



Suffolk SMP2 Sub-cell 3c
Policy Development Zone 6 – Orford Ness to Cobbold's Point

Suffolk Coastal District Council/Waveney District
Council/Environment Agency

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Version 9

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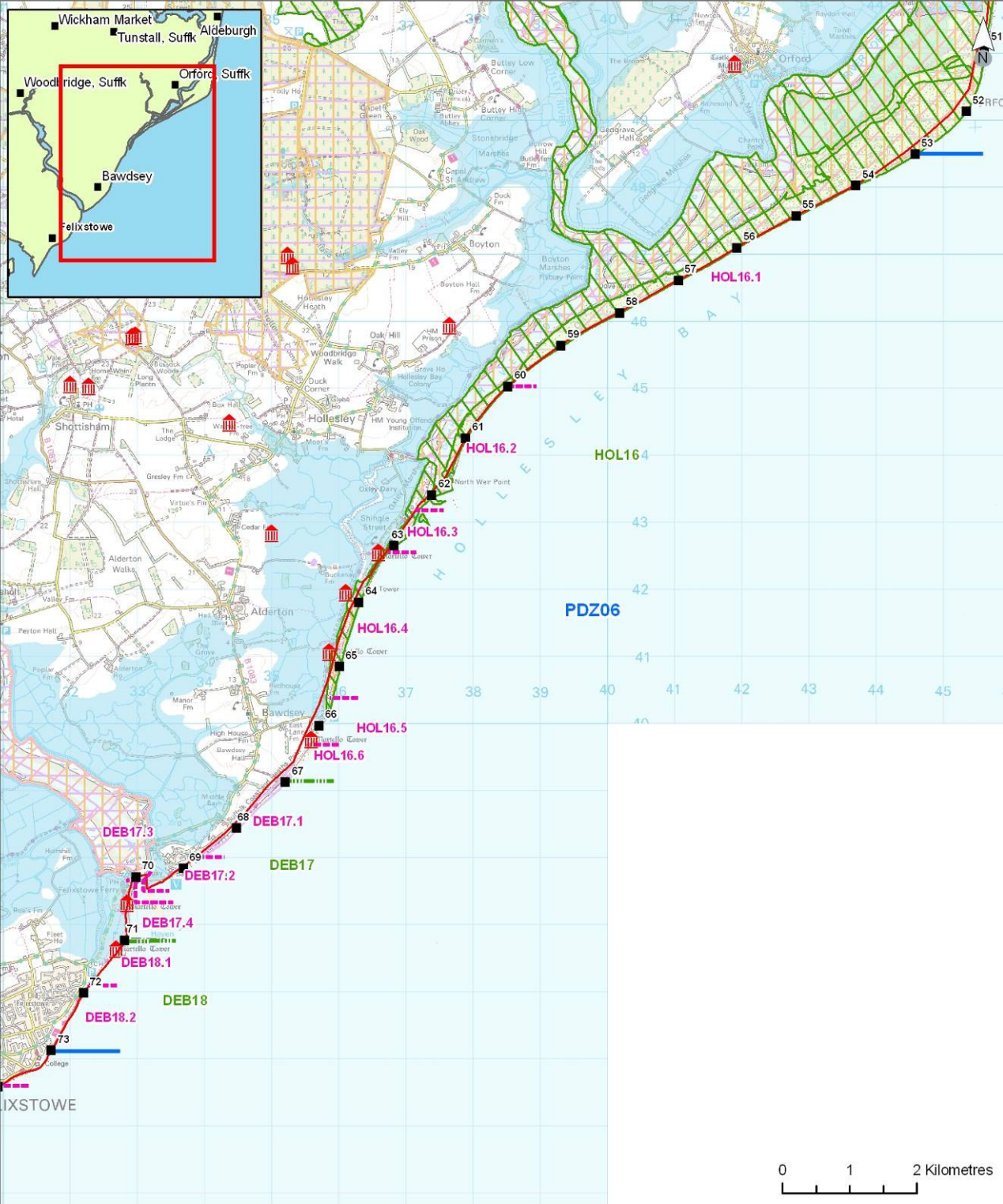
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4.6 POLICY DEVELOPMENT ZONE 6

Orford Ness to Cobbold's Point
Chainage: 53 to 73.



