erosion	Yes	Maintain Trail throughout frontage	Loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	Loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	Further loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	Further loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	(As A)	P	(As A)	P	Further loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	Further loss of parts of Peddlers Way & Norfolk Coast path but could be relocated	P	(As A)	P	(As A)	P
AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y

6.02 Sheringham

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*The timber groynes will fail during this period, as will the seawalls to the west and east. In front of the town the seawall and rock groynes will remain in place.*		*Seawall and groynes maintained to prevent any erosion.*		*The central seawall and rock groynes will remain for most of this period.*		*Seawall and groynes maintained to prevent any erosion.*		*(As A)*		*(As A)*		*The central seawall and rock groynes will fail at the start of this period.*		*Seawall and groynes maintained to prevent any erosion.*		*(As A)*		*(As A)*	
Residential properties	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	No loss	Y	No loss	Y	No loss of main town, but loss of properties along Beeston Regis	N	No loss	Y	(As A)	Y	(As A)	Y	Loss of residential properties	N	No loss	Y	(As A)	Y	(As A)	Y
Commercial properties	- Potential loss of businesses through erosion	Yes	Prevent loss of commercial properties to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of commercial properties	N	No loss	Y	(As A)	Y	(As A)	Y
Community facilities	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of main town streets and town centre car parks	N	No loss	Y	(As A)	Y	(As A)	Y

Heritage sites	- Loss of heritage sites including The Lees and Beeston Regis Hill, which are of high importance	Yes	Prevent loss of heritage sites to erosion	Loss of one Beeston Regis and other monument sites	N	No loss	Y	No further loss	N	No loss	Y	(As A)	Y	(As A)	Y	No further loss	N	No loss	Y	(As A)	Y	(As A)	Y
Recreational and tourist facilities	- Potential loss of tourist and recreation sites, accommodation and activities including major attractions, shops, public open space, holiday amenities, and promenade	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	No loss but promenade properties more exposed	Y	No loss but promenade properties more exposed	Y	(As A)	Y	(As A)	Y	Loss of promenade and seafront shops and amenities	N	No loss but promenade properties more exposed	Y	(As A)	Y	(As A)	Y
Infrastructure	- Potential loss of or damage to services and roads through erosion	Yes	Maintain services to properties	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of services associated with property loss	N	No loss	Y	(As A)	Y	(As A)	Y
		Yes	Maintain communication link within Sheringham	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of various roads within the town centre	N	No loss	Y	(As A)	Y	(As A)	Y
Lifeboat Station	- Potential loss of access- Potential loss of building	Yes	Maintain Lifeboat Station in the town	No loss and slipway functional	Y	No loss and slipway functional	Y	No loss and slipway functional	Y	No loss and slipway functional	Y	(As A)	Y	(As A)	Y	Loss of promenade and therefore existing Lifeboat Station	N	Building at increased risk of being overtopped and slipway will be functional	Y	(As A)	Y	(As A)	Y
Beeston Cliffs SSSI	- Continual erosion of cliffs necessary to maintain a clear face for geological study	Yes	Continued erosion of cliffs to maintain exposures	Cliff erosion, meaning increased SSSI exposure	Y	No cliff erosion therefore poor SSSI exposure	Y	Cliff erosion, meaning increased SSSI exposure	Y	No cliff erosion therefore poor SSSI exposure	N	(As A)	N	(As A)	N	Cliff erosion, meaning increased SSSI exposure	Y	No cliff erosion therefore poor SSSI exposure	N	(As A)	N	(As A)	N
	- Erosion or regrading could reduce the area of unimproved grassland on the cliff-top, which is also part of the SSSI through its characteristic plant species	Yes	Maintain the existing habitats	Small loss but habitat likely to be able to remain landward	Y	Cliff top grassland preserved	Y	Loss of cliff top grasslands. Possible recreation inland	N	Cliff top grassland preserved	Y	(As A)	Y	(As A)	Y	Loss of cliff top grasslands. Possible recreation inland	N	Cliff top grassland preserved	Y	(As A)	Y	(As A)	Y

Beach and foreshore	- Potential deterioration in condition and appearance of the Blue Flag beach	Yes	Maintain a beach suitable for recreation purposes	Similar beach to today	Y	Similar beach to today	Y	Little or no beach along main frontage. Beach present at Beeston Regis	N	Little or no beach	N	(As A)	N	(As A)	N	Beach present in a retreated position	Y	No beach	N	(As A)	N	(As A)	N
	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (non-policy issue)	No																			
	- Dredging of offshore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																			
National Trail	- Potential loss of Trail through erosion	Yes	Maintain Trail throughout frontage	No change in trail location along main frontage	Y	No change in trail location	Y	No change in trail location along main frontage	Y	No change in trail location	Y	(As A)	Y	(As A)	Y	Loss of present trail	N	No change in trail location	Y	(As A)	Y	(As A)	Y
Access to beach	- Potential loss of access to beach	Yes	Maintain access to the beach	Beach access as today	Y	Beach access as today	Y	Beach access as today	Y	Beach access as today	Y	(As A)	Y	(As A)	Y	Access lost as seawall and promenade fails	N	Beach access possible, but no beach	P	(As A)	P	(As A)	P

6.03 Sheringham to Cromer

				0 – 20 (up to 2025)		20 – 50 (up to 2055)				50 – 100 (up to 2105)			
				NAI	A, B, C	NAI	A	B	C	NAI	A	B	C
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber revetment will fail early during this period, with failure of timber groynes towards the end of the period. Masonry walls at Gaps will start to fail.*	*Timber groynes between Sheringham and West Runton allowed to fail. Two short stretches of masonry wall at Gaps maintained.*	*No defences*	*Short stretches of masonry wall at Gaps allowed to fail.*	*(As A)*	*(As A)*	*No defences*	*No defences*	*(As A)*	*(As A)*

Cliff top properties at East Runton	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	No properties lost but potential loss of land	Y	No properties lost but potential loss of land	Y	Most-seaward properties lost	N	Most-seaward properties lost	N	(As A)	N	(As A)	N	Properties lost	N	Properties lost	N	(As A)	N	(As A)	N
Cliff top caravan parks	- Loss of cliff-top caravan parks sited on eroding cliffs - Loss of investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	Partial loss of caravan park land	N	Partial loss of caravan park land	N	Further loss of caravan park land	N	Further loss of caravan park land	N	(As A)	N	(As A)	N	Further loss of caravan park land	N	Further loss of caravan park land	N	(As A)	N	(As A)	N
Heritage sites	- Loss of heritage sites including ones identified as of high importance	Yes	Prevent loss of heritage sites to erosion	No loss of sites identified as high importance	Y	No loss of sites identified as high importance	Y	Loss of one site of high importance and other sites	N	Loss of one site of high importance and other sites	N	(As A)	N	(As A)	N	No further loss of sites	N	No further loss of sites	N	(As A)	N	(As A)	N
Agricultural land	- Potential loss of Grade 3 land through erosion	Yes	Prevent loss of farmland to erosion	Loss of farmland	N	Loss of farmland	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N
Cliffs at West Runton and East Runton	- Continual erosion of the SSSI designated cliffs necessary to maintain a clear face for geological study and re-sampling	Yes	Continued erosion of cliffs to maintain exposures	Continued exposure therefore improved exposure	Y	Continued exposure, except Gaps, therefore improved exposure	Y	Continued exposure therefore improved exposure	Y	Continued exposure therefore improved exposure	Y	(As A)	Y	(As A)	Y	Continued exposure therefore improved exposure	Y	Continued exposure therefore improved exposure	Y	(As A)	Y	(As A)	Y
Car park and beach access	- Potential loss of car park	Yes	Maintain car park facilities	Loss of car park at West Runton (but possible relocation). Loss of section of East Runton car park	N	Loss of car park at West Runton (but possible relocation). Loss of section of East Runton car park	N	Loss of car park at East Runton	N	Loss of car park at East Runton	N	(As A)	N	(As A)	N	(Car park lost 20-50)	N	(Car park lost 20-50)	N	(As A)	N	(As A)	N
	- Potential loss of access to beach	Yes	Maintain access to the beach	Access at East and West Runton lost	N	Beach access at Runton gaps maintained	Y	(Access lost 0-20 but possible relocation)	N	Access lost due to outflanking, but possible relocation	N	(As A)	N	(As A)	N	(Access lost 20-50 but possible relocation)	N	(Access lost 20-50 but possible relocation)	N	(As A)	N	(As A)	N
Beach and Foreshore	- Loss of County Wildlife site	Yes	Maintain the existing habitats	Similar beach to today	Y	Similar beach to today	Y	Similar beach to today	Y	Similar beach to today	Y	(As A)	Y	(As A)	Y	Beach present	Y	Beach present	Y	(As A)	Y	(As A)	Y

	- Potential deterioration in condition/ appearance of beach	Yes	Maintain a beach suitable for recreation purposes	Similar beach to today	Y	Similar beach to today	Y	Similar beach to today	Y	Similar beach to today	Y	(As A)	Y	(As A)	Y	Beach present	Y	Beach present	Y	(As A)	Y	(As A)	Y
	- Dredging of offshore banks for aggregate – potential impact on beach level (Non-policy issue)	No																			
	- Continuing maintenance necessary for existing concrete defences at foot of cliffs	No																			
	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non-policy issue)	No																			
	- West Runton SSSI includes the foreshore - designation requires continued erosion to keep the exposures clean	Yes	Retain foreshore to maintain the marine study value of the site	Continued erosion keeps exposures clean	Y	Natural processes allowed and increased exposure	Y	Continued erosion keeps exposures clean	Y	Slight improvement once Gaps allowed to erode	Y	(As A)	Y	(As A)	Y	Continued erosion keeps exposures clean	Y	Continued erosion keeps exposures clean	Y	(As A)	Y	(As A)	Y

6.04 Cromer

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Along most of the frontage the seawall will remain in place for this period. The groynes will fail towards the end of the period.*		*Seawall and groynes maintained to prevent any erosion.*		*Complete failure of the seawall at the start of this period.*		*Seawall and groynes maintained to prevent any erosion.*		*(As A)*		*(As A)*		*No defences.*		*Seawall and groynes maintained to prevent any erosion.*		*(As A)*		*(As A)*	
Residential properties	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	No loss	Y	No loss	Y	Loss of residential properties	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of residential properties	N	No loss	Y	(As A)	Y	(As A)	Y

Commercial properties	- Potential loss of businesses through erosion - Loss of investment on part of individual business owners	Yes	Prevent loss of commercial properties due to erosion	No loss	Y	No loss	Y	Loss of commercial seafront properties	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of commercial properties in main town	N	No loss	Y	(As A)	Y	(As A)	Y
Commercial properties on the promenade	- Potential loss of businesses through erosion or repeated flooding	Yes	Prevent damage to/loss of commercial properties due to erosion	Promenade maintained	Y	No loss	Y	Loss of promenade and associated properties	N	No loss, but increased risk of overtopping (and no beach)	Y	(As A)	Y	(As A)	Y	(Promenade lost 20-50)	N	No loss, but increased risk of overtopping (and no beach)	Y	(As A)	Y	(As A)	Y
Heritage sites	- Potential loss of important monuments and Grade II listed properties of Cromer Baptist Church and 'The Gangway'	Yes	Prevent loss of heritage sites to erosion	No loss	Y	No loss	Y	Loss of Grade II properties, and important monument sites	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of heritage sites	N	No loss	Y	(As A)	Y	(As A)	Y
	- Grade 1 Cromer Church	Yes	Prevent loss of church to erosion	No loss	Y	No loss	Y	Loss of church	N	No loss	Y	(As A)	Y	(As A)	Y	Church lost in years 20-50.	N	No loss	Y	(As A)	Y	(As A)	Y
Community facilities	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	Loss of Post Office and museum	N	No loss	Y	(As A)	Y	Y	Y	Further loss of facilities	N	No loss	Y	(As A)	Y	(As A)	Y
Recreational and tourist facilities	- Potential loss of tourist and recreation sites, accommodation and activities including major attractions, shops, holiday amenities, public open space and promenade	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	Loss of seafront properties, promenade and other facilities	N	No loss	Y	(As A)	Y	(As A)	Y	Loss of main town seafront	N	No loss	Y	(As A)	Y	(As A)	Y
Pier	- Inappropriate management of beach and nearshore zone could jeopardise stability of pier and/or access to the pier	Yes	Prevent loss of recreational facility	No loss	Y	No loss	Y	Structural integrity of pier threatened once promenade lost	N	Structural integrity of pier threatened by sea level rise and dropping beach levels	N	(As A)	N	(As A)	N	Promenade lost and retreat of coast behind, therefore loss of pier	N	Structural integrity of pier threatened by sea level rise and dropping beach levels	N	(As A)	N	(As A)	N

