



**Suffolk SMP2 Sub-cell 3c**  
Policy Development Zone 2 – Benacre Ness to Easton Broad

Suffolk Coastal District Council/Waveney District  
Council/Environment Agency

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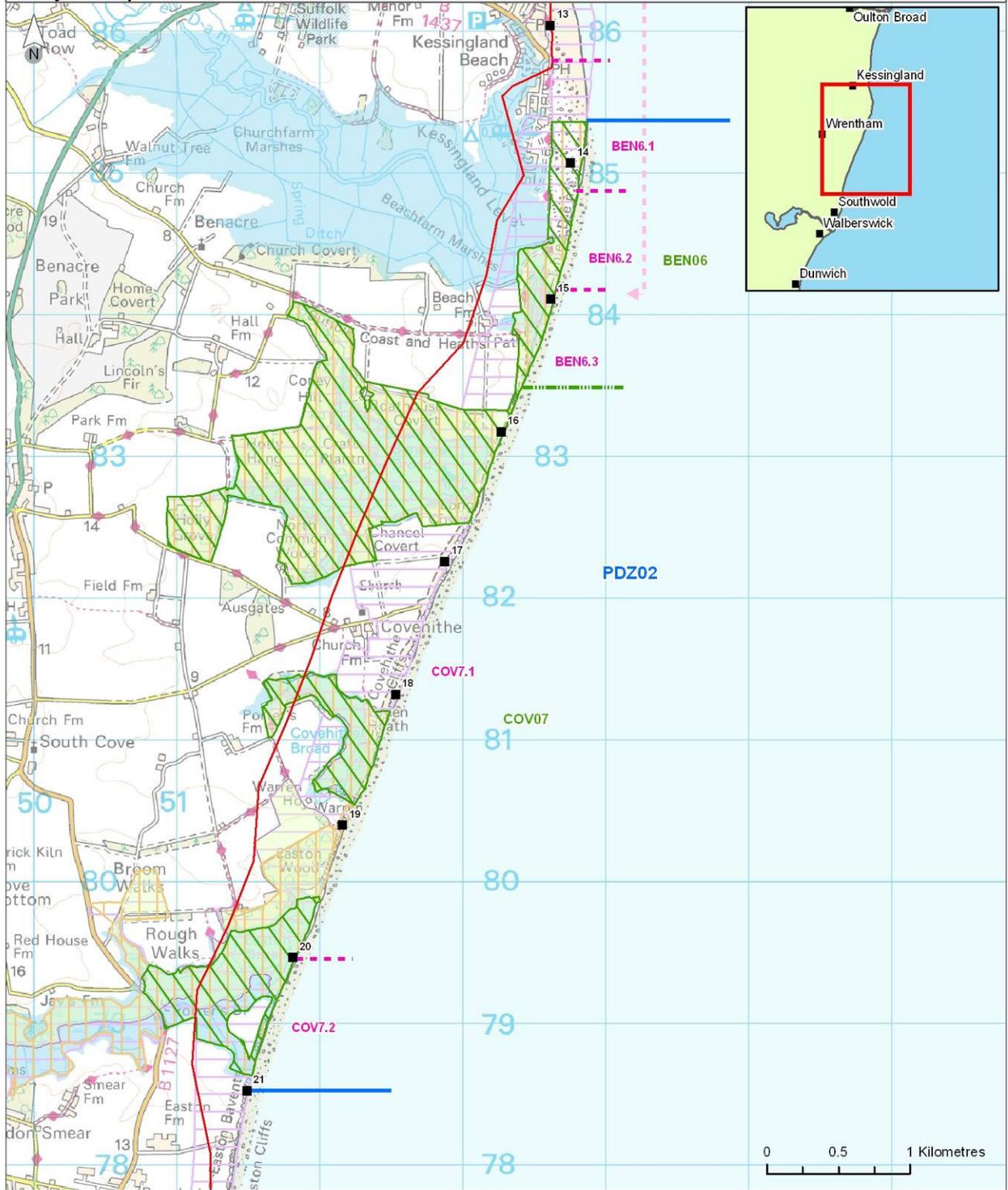


## 4.2 POLICY DEVELOPMENT ZONE 2

**Benacre Ness to Easton Broad**  
**Chainage: 13.5 to 21.**



**Shoreline Management Plan Sub Cell 3C - Lowestoft Ness To Felixstowe Landguard Point**  
**Baseline Location Map**  
**Policy Development Zone 2 - Benacre Ness to Easton Broad**



Key:			
	Anticipated 100 Year Shoreline with Present Management		RAMSAR
	Policy Development Zones		SAC
	Management Areas		Scheduled Monuments
	Policy Units		NNR
			SSSI
			Existing Indicative EA Flood Risk Zone
			SPA



## 4.2.1 OVERVIEW

### **PRINCIPAL FEATURES** (further details are provided in Appendix D)

#### **Built Environment:**

The zone principally comprises open farm land. To the north is the southern end of Kessingland Village and the Kessingland Levels (the Hundred River valley). Maintaining water level within the valley is the Kessingland Pump Station. Immediately south is Beach Farm. Further south, in the centre of the zone, is the village of Covehithe, currently some 250m back from the coastline. South of Covehithe are Porter's Farm and Warren House. At the southern end of the zone there is a small collection of properties at Easton Lane, and south of that are Easton Bavents and Southwold. North of Easton Lane, the B1127 approaches the coast crossing Potter's Bridge at the back of Easton Broad. The main A12 road runs across the head of Kessingland Levels this is considered to be an important regional transport route.

#### **Heritage and Amenity:**

The broads of Benacre and Covehithe were at least partially man-made, the result of cutting peat from the valley floor for fuel in the middle ages. The foci of medieval parishes in this area, such as Covehithe, was inland from the coast, however there is extensive multi-period archaeological evidence to the east of the church, to the present day cliffs and south of the broad. The whole area is covered by the Suffolk Coast and Heath AONB, providing a rich mixture of unique and vulnerable lowland landscapes. The coastal path runs well back from the coast, apart from at Kessingland, and across the Kessingland Levels where it runs along the back of the shore.

#### **Nature Conservation:**

The Benacre to Easton Bavents SPA and Benacre to Easton Bavents Lagoons SAC cover most of the coastline with designations at The Denes and around Benacre, Covehithe and Easton Broad. The whole section of coast is designated as a SSSI with elements both of ecology and in relation to geology.

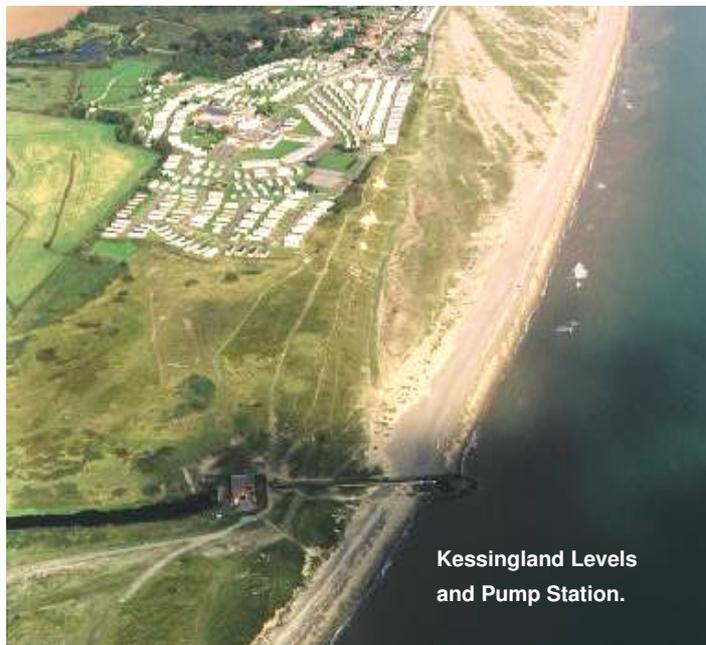
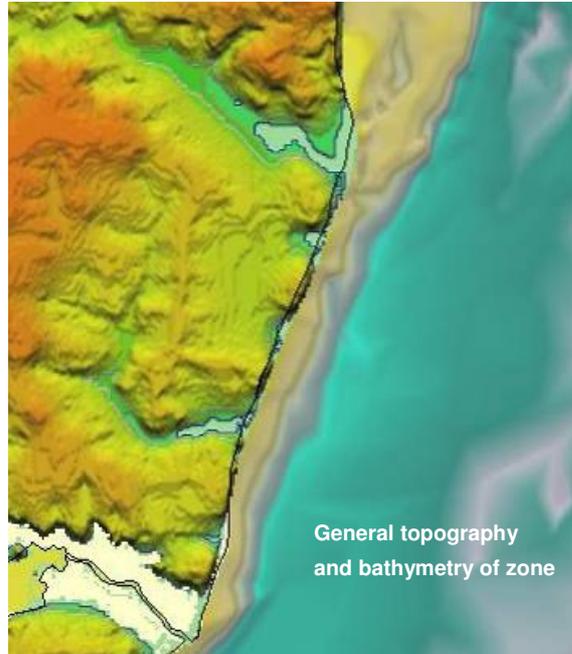
### **STAKEHOLDER OBJECTIVES** (the development of objectives is set out in Appendix B based on objectives listed in Appendix E)

- To maintain Kessingland as a viable commercial centre and tourist destination in a sustainable manner;
- To maintain critical transport links;
- To support adaptation of rural industries and communities;
- To maintain biological and geological features in a favourable condition, subject to natural change, and in the context of a dynamic coastal environment;
- To support appropriate ecological adaptation of habitats, in particular the important Easton Broad National Nature Reserve;
- To maintain important heritage and archaeological value;
- To maintain or enhance the high quality landscape; and
- To maintain access to and along the coastal path.

**DESCRIPTION**

The zone extends from just south of Kessingland to Easton Lane and has two distinct sections.

To the north is the Kessingland Levels, extending as a low lying valley some 3.5km in land. The A12 runs across the valley at Latymere Dam, with the road at a level of some 2m AOD. The valley floor varies between 500m and 1km in width, being narrowed at the mouth by the spit running south from Kessingland. Within the valley, the lower lying floor is cut by numerous drains feeding into the main Hundred River which has a pumped outfall at the Benacre Pump Station, the mouth of the valley being dammed by flood defences. The shore here is influenced by the northward moving Benacre Ness and also held to a degree by the ridge of land to the south. The general coastal orientation along this northern section is north/ south. The coastal fringe between the flood defences and the shoreline is generally comprised of shingle which is being eroded back. Within this shingle area are man made lagoons. The outfall of the Pump Station



cuts through the shingle area as a culvert and imposes a limited degree of control on the shape of the shore. The coast runs north from the outfall, with an earth bank behind forming part of the defences. There is a major Holiday Park behind this raised bank. The area of Kessingland Levels is predominantly farmland with properties along slightly higher ground to the north. The land rises quite steeply to the north side of the valley and less so to the south. Beach Farm sits upon the ridge to the south.

South of Kessingland Levels, running down to Easton Broad, the coastal angle swings to the west. Although generally quite straight, there are anomalies in this generally north

northeast, south southwest orientated section of the coast. At each of the cliffed sections – at Covehithe and Easton Woods – the coast is gently convex. Between these areas of higher lands are the three broads: Benacre Broad to the north, the smaller, shorter Covehithe Broad in the centre and the most extensive, Easton Broad to the south. The broads are each partially protected by shingle banks. In front of each, the shingle shoreline is held slightly forward at low water,



forming a typical fan of sediment. To the rear of the Covehithe Cliffs is the village of Covehithe and there are isolated properties set back from the cliff.

Some 900m within Easton Broad, the narrow valley is crossed by the B1127 running down to Southwold.

The coast south of Easton Broad tends to change its alignment such that the orientation is more north-south.

**PHYSICAL PROCESSES** (further details are provided in Appendix C)

**TIDE AND WATER LEVELS (mODN)**

Location	LAT	MLWS	MLWN	MHWN	MHWS	HAT	Neap range	Spring range	Correction CD/ODN
Lowestoft	-1.60	-1.00	-0.50	0.60	0.90	1.30	1.10	1.9	-1.5
Southwold		-0.80	-0.40	0.80	1.10		1.20	1.9	-1.3

**Extremes(mODN)**

Location:	1:1	1:10	1:25	1:50	1:100	1:250	1:500	1:1000
Kessingland	2.04	2.58	2.79	2.96	3.12	3.33	3.49	3.65
Southwold	2.05	2.58	2.79	2.94	3.1	3.31	3.47	3.63

**WAVE CLIMATE**

Dominant offshore wave directions are from the north northeast and south southwest. Though less frequent, there can be high south easterly waves. Only the northern end of the zone gains any significant protection from nearshore features. The net wave energy is from the north east.