Shoreline Management Plan Sub Cell 3C - Lowestoft Ness To Felixstowe Landguard Point
Baseline Location Map
Policy Development Zone 6 - Orford Ness to Cobbolds Point



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



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4.6.1 OVERVIEW

PRINCIPAL FEATURES (further details are provided in Appendix D)

Built Environment:

The zone includes Felixstowe Ferry and North Felixstowe at the south of the zone. On the other bank of the Deben Estuary is the small community of Bawdsey Ferry, together with Bawdsey Manor. To the north of the Bawdsey Cliffs is a small collection of properties at East Lane and at the northern end of Hollesley Bay is the village of Shingle Street. To the back of the low lying agricultural land behind Hollesley Bay are the villages of Hollesley, Alderton and Bawdsey. Within both the Deben and Alde/Ore estuaries there are substantial areas of low lying agricultural land backed by isolated properties.

Heritage and Amenity:

There are areas of significant known and potential archaeology of prehistoric and later date including former coastal activity such as Roman salt extraction around the extensive areas of reclaimed land. North Felixstowe is adjacent to the now submerged fourth century shore fort with significant Roman activity over and extensive area. Of more modern significance are Bawdsey Manor and the old radar establishment together with the artificial pulmanite cliff, the series of nineteenth-century Martello Towers and the Second World War gun emplacement at East Lane. The whole area lies within the Suffolk Coast and Heaths AONB, and the passenger ferry over the Deben is effectively the start of the Coastal Path. The areas of North Felixstowe and Shingle Street are important but very different amenity locations on the coast. The Deben estuary is both an important centre for recreational water use and for its local fishing fleet.

Nature Conservation:

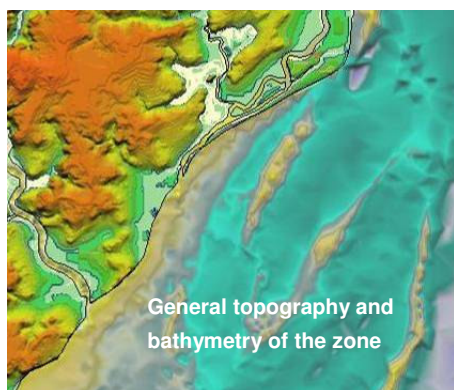
The Deben and the Alde/Ore are covered by SPA designations, together with the shingle beach of Hollesley Bay. The Alde/Ore is also designated as a SAC extending the SPA boundary to cover the shingle spit of Orford. Ramsar designations cover both estuaries and the Hollesley Bay shingle bank. The SSSI sites lie effectively within the boundaries of the above Natura 2000 sites.

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

- To maintain Orfordness as a designated site of international importance;
- To maintain biological and geological features in a favourable condition, subject to natural change, and in the context of a dynamic coastal environment;
- To maintain the semi natural and unique quality and community of Shingle Street;
- To support the adaptation of local coastal communities;
- To support the adaptation of the local coastal farming communities;
- To maintain the character and community of Felixstowe Ferry and Bawdsey;
- To support the other rural communities in the area and the underpinning agricultural activities;
- To maintain access to Felixstowe Ferry;
- To maintain the overall and specific recreational features associated with the entrance to the Deben, including the diversity of facilities such as the golf course and water sport activities;
- To maintain the beach use of North Felixstowe;
- To maintain the core heritage value of the area;
- To maintain transport links in the area;
- To promote ways to maintain access to and along the coastal footpath; and
- To support appropriate ecological adaptation of habitats.

DESCRIPTION

The zone extends from just south of Orford Ness through to Cobbold's Point on the Felixstowe frontage.



The Alde/Ore estuary runs behind the massive shingle ridge of Orford Spit to emerge at the coast at North Weir Point. The Butley River joins the Alde/Ore some 4.5km upstream of the main entrance. Over this southern section of the estuaries the broad channel is relatively straight, constrained by the thinning spit on the coastal side and to the rear, the Boyton and Orford Haven marshes. There is a ridge of higher ground running down from the area behind Boyton and Hollesley.



At North Weir Point the channel is deflected seaward in front of Shingle Street, running through a maze of shifting shingle banks. These banks extend from the end of Orford Spit and at times to in front of the village of Shingle Street. Depending on the configuration of the channel and banks, a large ness of shingle builds (or is eroded from) in front of the village, also forming and losing coastal lagoons within this shingle feature.

The village itself is built to the back of this ness, in part upon the back shingle ridge and in part on the back slope of higher peaty land. Behind the village the land falls away to the Oxley marshes which, together with the larger area of low lying agricultural land to the south, is defended and drained by the banks and pumping station between Oxley and Hollesley. The only access to Shingle Street runs in part along the defences, running in to the north end of the village.



Over the main section of Hollesley Bay the shore is backed by a wide shingle sand beach with a secondary flood defence behind. The low lying land is some 1.5km wide, extending to the higher ridge of land on which sit the villages of Alderton and Bawdsey. The low lying land is cut across by a lower ridge at Buckanay Lane and to a lesser degree by Beach Lane. Immediately behind the sea defences are four Martello Towers: one at Shingle Street, two in the central section of the bay and one at East Lane, Bawdsey. At East Lane the secondary line of defence runs forward forming a more heavily defended headland, which then links through to the defences over the rising ground to the south.