		Yes	Prevent loss of historical pier	No loss	Y	No loss	Y	Structural integrity of pier threatened once promenade lost	N	Structural integrity of pier threatened by sea level rise and dropping beach levels	N	(As A)	N	(As A)	N	Promenade lost and retreat of coast behind, therefore loss of pier	N	Structural integrity of pier threatened by sea level rise and dropping beach levels	N	(As A)	N	(As A)	N
Lifeboat Station	- Potential loss of access - Potential loss of building	Yes	Maintain Lifeboat Station in the town	No loss	Y	No loss	Y	Station is located at end of pier, therefore loss of station	N	Station is located at end of pier, therefore structural integrity may be threatened	N	(As A)	N	(As A)	N	(Station lost 20-50)	N	Station is located at end of pier, therefore structural integrity may be threatened	N	(As A)	N	(As A)	N
Infrastructure	- Potential loss of or damage to services and roads through erosion	Yes	Maintain services to properties	No loss	Y	No loss	Y	Loss associated with property loss	N	No loss	Y	(As A)	Y	(As A)	Y	Loss associated with property loss	N	No loss	Y	(As A)	Y	(As A)	Y
	- Promenade contains sewage pumping station	Yes	Maintain pumping station	No loss	Y	No loss	Y	Loss	N	Possible structural/ maintenance problems	Y	(As A)	Y	(As A)	Y	Loss	N	Possible structural/ maintenance problems	Y	(As A)	Y	(As A)	Y
Main Road at Cromer (A149)	- Potential loss of main A road through erosion	Yes	Maintain communication links within Cromer	No loss	Y	No loss	Y	Many link roads lost	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of town centre roads	N	No loss	Y	(As A)	Y	(As A)	Y
		Yes	Maintain major communication link between Cromer and settlements to the east	No loss	Y	No loss	Y	Loss of section of A149	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of A149	N	No loss	Y	(As A)	Y	(As A)	Y
Sea Wall	- Conserving the sea wall as a Grade II listed structure, which may restrict the options for its maintenance, repair or replacement.	Yes	Prevent loss of historical seawall	No loss	Y	No loss	Y	Loss of seawall	N	Work required to maintain structural integrity, which may threaten listing	N	(As A)	N	(As A)	N	(Seawall lost 20-50)	N	Work required to maintain structural integrity, which may threaten listing	N	(As A)	N	(As A)	N
Beach and foreshore	- Potential deterioration in condition and appearance of the Blue Flag beach	Yes	Maintain a beach suitable for recreation purposes	Narrower beach	Y	Narrower beach	Y	Beach in retreated position	Y	Little or no beach	N	(As A)	N	(As A)	N	Beach in retreated position	Y	No beach	N	(As A)	N	(As A)	N

	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non-policy issue)	No	-																				
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No	-																				
Access to beach	- Potential loss of access to beach	Yes	Maintain access to beach	No loss	Y	No loss		Access lost with promenade	N	Access to promenade but no beach	P	(As A)	P	(As A)	P	(Access lost with promenade 20-50)	N	Access to promenade but no beach	P		P		P

6.05 Cromer to Overstrand

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber revetments continue to fail over period, with failure of timber groynes in the first half of the period.*		*Revetments and timber groynes allowed to fail.*		*No defences.*		*No defences.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Royal Cromer Golf Course	- Potential loss of golf course through erosion	Yes	Prevent loss of golf course to erosion	Loss of coastal strip of golf course	N	Loss of coastal strip of golf course	N	Loss of part of golf course	N	Loss of part of golf course	N	(As A)	N	(As A)	N	Further loss of golf course	N	Further loss of golf course	N	(As A)	N	(As A)	N
Cliffs	- Loss of SAC designated site - Continued erosion of cliffs necessary to maintain habitats	Yes	Maintain the existing habitats	Designated as unprotected therefore continued erosion supports this	Y	Designated as unprotected therefore continued erosion supports this	Y	Designated as unprotected therefore continued erosion supports this	Y	Designated as unprotected therefore continued erosion supports this	Y	(As A)	Y	(As A)	Y	Designated as unprotected therefore continued erosion supports this	Y	Designated as unprotected therefore continued erosion supports this	Y	(As A)	Y	(As A)	Y
Cliff-top footpath	- Potential loss of footpath through erosion	Yes	Maintain footpath throughout frontage	Paston footpath lost, but possibility for re-routing	P	Paston footpath lost, but possibility for re-routing	P	Paston footpath lost, but possibility for re-routing	P	Paston footpath lost, but possibility for re-routing	P	(As A)	P	(As A)	P	Paston footpath lost, but possibility for re-routing	P	Paston footpath lost, but possibility for re-routing	P	(As A)	P	(As A)	P

Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present, but possible access issues	Y	Beach present, but possible access issues	Y	(As A)	Y	(As A)	Y	Beach present, but possible access issues	Y	Beach present, but possible access issues	Y	(As A)	Y	(As A)	Y
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No	-																				
AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y

6.06 Overstrand

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*The seawall will fail during this period, together with the timber revetment and groynes.*		*Seawall, timber revetment and groynes maintained.*		*No defences.*		*Seawall, timber revetment and groynes allowed to deteriorate.*		*(As A)*		*Seawall maintained to prevent any erosion. Timber revetment replaced by seawall to the south*		*No defences.*		*No defences.*		*(As A)*		*Seawall maintained.*	
Residential properties	- Potential loss of housing within the village through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	Loss of housing	N	Some housing lost to the south of Overstrand	P	Further loss of housing	N	Loss of seafront houses	N	(As A)	N	No loss	Y	Further loss of housing within village	N	Further loss of housing within village	N	(As A)	N	No loss	Y
Commercial properties	- Potential loss of businesses through erosion	Yes	Prevent loss of commercial properties to erosion	Loss of seafront commercial property	N	No loss	Y	Loss of commercial property	N	Loss of part of High Street	N	(As A)	N	No loss	Y	Loss of commercial property	N	Loss of commercial property	N	(As A)	N	No loss	Y

Heritage sites	- Potential loss of heritage sites including 2 Grade II properties: 'The Pleasance' (including Lutyens buildings) and ' Sea Marge' - General historical value	Yes	Prevent loss of heritage sites to erosion	Loss of 'Sea Marge'	N	No loss	Y	No further loss in this epoch.	N	Loss of 'Sea Marge'	N	(As A)	N	No loss	Y	Loss of 'The Pleasance'	N	Loss of 'The Pleasance'	N	(As A)	N	No loss	Y
Community facilities	- Potential loss of community facilities through erosion,	Yes	Prevent loss of community facilities to erosion	Loss of school	N	No Loss	Y	Further loss of community facilities	N	Loss of school	N	(As A)	N	No loss	Y	Further loss of community facilities	N	Loss of community facilities, buildings and land	N	(As A)	N	No loss	Y
Tourist facilities including the promenade	- Potential loss of recreation sites, including Jubilee Playground, and amenities	Yes	Prevent loss of tourist amenities to erosion	Loss of Jubilee Ground, promenade and seafront facilities	N	Loss of Jubilee Ground but promenade remains	N	Further loss of tourist facilities along Overstrand seafront	N	Loss of promenade and other tourist facilities along Overstrand seafront	N	(As A)	N	No loss	Y	Further loss of tourist facilities along Overstrand seafront	N	Further loss of tourist facilities along Overstrand seafront	N	(As A)	N	No loss	Y
Infrastructure	- Potential loss of or damage to services and roads through erosion	Yes	Maintain services to properties	Services lost with properties	N	Services lost at southern end	P	Services lost with properties	N	Services lost with properties	N	(As A)	N	No loss	Y	Services lost with properties	N	Services lost with properties	N	(As A)	N	No loss	Y
		Yes	Maintain communication links within Overstrand	Loss of link roads within Overstrand	N	Only access roads to houses lost, not link roads	P	Further loss of link roads within Overstrand	N	Road linkages within village lost with properties	N	(As A)	N	No loss	Y	Loss of link roads within Overstrand	N	Some road linkages within village lost with properties	N	(As A)	N	No loss	Y
	- Pumping Station and sewers	Yes	Maintain pumping station and sewers	High possibility for pumping station being lost	N	Sewers lost with properties at southern end of village	P	Pumping station lost	N	Pumping station lost	N	(As A)	N	No loss	Y	(Pumping station lost 20-50)	N	(Pumping station lost 20-50)	N	(As A)	N	No loss	Y
Overstrand Sea Front County Wildlife Site	- Potential loss of habitat	Yes	Maintain the existing habitats	Ecological interest associated with slumped cliff, therefore status could improve with cliff erosion	Y	No change from present	Y	Ecological interest associated with slumped cliff, therefore status could improve with cliff erosion	Y	Ecological interest associated with slumped cliff, therefore status could improve with cliff erosion	Y	(As A)	Y	No loss of area but not naturally active and slumping	P	Ecological interest associated with slumped cliff, therefore status could improve with cliff erosion	Y	Ecological interest associated with slumped cliff, therefore status could improve with cliff erosion	Y	(As A)	N	No loss of area but not naturally active and slumping	P
Access to beach	- Potential loss of access to beach	Yes	Maintain access to beach	Beach access at Overstrand lost	N	No change in beach access from present	Y	No beach access	N	Beach access at Overstrand lost	N	(As A)	N	No change in beach access	Y	No beach access	N	No beach access	N	(As A)	N	No change in beach access	Y
Car park on cliff top	- Potential loss of car park	Yes	Maintain car park facilities	Car park lost	N	Part of car park lost	P	No car park	N	Car park lost	N	(As A)	N	No loss of car park	Y	No car park	N	No car park	N	(As A)	N	No loss of car park	Y

6.07 Overstrand to Mundesley

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Continued failure of any existing timber revetment and groynes*		*Timber revetment and groynes to North of Beach Vale Rd allowed to fail. To south Timber revetment and groynes maintained/ replaced.*		*No defences.*		*Timber revetment and groynes allowed to deteriorate and fail.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Residential properties in Sidestrand	- Potential loss of housing within the village through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	No loss	Y	No loss	Y	Some property loss to north of Sidestrand	N	Some property loss to north of Sidestrand	N	(As A)	N	As A but greater loss of housing in this period	N	Some property loss in Sidestrand	N	Some property loss in Sidestrand	N	(As A)	N	(As A)	N
Residential properties in Trimingham	- Potential loss of housing within the village through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	Some loss	N	Some loss	N	Some loss	N	Some loss	N	(As A)	N	(As A)	N	Some loss	N	Some loss	N	(As A)	N	(As A)	N
Community facilities	- Potential loss of Trimingham church through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Church lost	N	Church lost	N	(As A)	N	(As A)	N
MOD communications facility	- Potential loss of MOD mobile communications facility	Yes	Prevent loss of MOD communications facility	No loss of MoD facility	Y	No loss of MoD facility	Y	No loss of MoD facility	Y	No loss of MoD facility	Y	(As A)	Y	(As A)	Y	Loss of MoD facility (but could be relocated)	N	Loss of MoD facility (but could be relocated)	N	(As A)	N	(As A)	N
Coastal Road at Trimingham	- Loss of coastal road through erosion	Yes	Maintain communication link within Trimingham	Loss of minor access roads	N	Loss of minor access roads	N	Loss of section of main coast road	N	Loss of section of main coast road	N	(As A)	N	(As A)	N	Further loss of main coast road	N	Further loss of main coast road	N	(As A)	N	(As A)	N