**TIDAL FLOW**

Offshore to the north, tidal flows are relatively strong, reaching 1.3m/sec on both the southerly flood and northerly ebb. Further south, flows reduce to 0.8m/sec to 0.9m/sec on both flood and ebb, with a slight set towards the coast on the flood and away from the coast on the ebb.

**PROCESSES**

**Control Features:**

The main physical control feature of the zone is Benacre Ness to the north, which has provided greater influence in the past directly on the coast but has now moved almost outside the zone. To the south, the Southwold Headland acts as an anchor, although not presently fully holding the alignment of the coast to the north. The higher sections of cliff tend to form limited control, although the ridge running between The Denes and Benacre Broad has formed a slight hard point. The influence of the broads tends to allow lower beach fans to develop.

**Existing Defences:**

The only existing defences are at the northern end with the earth bank raising the level of the Kessingland spit and extending as a dam across the mouth of the Kessingland Levels. The dam stops tidal inundation and the Pump Station allows control of water levels within the valley. The earth bank is given a very low residual life in NFCDD but in reality relies upon the protection afforded by the shingle beach.

**Processes:**

It is reported that historically Benacre Ness was considerably further to the south. Mapped evidence only shows the main body of the Ness as far south as Covehithe Cliffs and Benacre Broad. The tail of the feature extended down to Covehithe Broad, although earlier mapping does show the feature further south. It is also of interest to note that the north-south coast at Kessingland has changed little but the coast of Easton Bavents has reoriented quite significantly, with the coast moving back parallel to its old orientation. In terms of general development, the Ness has had a major influence. As it progressed north, it exposed the southern coast to increased drift, resulting in erosion. As this coast retreated, the southern end has been increasingly influenced by the headland at Southwold, with the potential that this southerly section of the coast will become more stable, more in line with the net direction of wave energy. As the coast has retreated so has the extent of the three broads.

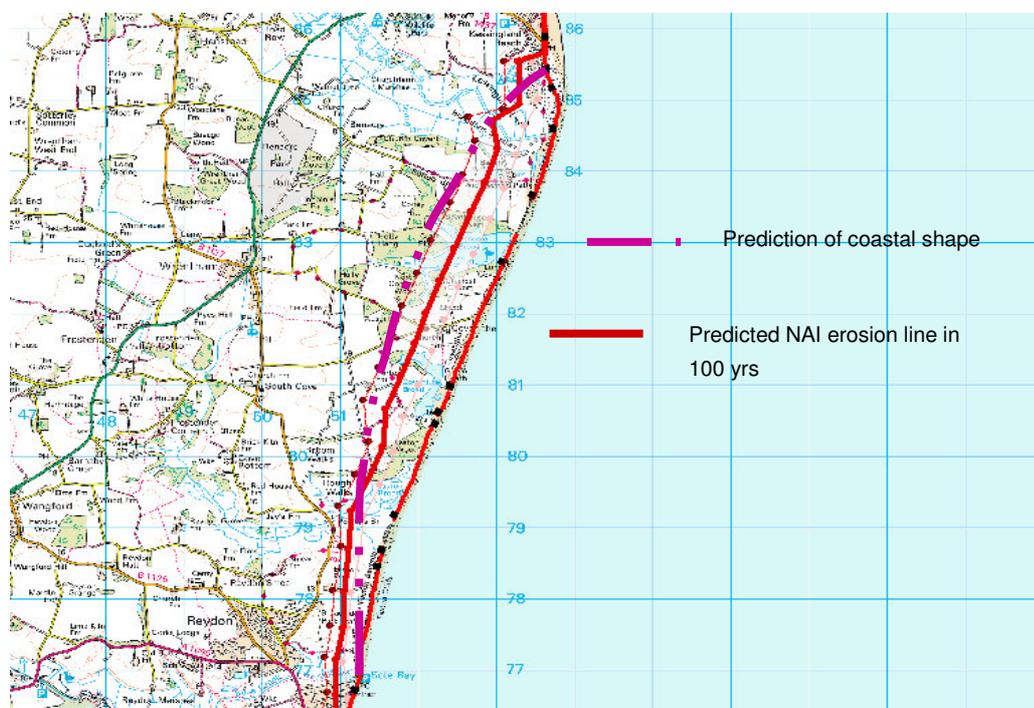


Shingle has been retained across the entrance to each of these valleys, reflecting the additional shoreline width that is available. This is unlike the cliffed sections of the coast, where the backshore cliff remains very much within the active exposure zone, acting as a control on the development of the shape of the coast. As such, the position of the shingle ridges is dictated by the rate of erosion of the adjacent cliff sections. The shingle ridges do not form a complete barrier to flooding and can be overtopped, with seawater flooding to the broads and within the valleys. This has resulted in flooding of the area around the B1127 within the valley of Easton Broad.

To the north of Benacre Ness, the coast has tended to be more stable, in part because of the influence of the nearshore sand banks. Critical to this northerly section is whether the tail of the nearshore banks moves north with the progression of the Ness and whether this progression is linked or indeed controlled by the banks rather than the Ness. The Ness has tended to move north at a rate of some 20m per year, although this rate varies year on year.

To the south, the Southwold headland holds the southern section of the coast and is likely to maintain this general control of the coast to the north irrespective of the management policy. In detail, however, the degree of erosion at the southern end is critically dependent on the manner and extent of protection provided at this principal control point. The more sensitive control of erosion of the whole zone is determined by Benacre Ness and by the progressive northward movement of the Ness.

Historical and current erosion rates have been used to examine the potential erosion of the land within the zone over the next 100 years. An additional comparison has been made with the projected erosion to a stable coastal shape base on the possible movement of the Ness to the north. Comparison of these two lines is shown below.



**Figure PDZ2.1: Indicative coastal evolution**

It may be concluded that over much of the zone it is unlikely that a stable coastal shape (the dotted purple line above) will develop over the SMP period, even under the more severe erosion scenarios considered. Therefore, much of the coast would still be eroding beyond the 100 years. Furthermore, if the Ness moves further north the shape of the coast will tend to cut back further. Erosion of the coast releases significant quantities of sediment with a continuing drift to the south. The nature of material supplied to the coast will vary as different sections of the cliff are exposed. At Easton Bavents the coast is likely to be constrained by the influence of Southwold and the shape of the coast is likely to be the dominating factor (this is discussed in PDZ3).

Drift rates of 20,000m<sup>3</sup>/yr to 100,000m<sup>3</sup>/yr have been modelled for this zone. Total potential erosion over the 100 years is estimated at some 25 million m<sup>3</sup> of material (250,000m<sup>3</sup>/yr.). While potentially there is a slowing of erosion over the latter period of the SMP, these approximate values are compatible with a continued erosive behaviour of the system, taking account of different fractions of sediment. A significant proportion of this material would be lost to the nearshore processes. Various analyses suggest that this sediment tends to move south, although McCave (1978) suggested some minor feed north.

At the northern end of the frontage, erosion might be expected to result in the loss of the Benacre Pump Station over the next 20 to 30 years. This would result in regular inundation of the Kessingland Levels as far upstream as the A12, in effect re-establishing the old estuary. There would be the possibility that this could create some form of ebb delta which might then slow erosion rates.

*Unconstrained Scenario:*

The unconstrained scenarios assumed that all defences are removed. Over much of the frontage this would be as discussed above. The main changes from present would be at Kessingland Levels, where there would be the opening up of the estuary. This would have an immediate impact on the coast and at Easton Bavents where there would be increased local erosion.

**POTENTIAL BASELINE EROSION RATES**

Base rates have been assessed from monitoring and historical data. The range of potential erosion is assessed in terms of variation from the base rate and sensitivity in potential sea level rise. Further detail on erosion rates is provided in Appendix

*(Sea Level Rise assumed rates: 0.06m to year 2025; 0.34m to year 2055; 1m to year 2105.)*

Location	Base Rate (m/yr)	Notes	100yr. Erosion range (m)
Kessingland Levels	3.8	High variation in data due to Benacre Ness.	250 to 1000
Benacre Broad to Easton Broad	4.5	Significant variation over time and location.	380 and 980
Easton Broad	3.4	Significant variation over time.	340 and 700
Easton Bavents	2.6	Varying from north to south with a rate of 3.5m/yr in the north.	220 and 490

## 4.2.2 PRESENT MANAGEMENT

Present Management is taken as that policy defined by SMP1, modified by subsequent strategies or studies. It should be noted that both in the case of SMP1 and that of many of the strategies undertaken before 2005, the period over which the assessment was carried out tended to be 50 years.

SMP1			REVIEWED POLICY		
MU	LOCATION	POLICY	REF	LOCATION	POLICY
BEN 4	Kessingland to Benacre Pump Station	HTL	S5	Hundred River and Benacre Denes	MR
			S8	Hundred River and Benacre Denes	HTL (20 years)
			I10	Kessingland Levels	Habitat replacement
BEN 5	Benacre Pump Station to Easton Marshes	retreat	S5	Benacre Cliffs	NAI
			S5	Benacre Broad	MR
			S5	Covehithe Cliffs	NAI
			S5	Covehithe Broad	Limited Intervention
			S5	Easton Wood Cliff	NAI
			S5	Easton Broad	MR

### References:

S5	<i>Lowestoft to Thorpeness Coastal Study 2001</i>
S8	<i>Kessingland to Benacre Denes Coastal Management study 2004</i>
I10	<i>Suffolk Coast and Heaths Management Plan (CHaMPs) 2002 (note the focus of the CHaMP was on possible habitat management rather than specific defence policy)</i>

The policy determined from the Catchment Flood Management Plan (2008) for the Suffolk Coasts and Heaths Area is set out below.

Policy two – reduce existing flood risk management actions (accepting that flood risk will increase with time). In the Suffolk Coast and Heaths we will accept that flood risk will increase in the future. The most vulnerable receptors to flooding are the environmental sites at risk. The risk to these sites now and in the future for a policy two response is not unacceptable. Under a policy two response 50 more people will be at risk (these are mainly in isolated properties) and economic agricultural damages will increase by £101,800. By adopting policy two the investment in flood risk management activities can reduce by £97,500.

Adopting policy two means that flood risk will remain acceptable in the future, despite the impact of climate change and urban growth. The existing level of flood risk is not considered to be unacceptable so we do not have to invest in an extensive effort in reducing flood risk from its current level either now or in the future. The Environment Agency can accept that risks will increase in the future and they will not reach an unacceptable level. This policy is appropriate for this policy unit because:

the current and future levels of risk are not deemed to be unacceptable;

the small and acceptable level of risk under this option means that any additional measures we undertake would be disproportionate to the level of risk; investment into flood risk management will be reduced in the future. The scale of flood risk in the Suffolk Coast and Heaths is such that under this policy option the estimated properties damages are £2.4m for a one per cent AEP event (an increase of £550,000) and agricultural damages are £484,300 (an increase of £113,600). The one per cent AEP event would affect approximately 12 more properties in the future and up to 50 more people will be at risk. Most of this increase in risk will be spread among Shottisham, Leiston, Therberton and Wrentham, but also among the more isolated areas and hamlets located in policy unit one. By scaling down our existing actions across this policy unit, the risks to society and the economy remain at an acceptable level over the next 100 years. There are 34 internationally and nationally designated environmental sites at risk in this policy unit. The greatest risk will be to the Stour-Orwell estuary Ramsar and SPA.

When this policy two is applied to a large area there could be some individual areas where a reduction in measures could not be adopted, because of unacceptable risks.

#### ***Baseline scenarios for the zone***

##### ***No Active Intervention (Scenario 1):***

Under this scenario there would be no further work to maintain or replace defences. At the end of their residual life structures would fail. There would be no raising of defences to improve standards of protection.

The scenario is effectively described in the section on coastal process above. There would be significant retreat of the coastline over the whole frontage. To the north, the initial impact would be the tidal inundation of Kessingland levels at the end of the first epoch as maintenance of defences is stopped and as the Pump Station is abandoned. In addition to increased risk to property within the Levels, there would be regular tidal flooding of the A12 typically on a yearly basis. This frequency would increase over the second epoch of the SMP, becoming regular flooding every spring tide in the latter period.

Flooding within the valley would potentially affect properties to the back of Kessingland. Over the second epoch, many of these properties would be under threat from erosion, with loss of the Holiday Park in the final epoch. There is the potential for the tidal inflow to the Levels to create an ebb tide delta and this may temporarily slow erosion of the northern section. As erosion to the south continues, the effect of this would be reduced, such that over the last epoch this would not significantly protect the area.

There would be significant opportunity for creation of saltmarsh and intertidal habitat, but this would be at the expense of maintaining low land grazing marsh. There would be the loss of fresh water surface abstraction sites which may influence farming outside the valley. There would also be the loss of the coastal footpath, resulting in the need to move the path away from the coast between Kessingland and Southwold.