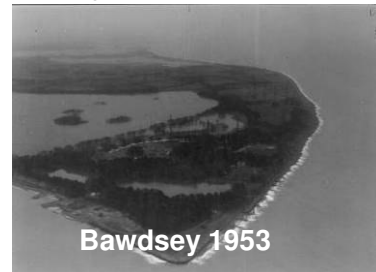
Currently, the ness at Shingle Street extends seaward of the village several hundreds of metres. At East Lane the headland protrudes significantly across the foreshore. There

has been a cut back of the higher clay cliff to the south of East Lane, although this has allowed development of a shingle beach which continues south in front of the still higher Bawdsey Cliffs.

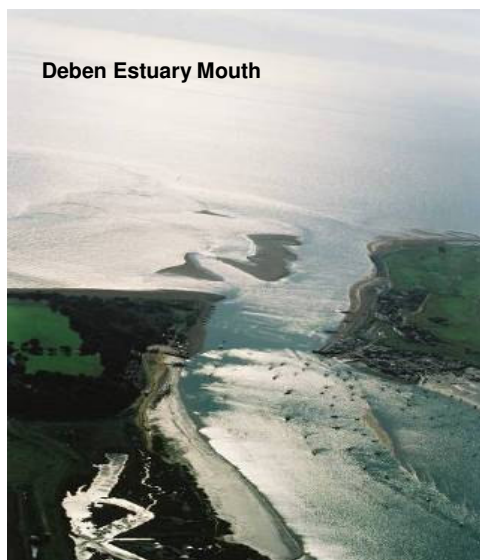


The cliff backed frontage south of East Lane, changes orientation from the typically NNE / SSW of the southern section of Hollesley Bay, to a more NE / SW orientation down to the mouth of the Deben, at Bawdsey Manor. The harder London Clay nearshore area of this section slopes more gently seaward than that of the northern section of Hollesley Bay and Orford Spit. The London Clay exposure continues to Felixstowe.

The ridge of higher ground running back from Bawdsey Cliffs separates the coast from the low lying land of the lower Deben Estuary. The cliffs are fronted by a shingle beach over most of their length. This beach thins considerably beneath the encased cliff garden of Bawdsey Manor. The narrowest section of beach is groyned with a piled seawall to the toe of the cliff. The beach widens again at the root of the Knolls at the mouth of the Deben. The Knolls are a shingle bank formation extending parallel to the coast across the entrance to the Deben Estuary.



At the entrance to the Deben the northern point is held by a sheet piled wall, backed by a low lying area of shingle deposits. The wall connects through to the Bawdsey Ferry Quay further into the estuary mouth.



At the entrance to the Deben the coastline creates a step across the mouth of the estuary, with the southern side being formed by a large ridge of shingle sand deposit. The banks of the Knolls are held clear of this shore by the Deben channel. Along this southern shore is the village of Felixstowe Ferry. This village is in part defended by flood embankments, which also protect the golf course and agricultural land behind. Part of the village and the harbour area are seaward of the sea defence. The strong flows along this section of coast in front of the village are controlled by rock groynes with a rock revetment at the seaward end by the Martello Tower.

Within the Deben the channel widens immediately upstream of the entrance, with embanked defences to the large area of low lying agricultural land of the lower estuary. Further upstream the estuary is far more

contained by natural geology, with a wide channel up to the defended area of Woodbridge some 12km from the entrance.

The Knolls periodically extend beyond the main entrance in front of the coast to the south. When the channel breaches through the Knolls, a ness forms to the corner of the coast and tends to spread along the heavily groyned sea front of North Felixstowe. The land along this section rises from the low lying northern end to the higher land of Brackenbury Cliffs and Cobbold's Point. There is a road and property to the crest of the cliff. An important number of beach chalets and other beach user amenities lie to the back of the defences and on the coastal slope.