			Maintain major communication link between Trimingham and adjacent towns and villages	Loss of local access roads only	N	Loss of local access roads only	N	Loss of section of main coast road	N	Loss of section of main coast road	N	(As A)	N	(As A)	N	Further loss of main coast road	N	Further loss of main coast road	N	(As A)	N	(As A)	N
Agricultural land	- Potential loss of Grade 3 land through erosion	Yes	Prevent loss of farmland to erosion	Loss of farmland	N	Loss of farmland	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N
Cliffs	- Continual erosion of SSSI designated cliffs necessary to sustain habitats and exposures	Yes	Retain clean exposure of cliff face to maintain the geological study value of the site	Continued erosion maintain geological exposure	Y	Continued erosion maintain geological exposure	Y	Continued erosion maintain geological exposure	Y	Continued erosion maintain geological exposure	Y	(As A)	Y	(As A)	Y	Continued erosion maintain geological exposure	Y	Continued erosion maintain geological exposure	Y	(As A)	Y	(As A)	Y
	- Continued cliff movements to support cliff face habitat types listed within SSSI designation	Yes	Maintain the existing habitats	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	(As A)	Y	(As A)	Y	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	Invertebrates associated with crevices and fallen debris therefore erosion should improve status	Y	(As A)	Y	(As A)	Y
	- Potential loss of CWS cliff and cliff top habitats	Yes	Maintain the existing habitats	Possible loss of cliff top habitats due to coastal squeeze	N	Possible loss of cliff top habitats due to coastal squeeze	N	Possible loss of cliff top habitats due to coastal squeeze	N	Possible loss of cliff top habitats due to coastal squeeze	N	(As A)	N	(As A)	N	Possible loss of cliff top habitats due to coastal squeeze	N	Possible loss of cliff top habitats due to coastal squeeze	N	(As A)	N	(As A)	N
Beach and Foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present (but limited access)	Y	Beach present (but limited access)	Y	(As A)	Y	(As A)	Y	Beach present (but limited access)	Y	Beach present (but limited access)	Y	(As A)	Y	(As A)	Y
	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non-policy issue)	No	-																				

	- Dredging of offshore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No	-																				
Access to beach	- Potential loss of access to beach	Yes	Maintain access to beach	Beach access at Vale Rd will remain but works may be required	Y	Beach access at Vale Rd will remain but works may be required	Y	Access lost	N	Access lost	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N
Cliff-top caravan park at Vale Road and Mundesley Cliffs North	- Loss of cliff-top caravan parks sited on eroding cliffs - Loss of considerable investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	Some loss of caravan parks	N	Some loss of caravan parks	N	Total loss of caravan parks	N	Total loss of caravan parks	N	(As A)	N	(As A)	N	(Lost in 20-50)	N	(Lost in 20-50)	N	(As A)	N	(As A)	N
AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y

6.08 Mundesley

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Defences will mostly remain effective until the end of the period.*		*Seawall and groynes maintained.*		*The seawall will fail at the start of this period.*		*Seawall (and groynes until redundant) maintained.*		*Timber revetment, seawall and groynes allowed to fail*		*Seawall (and groynes until redundant) maintained and extended to south (c. 200m).*		*No defences.*		*Seawall allowed to fail.*		*No defences.*		*Seawall maintained.*	
Residential properties	- Potential loss of housing within the village through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of residential properties to erosion	No loss along main frontage, but loss of houses to north	Y	No loss	Y	Loss of housing	N	No loss	Y	Loss of housing	N	No loss	Y	Loss of housing	N	Loss of housing	N	Loss of housing	N	No loss	Y

Commercial properties	- Potential loss of businesses through erosion	Yes	Prevent loss of commercial properties to erosion	No loss along main frontage, but loss of to north	Y	No loss	Y	Loss of commercial properties	N	No loss	Y	Loss of commercial properties	N	No loss	Y	Loss of commercial properties	N	Loss of commercial properties	N	Loss of commercial properties	N	No loss	Y
Heritage Sites	- Potential loss of important monument sites and Grade II listed buildings	Yes	Prevent loss of heritage sites to erosion	No loss	Y	No loss	Y	All Saint's Church and an important monument site lost	N	No loss	Y	All Saint's Church and an important monument site lost	N	No loss	Y	Loss of Brick Kiln Grade II building and important monument site	N	Loss of heritage sites	N	Loss of Brick Kiln Grade II building and important monument site	N	Loss of Brick Kiln Grade II site	N
Community facilities	- Potential loss of community facilities, including Mundesley library and Maritime Museum, through erosion		Prevent loss of community facilities to erosion	Loss of library, but Maritime Museum will remain	N	No loss	Y	Loss of Museum and other seafront facilities	N	No loss	Y	Loss of library and museum	N	No loss	Y	Loss of other facilities	N	Some loss of community facilities	N	Loss of other facilities	N	No loss	Y
Infrastructure	- Potential loss of or damage to services and amenities through erosion. Of particular concern are the AW outfall headworks. - Need to maintain access to outfall screens for Mundesley Beck	Yes	Maintain services to properties, outfall headworks and access to outfall screens	Services lost with properties	N	No loss	Y	Services lost with properties	N	No loss	Y	Services lost with properties	N	No loss	Y	Services lost with properties	N	Services lost with properties	N	Services lost with properties	N	No loss	Y
B1159 at Mundesley	- Potential loss of the road, which is the main thoroughfare in the town and forms the main coast road linking villages between Cromer and Caister	Yes	Maintain communication link within Mundesley	No loss	Y	No loss	Y	Loss of section of road in town centre	N	No loss	Y	Loss of road	N	No loss	Y	Further loss of road	N	Loss of main links	N	Loss of main links	N	No loss	Y
	- Loss of the cliff top section of road would require significant diversions around the town	Yes	Maintain major communication link between Mundesley and adjacent towns and villages	No loss	Y	No loss	Y	Loss of section of road in town centre	N	No loss	Y	Loss of road	N	No loss	Y	Further road loss	N	Loss of main links	N	Loss of main links	N	No loss	Y

Mundesley IRB station	- Potential impact on launching of the lifeboat	Yes	Maintain effective launching site for lifeboat	Lifeboat station will remain	Y	Lifeboat station will remain	Y	Lifeboat station lost	N	Lifeboat station will remain, but increased risk of overtopping	Y	Loss of Lifeboat Station	N	No loss, but possible issue due to narrowing beaches	Y	(Lifeboat station lost 20-50)	N	Lifeboat station will remain but possible issue with launching due to drop in beach levels	P	(Lifeboat station lost 20-50)	N	No loss, but possible issue due to narrowing beaches	Y
Beach and foreshore	- The way in which the coastline is managed may have an adverse effect on the condition and appearance of the Blue Flag beach	Yes	Maintain a beach suitable for recreation purposes	Narrower beach	Y	Narrower beach	Y	Beach in retreated position	Y	No beach	N	Beach could be present in retreated position	Y	No beach by end of period	N	Beach in retreated position	Y	Beach in retreated position	Y	Beach in retreated position	Y	No beach	N
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No	-																				

6.09 Mundesley to Bacton Gas Terminal

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Both the groynes and timber revetment will fail during this period.*		*Timber revetment and groynes allowed to fail.*		*No defences.*		*No defences.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Mundesley Holiday Camp and Hillside Chalet Park	- Potential loss of tourist accommodation due to erosion- Loss of considerable investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	No loss of Hillside Chalet Camp, but partial loss of Mundesley Holiday Camp	Y	No loss of Hillside Chalet Camp, but partial loss of Mundesley Holiday Camp	Y	Camps close to cliff edge	Y	Camps close to cliff edge	Y	(As A)	Y	(As A)	Y	Camps lost	N	Camps lost	N	(As A)	N	(As A)	N
	Loss of heritage site at Mundesley Holiday Camp	Yes	Prevent loss of heritage site to erosion	Partial loss of Mundesley Holiday Camp	N	Partial loss of Mundesley Holiday Camp	N	Partial loss of Mundesley Holiday Camp	N	Partial loss of Mundesley Holiday Camp	N	(As A)	N	(As A)	N	Loss of heritage site	N	Loss of heritage site	N	(As A)	N	(As A)	N

Heritage sites	- Potential loss of Saxon Cemetery	Yes	Prevent loss of heritage site to erosion	No loss	Y	No loss	Y	Loss of heritage site	N	Loss of heritage site	N	(As A)	N	(As A)	N	Heritage site lost in 20-50.	N	Heritage site lost in 20-50.	N	(As A)	N	(As A)	N
Agricultural land	- Potential loss of Grade 1 agricultural land through erosion	Yes	Prevent loss of farmland to erosion	Loss of farmland	N	Loss of farmland	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N
Cliffs	- Continual erosion of SSSI designated cliffs to sustain habitats and exposures	Yes	Retain clean exposure of cliff face to maintain the geological and biological study value of the site	Continued erosion will enhance geological exposure and habitats	Y	Continued erosion will enhance geological exposure and habitats	Y	Continued erosion will enhance geological exposure and habitats	Y	Continued erosion will enhance geological exposure and habitats	Y	(As A)	Y	(As A)	Y	Continued erosion will enhance geological exposure and habitats	Y	Continued erosion will enhance geological exposure and habitats	Y	(As A)	Y	(As A)	Y
Beach and Foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach similar to today	Y	Beach similar to today	Y	Beach similar to today	Y	Beach similar to today	Y	(As A)	Y	(As A)	Y	Beach present but possible access problems	Y	Beach present but possible access problems	Y	(As A)	Y	(As A)	Y
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No	-																				
Paston Way footpath	- Potential loss of footpath	Yes	Maintain footpath throughout frontage	Loss of Paston way footpath but could be relocated	P	Loss of Paston way footpath but could be relocated	P	Loss of Paston way footpath but could be relocated	P	Loss of Paston way footpath but could be relocated	P	(As A)	P	(As A)	P	Loss of Paston way footpath but could be relocated	P	Loss of Paston way footpath but could be relocated	P	(As A)	P	(As A)	P
AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y	Landscape maintained through natural cliff erosion	Y	Landscape maintained through natural cliff erosion	Y	(As A)	Y	(As A)	Y

6.10 Bacton Gas Terminal

				0 – 20 (up to 2025)		20 – 50 (up to 2055)				50 – 100 (up to 2105)			
				NAI	A, B, C	NAI	A	B	C	NAI	A	B	C
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Both the groynes and timber revetment will fail during this period.*	*Timber revetment replaced by seawall and groynes maintained.*	*No defences.*	*Seawall and timber groynes maintained.*	*Seawall and timber groynes allowed to fail.*	*(As A)*	*No defences.*	*Measures to reduce erosion rate.*	*No defences.*	*Seawall maintained.*

Gas Terminal	- Potential risk of loss or damage to the site and its plant through erosion	Yes	Prevent loss of Gas Terminal	Loss of seaward edge of terminal site	Y	Loss of land but facility will remain	Y	Further loss of terminal site	N	No loss of terminal but possible issues due to drop in beach volume	Y	Loss of most seaward buildings	N	No loss	Y	Further loss of terminal site	N	Loss of seaward edge of terminal site	N	Further loss of seaward buildings	N	No loss	Y
			Prevent loss of employment	Loss of seaward edge of terminal site	Y	Loss of land but facility will remain	Y	Further loss of terminal site	N	No loss of terminal but possible issues due to drop in beach volume	Y	Loss of most seaward buildings	N	No loss	Y	Further loss of terminal site	N	Loss of seaward edge of terminal site	N	Further loss of seaward buildings	N	No loss	Y
Cliffs	- Continual erosion of SSSI designated cliffs to sustain habitats and exposures	Yes	Retain clean exposure of cliff face to maintain the geological and biological study value of the site	Cliff erosion will enhance geological exposure and habitats	Y	Cliff line held therefore poor exposure of geology	N	Cliff erosion will enhance geological exposure and habitats	Y	Cliff line held therefore poor exposure of geology	N	Cliff erosion will enhance geological exposure and habitats	Y	Cliff line held therefore poor exposure of geology	N	Cliff erosion will enhance geological exposure and habitats	Y	Cliff erosion will enhance geological exposure and habitats	Y	Cliff erosion will enhance geological exposure and habitats	Y	Cliff line held therefore poor exposure of geology	N

6.11 Bacton, Walcott and Ostend

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*The timber groynes will fail at the start of this period. The seawall along southern section will fail towards the end of the period.*		*Seawall and timber groynes maintained.*		*No defences.*		*Seawall and timber groynes allowed to deteriorate and fail.*		*(As A)*		*Seawall (and groynes until redundant) maintained to prevent any erosion.*		*No defences.*		*No defences.*		*(As A)*		*Seawall maintained.*	
Residential properties	- Potential loss of housing within the village through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent damage to/loss of residential properties due to flooding	Properties lost at northern end of frontage	N	No loss	Y	Further properties lost	N	Seafront properties lost	N	(As A)	N	No loss	Y	Further properties lost	N	Further seafront properties lost	N	(As A)	N	No loss	Y