To the south of Kessingland Levels the predicted rates of erosion have a high degree of uncertainty. What is certain is that erosion will continue at a relatively high rate. Some time between year 50 and year 100 – probably in about 60 years – Beach Farm would be lost.

Further south, Benacre Broad would be lost back to the division at the back of the broad by year 100. Potentially over the period of the SMP the entire wider valley system would be lost, with little opportunity for setting back features within the steepening valleys behind.

Covehithe Village would be under threat within 50 years, with the possibility of the church being lost within this period. By year 100 the main part of the village would be lost, quite possibly back to the junction of the roads behind and beyond Jasmine Cottage. This would include the loss of Porter's Farm. Assuming probable rates of erosion, the scenario would be for loss due to erosion of the whole of the low lying valley of Covehithe Broad.

The whole of Easton Wood would be lost over the 100 years, with Warren House potentially under threat towards the 50 year period. At Easton Broad, the coast is likely to cut back to within 250m of Potter's Bridge and the road. At present the shingle ridge is quite extended over the width of the valley. As erosion occurs, the width of the valley reduces from some 700m to that of about 350m. This would tend to consolidate the shingle ridge such that it is likely to provide a more effective barrier against flooding. The natural shingle ridge would still be overtopped. In the intervening period, as at present, there would remain a flood risk to the road at this location and to property on higher return period events. The extent of Easton Broad over the period of the SMP would be reduced from an area of about 64ha seaward of the road to some 12ha.

Damages and erosion south of Easton Broad are discussed in PDZ 3.

***With Present Management (Scenario 2):***

The With Present Management scenario assumes that policy either of the SMP1 or subsequent strategies applies. This does not necessarily imply a Hold the Line approach throughout the area.

The SMP1 adopted a policy of holding the line through to the Benacre Pump Station. This was subsequently altered (2001) with the intent to move the Pump Station further inland behind projected 50 year erosion lines, aiming to maintain defence to the main area of the Levels while also maintaining opportunity for habitat recreation. The most recent coastal study (2004) recommended holding the line of the existing Pump Station for the next 20 years (now 16 years) but with a long term policy that the Environment Agency would withdraw from maintenance of defences beyond this period. The Suffolk CHaMP identified the potential for Kessingland Levels as an area for replacement or enhancement of coastal grazing land and freshwater habitat in compensation for the extensive loss of such habitat elsewhere on the Suffolk coast. The subsequent IBO study (Haskoning 2005), concludes that there is an opportunity to provide a transition from freshwater to brackish and marine habitats over the epochs of the SMP in this river valley fronted by Benacre Ness. These issues are commented upon further in the discussion in the subsequent section.

Further south, the overall With Present Management policy is to allow realignment of the coast with a recommendation that, across the Broads, this would be managed with the construction of bunds further inland. In reality only at Easton Broad is there scope for flood and erosion risk management. Here it was recommended in the Lowestoft to Thorpeness strategy that the road at Potter's Bridge be defended and the area behind maintained as freshwater habitat. A subsequent appraisal by the EA failed to produce a viable scheme indicating that this objective would not be attainable. Flood defence of the road and of the habitat further upstream would not influence coastal processes. Clearly, though, it would have implications in terms of maintaining access to the communities to the north and for the overall requirement for freshwater habitat over the whole area.

Taking an overall view of the above scenario, the most significant decision being proposed is to maintain the function of the Benacre Pump Station in the short term and a policy of NAI and withdrawal of flood defence responsibility in this area by the Environment Agency in the long term. Only in this location does the WPM scenario vary significantly from that of NAI.

## Economic Assessment

The following table provides a brief summary of damages determined by the SMP2 MDSF analysis for the whole PDZ. Further details are provided in Appendix H. Where further, more detailed information is provided by studies, this is highlighted. The table aims to provide an initial high level assessment of potential damages occurring under the two baseline scenarios.

### MDSF ASSESSMENT OF EROSION DAMAGES

<b>NAI</b>		<b>Present Value Damages (£x1000)</b>
<i>Location</i>	<i>Assets at risk</i>	
Kessingland South	32 properties.	£1,072
Benacre to Easton Broad	8 no. properties. Agricultural land.	£212 £153
<b>WPM</b>		<b>Present Value Damages (£x1000)</b>
<i>Location</i>	<i>Assets at risk</i>	
Kessingland South	32 properties.	£1,063
Benacre to Easton Broad	8 no. properties. Agricultural land.	£197 £153

### MDSF ASSESSMENT OF POTENTIAL FLOOD RISK

Kessingland Levels	Properties and agricultural land.	£2,992
Benacre to Easton Broad	Properties and agricultural land.	£625

### OTHER INFORMATION:

Values for loss of water abstraction or transport disruption to the A12 or at Potter's Bridge are not included. Strategy identifies potential flood damages of £640k at Easton Broad.

Potential NAI damages associated with Kessingland Levels are given as being of the order of £8.6m in the Kessingland to Benacre Denes Coastal Management study 2004. There are significant Heritage issues associated with the loss of Covehithe. Mitigation of this loss would need to be developed over the next 40 years. No costs have been included in the above table. Costs associated with this mitigation are expected to be high. It is uncertain where funding would be obtained to undertake this essential work.

### General Assessment of Objectives

The following table provides an overall assessment of how the two baseline scenarios impact upon the overall objectives agreed by stakeholders. These objectives are set out in more detail within Appendix E. The table aims to provide an initial high level assessment of the two baseline scenarios, highlighting potential issues of conflict. These issues are discussed in the following section, examining alternative management scenarios from which SMP2 policy is then derived.

STAKEHOLDER OBJECTIVE	NAI			WPM		
	Fails	Neutral	Acceptable	Fails	Neutral	Acceptable
To maintain Kessingland as a viable commercial centre and tourist destination in a sustainable manner	Fails			Fails		
To maintain critical transport links	Fails			Fails		
To support adaptation of rural industries and communities	Fails			Fails		
To maintain biological and geological features in a favourable condition, subject to natural change			Acceptable			Acceptable
To support appropriate ecological adaptation of habitats, in particular the important Easton Broad National Nature Reserve	Fails			Fails		
To maintain important heritage and archaeological value	Fails			Fails		
To maintain or enhance the high quality landscape		Neutral			Neutral	
To maintain access to and along the coastal path	Fails			Fails		

### 4.2.3 DISCUSSION AND DETAILED POLICY DEVELOPMENT

Over much of the coast the NAI and WPM scenarios are effectively the same. The key area of potential difference is in the management of the Kessingland Levels. Returning the coast to its natural condition would be a significant opportunity for the creation of intertidal habitat. However, neither scenario delivers against other stakeholder objectives.

The key issues with respect to the Kessingland Levels are the potential loss of agricultural assets, transport, infrastructure and increased flood risk to properties. In addition, the CHaMP had identified the Kessingland Levels as being a potential site for freshwater habitat to compensate for losses elsewhere in the coastal region. The subsequent IBO study (Haskoning 2005) concludes that there is an opportunity 'to provide a transition from freshwater to brackish and marine habitats over the epochs of the SMP in this river valley fronted by Benacre Ness, and which is in close proximity to freshwater sites threatened by sea level rise. Natural England's view on this is that in the face of coastal change and sea level rise, the land at Kessingland Levels does not represent a good opportunity for freshwater habitat because it is likely to become increasingly difficult to defend and to manage over time. If this land were to be defended for other reasons, then a subsidiary benefit might be the provision of freshwater habitat but this would not be a prime reason for defending the valley.

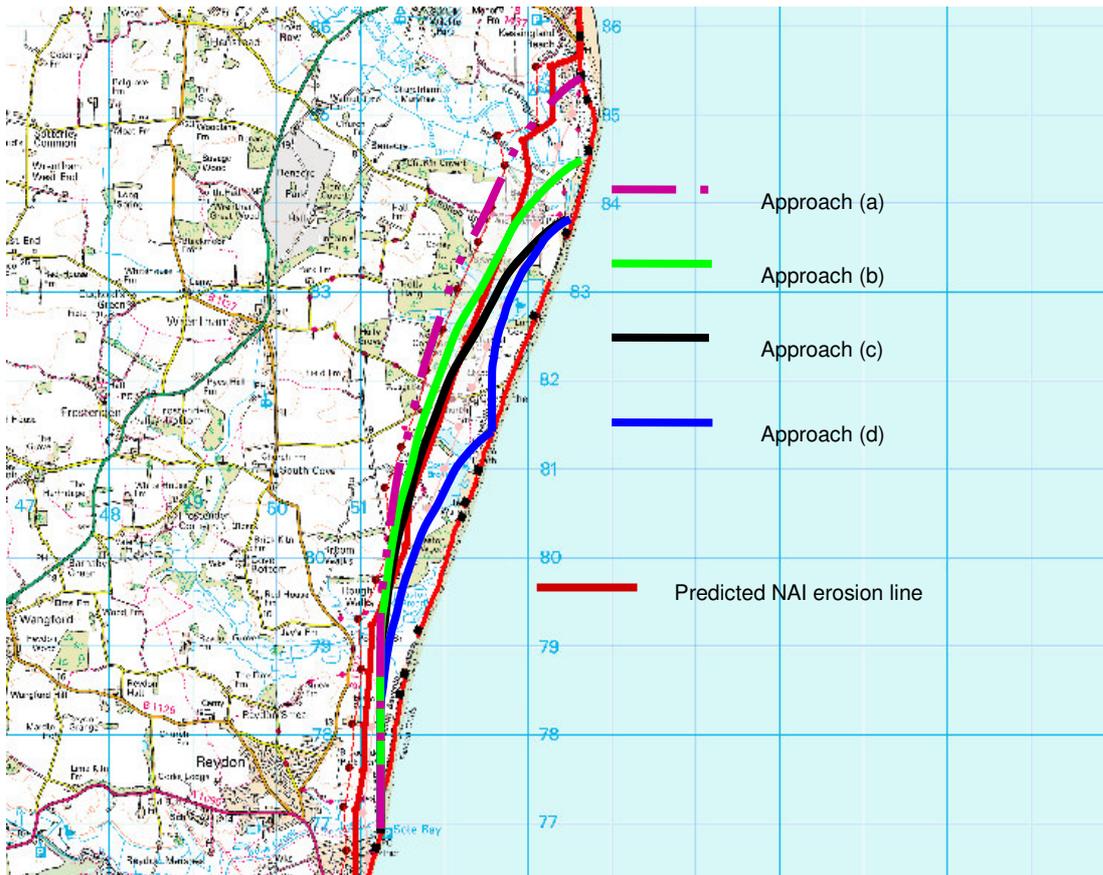
Over other areas of the zone, specific issue areas tend to be quite local in nature but these have to be considered in the broad context of how the coast as a whole may behave and evolve. The main problem is that this is a large section of rapidly changing coast. In assessing alternative scenarios the initial approach has been to consider potential high level scenarios, providing an understanding of the overall constraints. The figure below, developed from that previously presented in the section on coastal processes, sets out possible approaches for strategic management.

Four approaches are considered in outline, in addition to the NAI. The predicted coastal evolution for these approaches is shown in the figure below (Figure PDZ2.2). At this point in the discussion no judgement is made as to a preferred approach. The various approaches merely consider the impact on the coast of potential ways in which coastal evolution may be managed, rather than being specific as to the precise nature of works required.

Approach (a) is based on imposing control of the coast immediately south of Kessingland Village, consistent with the policy defined in PDZ1. Under this scenario, as the Ness moves north this point on the coast would need to be strengthened, allowing the coast to the south to hinge naturally at this point. The driver for this approach is to protect the integrity of the sea front to Kessingland Village and property along and in front of Beach Road. As identified in PDZ1, and given the present rate at which Benacre Ness is moving north, these properties would only come under pressure towards the end of the second epoch of the SMP.

The overall consequences of this would be for continued long term erosion over the coast to the south of Kessingland. Potentially within the next hundred years the coast over the Kessingland Levels would set back some 700m. The southern point of the Kessingland village would need to be robustly defended and this would become a major strong point on the coast. If the intention were to gain any long term advantage of

intertidal habitat, any flood defence would need to be set back further than the anticipated erosion line. This addresses Natural England's concern with respect to increasing difficulties in management of defences. Alternatives would be that defence was provided at the A12, based on meeting the objective to maintain the essential transport route, or that defences were constructed further downstream across the valley, gaining some additional protection to agricultural land and to properties.