PHYSICAL PROCESSES

TIDE AND WATER LEVELS (mODN)

<i>Location</i>	LAT	MLWS	MLWN	MHWN	MHWS	HAT	Neap range	Spring range	Correction CD/ODN
Orford Ness		-1.60	-0.75	1.05	1.15		1.80	2.75	-1.65
Orford Bar		-1.36	-0.76	0.94	1.54		1.70	2.90	-1.66
Woodbridge Haven		-1.43	-0.93	0.97	1.77		1.90	3.20	-1.93

Extremes(mODN)

<i>Location:</i>	1:1	1:10	1:25	1:50	1:100	1:250	1:500	1:1000
Orford Ness	2.06	2.58	2.78	2.94	3.09	3.3	3.46	3.61
Hollesley	2.35	2.87	3.08	3.24	3.39	3.6	3.76	3.91
Bawdsey	2.47	2.99	3.2	3.36	3.51	3.72	3.88	4.03
Felixstowe Ferry	2.53	3.05	3.26	3.42	3.57	3.78	3.94	4.09

WAVE CLIMATE

From the analysis of monitoring data, generally the best correlation nearshore at Bawdsey and Cobbold's Point is with offshore data from EA6 offshore of the bank system, east of the Naze. This would indicate that dominant offshore directions are from the east northeast and south southwest. There is, however, some indication that at Cobbold's Point there is also increased exposure from the north east. The nearshore banks and wider nearshore area significantly influence inshore wave direction such that the net energy tends to approach the coast from a direction east by south. Locally, waves are affected by the banks at the mouth of the two estuaries. Notwithstanding the typical net direction, there is a relatively wide exposure to different wave directions at the shore.

TIDAL FLOW

Tidal flows nearshore are relatively low. However, the constrained flow into and from the estuaries gives rise to very high flows locally. The pattern of flow is from the north east on the flood and to the north east on the ebb. With the typically south and southeast orientation of the Alde/Ore and Deben entrances respectively, this gives rise to local channels being cut through the respective bank systems. These can then develop, changing local flow patterns.

PROCESSES

Control Features:

The main control features in terms of direct sediment drift are the estuaries and their banks, forming large temporary sinks and, in effect, nearshore breakwaters modifying wave action and sediment drift along the shore. Only to the southern end is there significant geological control at the shore, at Bawdsey Cliffs and at Cobbold's Point, although in the nearshore area the shoreline system is strongly influenced by the harder nearshore bed. At East Lane the defences impose a significant downdrift control of the shoreline to the north and more locally act as an updrift headland to the coast to the south. Orfordness provides a massive reservoir of sediment feeding the coast to the south.

Existing Defences:

Within the Alde/Ore estuary there are flood defences protecting extensive areas of grade 2 agricultural land. The main area of Hollesley Bay is defended by a secondary embankment behind the shingle foreshore. To the north of this area are embankments behind areas of saltmarsh and the drainage is pumped. To the southern end of Hollesley Bay is the East Lane defence system, retaining the natural defence of the whole bay, with direct flood defence to the southern section and coast protection to the collection of properties and the Martello Tower. These defences have recently been upgraded to a 1:200 year level of defence and a nominal 25 year standard of protection over the northern section.

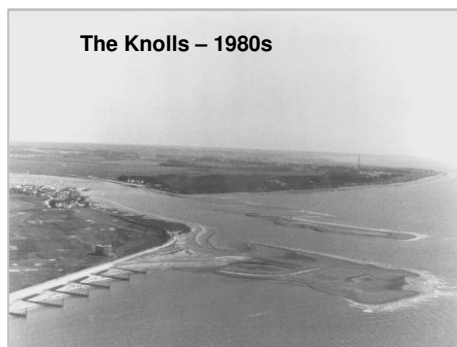
Work is currently underway to upgrade the southerly protection standard to a minimum of 50 years.

At the entrance to the Deben there is a groyned seawall to the toe of the Bawdsey Manor cliff with a sheet pile wall extending around the point of the estuary. This is a private defence. Within the estuary is the recently refurbished quay. On the south side of the estuary are flood embankments protected by erosion protection matting and rock flow control groynes. There is also a sea wall set back to the main village and, further south, a rock revetment protecting the continuation of the flood embankment along the coast. Within the Deben there are flood defence embankments protecting large areas of low lying agricultural land. Further up the estuary there are local embankments to small areas of low lying land with more extensive flood defences to Woodbridge.

Along the North Felixstowe frontage there is a continuation of the flood embankment in front of the golf course with a concrete sea wall and groynes in front. This joins with the concrete coast protection wall along the Dip and various other walls offering different degrees of protection along the Brackenbury cliffs. All of this section is further protected by a timber groyne field. Beneath Cobbold's Point there are Fishtail groynes comprising concrete reef blocks with a sea wall behind at the toe of the cliff.

Processes:

The two most obvious features of the coastal process along this frontage are the massive shingle bank systems at the mouth of the Alde/Ore just north of Shingle Street and the Knolls at the mouth of the Deben. Both systems operate in a similar manner but over different timescales.