Commercial properties	- Risk of flooding to businesses along the coast road	Yes	Prevent damage to/loss of commercial properties due to flooding	Seafront properties lost	N	No loss	Y	Seafront properties lost	N	Properties lost	N	(As A)	N	No loss	Y	Further seafront properties lost	N	Further seafront properties lost	N	(As A)	N	No loss	Y
Cliff-top caravan parks at Bacton	- Potential loss of cliff-top caravan parks due to erosion - Loss of considerable investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	Some loss of land	N	No loss of caravan parks	Y	Loss of most of caravan parks	N	Some loss of land	P	(As A)	P	No loss	Y	Further loss of caravan parks	N	Loss of most of caravan parks	N	(As A)	N	No loss	Y
Holiday and residential properties at Ostend	- Potential loss of cliff-top properties due to erosion - Loss of considerable investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	Loss of some seaward properties	N	Loss of some seaward properties	N	Further loss of properties	N	Further loss of properties	N	(As A)	N	(As A)	N	Further loss of properties	N	Further loss of properties	N	(As A)	N	(As A)	N
Heritage site	- Potential loss of Ostend House	Yes	Prevent loss of heritage site	Building lost	N	Building lost	N	(lost in 0-20)	N	(lost in 0-20)	N	(As A)	N	(As A)	N	(lost in 0-20)	N	(lost in 0-20)	N	(As A)	N	(As A)	N
B 1159 at Walcott	- Potential damage to or loss of road through erosion.	Yes	Maintain access to Bacton Gas Terminal	Road lost at Walcott but alternative emergency route possible	N	No loss	Y	Road lost at Walcott but alternative emergency route possible	N	Loss of access roads and high risk at Bacton (but possibility of re-routing road)	N	(As A)	N	No loss	Y	Road lost at Walcott but alternative emergency route possible	N	Road lost at Walcott but alternative emergency route possible	N	(As A)	N	No loss	Y
	- Flooding of road through overtopping and spray	Yes	Maintain communication links to adjacent towns and villages	Local roads lost and road between Bacton and Walcott lost	N	No change from current situation	Y	(Local roads lost 0-20)	N	Loss of access roads and high risk at Bacton (but possibility of re-routing road)	N	(As A)	N	No change from current situation	Y	(Local roads lost 0-20)	N	Road lost at Walcott	N	(As A)	N	No change from current situation	Y
Access to beach	- Potential loss of access to beach	Yes	Maintain access to beach	Access lost when sea wall fails but possibility for relocation	N	No loss	Y	Access lost when sea wall fails but possibility for relocation	N	Access lost when sea wall fails but possibility for relocation	N	(As A)	N	No loss	Y	Access lost when sea wall fails but possibility for relocation	N	Access lost but possibility for relocation	N	(As A)	N	No loss	Y

Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach similar to present	Y	Beach similar to present	Y	Beach similar to present	Y	Narrower beach	Y	(As A)	Y	Narrow beach	Y	Beach similar to present	Y	Beach similar to present	Y	(As A)	Y	No beach	N
	- Dredging of offshore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																					

6.12 Ostend to Eccles

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber revetment and groynes will fail.*		*Timber revetment and groynes allowed to fail.*		*No defences.*		*No defences.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Residential properties at Happisburgh	- Continued loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Sustainability of the village community reduces with each property loss - Difficulty in justification of scheme to protect properties.	Yes	Prevent loss of residential properties to erosion	Loss of some seafront houses along Beach Road	N	Loss of some seafront houses along Beach Road	N	Further loss of seafront houses along Beach Road	N	Further loss of seafront houses along Beach Road	N	(As A)	N	(As A)	N	Further loss of seafront houses along Beach Road	N	Further loss of seafront houses along Beach Road	N	(As A)	N	(As A)	N
Cliff-top caravan park at Happisburgh	- Loss of cliff-top caravan parks sited on eroding cliffs - Loss of considerable investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	Loss of caravan park	N	Loss of caravan park	N	(Park lost in 0-20)	N	(Park lost in 0-20)	N	(As A)	N	(As A)	N	(Park lost in 0-20)	N	(Park lost in 0-20)	N	(As A)	N	(As A)	N

Listed buildings in Happisburgh	- Potential threat to Grade I St Mary's Church and the Grade II Manor House and Hill House Hotel	Yes	Prevent loss of heritage sites to erosion	No loss to building but loss of seafront land	Y	No loss to building but loss of seafront land	Y	Buildings at high risk of erosion	N	Buildings at high risk of erosion	N	(As A)	N	(As A)	N	Loss of buildings	N	Loss of buildings	N	(As A)	N	(As A)	N
Agricultural land	- Potential loss of Grade 1 land through erosion	Yes	Prevent loss of farmland to erosion	Loss of farmland	N	Loss of farmland	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N	Further loss of farmland	N	Further loss of farmland	N	(As A)	N	(As A)	N
Cliffs	- Continual erosion of SSSI designated cliffs necessary to maintain a clear face for geological study	Yes	Continued erosion of cliffs to maintain exposures	Continued erosion will allow exposure of geology	Y	Continued erosion will allow exposure of geology	Y	Continued erosion will allow exposure of geology	Y	Continued erosion will allow exposure of geology	Y	(As A)	Y	(As A)	Y	Continued erosion will allow exposure of geology	Y	Continued erosion will allow exposure of geology	Y	(As A)	Y	(As A)	Y
	- Erosion of cliffs may lead to outflanking of flood defences to the south	No														-		-					
Access to the beach	- Re-establishment of access to beach at Happisburgh following its collapse in early 2003	Yes	Maintain access to the beach	Access likely to be difficult	N	Access likely to be difficult	N	No access	N	No access	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N
HM Coastguard Rescue facility	- Potential loss of building through erosion	Yes	Maintain facility.	Loss of building and no access	N	Loss of building and no access	N	Loss of building	N	Loss of building	N	(As A)	N	(As A)	N	Loss of building	N	Loss of building	N	(As A)	N	(As A)	N
Lifeboat access	- Ramp at Happisburgh now derelict forcing RNLI crew to launch at Cart Gap	Yes	Create and maintain a launching facility in the vicinity that meets the needs of the lifeboat crew	No lifeboat access	N	No lifeboat access	N	No access	N	No access	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Small beach present in retreated position	Y	Small beach present in retreated position	Y	Beach, but access issues	P	Beach, but access issues	P	(As A)	P	(As A)	P	Beach, but access issues	P	Beach, but access issues	P	(As A)	P	(As A)	P
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																					

	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (non-policy issue)	No																					

6.13 Eccles to Winterton Beach Road

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*The seawall and reefs at Sea Palling will remain, but seawall to the south may fail, together with the old groynes*		*Offshore reefs and seawall maintained, groynes replaced and continued beach recharge. Possible construction of flood embankment just behind dune belt at Winterton (in event of seawall breach) and dune management.*		*Along Sea Palling, reefs and seawall will remain, but to south the new groynes will fail early on during this period*		*Offshore reefs maintained, seawall maintained throughout frontage, groynes replaced and continued beach recharge. Flood embankment maintained at Winterton (if required) and dune management.*		*Retired defence line constructed (3 possible location options to be considered), and reefs, seawall and groynes allowed to deteriorate/ fail.*		*Seawall maintained to prevent flooding.*		*No defence to south but reefs will probably remain.*		*Retired defence line constructed and reefs, seawall and groynes allowed to deteriorate/ fail.*		*Retired defence line.*		*Seawall maintained to prevent flooding. Flood embankment maintained at Winterton (if required) and dune management.*	
The Bush Estate, Eccles	- Potential damage/ loss of housing – concern of outflanking of concrete defences - Anxiety and stress to owners and occupiers facing loss - Loss of local unadopted road system - EA embargo on any further development of the Bush Estate	Yes	Prevent loss of/damage to properties due to flooding	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Loss (or partial loss) under 3 scenarios	N	No loss	Y	Loss of Bush Estate	N	Loss (or partial loss) under 3 scenarios	N	Loss (or partial loss) under 3 scenarios	N	No loss	Y
Car parks at Cart Gap	- Loss of or damage to car park as a result of erosion or flooding	Yes	Maintain car parking facilities	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Loss under 3 scenarios	N	No loss	Y	Loss	N	Loss under 3 scenarios	N	Loss under 3 scenarios	N	No loss	Y

Car parks at Sea Palling and Horsey Gap.	- Loss of or damage to car parks as a result of erosion or flooding	Yes	Maintain car parking facilities	High risk of loss of car parks due to breach and subsequent flooding	Y	No loss	Y	No loss	Y	No loss	Y	Loss	N	No loss	Y	Loss	N	Loss	N	Loss	N	No loss	Y
Marram Hills CWS and Waxham Sands Holiday Park CWS	- Potential loss of or damage to habitats	Yes	Maintain the existing habitats	No loss of dunes behind the seawall and reefs will help maintain a beach in front	Y	No loss of dunes behind the seawall and reefs, together with recharge will help maintain a beach and embryo dunes in front	Y	No loss of dunes along the Sea Palling stretch, but risk of breach of dunes to south, once seawall fails	Y	No loss of dunes behind the seawall and reefs, together with recharge will help maintain a beach and embryo dunes in front	Y	Potential recreation of beach-dune system in retreated position, but net loss of dune volume expected	N	No loss of dunes behind the seawall but, without recharge, beach would narrow and unlikely to sustain dune in front of seawall.	P	Potential recreation of beach-dune system in retreated position, but net loss of dune volume expected	P	Potential recreation of beach-dune system in retreated position, but net loss of dune volume expected	P	Potential recreation of beach-dune system in retreated position	P	No loss of dunes behind the seawall but, without recharge, it would be difficult to hold a beach in front of the seawall.	P
Access to the beach	- Potential loss of access through erosion or management measures - Informal accesses through dune system reduce their effectiveness	Yes	Maintain access to beach	No change to access	Y	No change to access	Y	No change to access	Y	No change to access	Y	Present access lost, but possible relocation	N	No loss	Y	Present access lost, but possible relocation	N	Present access lost, but possible relocation	N	Present access lost, but possible relocation	N	No loss	Y
Residential properties at Sea Palling	- Potential loss/damage to housing through flooding - Loss of community through inundation if existing defences are allowed to deteriorate - Anxiety and stress to owners and occupiers facing loss - Standard of flood protection may inhibit further development	Yes	Prevent damage to/loss of residential properties due to flooding	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y	Loss/damage to housing through flooding	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y

Commercial properties at Sea Palling	- Potential damage to or loss of businesses through flooding	Yes	Prevent damage to/loss of commercial properties due to flooding	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y	Loss/damage to properties through uncontrolled flooding	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y
Infrastructure at Sea Palling	- Potential for damage to or loss of services and amenities through flooding	Yes	Maintain services to properties	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y	Loss/damage to services through uncontrolled flooding	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	Lost under retired lines 2 and 3 (*possibly retained under retired line 1)	N	No loss	Y
Sea Palling IRB station	- Potential impact on launching of the lifeboat	Yes	Maintain effective launching site for lifeboat	No loss	Y	No loss	Y	No loss	Y	No loss	Y	Loss under 3 scenarios	N	No loss	Y	Unlikely to be maintained in current position	N	Loss under 3 scenarios	N	(Lost under 3 scenarios 20-50)	N	No loss	Y
Beach and Foreshore	- Potential loss of Blue Flag award	Yes	Maintain a beach suitable for recreation purposes	No loss	Y	Beach present (With recharge)	Y	Narrowing beach	Y	Beach present (With recharge)	Y	Loss under 3 scenarios – potential for beach in a retreated position, but different form	N	Without recharge beach would narrow	Y	Beach likely in some form, but different from today	Y	Loss under 3 scenarios – potential for beach in a retreated position, but different form to today	P	Potential for beach in a retreated position, but different form	P	More difficult to hold beach	N
	- Potential deterioration in condition and appearance of the beach	No																					
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																					