**Figure PDZ2.2: Indicative coastal evolution under different approaches.**

In the latter of these two alternatives approximately half of the valley area, between the existing defences and the line of the A12, would be subject to tidal inundation. The actual benefit of providing a defence other than at the A12 may not be justified. In either case (defence at the A12 or at some point further downstream) the retired defence would be of the order of 900m in length. The South Kessingland and the Kessingland Level frontage would retain little shingle sediment as Benacre Ness progressed north and as beach material to the south of the Ness is moved south. This approach would provide little natural flood protection to the south of Kessingland village and areas of the village would be at significantly higher risk. Further south the coast would continue to erode with losses as previously defined. Works to defend the southern seaward end of Kessingland would be needed in possibly 50 years time.

Approach (b) assumes that the Pump Station becomes the principal control feature of the coast to the north. This would require significant works, reinforcing the Pump Station outfall as a major breakwater. North of the Pump Station, the north south orientated coast is likely to be relatively stable. However, there would be a continuing need to

improve the defence here either by improving the earth bank or by local control structures. This would act to protect the Holiday Park and reduce the need for works to the northern defences. Works at the Pump Station would be required within 20 years and possibly sooner as it would be sensible to base the control point on the outfall. There would be a need to realign the earth bank to the south of the Pump Station as its current position would still come under pressure, with the potential need for some 500m of new reinforced reveted bank. This approach would only be sensibly justified if the intent was to retain the freshwater area of Kessingland Levels. This would exclude any opportunity for intertidal development but would retain flood risk management to the Levels, protection to the A12 road and protection to the rear of Kessingland. The coast to the south would continue to erode back with virtually no gain in terms of protection of the Broads. The northern two broads would still, in effect, disappear. The area of Easton Broad would still decrease, as described in NAI.

Because the Pump Station is centred on a valley, with no natural resistance, technically this approach, creating this as a major control point, would be difficult. The extent of works required to achieve this would not make it viable.

Approach (c) would aim to limit erosion of the ridge of land to the south of Kessingland Levels. The intent of these works would be to impose control on the evolution of the coast to both north and south of the levels, with the additional benefit of protecting Beach Farm. To influence the coast effectively to the north, works here would need to be undertaken in possibly 20 to 40 years time. The intent with respect to the north would be to create a more sustainable coastal shape such that local decisions could be made with respect to the defence south of Kessingland. This may still involve some retreat of the existing defence line to the south of Beach Road in front of the Holiday Park.

Over the Kessingland Levels this would create the opportunity to provide a flood defence further downstream than in approach (a). Typically, this might be moved inland some 500m to 700m from its present alignment to allow development of shingle and intertidal area in front.

This would leave the side valley behind Kessingland open to tidal inundation. This area would, however, be protected to a degree by the shingle bank that would develop across the Kessingland Levels. Local defence could be provided to prevent flooding to property with the side valley and the sewage pump station would be defended. This would be the intent but the precise line of any defence would need to be considered at the local scale.

Both the main valley defence and open coast would be sustainable in the long term. To the south, the coast would still erode back and there would be little gain in terms of retaining the Broads and no effective value in terms of delaying erosion to Covehithe.

The principal benefits would be to the north, with opportunities for managing greater biodiversity and for providing a more sustainable approach to management south of Kessingland.

In none of the above approaches would there be any net detriment to the natural behaviour of Benacre Ness, although clearly there could be some detriment to exposure of the coastal cliff in front of Beach Farm. Initially, there might be some increased erosion immediately south of Beach Farm but overall there would not be a significant reduction of sediment supply to the coast to the south.

Approach (d) is a development on approach (c). The intent of this approach would be to protect Covehithe, creating two shallow embayments south of Kessingland Levels. There would be some gain potentially in retaining a relatively stable coastal frontage to the upper reaches to Benacre Broad and Covehithe Broad, retaining a residual value of freshwater broad behind a more stable shingle frontage. While the highly dynamic ephemeral lagoons at Benacre and Covehithe are likely to be lost, there is potential to create suitable conditions for saline lagoon establishment in the proposed set back area at Kessingland Levels. There would in this scenario, however, be a significant reduction in sediment supply to the south. This would result in loss of beach to Southwold earlier than might otherwise be anticipated. If protection to Covehithe was delayed until there was more imminent threat to the community, potentially in 50 years time there would be less gain to the Broads but significantly less reduction in sediment supply to the south.

Assessing these high level approaches, approach (b) is ruled out technically due to the difficulty of maintaining defence at the location of the Pump Station. This point in the coast would become a major hinge in the coastal orientation. The lack of any hard geological structure to the coast at this point would mean that there would be continuing pressure from erosion to the south.

Approach (d) is really a sub-option to (c). While more feasible than approach (b), there would be a significant reduction in sediment supply to the south. This would result in increasing pressure at Southwold, making defence of the town difficult to sustain. This is discussed further below following the assessment made of approaches (a) and (c).

An assessment is made of approach (a) and (c) in more detail with respect to the stakeholder objectives. In the case of (a) the beach area in front of the south end of Kessingland would be narrow and subject to increasing erosion, tending to reduce significantly the attraction of this area as a tourism centre. It seems probable that with the loss of half the valley area, defence of the agricultural use would not be justifiable. As such it is more probable that defence would be retired to that maintaining the strategic transport route at the A12. Therefore it is assumed that this would not support the local rural industry or provide opportunity to adapt. This would be further affected by the loss of Beach Farm. There would be development of transitional habitat but still a need to find replacement for freshwater grazing marsh. There would be no specific measures to allow adaptation of the Easton Broad National Nature Reserve (this would be equally true of NAI and approach (c)). Arguably, while there would be a change to the landscape, there would be no substantial improvement and the access to the coast and along the coast would be reduced.

In the case of approach (c), the opportunity is provided to maintain a more sustainable foreshore in front of Kessingland Village. The new hard point created in front of Beach Farm would act as the hinge point in the coast. Benacre Ness would still progress northward but the new anchor point in the system to the south would allow the coast across the Kessingland Levels to adjust, such that a more stable orientation would be achieved. By setting back the flood defence well behind this new coastline there would be width created within which a natural shingle bank could develop. Behind this front line ridge there would be further opportunity for higher brackish salt marsh or scrub to develop. This transitional habitat would extend naturally up the side valley behind the

Kessingland Holiday Park. Transport links would be maintained and there would be increased area and opportunity for the agricultural activity to adapt. Under this approach the intent would be to maintain flood defence to the inland side of Kessingland village and to the sewage pump station. This would be practical given the fact that these areas would gain benefit from the natural shingle bank which would develop across the Kessingland Levels.

The impact on Easton Broad would remain. Erosion to the south of the new hard point would continue. The coastal path might be retained at the coast, although still heading inland south of Kessingland Levels.

This assessment is summarised in the table below.

STAKEHOLDER OBJECTIVE	NAI			(a)			(c)		
	F	N	A	F	N	A	F	N	A
To maintain Kessingland as a viable commercial centre and tourist destination in a sustainable manner	Red			Red					Green
To maintain critical transport links	Red				Orange				Green
To support adaptation of rural industries and communities	Red				Orange				Green
To maintain or enhance coastal biodiversity and geological features in a favourable condition			Green			Green		Orange	
To support appropriate ecological adaptation of habitats, in particular the important Easton Broad National Nature Reserve	Red			Red			Red		
To maintain important heritage and archaeological value:	Red			Red			Red		
To maintain or enhance the high quality landscape; and		Orange			Orange			Orange	
To maintain access to and along the coastal path	Red			Red					Green

Based upon the economics presented by the 2004 strategy and comparing the above approaches in incremental terms with the proposed 'maintain for 20 years and then do minimum', the following assessment is made.

With approach (a) the cost to maintain the defence south of Kessingland would be of the order of £5m in year 50. This assumes that Benacre Ness has moved north exposing the main southern section of the village. This would be the main control feature on the coast and require extensive hard protection as the beach width is reduced by the movement of Benacre Ness.

With approach (c), there would still be significant works required forming a headland with erosion to the south. The northern flank of the headland would tend to be better protected by the development of a shingle beach within the valley of Kessingland Levels. The costs of such a structure are estimated at £2.5m in year 30 to control at Beach Farm and £1m at Kessingland in year 50. In both cases these costs are over and above the costs presented in the strategy, which includes the relocation of a flood embankment within the area of the levels. These estimated costs are based on rates for defence as reported in the Lowestoft to Thorpeness Strategy<sup>1</sup>. As indicated earlier within the SMP, the cost of typical structures has been assessed to test the economic viability of such an approach to policy. The precise nature and timing of works would need to be developed further.

<sup>1</sup> Rates have been updated to 2008.

In terms of damages, the 2004 strategy focussed on the issue of management of the Pump Station and, appropriately, only determined options over a 50 year period. This did not take account of the risk to properties along the South Kessingland frontage. Values in the table below include these potential damages determined from the MDSF analysis and are shown in italics. Two options from the strategy are considered: the recommended 'maintain the Pump Station for 20 years and then do minimum' (option 4b) and 'maintain the Pump Station for 20 years and then partially set back' (option 4g). The SMP has identified that as a result of continuing erosion beyond year 50, option 4g would not be sustainable without works at Beach Farm. However, at the higher level assessment provided by the SMP, this option is included for comparison. Damage values, therefore, are adapted from the more detailed analysis of the strategy but are recognised to be indicative. It is also noted that in the strategy the potential NAI flood risk damages to the A12 are capped at the cost of raising the road. This does not strictly provide a valid NAI value as it is considered to be a flood risk management cost.

#### Outline economic assessment of different management scenarios

	Strategy option 4b 20 yrs (then do min.)	Strategy option 4g 20yrs (partial set back)	SMP2 approach	
			(a)	(c)
PV 20 yr. cost (£k)	1,378	1,328	1,328	1,328
PV subsequent cost (£k)	0	2,831	3,855	3,951
PV costs (£k)	1,378	4,159	5,183	5,279
PV Damages (£k) (NAI damages taken as £8,842 + £1,072)	5,255 (+1,072)	232 (+1,072)	969	232
PV Benefits (£k)	3,586	8,609	8,912	9,649
Incremental B/C ratio in comparison with preferred strategy option 4b	-	1.8	1.4	1.6

Given the significant benefit in terms of meeting objectives for balanced sustainability, approach (c) appears a suitable policy to take forward. It is accepted that such an approach would need to be considered in greater detail. The concept that management of at least part of the Kessingland Levels is practical in delivering a sustainable approach into the future is concluded.

It is, however, recognised that while an economic case is made for adopting approach (c), the conclusion of the strategy study was that funding under flood defence would not be available based on current priority guidance. The SMP, therefore, proposes acceptance of the scenario option put forward as approach (c) as the aspiration for achieving balanced sustainable management of the area, noting that this may require additional funding from sources other than flood risk management. The default policy would be for abandonment of the Pump Station by the end of the first epoch and withdrawal of maintenance of defences within the Kessingland Levels and to the rear of the village.

With respect to the southern half of the zone, there is no strategic benefit in managing the erosion of the frontage. In fact, the reduction of sediment supply to the coast further south would be a constraint on reducing erosion of the section between Beach Farm

and Easton Broad. Future defence of Covehithe could be considered but at a time when properties come under more immediate threat. Earlier defence of the local frontage would risk potential significant loss of sediment to Southwold. The economic case for defence in undertaking works in the future would be weak (with a benefit cost ratio in the order of unity).

It is, however, recognised that in addition to the basic economics, there would be loss of the church and potential archaeological value. In terms of sustainability, there is anticipated to be significant pressure for continued erosion and major works would have to be undertaken. Under the worst case erosion scenario, works at this point would not be seen as being sustainable. Under the lowest rate of erosion they would potentially be seen as sustainable over the period of the SMP. However, in the longer term, even under the lower rate of erosion the coast will not have reached a stable equilibrium. The natural alignment of the coast is more in line with currently predicted 100 year erosion, some 400m behind the seaward face of the village. In all probability, even if works were undertaken in 50 years time, subsequent to that – potentially within the period of the present SMP – the defence of the village would be abandoned. In this location there is little scope for reducing rates of erosion and the policy here is, therefore, No Active Intervention.

Concerns have been raised over the loss of agricultural land over this southern section of the zone and the impact of allowing the coast to develop as a deeper bay between Kessingland and Southwold. These issues have been considered.

The frontage provides sediment from the cliffs to the beaches to the south. Preventing sediment movement, either by preventing the supply by protecting the frontage or by restricting the movement of sediment along the shoreline would have a serious consequence for Southwold. The fine sediment has also been identified as being potentially important as a supply to the Blyth Estuary.

The Southwold headland acts as a downdrift control to the coast to the north. Anchoring the coast further north would not improve the opportunity to maintain defence at Southwold. It would, however, significantly reduce the supply of sediment which would make sustaining the beach at Southwold more difficult.