In each case there is a drift supply from the north interacting with the flows of the estuary channel to create a series of offshore parallel banks separated by small channels. These banks tend to feed shingle to the shore at their southern limit. In both cases the extent of the overall banks is a function of the ebb flow of the estuary, balanced by the energy of the waves attempting to push the banks onto the shore behind. As the banks extend there is a tendency for new channels to breach the system, forming a more efficient entrance to the estuaries. In the case of the Alde/Ore, this major cyclic reconfiguration has been estimated to occur over several decades (potentially some 80 years, the last major reconfiguration occurring in 1893 with a reconsolidation of the spit by 1912). More minor breaches occur regularly but without significantly altering the overall integrity of the banks. In the case of the Deben, the cyclic behaviour tends to be over some 20 years and a major breach occurred around 2004.

In both cases, once a major channel breach has developed shortening the length of the banks, the detached banks at the southern end of the system tend to be welded to the shoreline as a ness. This feature, which is then exposed to typical influence of longshore drift, redistributes sediment along the shore, principally to the south.

Under current conditions the North Weir Point system has extended further than previously recorded, suggesting that the system has reached a critical condition. In the case of the Knolls, a major breach of the banks occurred recently. Prior to the recent breakdown of the Knolls they extended parallel to the southern shoreline further than previously recorded. This is, therefore, comparable to the current situation at North Weir Point. The process by which sediment is being fed along the North Felixstowe frontage is continuing.

Against this background a more general description is provided for the zone:

There is a general drift system from north to south over the whole frontage. The Orford Spit, though seen to be accreting slowly seaward at present, is still an active drift system with supply from Orfordness being greater than the drift along the frontage. This drift occurs under most wave conditions, although it is lower with more southerly waves. Over Hollesley Bay, the angle of the bay is in net equilibrium. Under north to east wave conditions material will progress south. South easterly wave conditions can cause northerly drift.

Over the Bawdsey cliff section the drift is on average to the south with relatively high rates. Here, as with Hollesley Bay, there can be northerly drift due to waves from the south but with lower rates. Across the Deben the normal low drift to the south relies on the Knolls to act as a pathway negotiating the step in the coast. Depending on the stage within the Knolls cycle, drift along the northern part of North Felixstowe may be to the north or to the south. Further south, towards Cobbold's Point, potential drift is southerly but actual drift is limited by the availability of material.

Under any specific wave conditions, different patterns develop in terms of accretion and erosion. Under north-easterly conditions the whole coast can be mobilised, with a southerly drift potential throughout. This means that material is fed from Orfordness, along Orford Spit, potentially through the North Weir banks, to Hollesley Bay and down to East Lane. Subject to the amount of material built against East Lane, this has the potential to overflow to Bawdsey Cliffs and down and across the Deben. From any other direction the drift of material tends to be more segmented, either being held up at the entrance to the Alde/Ore, or along the Bawdsey Frontage, or at the Deben.

At present and potentially over the last 20 years, a greater extent of the shoreline sediment supply has been held within the North Weir banks and the ness formed in front of Shingle Street. This has tended to limit the sediment build against East Lane and restricts material passing to the Bawdsey Cliff section. Also, there appears to have been a tendency for material to be eroded immediately in front of Bawdsey Manor Cliffs despite the large volume of available material further north. The Knolls have still been fed locally and have still developed in their characteristic manner.

Without the artificial headland at East Lane, material would still be held up in front of Shingle Street but the control point at the southern end of Hollesley Bay would be Bawdsey Cliffs some 750m further south. This would significantly reduce the shingle width to the north within Hollesley Bay, while quite probably developing a ness of material at the northerly section of the Bawdsey Cliffs. There would be supply to the south, feeding principally the Knolls.

At the mouth of the Deben the control at the mouth of the estuary maintains the flows necessary to drive the development of the Knolls across the step in the coastline. If this control – either to the north at Bawdsey Manor or along the Felixstowe Ferry frontage – were lost, the mouth of the Deben would widen. There would be a tendency for material from the north to fill into the estuary, creating a major

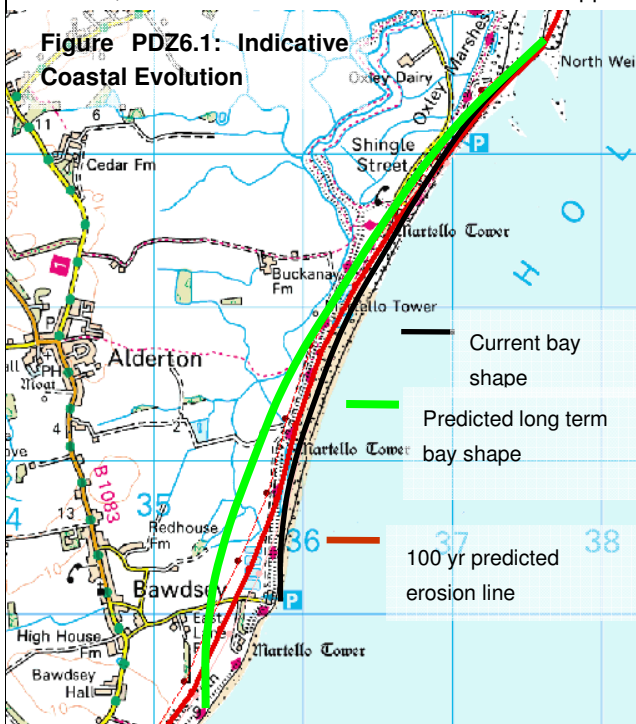
sediment sink on the coastline.