Residential properties at Waxham	- Potential loss/damage to housing through flooding - Loss of community through inundation if existing defences are allowed to deteriorate - Anxiety and stress to owners and occupiers facing loss - Standard of flood protection may inhibit further development	Yes	Prevent damage to/loss of residential properties due to flooding	No loss	Y	No loss	Y	High risk of damage to/ loss of properties due to uncontrolled flooding	N	No loss	Y	Loss under 3 scenarios	N	No loss	Y	Damage to/ loss of properties due to flooding	N	Loss under 3 scenarios	N	(Lost under 3 scenarios 20-50)	N	No loss	Y
Community facilities at Waxham	- Potential loss of Waxham church through erosion	Yes	Prevent loss of church to erosion	No loss	Y	No loss	Y	Damage to/ loss of properties due to flooding	N	No loss	Y	Loss under 3 scenarios	N	No loss	Y	Damage to/ loss of properties due to flooding	N	Loss under 3 scenarios	N	(Lost under 3 scenarios 20-50)	N	No loss	Y
Waxham Barn	- Potential risk to Grade 1 listed building	Yes	Prevent damage to/loss of Waxham Barn due to flooding	No loss	Y	No loss	Y	Damage to/ loss of property due to flooding	N	No loss	Y	Loss under 3 scenarios	N	No loss	Y	Damage to/ loss of property due to flooding	N	Loss under 3 scenarios	N	(Lost under 3 scenarios 20-50)	N	No loss	Y

Winterton Dunes and Ness	- Potential loss of dune and coastal habitats due to coastal squeeze (candidate SAC site) - site is a SSSI geomorphological site and as such is dependent on coastal processes continuing the integrity of the ness is dependent on a continuing flow of sediment from The north- loss of unique landscape - Interpretation of coastal processes assumed in preparing the CHaMP for Winterton Ness	Yes	Maintain the existing habitats	Potential reduction in dune area both due to natural ness fluctuations and reduced sediment feed	N	Potential loss of dune area due to ness fluctuation, but sediment supply via recharge	N	Dune erosion likely due to breaching to north	N	Potential loss of dune area due to ness fluctuation , but sediment supply via recharge to the north at Sea Palling	N	High risk of breach and erosion along the narrowest sections once seawall is removed, but may allow roll back of dunes	N	The short stretch of seawall will prevent dune rollback but at the end of the wall there may be scour and risk of breach in the case of a storm	Y	Dune erosion likely due to breaching to north	N	High risk of breach and erosion	N	High risk of breach and erosion	N	The short stretch of seawall will prevent dune rollback but at the end of the wall there may be scour and risk of breach in the case of a storm. Without recharge to the north there would be a limited input to the dune system and therefore erosion is a high risk.	N
	- Loss of County Wildlife Site and NNR	Yes	Maintain natural geomorphological processes	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	The short stretch of seawall will restrict the natural response of the dunes and the system as a whole will not	N	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	Natural processes allowed to take place	Y	The short stretch of seawall will restrict the natural response of the dunes and the system as a whole will not	N

														be a naturally functioning one								be a naturally functioning one	
Residential properties at Winterton (north of Beach Road)	- Potential damage to or loss of some lower-lying housing through flooding - Concern over reduced protection due to eroding dunes - Anxiety and stress to owners and occupiers facing loss - Impact on sustainability of the village community~ - Standard of flood protection may inhibit further development - Complaints from residents that windblown sand is migrating onto property (Non-policy issue)	Yes	Prevent damage to/loss of residential properties due to flooding or erosion	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence Dune management could reduce erosion	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence Dune management could reduce erosion	Y	(As A)	Y	(As A)	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence. Dune management could reduce erosion	Y	(As A)	Y	(As A)	Y
AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	No change from present condition	Y	No change from present condition	Y	Uncontrolled flooding may be detrimental to landscape	N	No change from present condition	Y	Once retired line option constructed a more naturally functioning coast will develop	Y	No change from present condition	Y	Uncontrolled flooding may be detrimental to landscape	Y	Once retired line option constructed a more naturally functioning coast will develop	Y	More naturally functioning coast	Y	No change from present condition, but narrowing beach and possible need for increased	Y

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(6.13) Happisburgh to Winterton Broadlands

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)					
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*		*(see Happisburgh to Winterton Dunes)*	
Residential properties (including Villages of Hickling, Horsey, Potter Heigham, West Somerton)	- Potential damage/ loss of housing through flooding - Anxiety and stress to owners and occupiers facing loss - Standard of flood protection may inhibit further development	Yes	Prevent damage to/loss of residential properties due to flooding	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	No loss	Y

Commercial properties (including Villages of Hickling, Horsey, Potter Heigham, West Somerton)	- Potential loss/damage to commercial properties and community facilities due to inundation	Yes	Prevent damage to/loss of commercial properties due to flooding	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	Loss varies under 3 scenarios, but proposed that Hickling, Potter Heigham and West Somerton probably would be protected	N	No loss	Y
Broadland Habitats	- Potential saltwater penetration of this otherwise freshwater area- Loss/damage to nationally important wetland area for recreation and conservation due to wide-scale inundation of this area- Changes in coastal processes resulting in biological issues on cSAC- Drainage of the land and deep-water seepage are increasing the salinity of run-off into River Thurne	Yes	Maintain the existing habitats	No change from present	Y	No change from present	Y	Total change in habitats – potential for increased biodiversity – but uncontrolled	P	No change from present	Y	Total change in habitats – potential for increased biodiversity (varies under 3 scenarios)	P	No loss	Y	Total change in habitats – potential for increased biodiversity – but uncontrolled	P	Total change in habitats – potential for increased biodiversity (varies under 3 scenarios)	P	Total change in habitats – potential for increased biodiversity (varies under 3 scenarios)	P	No loss	Y
Agricultural land	- Potential damage to or ultimate loss of land through flooding	Yes	Prevent damage to/loss of farmland due to flooding	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios	N	Loss varies under 3 scenarios	N	No loss	Y

Tourist related property and facilities	- Unrestricted flooding of the Broads area would lead to a decimation of the tourism economy of the area with loss of pubs, restaurants, boatyards	Yes	Prevent damage to/ loss of tourist facilities due to flooding	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	No loss	Y
Windmills and other historic buildings/ heritage sites	- Loss/ damage to historic properties/ heritage sites due to inundation including Grade II and II* properties and monuments of high importance	Yes	Prevent damage to/loss of historical buildings/ Heritage sites due to flooding	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios	N	Loss varies under 3 scenarios	N	No loss	Y
Infrastructure	- Potential loss of or damage to services and roads through erosion	Yes	Maintain services to properties	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	Loss varies under 3 scenarios, but Hickling, Potter Heigham and West Somerton would be protected	N	No loss	Y
B1159 Coast road	- Potential loss of road through inundation	Yes	Maintain communication link for villages between Happisburgh and Winterton	No loss	Y	No loss	Y	High risk of flooding and uncontrolled inundation	N	No loss	Y	Loss varies under 3 scenarios	N	No loss	Y	High risk of flooding	N	Loss varies under 3 scenarios	N	Loss varies under 3 scenarios	N	No loss	Y

AONB	- The way in which the coastline is managed may have an adverse effect on the landscape which contributes to this status	Yes	Maintain landscape quality	No change from present condition	Y	No change from present condition	Y	Uncontrolled flooding may be detrimental to landscape	N	No change from present condition	Y	Once retired line option constructed a more naturally functioning coast will develop	Y	No change from present condition	Y	Uncontrolled flooding may be detrimental to landscape	N	Once retired line option constructed a more naturally functioning coast will develop	Y	More naturally functioning coast	Y	No change from present condition, but narrowing beach and possible need for increased defences	Y

6.14 Winterton to Scratby

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*No shoreline defences*		*No shoreline defences*		*No defences*		*No defences*		*(As A)*		*(As A)*		*No defences*		*No defences*		*(As A)*		*(As A)*	
Residential properties at Winterton	- Potential damage to or loss of housing through erosion - Concern over reduced protection due to eroding dunes - Anxiety and stress to owners and occupiers facing loss - Impact on sustainability of the village community - Complaints from residents that windblown sand is migrating onto property (Non-policy issue)	Yes	Prevent damage to/loss of residential properties due to flooding or erosion	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	(As A)	Y	(As A)	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence.	Y	(As A)	Y	(As A)	Y

Residential properties at Hemsby and Scratby	- Loss of cliff top properties through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Sustainability of continued protection	Yes	Prevent loss of residential properties to erosion	Houses should not be affected by erosion	Y	Houses should not be affected by erosion	Y	Only most-seaward houses lost	N	Only most-seaward houses lost	N	(As A)	N	(As A)	N	Further houses lost	N	Further houses lost	N	(As A)	N	(As A)	N
Winterton Valley Estate	- Potential loss of tourist accommodation through erosion	Yes	Prevent loss of tourist accommodation to erosion	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	(As A)	Y	(As A)	Y	Low risk of loss – protection provided by natural dune defence	Y	Low risk of loss – protection provided by natural dune defence	Y	(As A)	Y	(As A)	Y
Holiday development at Hemsby	- Potential erosion of Hemsby Marrams which provides natural protection to the village	Yes	Prevent loss of tourist facilities to erosion	No loss of holiday development	Y	No loss of holiday development	Y	Some loss of seafront developments	N	Some loss of seafront developments	N	(As A)	N	(As A)	N	Further loss of seafront developments	N	Further loss of seafront developments	N	(As A)	N	(As A)	N
Recreation and Tourist facilities at Winterton	- Potential damage to or loss of shops, cafes, pub and holiday accommodation through flooding or erosion	Yes	Prevent loss of or damage to tourist facilities due to flooding or erosion	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	(As A)	Y	(As A)	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence.	Y	(As A)	Y	(As A)	Y
Tourism related property and facilities at Hemsby and Scratby	- Potential loss of cliff top amenities and businesses through erosion	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	Some loss of property	N	Some loss of property	N	(As A)	N	(As A)	N	Further loss of property	N	Further loss of property	N	(As A)	N	(As A)	N
CWSs	- Potential damage if coastal defences breached	Yes	Maintain the existing habitats	No change from present	Y	No change from present	Y	Probably lost	N	Probably lost	N	(As A)	N	(As A)	Y	Lost	N	Lost	N	(As A)	N	(As A)	N
Community facilities at Winterton	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence		No loss – protection provided by natural dune defence		(As A)		(As A)		No loss – protection provided by natural dune defence		No loss – protection provided by natural dune defence.		(As A)		(As A)	
Community facilities at Hemsby and Scratby	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	Some loss but majority is tourist-related facilities	N	Some loss but majority is tourist-related facilities	N	(As A)	N	(As A)	N	Further loss	N	Further loss	N	(As A)	N	(As A)	N

Coastguard Station	- Mass movement of the Ness or beach erosion could have an adverse effect on the Station	Yes	Removed Winter 2003/4																			
Infrastructure at Winterton	- Potential loss of or damage to services and amenities through erosion - Loss or damage to local infrastructure	Yes	Maintain services to properties	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence	Y	(As A)	Y	(As A)	Y	No loss – protection provided by natural dune defence	Y	No loss – protection provided by natural dune defence.	Y	(As A)	Y	(As A)	Y
	- Loss of a number of submarine tele-communications cables	Yes	Prevent loss of /damage to cable landing site	No loss to site, but possible damage to cables due to dune erosion	Y	No loss to site, but possible damage to cables due to dune erosion	Y	No loss to site, but possible damage to cables due to dune erosion	Y	No loss to site, but possible damage to cables due to dune erosion	Y	(As A)	Y	(As A)	Y	No loss to site, but possible damage to cables due to dune erosion	Y	No loss to site, but possible damage to cables due to dune erosion	Y	(As A)	Y	(As A)	Y
Infrastructure at Hemsby and Scratby	- Potential loss of or damage to services and amenities through erosion	Yes	Maintain services to properties	Losses related to holiday village	N	Losses related to holiday village	N	Losses related to holiday village	N	Losses related to holiday village	N	(As A)	N	(As A)	N	Further losses related to holiday village	N	Further losses related to holiday village	N	(As A)	N	(As A)	N
			Maintain communication link within Newport	Main linkages not lost, only access roads	N	Main linkages not lost, only access roads	N	Some loss of linkage roads	N	Some loss of linkage roads	N	(As A)	N	(As A)	N	Further loss of linkage roads	N	Further loss of linkage roads	N	(As A)	N	(As A)	N
Hemsby Marrams	- Potential erosion of dunes and loss of habitat	Yes	Maintain the existing habitats	Erosion of dunes will continue	N	Erosion of dunes will continue	N	Possible dune loss	N	Possible dune loss	N	(As A)	N	(As A)	N	Loss of dunes and potential reactivation of sand cliffs	N	Loss of dunes and potential reactivation of sand cliffs	N	(As A)	N	(As A)	N
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beaches likely to be similar to today	Y	Beaches likely to be similar to today	Y	(As A)	Y	(As A)	Y	Beaches likely to be similar to today	Y	Beaches likely to be similar to today	Y	(As A)	Y	(As A)	Y
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																				