It has been suggested that local “soft” defences could be put in place to the cliffs, reducing the rates of erosion. The nature of the defences is not really the issue. Any form of defence which substantially reduces erosion would have the same effect as described above. This section of the coast suffers from the highest erosion rates of anywhere along the Suffolk coastline. This is due to the alignment of the shore, associated with the movement of Benacre Ness northward. In effect, this is a section of coast that has not had time to adjust to the net direction of wave energy. Because of this, any attempt to defend the cliffs would require substantial and continued investment to resist erosion.

At Easton Broad the range of erosion is such that it is realistic to expect erosion to slow, or stop seaward of Potter’s Bridge. In the long term it would be expected that a sustainable shingle bank will provide better flood protection to the area of the road with respect to coastal flooding, as the width of the broad reduces. There remains, however, a significant risk of flooding to the road and property from fluvial flooding. A recent appraisal of management concluded that no action should be taken to reduce the flood

risk. This issue needs to be resolved through discussion between the Environment and Highways agencies. The overall intent for management of the coast in this southern area, is to allow natural development of the frontage. There is a recognised issue with respect to potential loss of freshwater reed beds. There would be potentially a ten year period, before compensatory habitat could be provided. While the policy of No Active Intervention reflects the overall intent of the plan, the short term policy is proposed as Managed Realignment. The policy of No Active Intervention long term, does allow adaptation of habitat within Easton Broad in line with nature conservation objectives. This does not mean abandonment of the road, merely that there would continue to be regular occurrence of flooding to the area. Management of freshwater flooding would continue to be an issue and the road is recognised to be an important local route. The management of water issuing through the shingle bank at Easton Broad needs to be considered. It is understood that these issues are being considered further. The policy for No Active Intervention is principally in relation to ensuring continued natural function of the shoreline processes. This would not preclude development of a more detailed management plan for the area within Easton Broad.

In the case of the other broads, local management could be undertaken to improve habitat adaptation. This is considered to be a local issue and the policy for these areas would be NAI, with the clear intent that loss of habitat within these areas would be allowed and that the remaining areas would be allowed to adapt to a more saline environment. To support adaptation, short term small scale works would be put in place to avoid deterioration of the features of the Easton Broad National Nature Reserve, while replacement 'freshwater' habitat is established.

### **Management Areas**

In summary, therefore, the zone is sub-divided into two management areas, these being:

- The Kessingland Levels (three policy units initially reflecting the intent to manage the Pump Station over the short term. These three policy units then have to be considered as one in developing an overall policy of managed realignment of the area).
- Benacre Broad to Easton Broad (two policy units).

The policy and intent of management is set out by management area in the following sheets.

## PDZ2

**BEN 06 - KESSINGLAND** LEVELS (CH. 13.5 TO 15.5)  
**COV 07 - BENACRE** BROAD TO EASTON BROAD (CH. 15.5 TO 21)



#### 4.2.4 BEN 06 - KESSINGLAND

<b>Location reference:</b>	<b>KESSINGLAND LEVELS (CH. 13.5 TO 15.5)</b>
<b>Management Area reference:</b>	<b>BEN 06</b>
<b>Policy Development Zone:</b>	PDZ 2

\* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

##### **100 year shoreline position:**

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.

- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

 With Present Management.

 Draft Preferred Policy.

-  In some areas, the Draft Preferred Policy either promotes a more adaptive approach to management or recognises that the shoreline is better considered as a width rather than a narrow line. This is represented on the map by a broader zone of management:

##### **Flood Risk Zones**

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.

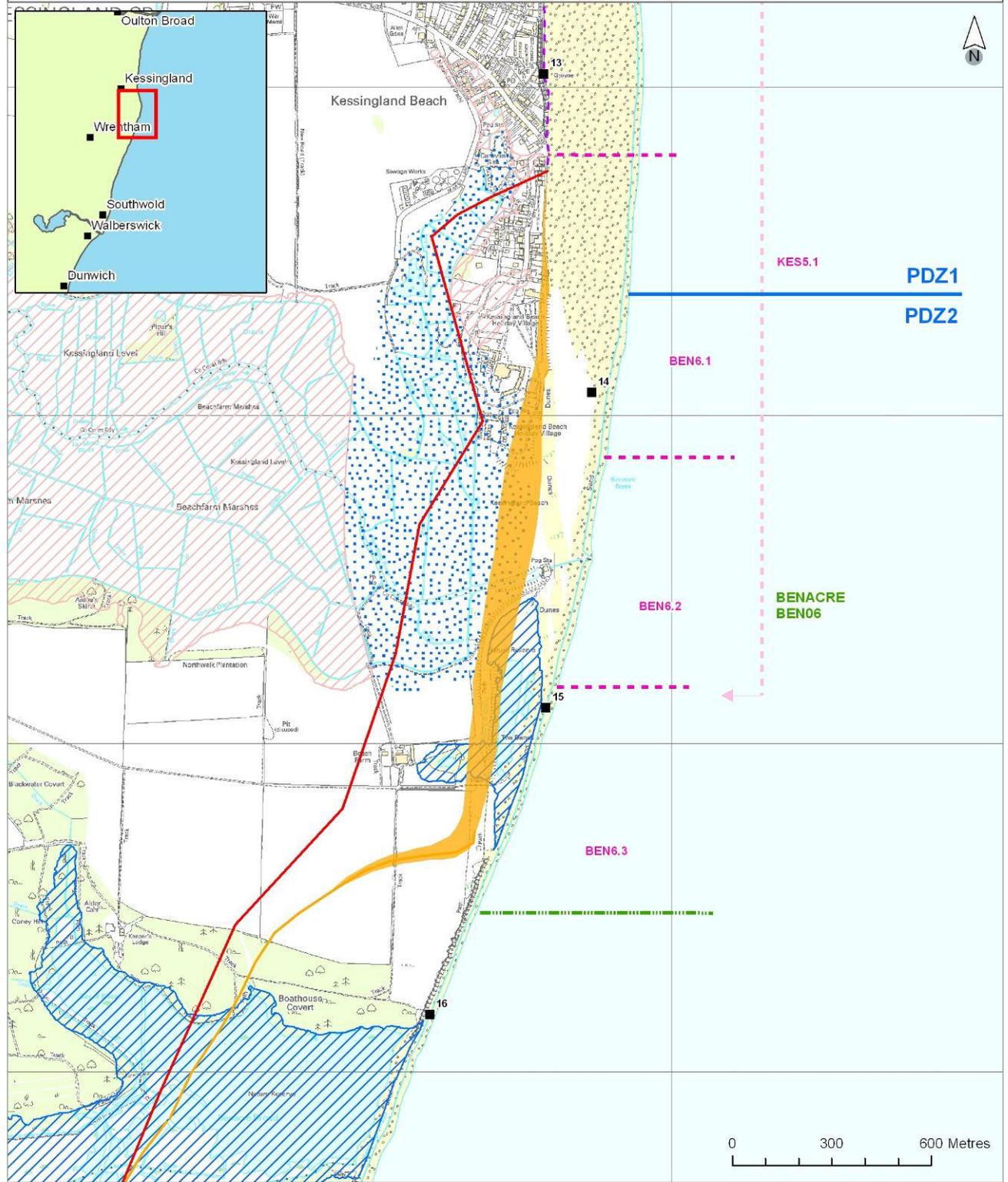
 Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.

 Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.

### Policy Development Zone 2 - Benacre Ness to Easton Broad Management Area 6 - Kessingland Levels (Ch 13.5 To 15.5)

- Key:
- Policy Development Zones
  - - - Management Areas
  - - - Policy Units
  - Chainage
  -  Scheduled Monuments



100 yr shoreline position:

- - - Draft preferred policy would be the same as With Present Management
- With Present Management where this differs from the Draft Preferred Policy
- Draft Preferred Policy where this differs from the With Present Management
- Indicative shoreline zone under Draft Preferred Policy

Note. Further explanation of these lines and zones is provided on the previous page.

-  Existing Indicative EA Flood Risk Zone
-  EA Flood Risk Zone where Draft SMP policy is for continued management of defence.
-  EA Flood Risk Zone 2 where under Draft SMP policy there would be increased probability of flooding.



I:\9S4195\Technical\_Data\GIS\Projects\Figures\Policy\_Development\_Zones\With Present Management

## **SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION**

**PLAN:** The intent within this area is to support a sustainable shoreline as Benacre Ness moves north. Within this, the aim would be to support land use associated with Kessingland and to maintain defence within the Kessingland Levels but further back than at present, thus maintaining defence to the A12. The beach and undefended back shore area and the intertidal area created at the coast will support and enhance designated nature conservation values of this section of the coast. There is also potential to take advantage of the approach to enhance nature conservation values within the defended area of Kessingland Levels valley. This would support but not replace the need for habitat replacement for loss elsewhere on the coast. The plan would aim to set back the current defence line by year 20, creating opportunity for sustainable intertidal area and shingle deposition within the mouth of the Levels. The above intent is met by developing a coastal hard point to the south of the Levels and maintaining the defence of south Kessingland as set out in PDZ1. Establishment of a control point in the second epoch will need to take account of coastal dynamics, which are important for geological SSSI interests and the shingle habitat which supports internationally important Little Tern colonies. The loss of some brackish and saline lagoon habitats on this section of the coast over the epochs is accepted as natural change where these habitats have not been defended in the past and where they run to naturally rising ground. The plan provides the opportunity to manage protection to Kessingland village (PDZ1, MA5) in a manner which would also sustain a beach in front of the village. The intent is also to provide flood defence to the rear of the village and to sustain the use of the sewage pump station. The development of a shingle beach across the entrance to Kessingland Levels would support this intent. The extent of defence within the side valley would need to be examined in detail. The proposed plan sets out a management approach which aims to deliver a sustainable and realistically affordable means of delivering stakeholder objectives. Funding and management of this area will, however, need to be delivered by various partners. Without such additional funding the default policies would be for maintaining defences over the first epoch with a withdrawal of flood defence maintenance beyond that time.

Clearly the issue of funding continued defence is critical in the area of Kessingland Levels. It seems unlikely that national funding purely from a flood and coastal erosion perspective would be justified. Without a collaborative approach the default position would be defence purely at the southern end of the main Kessingland Village. The recent EA strategy has, however, demonstrated benefit in maintaining the existing line of defence over the first epoch. In the medium to long term the default policy would incur significant cost in securing the route of the A12 and alongside this there would be loss of agricultural land and Beach Farm. Other commercial interests could be affected including flooding to part of the Suffolk Wild Park and loss due to erosion and flooding of the Kessingland Beach Holiday Village; this in addition to losses to property along Beach Road. The impact on the area is dependent on the rate of movement of Benacre Ness and this would need to be monitored. There is a strong case for continuing defence of the area in the manner indicated by the SMP. This is supported by the outline economic argument discussed in the main text. The action plan identifies the need to further develop a partnership approach to management of the area and there is adequate time to develop such an approach if this is taken forward over the next few years. The SMP approach is compatible with that set out in the FCERM strategy Making Space for Water, in identifying opportunity for multiple objective management, drawing upon different funding schemes.

<b>PREFERRED POLICY TO IMPLEMENT PLAN:</b>	
<b>From present day</b>	Maintain the Pump Station and defence bund. Agree detailed implementation of the policy.
<b>Medium term</b>	Realign the Pump Station and defence some 500m to 750m within the valley. Establish control point to the south and maintain defences to Kessingland South, potentially with some realignment.
<b>Long term</b>	Maintain defence line and construct local flood defence to the back of Kessingland.

**SUMMARY OF SPECIFIC POLICIES**

<b>Policy Unit</b>		<b>Policy Plan</b>			<b>Comment</b>
		<b>2025</b>	<b>2055</b>	<b>2105</b>	
BEN 6.1	Kessingland South	HTL	MR	MR	The line of defence to the north may need to be adjusted in the final epoch. Some form of control would be envisaged to the south of the area. The flood defence line would be set back within Kessingland Levels.
BEN 6.2	Kessingland Levels	HTL			
BEN 6.3	Beach Farm	MR			
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

**CHANGES FROM PRESENT MANAGEMENT**

Subject to funding, the approach to management of this area would change from an existing general policy of withdrawal of flood defence maintenance to one of creating a control point to the south of the Kessingland Levels, such that sustainable defences may be maintained over the area of coast to the north.

**IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT**

<b>Economics</b>		<b>by 2025</b>	<b>by 2055</b>	<b>by 2105</b>	<b>Total £k PV</b>
<b>Property</b>	Potential NAI Damages/ Cost £k PV	-	8,842	1,072	9,914
	Preferred Plan Damages £k PV	-	232	0	232
	Benefits £k PV	-	8,610	1,072	9,682
	Costs of Implementing plan £k PV	1,328	3,722	228	5,279

**Strategic Environmental Assessment summary table for preferred policy MA BEN 06**

This is an excerpt from the **Strategic Environmental Assessment** undertaken for the Suffolk SMP – for the full assessment, please refer to **Appendix F (Strategic Environmental Assessment: Environmental Report)**.