At the mouth of the Alde/Ore, increases in flows out of the estuary, which might occur with sea level rise or due to abandoning defences within the estuary, are likely to make North Weir Point less stable. This would potentially increase the chance of breakdown and transfer of pulses of sediment through the extended but more variable ebb tide delta and banks system. There may also be a tendency for increased pressure on the northern flank of Shingle Street. The net impact might be for more regular sediment supply to the south, although over a longer period of time this would be of the same overall volume. If, on the other hand, the flow within the estuary were reduced, such as might happen due to a breach at Slaughden, the effect would be to allow the spit and the bank system to move closer to the shore. This may increase the supply across the frontage under specific wave conditions, with less likelihood of the major ness developing in front of Shingle Street. While locally significant to the northern frontage of Shingle Street, whether the flows within the Alde/Ore increase or decrease, the impact on overall sediment supply to Hollesley Bay would be minimal. The main effect would be on the timing and regularity of supply.

Unconstrained Scenario:

The unconstrained scenarios assume that all defences are removed. Although unrealistic, in terms of the residual impact of existing defences the scenario does highlight the pressure on the coast.

The principal areas of change under this scenario would be at East Lane and at the entrance to the Deben. In this scenario, if East Lane had not been defended there would have been significant erosion at this point forcing the whole of Hollesley Bay to retreat. At the northern end of the bay North Weir Point would have also changed, adapting to the lack of reclamation within the Alde/Ore estuary. However, overall there would still be some feature approximately in its current position. Studies of the



area just north of Shingle Street have indicated that the estuary mouth has not tended to be further south in the past.

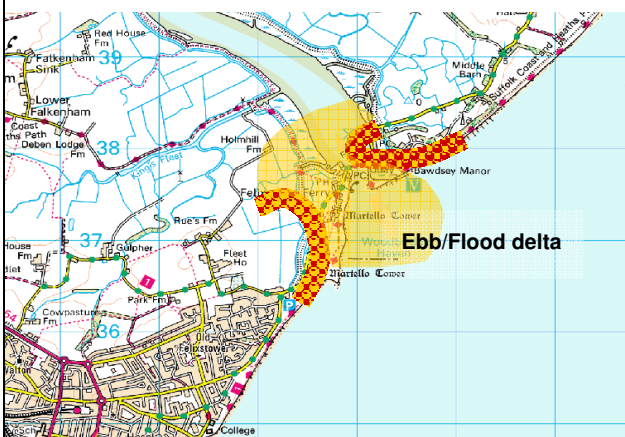
In the absence of East Lane, the downdrift control of the bay would be the higher ground of Bawdsey Cliffs. In considering this, two approaches have been taken. The first is through use of the erosion rates based on available monitoring information. This tends to be over a far shorter time period than can properly be extrapolated, given the periodic nature of sediment drift patterns based on a cyclic behaviour of the estuary mouth and the annual and decadal variations in wave climate. The second approach is through assessing the equilibrium shape of the bay. The results of these approaches are shown in Figure PDZ6.1.

With the continued erosion predicted to the south, the predicted equilibrium shape would continue to develop. There are also assumptions being made as to the position of the northern limit of the bay. It

is significant that without East Lane the indicated readjustment of the bay impacts over the full extent of Hollesley Bay, affecting the Shingle Street frontage.

At Shingle Street there would still be occasions when changes in the configuration of the mouth moves the northern point of the bay south, due to the greater retention of sediment at this northern end. Associated with this would be a period of reduced sediment supply over the bay as a whole and greater erosion at the southern end. (This is what appears to be happening at present despite being held by East Lane.) Under this unconstrained scenario there would be no significantly greater released quantities of sediment to the south as the main control of available material is at the entrance to the Alde/Ore.

As material is subsequently released from the Shingle Street sink, this would tend to move south with little retention along Hollesley Bay due to the transient control imposed by the southern headland. The sudden natural change in orientation at this southern point might, however, induce the development of a ness, locally holding material at the corner and releasing this sporadically to the coast to the south.