Access to beach	- Loss of access to beach through erosion, flood damage or management measures	Yes	Maintain access to beach	Access possible	Y	Access possible	Y	Possible loss of access due to dune erosion, but possible provision of alternative	Y	Possible loss of access due to dune erosion, but possible provision of alternative	Y	(As A)	Y	(As A)	Y	Possible loss of access due to dune erosion, but possible provision of alternative	Y	(As A)	Y	(As A)	Y	(As A)	Y

6.15 California to Caister-on-Sea

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Rock berm will remain in place.*		*Rock bund maintained.*		*The rock berm will remain for much of this period*		*Rock bund allowed to deteriorate.*		*(As A)*		*(As A)*		*No defences*		*Rock bund allowed to deteriorate.*		*(As A)*		*(As A)*	
Residential properties at California	- Loss of cliff top properties through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Sustainability of continued protection	Yes	Prevent loss of residential properties to erosion	Risk of loss of most seaward properties	N	Risk of loss of most seaward properties	N	Further loss of seafront properties	N	Further loss of seafront properties	N	(As A)	N	(As A)	N	Further loss of seafront properties	N	Further loss of seafront properties	N	(As A)	N	(As A)	N
Holiday Developments at California	- Potential loss of tourist accommodation and supporting infrastructure through erosion	Yes	Prevent loss of tourist accommodation to erosion	Some land lost, but not main sites	N	Some land lost, but not main sites	N	Loss of some sites	N	Loss of some sites	N	(As A)	N	(As A)	N	Further loss of some sites	N	Further loss of some sites	N	(As A)	N	(As A)	N
Recreational and Tourist facilities	- Potential loss of cliff top amenities and businesses through erosion	Yes	Prevent loss of tourist facilities to erosion	Facilities should not be affected	Y	Facilities should not be affected	Y	Loss of some sites and facilities	N	Loss of some sites and facilities	N	(As A)	N	(As A)	N	Loss of some sites and facilities	N	Loss of some sites and facilities	N	(As A)	N	(As A)	N
County Wildlife Site (CWS)	- Potential risk of damage through erosion to heath land along cliff top	Yes	Maintain the existing habitats	Minimum loss of CWS site	Y	Minimum loss of CWS site	Y	Some loss of northern end of site, but no loss to south	N	Some loss of northern end of site, but no loss to south	N	(As A)	N	(As A)	N	Loss of site	N	Loss of site	N	(As A)	N	(As A)	N

Infrastructure	- Potential loss of, or damage to, services and amenities through erosion - Loss of the promenade which houses a sewage pumping station	Yes	Maintain services to properties	No loss	Y	No loss	Y	Loss of services associated with property loss	N	Loss of services associated with property loss	N	(As A)	N	(As A)	N	Loss of services associated with property loss	N	Loss of services associated with property loss	N	(As A)	N	(As A)	N
	- Potential loss of local link roads	Yes	Maintain communication link between Scratby and California	Loss of section of road between Scratby and California	N	Loss of section of road between Scratby and California	N	Loss of road	N	Loss of road	N	(As A)	N	(As A)	N	Road lost	N	Road lost	N	(As A)	N	(As A)	N
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present	Y	Beach present	Y	(As A)	Y	(As A)	Y	Beach present in retreated position	Y	Beach present in retreated position	Y	(As A)	Y	(As A)	Y
	- Dredging of off-shore banks for aggregate – concern about the impact on beach levels (Non-policy issue)	No																					
Access to beach at California Gap	- Loss of access to beach through erosion or management measures	Yes	Maintain access to beach	Access likely to remain	Y	Access maintained	Y	Loss of access, but alternative could be provided	N	Loss of access, but alternative could be provided	N	(As A)	N	(As A)	N	Loss of access, but alternative could be provided	N	Loss of access, but alternative could be provided	N	(As A)	N	(As A)	N

6.16 Caister-on-Sea

				0 – 20 (up to 2025)		**20 – 50 (up to 2055)**				**50 – 100 (up to 2105)**			
				NAI	**A, B, C**	**NAI**	**A**	**B**	**C**	**NAI**	**A**	**B**	**C**
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall, rock reefs and groynes will remain.*	*Seawall, reefs and groynes maintained.*	*Seawall will fail by the end of this period, but rock groynes and reefs will remain.*	*Seawall, reefs and groynes maintained.*	*Seawall, reefs and groynes allowed to fail.*	*(As A)*	*Rock reefs and groynes deteriorate.*	*Seawall, reefs and groynes allowed to deteriorate.*	*No defences.*	*Seawall, reefs and groynes maintained.*

Residential properties	- Loss of properties through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Sustainability of continued protection	Yes	Prevent loss of residential properties to erosion	No loss	Y	No loss	Y	Loss of properties in North Caister	N	No loss	Y	Loss of properties in North Caister by the end of the period	N	No loss	Y	Loss of properties	N	Loss of properties at northern end of the frontage	N	Further loss of properties along the northern section	N	No loss	Y
Community facilities	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	Loss of some properties but not in main part of town	N	No loss	Y	Loss of some properties along the seafront but not in main part of town	N	No loss	Y	Loss of some properties but not in main part of town	N	Loss of some properties but not in main part of town	N	Loss of some properties but not in main part of town	N	No loss	Y
Recreational and tourist facilities	- Potential loss of amenities and businesses through erosion	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Area of uncertainty due to fluctuation of ness feature. High risk of breach and erosion should the wall be exposed and fail.	N	Area of uncertainty due to fluctuation of ness feature. High risk of dune erosion should the wall be exposed and fail.	N	Area of uncertainty due to fluctuation of ness feature. Once wall fails there will be loss of seafront facilities along the northern section	N	(As A)	N
Seafront holiday centres and caravan parks at Caister	- Potential loss of sites through erosion, including holiday properties in private ownership	Yes	Prevent loss of tourist accommodation to erosion	No loss	Y	No loss	Y	Loss of properties	N	No loss	Y	Loss of seafront properties	N	No loss	Y	Loss of seafront properties	N	Loss of a number of caravan parks	N	Further loss of seafront properties	N	No loss	Y
Caister Point County Wildlife Site	- Potential risk of damage through erosion to heath land at Caister Point County Wildlife Site along the cliff top	Yes	Maintain the existing habitats	Minimum loss of CWS site	Y	Minimum loss of CWS site	Y	Some loss at northern end of site, but integrity of site maintained	P	Some loss at northern end of site, but integrity of site maintained	P	(As A)	P	(As A)	P	Loss of CWS site likely	N	Loss of CWS site likely	N	Loss of CWS site likely	N	(As A)	N

Caister Volunteer Rescue Service	- Potential impact on launching of the lifeboat	Yes	Maintain effective launching site for lifeboat	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but no loss expected to building or access.	Y	Natural fluctuation of dunes, but beach expected to remain healthy.	Y	Natural fluctuation of dunes, but beach expected to remain healthy.	Y	Natural fluctuation of dunes, but beach expected to remain healthy.	Y	Natural fluctuation of dunes, but beach expected to remain healthy.	
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present	Y	Beach present	Y	Beach present	Y	Beach present	Y	Beach present in retreated position.	Y	Beach present – although initially more narrow once reefs and groynes reduce in trapping-efficiency.	Y	Beach present	Y	Beach present	Y
	- Dredging of off-shore banks for aggregate – concern about potential impact on beach levels (Non-policy issue)	No																					
Access to beach	- Loss of access to beach through erosion or management measures	Yes	Maintain access to beach	Access will remain	Y	Access will remain	Y	Access lost but provision of alternative	N	Access will remain	Y	Access lost but possible provision of alternative	N	Access will remain	Y	Access lost but possible provision of alternative	N	Access will remain – or provision of alternative	N	Access lost but provision of alternative	N	Access will remain	Y

6.17 Great Yarmouth

				0 – 20 (up to 2025)		20 – 50 (up to 2055)				50 – 100 (up to 2105)			
				NAI	**A, B, C**	**NAI**	**A**	**B**	**C**	**NAI**	**A**	**B**	**C**
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall and groynes will remain. Harbour Arm will remain as a port structure.*	*Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion.*	*Seawall and groynes fail towards the start of this period. Harbour Arm will remain as a port structure.*	*Seawall, Harbour arm (and groynes until redundant) maintained to prevent erosion.*	*(As A)*	*(As A)*	*Harbour Arm will remain as a port structure.*	*Seawall and Harbour arm maintained to prevent erosion.*	*(As A)*	*(As A)*

Residential properties	- Loss of properties through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Sustainability of continued protection	Yes	Prevent damage to/loss of residential properties due to flooding or erosion	No loss	Y	No loss	Y	Increasing risk of erosion and flooding to seafront properties at southern end of frontage	N	No loss	Y	(As A)	Y	(As A)	Y	High risk of erosion and flooding to seafront properties at southern end of frontage	N	No loss	Y	(As A)	Y	(As A)	Y
Commercial properties	- Potential loss of or damage to businesses through erosion	Yes	Prevent damage to/loss of commercial properties due to flooding	No loss	Y	No loss	Y	Increasing risk of erosion and flooding to seafront properties	N	No loss	Y	(As A)	Y	(As A)	Y	High risk of erosion and flooding to seafront properties	N	No loss, but increased risk of overtopping	Y	(As A)	Y	(As A)	Y
Industrial units at South Denes	- Viability of continued use of this part of the frontage - Will form an important hinterland to the proposed East Port development	Yes	Protect land to allow for development potential. Once developed, prevent damage/loss of commercial properties due to flooding	No loss	Y	No loss	Y	Risk of erosion and flooding	N	No loss	Y	(As A)	Y	(As A)	Y	High risk of erosion and flooding	N	No loss, but increased risk of overtopping	Y	(As A)	Y	(As A)	Y
Existing Port	- Need to continue to operate - Flooding causes operational problems	Yes	Ensure port can continue to operate	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	(As A)	Y	(As A)	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	(As A)	Y	(As A)	Y
Recreational and tourist facilities	- Potential loss of tourist and recreation sites, accommodation and activities	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	Risk of erosion and flooding to seafront facilities at southern end of frontage	N	No loss	Y	(As A)	Y	(As A)	Y	Increased risk of erosion and flooding to seafront facilities at southern end of frontage	N	No loss, but increased risk of overtopping for properties on promenade at southern end of frontage	Y	(As A)	Y	(As A)	Y
Caravan parks at North Denes	- Loss of caravan parks - Loss of investment on part of local businesses	Yes	Prevent loss of tourist accommodation to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y

Great Yarmouth and Caister Golf Club	- Loss of golf course through erosion	Yes	Prevent loss of golf course to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y
Great Yarmouth Race Course	- Loss of the race course through erosion	Yes	Prevent loss of race course to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y
Infrastructure	- Potential loss of or damage to services and amenities through erosion	Yes	Maintain services to properties	No loss	Y	No loss	Y	Risk of erosion and flooding	N	No loss	Y	(As A)	Y	(As A)	Y	Increased risk of erosion and flooding	N	No loss	Y	(As A)	Y	(As A)	Y
	- Potential loss of beach road	Yes	Prevent loss of communication link along the beach frontage	No loss	Y	No loss	Y	Risk of erosion and flooding to beach road	N	No loss	Y	(As A)	Y	(As A)	Y	Increased risk of erosion and flooding to beach road	N	No loss	Y	(As A)	Y	(As A)	Y
North Denes SSSI/SPA	- Integrity of the North Denes SSSI/SPA and impact of any future management regime - high vulnerability to any disturbance by works for coastal defence	Yes	Maintain the existing habitats	Beach present	Y	Beach present	Y	Beach present – no disturbance from defence works. Beach steepening may result in loss of areas for tern nesting - impact on SPA designation	Y	Beach present – no disturbance from defence works. Beach steepening may result in loss of areas for tern nesting - impact on SPA designation	Y	(As A)	Y	(As A)	Y	Beach present, but narrower along northern end.	Y	'Beach present, but narrower along northern end. Subject to natural fluctuations, but input of sediment from allowing defences to fail further north - any beach steepening may result in loss of areas for tern nesting. Possible impact of constructing flood defence.	P	'Beach present, but narrower along northern end. Subject to natural fluctuations. Any beach steepening may result in loss of areas for tern nesting. Possible impact of constructing flood defence.	P	(As A)	P