ISSUE	DETERMINATION
<p><b>ISSUE - Maintenance and Enhancement of Biodiversity on a Dynamic Coastline</b></p> <p>The interaction between the maintenance of designated freshwater or terrestrial habitat protected by defences and designated coastal habitat seaward of defences – will SMP policy provide a sustainable approach to habitat management?</p>	<p>Designated sites in this Management Area are the southern edge of Pakefield to Easton Bavents SSSI, Benacre to Easton Bavents SPA and Benacre to Easton Bavents Lagoons SAC.</p> <p>The Management Area seeks to enable natural development of the coast and not defend unsustainable habitat, therefore there is a significant benefit.</p>
<p>Coastal squeeze and changes to coastal processes has the potential to adversely affect the integrity of international sites (Ramsar sites and areas designated under the Habitats and Birds Directives) – will SMP policy have an adverse effect on the integrity of any international sites?</p>	<p>SMP policy within this management area will not have an adverse effect on the integrity of international sites, as the saline lagoons would be lost due to natural change. Saline lagoons are a highly dynamic and ephemeral habitat type and any control points would be conditioned so that their design would take account of coastal dynamics. The overall effect is therefore minor positive.</p>
<p>The potential loss of Annex I Priority habitat on the Suffolk coast, which may be at risk from natural coastal processes or coastal policy which seeks to protect public health and safety – will SMP policy have an adverse effect on the integrity of any Annex 1 Priority Habitat?</p>	<p>The saline lagoons in this site would be lost due to natural processes and not as a result of the direct action of SMP policy, therefore the effect is neutral.</p>
<p>New coastal lagoons (EU Annex I habitat) have been created further back from the coast on the Benacre to Easton Bavents SPA. JNCC have recommended that management actions to decrease the rate of erosion should be addressed through the SMP process with rates to enable the sustainable relocation of habitat – has SMP policy provided sustainable management for emerging saline lagoon habitat?</p>	<p>The policy provides for a more natural coastal system in this area, where the potential for saline lagoon creation is accommodated. The overall effect is therefore minor positive.</p>
<p>Coastal squeeze has the potential to lead to the loss of UK BAP (priority &amp; broad) coastal habitat. Alternative sites for habitat creation are required to help offset the possible future natural losses – will there be no net loss of UK BAP habitat within the SMP timeline up to 2100?</p>	<p>The BAP habitat in this area includes: Coastal Floodplain Grazing Marsh, Coastal Vegetated Shingle, Coastal Sand Dunes and Saline Lagoons. The realignment would lead to the loss of Saline Lagoons (which are likely to migrate landward) and coastal grazing marsh which will be replaced by Coastal Saltmarsh.</p>

ISSUE	DETERMINATION
	<p>Therefore, the Management Area is considered to have a minor negative effect on this issue. Some BAP habitat will be lost but an equivalent amount of alternate habitat will be gained.</p>
<p>Coastal squeeze has the potential to lead to coastal SSSIs falling into unfavourable condition. For example, approximately 50 of 100 SSSI units assessed at the Minsmere-Walberswick Heaths and Marshes SSSI are in unfavourable condition, although the majority of these (36) are in an unfavourable recovering condition. Factors attributable to the unfavourable declining condition relating to the SMP, are cited as coastal squeeze – will SMP policy contribute to further SSSIs falling into unfavourable condition and address the causal factors of existing units which are in unfavourable declining condition (due to coastal management) wherever possible?</p>	<p>The SSSI in this Management Area is designated for vegetated shingle, saline lagoons, floodplains and fens. The policy promotes natural change via realignment and not promoting the defence of unsustainable freshwater habitat. The status of the site is to maintain favourable condition subject to natural change. It is considered that this policy provides for a more natural development of the coast. SMP policy in this management area seeks to ensure that the geological features contained within the Pakefield-Easton Barents SSSI are promoted through the maintenance of an open face.</p> <p>Therefore, the Management Area is considered to have a minor positive effect on this issue.</p>
<p>ISSUE - Maintenance of environmental conditions to support biodiversity and the quality of life</p>	
<p>ISSUE - Maintenance of balance of coastal processes on a dynamic linear coastline with settlements at estuary mouths</p>	
<p>The Suffolk coast is a complex system of dynamic and static shingle, beach frontages, urban areas and estuary mouths. The system has been maintained in recent years to provide relative stability to the system in order to protect coastal assets. The effects of sea level rise require a more strategic approach to shoreline management, but the relative stability of the plan area needs to be maintained albeit within a dynamic context.</p> <p>Will SMP policy maintain an overall level of balance across the Suffolk coast in regard to coastal processes, which accepts dynamic change as a key facet of overall coastal management?</p> <p>Will SMP policy increase actual or potential coastal erosion or flood risk to communities in the</p>	<p>The Management Area provides the natural development of the coast in this undeveloped area. Therefore the Management Area seeks to provide a level of natural balance. Overall, the Management Area will have a significant positive effect. The Management Area will not lead to increased levels of erosion or flood risk. The overall effect therefore is neutral</p>

ISSUE	DETERMINATION
<p>future?</p> <p>Will SMP policy commit future generations to spend more on defences to maintain the same level of protection?</p> <p>Does the policy work with or against natural processes?</p>	<p>The MR policies here will lead to a reduction in the amount required for future defence works.</p> <p>The overall intent of the Management Area is to promote a natural evolution of the coast. The overall effect is therefore significant positive.</p>
<p><b>ISSUE - Maintenance of water supply in the coastal zone</b></p>	
<p>Agriculture on the Suffolk coast is dependent on the maintenance of a freshwater supply from groundwater aquifers. The delivery of this supply is threatened by intrusion of salt water into freshwater aquifers and from the loss of boreholes at risk from erosion – will SMP policy maintain structures to defend water abstraction infrastructure and to avoid any exacerbation of levels of saline intrusion into freshwater aquifers.</p>	<p>The policy will lead to the realignment of an extensive area of fluvial/estuarine systems. The potential therefore to the freshwater system and salinisation of the aquifer cannot be ruled out.</p> <p>The effect of this Management Area is therefore unknown.</p>
<p><b>ISSUE - Maintenance of the values of the coastal landscape &amp; Area of Outstanding Natural Beauty (AONB)</b></p>	
<p>The maintenance of the coastal landscape in the face of coastal change on a dynamic coast and estuary system. A key factor being the potential change in the landscape in response to shifts in coastal habitat composition and form.</p> <p>Will SMP policy maintain a range of key natural, cultural and social features critical to the integrity of the Suffolk coastal landscape?</p> <p>Will SMP policy lead to the introduction of features which are unsympathetic towards the character of the landscape?</p>	<p>The Management Area will enhance the coastal mosaic of habitat type, and since this coast has lost much of its saltmarsh, the creation of this habitat will lead to an increase in the diversity of natural features on the coast.</p> <p>The Management Area is considered to have a minor positive effect on this issue.</p> <p>One feature is substantiated by another and there has a neutral effect.</p>

ISSUE	DETERMINATION
<b>ISSUE - Protection of historic and archaeological features on a dynamic coastline</b>	
<p>The coastal zone in Suffolk contains a range of archaeological and palaeo-environmental features which may be at risk from loss from erosion within the timeline of the SMP – will SMP policy provide sustainable protection of archaeological and palaeo-environmental features (where appropriate) and ensure the provision of adequate time for the survey of archaeological sites where loss is expected.</p>	<p>The Management Area provides for a staggered approach to realignment, geared to providing time for adaptation and study of the environment. The Management Area is considered to have a neutral effect on this issue.</p>
<b>ISSUE - Protection of coastal communities and culture</b>	
<i>Protection of coastal towns and settlements</i>	
<p>The Core Strategies of Waveney Council and Suffolk Coastal District Council identify key coastal settlements which are important to the quality of life locally and the integrity of the economy of the area. These settlements are likely to face a higher level of risk from coastal flooding and loss due to erosion in response to sea level rise. There is a need therefore to ensure that the settlements below are protected for the duration of the SMP</p> <p>Will SMP policy maintain key coastal settlements in a sustainable manner, where the impact of coastal flooding and erosion is minimised and time given for adaptation?</p> <p>Will SMP policy protect the coastal character of communities which have historically been undefended?</p>	<p>The HTL policies for defended areas provide sustainable defence and offer two epochs for adaptation prior to the MR in Epoch 3 covering south Kessingland. The policy has a minor positive benefit.</p> <p>Maintains the character of Kessingland.</p>
<i>Protection of key coastal infrastructure</i>	
<p>The Suffolk coast is visited by a large number of tourists and residents every year. Access to and along the coast is provided by a range of coastal footpaths (the primary footpath being the Suffolk Coasts and Heaths Footpath). The provision of this access, rather than the actual footpaths themselves supports a range of values which contribute to the quality of life and local economy of the Suffolk coastal area. Paths are often located close to the foreshore in areas at risk from coastal erosion (or within potential areas for managed realignment) – will SMP policy maintain or enhance levels of access along or to the Suffolk coast.</p>	<p>The Management Area would lead to inundation over the existing coastal footpath, however the timing of the SMP and its phased nature will enable alternate routes to be provided.</p> <p>Therefore the Management Area has a neutral effect.</p>

APPROPRIATE ASSESSMENT – PREFERRED PLAN MA 06

This is an excerpt from **Appendix I** of the **Appropriate Assessment** undertaken for the Suffolk SMP – for a full description of the potential effects and any avoidance measures, mitigation or compensation required as a result of the policies, please refer to **Appendix J (Appropriate Assessment Report)**.

<p><b>Benacre to Easton Barents Lagoons SPA site features</b></p>	<p><b>Article 4.1</b>  <b>During the breeding season the area regularly supports:</b>          Bittern, Marsh harrier, Little tern</p>	
<p><b>Sub Feature(s)</b>          Vegetated shingle ridge           Swamp, marginal and inundation standing water</p>	<p><b>Sensitivity</b>          Loss of habitat - The natural sea level rise will lead to more frequent saltwater inundation of the site, whilst being beneficial for some habitats will lead to loss of others. Sea level rise is causing erosion of the lagoons through the landward movement of the confining shingle barrier. Natural processes if unchecked are likely over time to lead to the loss of these features and the area of reedbed will be reduced. New lagoons have been created further back from the coast</p>	<p><b>Conservation Objective</b>          To maintain*, in favourable condition, the habitats for the populations of Bittern (<i>Botaurus stellaris</i>) and Marsh harrier (<i>Circus aeruginosus</i>), with particular reference to swamp, marginal and inundation and standing water.           Subject to natural change, to maintain* in favourable condition the habitats for the population of Little tern (<i>Sterna albifrons</i>), with particular reference to shingle and shallow coastal waters.           * maintenance implies restoration if the feature is not currently in favourable condition.</p>

<p><b>Benacre to Easton Barents Lagoons SAC site features</b></p>	<p><b>Annex I habitats</b> (as a primary reason for selection): Coastal Lagoons (Priority feature*)</p>	
<p><b>Sub Feature(s)</b>          Shingle ridges along the coastline in front of and to the south of Kessingland. Saline lagoons</p>	<p><b>Sensitivity</b>          Loss of habitat due to inappropriate coastal management (subject to natural change) - the lagoons at the Denes were created through</p>	<p><b>Conservation Objective</b>          The conservation objective is, subject to natural change, to maintain*, in favourable condition, the saline lagoon feature.</p>

<p>(priority habitat) to south.</p>	<p>shingle extraction. Salinity is maintained through percolation and overtopping of the shingle barrier. No management input is required to maintain these lagoons. The lagoons at Benacre, Covehithe and Easton are natural and result from ponded streams behind shingle barriers. Seawater enters the lagoons through overtopping of the barriers during high tides. These lagoons are experiencing erosion and landwards movement of the confining barrier, leading to the reduction in the area of each lagoon; this is considered to be a function of an ephemeral habitat type on a dynamic coast and is not therefore an adverse effect on the integrity of the site.</p>	<p>* maintenance implies restoration if the feature is not currently in favourable condition.</p>
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**BEN 6.1 to 6.3**

**Potential effect of policy:**

This management area seeks to provide a degree of management to the features in the adjacent SPA and SAC so that the effects of sea level rise do not lead to the overall loss of freshwater features through overtopping and breach of the shingle barrier. The cell is complicated by the location of an outfall in this area, which is not considered sustainable in later epochs. This management area seeks to provide a considered approach to the overall realignment of the frontage in anticipation of the defence and loss of the outfall, seeking to promote conditions for the temporal continuity of the SAC saline lagoon feature (saline lagoons are regarded as ephemeral features and therefore the appropriate intent of management is to allow the conditions for the formation of saline lagoon to exist, rather than protecting these features *in situ*), provide a wide shingle beach (allowing nesting of Tern *Sterna* spp. communities) and enable the creation of a balance of static and dynamic shingle (for the maintenance of perennial and drift line vegetation). The core element of this is the provision of a control point in epoch two; the installation of this control point has the potential to impact upon the conditions which allow for the formation of saline lagoon features within this International site, lead to the loss of shingle habitat through squeeze, to interfere with the migration of Benacre Ness or to alter the natural formation of the shingle beach. Of these impacts, the limiting of the

conditions required for the formation of saline lagoons would be seen as AEOI and therefore the design of this control point needs to take this into account.