At the mouth of the Deben it is only possible to make quite broad assumptions as to the estuary mouth configuration in the absence of the existing defences. In general, the mouth would widen. The northern section of coast would tend to curve in towards the estuary, being the more natural flow path between the estuary and the coastal tidal flow. Wave energy would tend to support this movement. The overall change is highlighted in Figure 6.2.

Figure PDZ6.2: Potential change to mouth of the Deben

There would still be a discontinuity in the alignment of the coast to the north and south, which would tend to infill with sediment in a more variable ebb/flood delta system. The old spit of sediment providing the current southern bank would tend to retreat and curve in to the estuary. The ebb delta system would, once established, allow some drift generally from north to south.

Under this scenario the Brackenbury Cliffs would erode and the instability in sections of cliff would result in slippage on to the foreshore. The crest of the cliff is likely to retreat at a faster rate than the toe. At Cobbold's Point the toe would erode more slowly than the retreat at the crest and the point would still act as a control feature of the coast. Various studies suggest that sediment is diverted into the nearshore system to the south.

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 C.

(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)
Orford Ness	1	Dependent of occasional feed from the north.	33 to 186
Orford Spit	0.0	Still affected by sea level rise.	5 to 15
North Weir Point	0.3		17 to 115
Shingle Street	0.5	Allowing for variation due to sediment supply.	40 to 115
Hollesley Bay	1	Influenced by sediment supply.	60 to 300
Bawdsey Cliffs	0.1		15 to 70
Bawdsey Ferry	1.1	Influenced by behaviour of the Knolls.	60 to 100
Felixstowe Ferry	3	Influenced by behaviour of the Knolls.	75 to 410
North Felixstowe	0.8	Influenced by behaviour of the Knolls.	40 to 120

4.6.2 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
ORF 4	Lantern Marshes to Orford Beach	Do Nothing			
ORF 5	Orford Beach	Do Nothing			
	Shingle Street	HTL	S4	Shingle Street	HTL
FEL 1	Hollesley Bay	HTL short term	S4	Hollesley Bay	HTL
			S4	East Lane promontory	HTL
			S4	Bawdsey Cliffs	Transitional area between HTL and NAI
FEL 2	Bawdsey Manor Lodge to North Felixstowe	Defer Decision	S4	Deben mouth	HTL
			P8	Bawdsey Manor and entrance to Deben	HTL with some relaxation of the defences.
			P7	Felixstowe Ferry	HTL
			S7	North Felixstowe	HTL

References:

- S4 *Hollesley to Bawdsey Coastal Study*
- P7 *Felixstowe Ferry*
- P8 *Bawdsey Manor implementation strategy*
- S7 *North Felixstowe Strategy*

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 designated environmental conservation 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 the Environment Agency 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 in 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 £2.4 million 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 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. Defences would not be raised to improve standards of protection.

The northern section of the zone is the main supply of sediment to the frontage. This supply comes from Orfordness and along the spit as a relatively regular feed. Along the whole coast south of here, sediment supply and distribution is determined principally by the behaviour of the estuary entrance, by the variation through individual storm events and more generally through the variation year on year of wave climate.

The initial control is at the mouth of the Alde/Ore. Under the NAI scenario, there are still two conditions which might apply:

- that where the estuary defences are abandoned but the estuary entrance is still at North Weir Point;
- that where there is also a breach at Slaughden.

In the first of these there is an increased flow through the entrance. This may result in increased tendency for the bank system to break down and reform. During the building stage of the system this could increase the quantity of material retained locally but with a shorter period between cycles. There is likely to be increased vulnerability of Shingle Street due to possible increased erosion of the shingle deposits to the north and potentially a greater tendency during the initial breakdown stage of the entrance cycle for loss of beach in front of the village. In the second condition there would be a generally smaller entrance channel, with the Orford Spit tending to roll back. This would form a more continuous system for transfer of material to the south, but still with some cyclic pattern of retention and release of material southwards.

Overall, therefore, the impact on the coast between these two conditions is one of degree. There

would be, in either case, a variable supply of material to the coast to the south, varying only in timing of supply.

The underlying threat to Shingle Street comes from the control of the shape of Hollesley Bay, this being determined by the management at East Lane. Under this scenario it is assumed that the northern East Lane promontory is abandoned and fails during the second epoch of the SMP. With failure of this promontory, the control of the bay is progressively shifted south and west. The bay opens up and gradually, as the Shingle Street frontage works through cycles of change, the trend will be for gradual retreat of the coast. This is likely to result in erosion affecting the community of Shingle Street. The timing of loss is uncertain but it would be expected over the next 100 years, regardless of estuary management. It would result in the loss of at least the southern two thirds of the village. There would have been an earlier loss of access to the village due to flooding occurring initially at the East Lane end, but increasing as the shingle beach along the bay no longer provides protection to the secondary line of defence.