Heritage sites	- Potential loss of heritage sites including monuments of high importance and Grade I, II* and II properties	Yes	Prevent loss of heritage sites to erosion	No loss	Y	No loss	Y	Loss of some seafront heritage sites	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of seafront heritage sites	N	No loss	Y	(As A)	Y	(As A)	Y
Access to beach	- Loss of access to beach through erosion or management measures	Yes	Maintain access to beach	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	No loss	Y	No loss	Y	Northern access may need to be relocated	N	(As A)	
Beach and foreshore	- Potential deterioration in condition and appearance of the beach which has a seaside award	Yes	Maintain a beach suitable for recreation purposes	Deterioration of dunes and beach loss at southern end	Y	Deterioration of dunes and beach loss at southern end	Y	Further deterioration of dunes and beach loss at southern end	N	Further deterioration of dunes and beach loss at southern end	N	(As A)	N	(As A)	N	Loss of beach along the southern section and narrowing along the northern section	N	Loss of beach along the southern section and narrowing along the northern section	N	(As A)	N	(As A)	N
	- Dredging of off-shore banks for marine aggregate (Non-policy issue)	No																					
	- Continued accretion of dune system which can not migrate landwards because of development	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present although narrower	Y	Beach present although narrower	Y	(As A)	Y	(As A)	Y	Beach present along most of frontage, but narrower at northern end	Y	Beach present along most of frontage, but narrower at northern end	Y	Beach present	Y	(As A)	
Proposed Great Yarmouth Outer Harbour	- Potential for economic regeneration of the area and long-term implications of this feature for the area - Impact on coastal processes - perceived increased risk of erosion at Gorleston, Hopton and Corton - Maintenance dredging implications (Non-policy issue)	Yes	*Considered separately (see Appendix C)*																			

6.18 Gorleston

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall will remain, but groynes fail during this period. Harbour Arm will remain as a port structure.*		*Seawall and Harbour arm maintained (or replaced) to prevent erosion.*		*Seawall will fail towards the start of the period. Harbour Arm will remain as a port structure.*		*Seawall and Harbour arm maintained (or replaced) to prevent erosion.*		*(As A)*		*(As A)*		*Harbour Arm will remain as a port structure.*		*Seawall and Harbour arm maintained (or replaced) to prevent erosion.*		*(As A)*		*(As A)*	
Port Entrance	- Need to protect structures	Yes	Maintain an entrance to the port	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	(As A)	Y	(As A)	Y	No issue with port operation with respect to defences	Y	No issue with port operation with respect to defences	Y	(As A)	Y	(As A)	Y
Residential properties	- Potential loss/damage to housing through flooding - Loss of community through inundation if existing defences are allowed to deteriorate - Anxiety and stress to owners and occupiers facing loss	Yes	Prevent loss of/damage to properties due to flooding	No loss	Y	No loss	Y	Loss of most seaward properties	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of most seaward properties	N	No loss	Y	(As A)	Y	(As A)	Y
Commercial properties	- Potential loss of, or damage to, businesses through erosion	Yes	Prevent loss of commercial properties to erosion	No loss	Y	No loss	Y	No loss to main town, but potential loss of properties near pier	P	No loss	Y	(As A)	Y	(As A)	Y	No loss to main town, but further loss of properties near pier	P	No loss	Y	(As A)	Y	(As A)	Y
Gorleston Pavilion and other heritage sites	- Potential loss of, or damage to, heritage sites, including Grade II Pavilion and Gorleston Old Lighthouse, due to erosion	Yes	Prevent loss of heritage sites to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of Pavilion	N	No loss	Y	(As A)	Y	(As A)	Y
Community facilities	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	No loss to main town, but potential loss of facilities near pier	P	No loss	Y	(As A)	Y	(As A)	Y	No loss to main town, but further loss of facilities near pier	P	No loss	Y	(As A)	Y	(As A)	Y

Recreational and tourist facilities	- Potential loss of tourist and recreation sites accommodation and activities including major attractions, shops, holiday amenities, public open space and promenade	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	No loss to main town, but potential loss along seafront	P	No loss but beach narrowing expected	Y	(As A)	Y	(As A)	Y	No loss to main town, but potential loss near pier	P	No loss but risk of overtopping particularly along the southern section	Y	(As A)	Y	(As A)	Y
Infrastructure	- Potential loss of or damage to services and amenities through erosion including Pumping station and sewer	Yes	Maintain services to properties	No loss	Y	No loss	Y	Loss of services associated with property loss	N	No loss	Y	(As A)	Y	(As A)	Y	Further loss of services associated with property loss	N	No loss	Y	(As A)	Y	(As A)	Y
		Yes	Maintain pumping station	No loss	Y	No loss	Y	Loss	N	No loss	Y	(As A)	Y	(As A)	Y	Loss	N	No loss, but may require works to maintain outlet to sea	Y	(As A)	Y	(As A)	Y
Beach and foreshore	- Potential deterioration in condition and appearance of the beach which has a Blue Flag award	Yes	Maintain a beach suitable for recreation purposes	No change in beach	Y	Beach present and maintained through recharge	Y	Beach present but may narrow along southern section	Y	Beach present but may narrow along southern section	Y	(As A)	Y	(As A)	Y	Narrow beach maintained	Y	Narrower beach, particularly along southern section	Y	(As A)	Y	(As A)	Y
	- Dredging of off-shore banks for marine aggregate (Non-policy issue)	No																					

6.19 Gorleston to Hopton

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber revetment and groynes will fail by the end of the period.*		*Timber revetment and groynes maintained until failure.*		*No defences.*		*Timber revetment and groynes allowed to deteriorate and fail.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Gorleston Golf Course	- Loss of golf course through erosion	Yes	Prevent loss of golf course to erosion	Loss of golf course land, including some holes	N	Loss of golf course land, including some holes	N	Further loss of golf course land	N	Further loss of golf course land	N	(As A)	N	(As A)	N	Further loss of golf course land	N	Further loss of golf course land	N	(As A)	N	(As A)	N

6.20 Hopton

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall will start to fail by the end of the period.*		*Timber revetment and groynes to north maintained until failure. Seawall and groynes maintained.*		*No defences.*		*Timber revetment, seawall and groynes allowed to deteriorate and fail.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Residential properties	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Viability of protecting Hopton in the longer-term	Yes	Prevent loss of residential properties to erosion	Loss of seafront houses along Beach Road, once sea wall fails	N	No loss	Y	Further loss of seafront houses in Beach Road area	N	Loss of seafront houses along Beach Road, once sea wall fails	N	(As A)	N	(As A)	N	Further loss of seafront houses in Beach Road area	N	Further loss of seafront houses in Beach Road area	N	(As A)	N	(As A)	N
Commercial properties	- Potential damage to or loss of businesses through flooding or erosion	Yes	Prevent loss of commercial properties to erosion	No loss	Y	No loss	Y	No loss of non-tourist facilities	Y	No loss of non-tourist facilities	Y	(As A)	Y	(As A)	Y	No loss of non-tourist facilities	Y	No loss of non-tourist facilities	Y	(As A)	Y	(As A)	Y
Community facilities	- Potential loss of community facilities through erosion	Yes	Prevent loss of community facilities to erosion	No loss – heart of village not affected by erosion	Y	No loss	Y	No loss – heart of village not affected by erosion	Y	No loss – heart of village not affected by erosion	Y	(As A)	Y	(As A)	Y	No loss – heart of village not affected by erosion	Y	No loss – heart of village not affected by erosion	Y	(As A)	Y	(As A)	Y
Hopton Holiday Village	- Potential loss of tourist accommodation through erosion	Yes	Prevent loss of tourist accommodation to erosion	Loss of seafront tourist accommodation	N	Loss of seafront tourist accommodation	N	Loss of seafront tourist accommodation	N	Loss of seafront tourist accommodation	N	(As A)	N	(As A)	N	Loss of seafront tourist accommodation	N	Loss of seafront tourist accommodation	N	(As A)	N	(As A)	N
Recreational and tourist facilities	- Protection of tourist and recreation sites, accommodation and activities including major attractions, shops, holiday amenities, public open space and promenade	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	Loss of facilities associated with Holiday Village and playing field and miniature golf course lost to south	N	Loss of facilities associated with Holiday Village and playing field and miniature golf course lost to south	N	(As A)	N	(As A)	N	Further loss of facilities along the coastal strip	N	Further loss of facilities along the coastal strip	N	(As A)	N	(As A)	N

Infrastructure	- Potential loss of or damage to services and amenities through erosion, including the promenade	Yes	Maintain services to properties	Loss of services associated with non-holiday village properties	N	Loss of services associated with non-holiday village properties	N	Loss of services, associated with housing, and promenade lost	N	Loss of services, associated with housing, and promenade lost	N	(As A)	N	(As A)	N	Further loss of services associated with housing	N	Further loss of services associated with housing	N	(As A)	N	(As A)	N
Access to beach	- Loss of access to beach through erosion or management measures	Yes	Maintain access to beach	Beach access maintained, but loss of temporary/informal accesses	P	Beach access maintained, but loss of temporary/informal accesses	P	Beach access lost	N	Beach access lost	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N
Beach and Foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present but narrower until seawall fails and allows retreat	Y	Beach present but narrower	Y	Beach present in retreated position	Y	Beach present in retreated position once defences have failed	Y	(As A)	Y	(As A)	Y	Beach present, but possible access problems	P	Beach present, but possible access problems	P	(As A)	P	(As A)	P
	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non policy issue)	No	-																				
	- Dredging of off-shore banks for marine aggregate and impact on beach levels (Non-policy issue)	No	-																				

6.21 Hopton to Corton

				0 – 20 (up to 2025)				**20 – 50 (up to 2055)**								**50 – 100 (up to 2105)**							
				NAI		**A, B, C**		**NAI**		**A**		**B**		**C**		**NAI**		**A**		**B**		**C**	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber revetment will fail during this period*		*Timber revetment and groynes allowed to fail.*		*No defences.*		*No defences.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Broadland Sands Holiday Centre	- Potential loss of tourist accommodation through erosion	Yes	Prevent loss of tourist accommodation to erosion	No loss to Broadland Sands (despite cliff retreat)	Y	No loss to Broadland Sands (despite cliff retreat)	Y	Some loss at edge of site	N	Some loss at edge of site	N	(As A)	N	(As A)	N	Loss of caravan pitches but not main resort buildings	N	Loss of caravan pitches but not main resort buildings	N	(As A)	N	(As A)	N

Agricultural land	- Risk of loss of Grade 2 agricultural land through erosion	Yes	Prevent loss of farmland to erosion	Loss of farmland	N	Loss of farmland	N	Loss of farmland	N	Loss of farmland	N	(As A)	N	(As A)	N	Loss of farmland	N	Loss of farmland	N	(As A)	N	(As A)	N
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present, but possible access issues	P	Beach present, but possible access issues	P	(As A)	P	(As A)	P	Beach present, but possible access issues	P	Beach present, but possible access issues	P	(As A)	P	(As A)	P
	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non-policy issue)	No	-																				
	- Dredging of off-shore banks for marine aggregate and impact on beach levels (Non-policy issue)	No	-																				
Access to beach at Broadland Sands	- Potential loss of access to beach through erosion or management measures	Yes	Maintain access to beach	Informal access lost	N	Informal access lost	N	Access lost	N	Access lost	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N
Pumping station	- Potential loss of works	Yes	Prevent loss of/damage to Sewage and gas installations	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of part of site	N	Loss of part of site	N	(As A)	N	(As A)	N