**Implications for the integrity of the site:** The policy promotes the natural behaviour of the coast, therefore no adverse affect on the integrity of the site.

**Avoidance measure:** An active requirement to ensure that the control point required in epoch two does not have an adverse effect on the integrity of international sites (in reality such a measure would in any case be subject to an assessment under Regulation 48 of the Habitats Directive).



#### 4.2.5 COV 07 - BENACRE

<b>Location reference:</b>	<b>BENACRE BROAD TO EASTON BROAD (CH. 15.5 TO 21)</b>
<b>Management Area reference:</b>	<b>COV 07</b>
<b>Policy Development Zone:</b>	<b>PDZ 2</b>

\* Note: Predicted shoreline mapping is based on a combination of monitoring data, analysis of historical maps and geomorphological assessment with allowance for sea level rise. Due to inherent uncertainties in predicting future change, these predictions are necessarily indicative. For use beyond the purpose of the shoreline management plan, reference should be made to the baseline data.

The following descriptions are provided to assist interpretation of the map shown overleaf.

##### 100 year shoreline position:

The following maps aim to summarise the anticipated position of the shoreline in 100 years under the two scenarios of “With Present Management” and under the “Draft Preferred Policy” being put forward through the Shoreline Management Plan.

-  In some areas the preferred policy does not change from that under the existing management approach. In some areas where there are hard defences this can be accurately identified. In other areas there is greater uncertainty. Even so, where the shoreline is likely to be quite clearly defined by a change such as the crest of a cliff the estimated position is shown as a single line.

- Where there is a difference between With Present Management and the Draft Preferred Policy this distinction is made in showing two different lines:

-  With Present Management.
-  Draft Preferred Policy.

-  In some areas, the Draft Preferred Policy either promotes a more adaptive approach to management or recognises that the shoreline is better considered as a width rather than a narrow line. This is represented on the map by a broader zone of management:

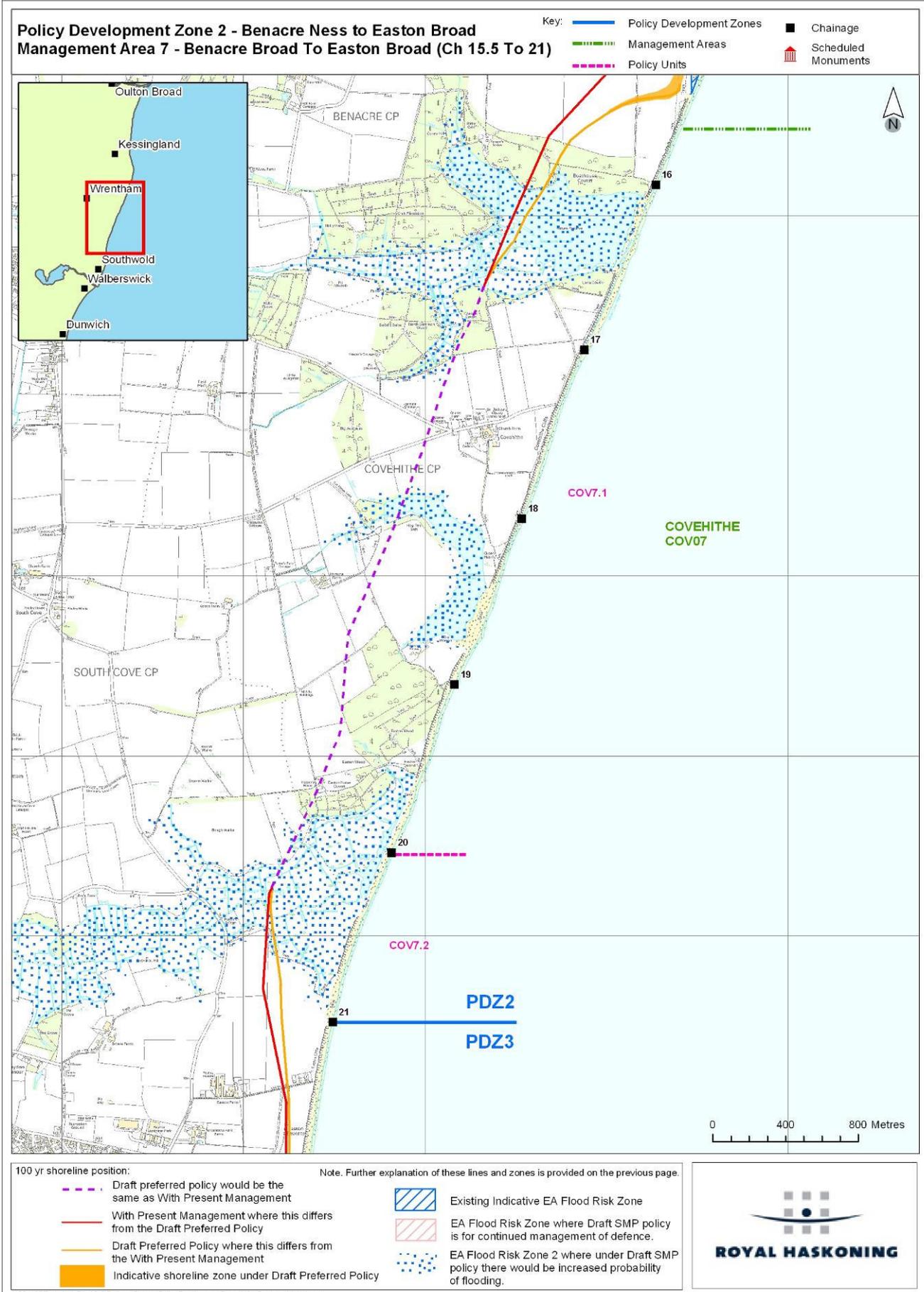
##### Flood Risk Zones

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.

 Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.

 Indicate where over the 100 years the policy would allow increased risk of flooding.

The maps should be read in conjunction with the text within the Draft SMP document.



### SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

**PLAN:** The overall intent of the plan is to allow natural erosion of the coast. No works would be undertaken to constrain this. The aim quite specifically is to maintain sediment supply to the coastal system and to maintain the favourable status of the SPA and the coast to the south. This will result in natural loss of areas of SAC, but the aim of the plan is to allow this to adapt while maintaining the SPA interest. There is no identified overriding interest to protect areas. There is unlikely to be justification to protect Covehithe village even in the long term. There will be no improvement to flood risk in the area of Easton Broad. The bridge and road at Potters Bridge will, therefore, be exposed to increasing levels of flood risk. Within this overall intent, local site management within the areas of the Broads would not be precluded. This could include developing an appropriate management plan for Easton Broad, recognising both the important nature conservation interests and the importance of the transport route. This assumes that any works – either directly or as the inner areas of the broads were exposed – did not impact on the natural development of the coast in the longer term.

- The epoch one policy is managed realignment in the area of Easton Broad. This policy specifically recognises the short term need to manage the designated reed bed within the broad. As such this policy may change over epoch one as compensatory habitat is developed.
- It is recognised under this intent for long term no active intervention, that this could result in significant impact on the local transport system. This issue needs to be further considered in collaboration between the Environment and Highway agencies.

The policy would not preclude local small scale management of erosion to the cliffs to the north, if it could be demonstrated that any works would not impact on the overall sediment supply to the foreshore, did not significantly interrupt sediment drift and did not have a material impact on the nature conservation interests and landscape quality of the area.

PREFERRED POLICY TO IMPLEMENT PLAN:	
<b>From present day</b>	There would be no action taken.
<b>Medium term</b>	No action would be taken.
<b>Long term</b>	No action taken.

### SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
COV 7.1	Benacre Broad to Easton Broad	NAI	NAI	NAI	The policy would not preclude local small scale management of erosion to the cliffs if it could be demonstrated that any works would not impact on the overall sediment supply to the foreshore, did not significantly interrupt sediment drift and did not have a material impact on the nature conservation interests, geological processes and landscape quality of the area.
COV 7.2	Easton Broad	MR	NAI	NAI	The Southwold to Wrentham highway at Potter's Bridge will be exposed to increasing levels of flood risk.
Key: HTL - Hold the Line, A - Advance the Line, NAI – No Active Intervention MR – Managed Realignment					

**CHANGES FROM PRESENT MANAGEMENT**

No substantial change from existing policy.

**IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT**

Economics		by 2025	by 2055	by 2105	Total £k PV
<b>Property</b>	Potential NAI Damages/ Cost £k PV	327	268	395	990
	Preferred Plan Damages £k PV	327	268	395	990
	Benefits £k PV	0	0	0	0
	Costs of Implementing plan £k PV	0	0	0	0

### Strategic Environmental Assessment summary table for preferred policy MA COV 07

This is an excerpt from the **Strategic Environmental Assessment** undertaken for the Suffolk SMP – for the full assessment, please refer to **Appendix F (Strategic Environmental Assessment: Environmental Report)**.

ISSUE	DETERMINATION
<b>ISSUE - Maintenance and Enhancement of Biodiversity on a Dynamic Coastline</b>	
<p>The interaction between the maintenance of designated freshwater or terrestrial habitat protected by defences and designated coastal habitat seaward of defences – will SMP policy provide a sustainable approach to habitat management?</p>	<p>Designated sites in this Management Area are Pakefield to Easton Bavents SSSI, Benacre to Easton Bavents SPA and Benacre to Easton Bavents Lagoons SAC. The Management Area seeks to enable natural development of the coast and not defend unsustainable habitat, therefore there is a significant benefit.</p>
<p>Coastal squeeze and changes to coastal processes has the potential to adversely affect the integrity of international sites (Ramsar sites and areas designated under the Habitats and Birds Directives) – will SMP policy have an adverse effect on the integrity of any international sites?</p>	<p>The policy seeks to ensure the natural development of the coast, which would therefore not have an adverse effect on the integrity of the site and the effect is therefore neutral.</p>
<p>The potential loss of Annex I Priority habitat on the Suffolk coast, which may be at risk from natural coastal processes or coastal policy which seeks to protect public health and safety – will SMP policy have an adverse effect on the integrity of any Annex 1 Priority Habitat?</p>	<p>The three broads adjacent to this area of Benacre Broad, Covehithe Broad and Easton Broad are all examples of saline lagoons. The effect of this policy would be to enable natural processes to continue on this coast, with it being likely that the SAC lagoon at Easton Bavents will migrate up the valley, albeit at the expense of freshwater reedbed habitat. Any change to the lagoons would therefore be as a result of natural change, with no adverse effect on integrity. The effect is therefore neutral.</p>
<p>New coastal lagoons (EU Annex I habitat) have been created further back from the coast on the Benacre to Easton Bavents SPA. JNCC have recommended that management actions to decrease the rate of erosion should be addressed through the SMP process with rates to enable the sustainable relocation of habitat – has SMP policy provided sustainable management for emerging saline lagoon habitat?</p>	<p>The policy takes a NAI approach to promote natural coastal evolution in this section where the shingle ridge maintains through percolation the three broads listed above. It is considered that the management of NAI on this frontage (where the creation of this ephemeral habitat type would be likely) would not have an adverse effect on site integrity. The effect is therefore neutral.</p>
<p>Coastal squeeze has the potential to lead to the loss of UK BAP (priority &amp; broad) coastal habitat. Alternative sites for habitat creation are required to help offset the possible future natural losses – will there be no net loss of UK BAP habitat within the SMP timeline up to 2100?</p>	<p>The BAP habitat in this area includes: Lowland Dry Acid Grassland, Maritime Cliffs and Slopes and Saline Lagoons. The Management Area promotes a natural movement of the coastline which may lead to some loss and or gain of BAP habitat, such losses if they occur will however be a component of natural movement of the coast.</p>