6.22 Corton

				0 – 20 (up to 2025)		20 – 50 (up to 2055)				50 – 100 (up to 2105)			
				NAI	A, B, C	NAI	A	B	C	NAI	A	B	C
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall and rock revetment will remain.*	*Seawall and rock revetment maintained.*	*Seawall will fail at the start of this period.*	*Seawall and rock revetment allowed to deteriorate and fail.*	*(As A)*	*Seawall and rock revetment maintained (and enhanced).*	*No defences.*	*No defences*	*(As A)*	*Seawall and rock revetment maintained (and enhanced).*

Residential properties	- Potential loss of housing through erosion - Devaluation of neighbouring property - Anxiety and stress to owners and occupiers facing loss - Potential loss of community cohesion through property loss - Viability of protecting Corton in the longer-term – concern over limited life of new defences - Concern expressed by Parish Council that no compensation is payable to property owners (non policy issue) - Concern about outflanking of defences from adjoining undefended frontages (non policy issue)	Yes	Prevent loss/damage to properties due to erosion	No loss	Y	No loss	Y	Loss of properties	N	Some property loss, but at a later stage than NAI	N	(As A)	N	No loss	Y	Further loss of properties	N	Further loss of properties	N	(As A)	N	No loss	Y
Commercial properties	- Potential loss of businesses through erosion - Viability of protecting Corton in the longer-term – concern over limited life of new defences	Yes	Prevent damage/loss of commercial properties due to erosion	No loss	Y	No loss	Y	Loss of properties	N	Some property loss	N	(As A)	N	No loss	Y	Loss of properties	N	Loss of main street and associated properties	N	(As A)	N	No loss	Y
Community facilities	- Potential loss of community facilities through erosion, including Common land at Bakers Score	Yes	Prevent loss of community facilities to erosion	No loss	Y	No loss	Y	Some loss of seafront facilities possible	N	Some loss of seafront facilities possible	N	(As A)	N	No loss	Y	Loss of school and main road through village, also loss of Methodist Church, village hall and Public House.	N	Loss of school and main road through village, also loss of Methodist Church, village hall and Public House.	N	(As A)	N	No loss	Y

Heritage sites	- Potential loss of area of high archaeological interest seaward of Corton Church	Yes	Prevent loss of site of high archaeological interest	No loss	Y	No loss	Y	Some loss of site	N	Some loss of site	N	(As A)	N	No loss	Y	Further loss of site	N	Further loss of site	N	(As A)	N	No loss	Y
Tourist facilities	- Protection of tourist and recreation sites, accommodation and activities	Yes	Prevent loss of tourist and recreational facilities	No loss	Y	No loss	Y	Loss of seafront caravan sites/ holiday camps	N	Loss of seafront caravan sites/ holiday camps	N	(As A)	N	No loss	Y	Further loss of caravan sites/ holiday camps	N	Further loss of caravan sites/ holiday camps	N	(As A)	N	No loss	Y
Infrastructure	- Potential loss of or damage to services and roads through erosion, including the main village street and mains drainage	Yes	Maintain services to properties	No loss	Y	No loss	Y	Loss of services associated with holiday camps	N	Loss of services associated with holiday camps	N	(As A)	N	No loss	Y	Loss of services associated with properties	N	Loss of services associated with properties	N	(As A)	N	No loss	Y
		Yes	Maintain communication link to adjacent towns	No loss	Y	No loss	Y	Loss of section of main road through village	N	Loss of section of main road through village	N	(As A)	N	No loss	Y	Loss of main road 'The Street'	N	Loss of main road 'The Street'	N	(As A)	N	No loss	Y
Cliffs	- Erosion of cliff face needs to continue to maintain clean exposures and retain SSSI designation	Yes	Retain clean exposure of cliff face to maintain the geological study value of the site	Standard of protection sufficient to allow acceptable exposure of cliffs	Y	Standard of protection sufficient to allow acceptable exposure of cliffs	Y	Increased cliff erosion resulting in improved exposure of geology	Y	Increased cliff erosion resulting in improved exposure of geology	Y	(As A)	Y	Cliff protected so reduced erosion and exposure	N	Increased erosion resulting in continued exposure of geology	Y	Increased erosion resulting in continued exposure of geology	Y	(As A)	Y	Cliff protected so reduced erosion and exposure	N
Beach and foreshore	- Dredging of off-shore banks for marine aggregate (Non-policy issue)- Impact of Great Yarmouth Outer Harbour on future beach levels in front of the village- Retention of specialist recreation facility- Public notion that lowering beach levels in front of the village could be improved by restoring the failed groynes	Yes	Maintain a beach suitable for recreation purposes	Beach narrowing therefore little/ no beach	N	Beach narrowing therefore little/ no beach	N	Beach present in retreated position once sea wall fails	Y	Beach present in retreated position once sea wall fails	Y	(As A)	Y	No beach due to increased exposure of site	N	Narrow beach, but access issues	P	Narrow beach, but access issues	P	(As A)	P	No beach due to increased exposure of site	N

	- Potential health and safety hazard caused by deteriorating defences at foot of cliffs (Non-policy issue)	No	-																		
Access to beach at Bakers Score and Tibbenham's Score	- Loss of access through erosion or management measures	Yes	Maintain access to beach	No change in access	Y	No change in access	Y	Loss of access	N	Loss of access	N	(As A)	N	No change in beach access, but no beach	P	Loss of access	N	Loss of access	N	(As A)	N	No change in beach access, but no beach	P

6.23 Corton to Lowestoft

				0 – 20 (up to 2025)				20 – 50 (up to 2055)								50 – 100 (up to 2105)							
				NAI		A, B, C		NAI		A		B		C		NAI		A		B		C	
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Timber groynes will fail.*		*Timber groynes allowed to fail.*		*No defences.*		*No defences.*		*(As A)*		*(As A)*		*No defences.*		*No defences.*		*(As A)*		*(As A)*	
Infrastructure	- Rising mains to Corton Sewage Treatment works and treated water return cross the site of Gunton Warren	Yes	Prevent loss of/damage to sewage and treated water mains	Possible damage to pipelines through erosion	N	Possible damage to pipelines through erosion	N	Increased risk of damage to pipelines through erosion	N	Increased risk of damage to pipelines through erosion	N	(As A)	N	(As A)	N	Damage to pipelines through erosion	N	Damage to pipelines through erosion	N	(As A)	N	(As A)	N
Cliffs	- Erosion of cliff face needs to continue to maintain clean exposures and retain SSSI designation	Yes	Retain clean exposure of cliff face to maintain the geological study value of the site	Erosion will maintain exposure of cliffs.	Y	Erosion will maintain exposure of cliffs.	Y	Erosion will maintain exposure of cliffs.	Y	Erosion will maintain exposure of cliffs.	Y	(As A)	Y	(As A)	Y	Erosion will maintain exposure of cliffs.	Y	Erosion will maintain exposure of cliffs.	Y	(As A)	Y	(As A)	Y
Gunton Warren	- Loss of beach will threaten future of designated LNR/County Wildlife site	Yes	Maintain the existing habitats	Deterioration and loss of dunes likely, so some loss of CWS	N	Deterioration and loss of dunes likely, so some loss of CWS	N	Loss of dunes (and therefore CWS), but naturally functionin g system	N	Loss of dunes (and therefore CWS), but naturally functionin g system	N	(As A)	N	(As A)	N	Exposure of sand cliffs (possible habitat creation?)	N	Exposure of sand cliffs (possible habitat creation?)	N	(As A)	N	(As A)	N
	- Open Space indicated in Local Plan as needing protection	Yes	Prevent loss of public open space to erosion	Loss of open space through erosion	N	Loss of open space through erosion	N	Loss of open space through erosion	N	Loss of open space through erosion	N	(As A)	N	(As A)	N	Further loss of open space through erosion	N	Further loss of open space through erosion	N	(As A)	N	(As A)	N

Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Beach present	Y	Beach present	Y	Beach present	Y	Beach present	Y	(As A)	Y	(As A)	Y	Beach present in retreated position	Y	Beach present in retreated position	Y	(As A)	Y	(As A)	Y
	- Potential health and safety hazard caused by deteriorating groyne field (Non-policy issue)	No	-																				
	- Dredging of off-shore banks for marine aggregate – concern about the potential impact on beach levels (Non-policy issue)	No	-																				
	- Potential contamination from Eleni V oil dump	Yes	Prevent exposure of oil dump	Risk of old dump exposure	N	Risk of old dump exposure	N	High risk of old dump exposure as much of dunes will erode	N	High risk of old dump exposure as much of dunes will erode	N	(As A)	N	(As A)	N	Much of dunes eroded therefore exposure of dump probably occurred years 20-50	N	Much of dunes eroded therefore exposure of dump probably occurred years 20-50	N	(As A)	N	(As A)	N
Access to beach at Tramps Alley	- Potential loss of access through erosion or management measures - Lack of beach access points along this section of coast	Yes	Maintain vehicular access to beach	Access possible	Y	Access possible	Y	Access lost	N	Access lost	N	(As A)	N	(As A)	N	No access	N	No access	N	(As A)	N	(As A)	N

6.24 Lowestoft North (to Ness Point)

				0 – 20 (up to 2025)		20 – 50 (up to 2055)				50 – 100 (up to 2105)			
				NAI	A, B, C	NAI	A	B	C	NAI	A	B	C
Feature	**Issues associated with Feature**	**Affect Policy?**	**Objective**	*Seawall will remain.*	*Seawall maintained/ improved to prevent erosion/ flooding.*	*Seawall will remain.*	*Seawall maintained/ improved to prevent erosion/ flooding.*	*(As A)*	*(As A)*	*Failure of seawall.*	*Seawall maintained to prevent erosion.*	*(As A)*	*(As A)*

Lowestoft commercial properties	- Potential loss of important industrial land and associated assets	Yes	Prevent loss of commercial properties to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of properties due to flooding and erosion	N	No loss	Y	(As A)	Y	(As A)	Y
Infrastructure	- Protection of sewage pumping station and headworks. Sewage rising mains and treated water return pipes. - Gas mains and gas holder at Ness Point	Yes	Prevent loss of/damage to Sewage and gas installations	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	High risk to infrastructure	N	No loss	Y	(As A)	Y	(As A)	Y
	- Potential loss or damage to local road network	Yes	Maintain communication links within Lowestoft	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss of link roads only	P	No loss	Y	(As A)	Y	(As A)	Y
Recreational and tourist facilities	- Potential loss of tourist and recreation sites, accommodation and activities	Yes	Prevent loss of tourist facilities to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Flood and erosion risk to recreation ground and promenade	N	No loss	Y	(As A)	Y	(As A)	Y
Lowestoft North Denes	- Preservation of fishing nets heritage site	Yes	Prevent loss of heritage site to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss/ damage due to flooding	N	No loss	Y	(As A)	Y	(As A)	Y
	- Open space indicated in Local Plan as needing protection	Yes	Prevent loss of public open space to erosion	No loss	Y	No loss	Y	No loss	Y	No loss	Y	(As A)	Y	(As A)	Y	Loss/ damage due to flooding	N	No loss	Y	(As A)	Y	(As A)	Y
	- Potential exposure of former household waste tip	Yes	Prevent exposure of household waste tip	No risk of exposure	Y	No risk of exposure	Y	No risk of exposure	Y	No risk of exposure	Y	(As A)	Y	(As A)	Y	Risk of exposure	N	No risk of exposure	Y	(As A)	Y	(As A)	Y
Lowestoft Ness Point	- Maintaining the area as mainland Britain's most easterly point	Yes	Prevent loss of Ness Point as cardinal point	No loss	Y	No loss	Y	No loss	Y	No loss, but increased works required	Y	(As A)	Y	(As A)	Y	Loss of Euroscope marking position of most easterly point	N	No loss, but increased works required	Y	(As A)	Y	(As A)	Y
Beach and foreshore	- Potential deterioration in condition and appearance of the beach	Yes	Maintain a beach suitable for recreation purposes	Little/no beach particularly at southern end	N	Little/no beach particularly at southern end	N	No beach	N	No beach	N	(As A)	N	(As A)	N	Narrow beach possible	Y	No beach	N	(As A)	N	(As A)	N

	- Potential health and safety hazard caused by deteriorating groyne field (Non-policy issue)	No	-																					
	- Dredging of offshore banks for aggregate (Non-policy issue)	No	-																					