ISSUE	DETERMINATION
	Therefore, the Management Area is considered to have a minor adverse effect on this issue. Some BAP habitat may be lost but an equivalent amount of alternate habitat will be gained.
<p>Coastal squeeze has the potential to lead to coastal SSSIs falling into unfavourable condition. For example, approximately 50 of 100 SSSI units assessed at the Minsmere-Walberswick Heaths and Marshes SSSI are in unfavourable condition, although the majority of these (36) are in an unfavourable recovering condition. Factors attributable to the unfavourable declining condition relating to the SMP, are cited as coastal squeeze – will SMP policy contribute to further SSSIs falling into unfavourable condition and address the causal factors of existing units which are in unfavourable declining condition (due to coastal management) wherever possible?</p>	<p>The SSSI in this Management Area is designated for vegetated shingle, saline lagoons, floodplains and fens. The policy promotes natural and not promoting the defence of unsustainable freshwater habitat. The status of the site is to maintain favourable condition subject to natural change. It is considered that this policy provides for a more natural development of the coast</p> <p>Therefore, the Management Area is considered to have a minor positive effect on this issue.</p>
ISSUE - Maintenance of environmental conditions to support biodiversity and the quality of life	
ISSUE - Maintenance of balance of coastal processes on a dynamic linear coastline with settlements at estuary mouths	
<p>The Suffolk coast is a complex system of dynamic and static shingle, beach frontages, urban areas and estuary mouths. The system has been maintained in recent years to provide relative stability to the system in order to protect coastal assets. The effects of sea level rise require a more strategic approach to shoreline management, but the relative stability of the plan area needs to be maintained albeit within a dynamic context.</p> <p>Will SMP policy maintain an overall level of balance across the Suffolk coast in regard to coastal processes, which accepts dynamic change as a key facet of overall coastal management?</p> <p>Will SMP policy increase actual or potential coastal erosion or flood risk to communities in the future?</p> <p>Will SMP policy commit future generations to spend more on defences to maintain the same level</p>	<p>The Management Area provides the natural development of the coast in this undeveloped area. Therefore the Management Area seeks to provide a level of natural balance. Overall, the Management Area will have, however, a minor positive effect due to the development of a natural coastal system.</p> <p>The Management Area will not lead to increased levels of erosion or flood risk. The overall effect therefore is neutral</p> <p>The Management Area will not lead to any increased requirement for future defence</p>

ISSUE	DETERMINATION
<p>of protection?</p> <p>Does the policy work with or against natural processes?</p>	<p>works.</p> <p>The overall intent of the Management Area is to promote a natural evolution of the coast. The overall effect is therefore minor positive.</p>
<p><b>ISSUE - Maintenance of water supply in the coastal zone</b></p>	
<p>Agriculture on the Suffolk coast is dependent on the maintenance of a freshwater supply from groundwater aquifers. The delivery of this supply is threatened by intrusion of salt water into freshwater aquifers and from the loss of boreholes at risk from erosion – will SMP policy maintain structures to defend water abstraction infrastructure and to avoid any exacerbation of levels of saline intrusion into freshwater aquifers.</p>	<p>The Management Area will lead to the natural development of this area with no major incursions covering terrestrial areas expected. The effect of this Management Area is therefore neutral.</p>
<p><b>ISSUE - Maintenance of the values of the coastal landscape &amp; Area of Outstanding Natural Beauty (AONB)</b></p>	
<p>The maintenance of the coastal landscape in the face of coastal change on a dynamic coast and estuary system. A key factor being the potential change in the landscape in response to shifts in coastal habitat composition and form.</p> <p>Will SMP policy maintain a range of key natural, cultural and social features critical to the integrity of the Suffolk coastal landscape?</p> <p>Will SMP policy lead to the introduction of features which are unsympathetic towards the character of the landscape?</p>	<p>The Management Area will provide for an extensive area of coast which will evolve naturally. The benefit is therefore expected to be minor positive.</p> <p>No new features are proposed by this policy</p>
<p><b>ISSUE - Protection of historic and archaeological features on a dynamic coastline</b></p>	
<p>The Suffolk coast contains a range of historic settlements and harbours typically located on the open coast and mouths of estuaries (for example, Southwold - Walberswick, Aldeburgh, Shingle Street etc). These settlements may be at higher levels of risk from coastal flooding as a result of climate change or levels of erosions along the coast – will SMP policy maintain the fabric and setting of key historic listed buildings and conservation areas?</p>	<p>The Management Area provides a NAI approach the management of Covehithe. Covehithe is a small historical settlement and though it is not a conservation area, it has a Grade 1 listed building at St Andrews Church. The long term protection of these features (which are located over 500m from the coast) cannot be guaranteed in the context of promoting the natural development of the coast. Given the distance from the foreshore however any loss is considered extremely unlikely in the timeline of the SMP.</p>

ISSUE	DETERMINATION
	The overall affect will therefore be neutral.
The coastal zone in Suffolk contains a range of archaeological and palaeo-environmental features which may be at risk from loss from erosion within the timeline of the SMP – will SMP policy provide sustainable protection of archaeological and palaeo-environmental features (where appropriate) and ensure the provision of adequate time for the survey of archaeological sites where loss is expected.	The Management Area provides the natural development of the coast, this will provide adequate time for investigation and study, but will not secure their protection. The overall affect will therefore be neutral.
<b>ISSUE - Protection of coastal communities and culture</b>	
<i>Protection of coastal towns and settlements</i>	
<p>The Core Strategies of Waveney Council and Suffolk Coastal District Council identify key coastal settlements which are important to the quality of life locally and the integrity of the economy of the area. These settlements are likely to face a higher level of risk from coastal flooding and loss due to erosion in response to sea level rise. There is a need therefore to ensure that the settlements below are protected for the duration of the SMP.</p> <p>Will SMP policy maintain key coastal settlements in a sustainable manner, where the impact of coastal flooding and erosion is minimised and time given for adaptation?</p> <p>Will SMP policy protect the coastal character of communities which have historically been undefended?</p>	<p>The NAI policies promote the natural development of this section of rural coast and no protection is offered for the small settlement at Covehithe. The Management Area has a neutral benefit.</p> <p>The policy covers the settlement at Covehithe within a context of a naturally evolving coast. The coastal character will therefore be maintained.</p>
<i>Protection of key coastal infrastructure</i>	

ISSUE	DETERMINATION
<p>The Suffolk coast is visited by a large number of tourists and residents every year. Access to and along the coast is provided by a range of coastal footpaths (the primary footpath being the Suffolk Coasts and Heaths Footpath). The provision of this access, rather than the actual footpaths themselves supports a range of values which contribute to the quality of life and local economy of the Suffolk coastal area. Paths are often located close to the foreshore in areas at risk from coastal erosion (or within potential areas for managed realignment) – will SMP policy maintain or enhance levels of access along or to the Suffolk coast.</p>	<p>The coastal footpath in this area runs over 500m inland of the coast.</p> <p>Therefore the Management Area has a neutral effect.</p>

APPROPRIATE ASSESSMENT - PREFERRED PLAN MA 07

This is an excerpt from **Appendix I** of the **Appropriate Assessment** undertaken for the Suffolk SMP – for a full description of the potential effects and any avoidance measures, mitigation or compensation required as a result of the policies, please refer to **Appendix J (Appropriate Assessment Report)**.

<p><b>Benacre to Easton Bavents Lagoons SPA site features</b></p>	<p><b>Article 4.1</b>  <b>During the breeding season the area regularly supports:</b>          Bittern, Marsh harrier, Little tern</p>	
<p><b>Sub Feature(s)</b>          Vegetated shingle ridge</p> <p>Saline lagoons - these are a series of artificial system and natural bar built percolation lagoons representing a range of salinities. Benacre Broad is the most saline and Easton Broad is the least saline.</p> <p>Reedbeds and Marshland</p>	<p><b>Sensitivity</b>          Sea level rise is causing loss of the lagoons through the landward movement of the confining shingle barrier. Disturbance of the shingle has led to colonisation of open areas by false oat grass, common mouse-ear and sea pea.</p> <p>Natural sea level rise will lead to more frequent saltwater inundation of the site. Whilst being beneficial to some habitats, it will lead to loss of others. Natural processes if unchecked are likely over time to lead to the loss of these features. New lagoons have been created further back from the coast. The lagoons in this management area contain two marine species considered nationally rare or scarce - the starlet sea anemone and the lagoonal sand shrimp.</p> <p>Natural processes if unchecked are likely over time to lead to the loss of these features and the</p>	<p><b>Conservation Objective</b>          To reduce the rate of erosion of the shingle ridge to avoid landwards movement.</p> <p>To maintain the diversity of salinity and subsequent habitats provided by the lagoons by preventing loss through landwards movement of the shingle ridge.</p> <p>Reedbed and marshland area can be conserved by reducing the rate of landwards movement of the shingle ridge.</p>

Flood-plain fens - found in the valleys at Benacre, Covehithe and the Easton Valley.	area of reedbed will be reduced. The reedbeds are particularly important for Bittern at this site. Marsh harrier like marshland and reedbeds too.	To maintain the diversity present within this habitat.
Cliffs at Covehithe	Different species are found depending on the extent of water present. Saline and brackish influences are noted.	Natural processes - continue to allow cliffs to erode reveal geomorphological features
Sand dunes	Eroding cliffs have a fringing beach of sand and shingle. This is the most rapidly eroding area on the English coast.	To maintain habitats by avoiding erosion of the shingle ridge.
Sandy Grassland	At the southern end of the Ness the sand dunes lie landward of the eroding shingle. Risk of loss of habitat from erosion.	To maintain habitat
Scrub woodland	Includes largely short, species poor grassland with buck's horn plantain, biting stonecrop and moss. Risk of erosion.	To maintain habitat

<b>Benacre to Easton Barents Lagoons SAC site features</b>	Annex I habitats (as a primary reason for selection): Coastal Lagoons (Priority feature*)	
<b>Sub Feature(s)</b> Coastal Lagoons - formed behind shingle barriers. Seawater enters the lagoons by percolation through the barriers, or by overtopping	<b>Sensitivity</b> The lagoons show a wide range of salinities; Easton Broad has extremely low salinity. The low salinity has resulted in specific vegetation types, including beds of spiral tasselweed	<b>Conservation Objective</b> The lagoons at Benacre, Covehithe and Easton are natural and result from ponded streams behind shingle barriers. Seawater enters the lagoons through overtopping during high tides. Natural processes will eventually lead to the loss of these features. Potential management actions would be to reduce the rate of erosion of the shingle barriers.

<p>them during storms and high spring tides.</p>	<p>Ruppia cirrhosa in brackish water and dense beds of common reed Phragmites australis in freshwater. The site supports a number of specialist lagoonal species. Sea level rise is resulting in erosion and landwards movement of the shingle barrier, leading to the reduction in area of each lagoon.</p>	
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**COV 7.1 to 7.2**

**Potential effect of policy:**

This management area seeks to provide for the natural development of a sand and shingle frontage, with a brackish and freshwater system to the rear at Easton, Covehithe and Benacre Broads. The SAC features are saline lagoons located around the shingle ridge and the SPA features on the ridge and in the freshwater features landward of this.

The integrity of the broad has been maintained historically via control of water levels via a sluice and the management of the shingle ridge. It is considered, in the wider context of sea level rise that the ongoing practice of management on this frontage is not sustainable. Management of the ridge ceased several years ago, and since that time the ridge has widened and flattened. It is considered that over time, the ridge will continue to flatten and roll landwards. As this happens, the ridge will encounter higher instances of overtopping and may breach in a storm event, leading to the loss of the SPA reedbed feature through increased wave action and the associated nesting marsh harrier

It is considered that the loss of saline lagoons, as a SAC feature, is part of natural change, and is therefore not an adverse effect on the integrity of the site. The loss of the SPA cited habitat within the freshwater areas of the broads (reedbed) does however constitute an adverse effect on the integrity on the site and will therefore require compensation.

**Implications for the integrity of the site:**

Due to the loss of freshwater habitat, which is critical for Bittern and Marsh Harrier, the NAI policy of COV7.2 is expected to have an adverse effect on the integrity of this site. The loss of the lagoons is considered to be a natural change, given their ephemeral nature. Policies in this area will not have any adverse effect on the integrity of the SAC therefore.

**Consideration of alternatives:** The alternative management approach would be to hold the line by continuing to re-profile the shingle ridge, maintaining the fluvial drainage and tidal flood defence for the benefit of bittern and marsh harrier (SPA features), although this would also lead to damage of the saline lagoon SAC features.

This approach is required to maintain the nature conservation interests of the site for the most beneficial conservation outcome on a dynamic coastline in the face of climate change and sea level rise. The pursuit of this policy is required in the interests of accepting natural change and the effects of sea level rise in order to manage the site for the most beneficial conservation outcomes in this scenario. A No Active Intervention policy on this frontage would allow the saline lagoon to roll back under rising sea levels, although this too would lead to the loss of SPA habitat and associated species.

**Compensation required:** The provision of replacement freshwater SPA habitat, commensurate with the loss of SPA features, to be provided by the Environment Agency Regional Habitat Creation Programme.