Flooding would occur to the large area of agricultural land seaward of the ridge upon which sit the villages of Bawdsey, Alderton and Hollesley. These communities would not be expected to flood but the roads between the communities would suffer flooding on more extreme conditions.

At East Lane, if a No Active Intervention policy were adopted, the properties and Martello Tower would be lost within the next 10 years. With the new works now undertaken, even with a subsequent policy of No Active Intervention, these properties would remain through to the end of the second epoch of the SMP.

Over the longer term the coast is likely to readjust as described in the unconstrained scenario, delayed slightly by the residual effect of the existing defences. Over the bay as a whole, the shingle bank would be weakened and would be regularly overtopped. The retreat of the shingle bank would eventually be squeezed against the defence embankment behind. This would, over the medium term, reduce the area of designated shingle habitat. As the rear bank becomes exposed and fails, the shingle would continue to retreat inland forming a lower overwashed shingle ridge. The sediment, when released from the Alde/Ore entrance, would work its way along the bay foreshore. However, as this bay shape itself would never fully stabilise, sediment would be fed into overtopping fans within the low lying land behind. There would eventually be some equilibrium restored so that sediment could travel through to Bawdsey Cliffs to the south. The regular flooding of the low lying land would create a large expanse of saltmarsh or mud flat.

Depending on the supply from the north, the Knolls system will still function initially under this scenario. When sediment is retained within the broader Hollesley Bay area, either sporadically within the Alde/Ore entrance or within the bay itself, the Knolls will tend to be fed from material at the toe of the Bawdsey Cliffs.

As defences at Felixstowe Ferry, Bawdsey Manor and within the estuary fail under this scenario, the entrance at the mouth of the Deben will tend to become unconstrained. There would be a loss of sections of Bawdsey Manor, the quays to both sides of the estuary, the village of Felixstowe Ferry and the area of the golf course and the agricultural land behind. The defences at North Felixstowe would already have tended to fail and this would continue with loss of amenity use, the roadway at the crest of the cliff and property behind. Navigation within the mouth of the estuary would become increasingly difficult and the use for fishing and recreational purposes would be severely constrained.

With Present Management (Scenario 2):

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

As discussed in the NAI scenario, the impacts of different conditions imposed from within the Alde/Ore estuary will affect conditions at Shingle Street locally but only to the extent that the frontage could become slightly more vulnerable under certain stages of the estuary mouth cycle. This would be manageable in terms of retaining sediment along the frontage or controlling flow at the northern end. The process of sediment retention and release would still occur.

Similarly at the Knolls, the process of building, break down and sediment distribution will continue while the entrance to the estuary is held.

Within this pattern of variable timing of sediment supply and retention, the adjacent defences will



North Felixstowe - north

come under periods of pressure and periods of beach protection. This is seen clearly on the North Felixstowe frontage where recent improvements to the groynes close to the Golf Club house are temporarily made redundant by the most recent stage in the cycle of the Knolls.

The various strategies for this section of coast have all identified this variation, concluding, typically, that defences are sustainable but periodically vulnerable.

An analysis of geomorphological change at East Lane, based on the current extent of profile and photographic evidence from the Environment Agency's monitoring data, clearly shows the pressure that has developed at the promontory over the last twenty years. At East Lane, therefore, the implementation of defence to the northern section has been based on a nominal 25 year life. Despite the earlier strategy conclusion to Hold the Line, this 25 year period is now taken as being the policy extent under this scenario.

Within the Deben, no policy has been defined. However, the initial findings of the recent strategy study have highlighted the importance of maintaining the estuary entrance configuration, reducing pressure on defences upstream and, through slightly constraining flows into the estuary, reducing water level at Woodbridge.

This is, therefore, taken as the WPM scenario. Based on this, the following impacts are identified.

At Shingle Street, the village is initially sustained by the ness of sediment in front. The long term behaviour would critically depend at present on whether:

- the bank system breaks down within the next 25 years, feeding sediment to the south along the shore; and
- the defence at the northern section of East Lane is then abandoned.

As sediment is restored to the system by the breakdown of the spit at Shingle Street, pressure on

East Lane would be relieved and the promontory will continue to retain material within Hollesley Bay. Gradually as this occurs, sediment feed would be restored to the southern section of the coast.

If, however, the northern section of the East Lane promontory is allowed to fail before the sediment supply from the north is restored, there would be a release of sediment contained within the bay at present. As in the NAI scenario, there would then be a retreat of the whole bay. This would impact on the sustainable defence of Shingle Street in the long term and reduce defence of the low lying land to the rear.

At the Deben, the present policy is to maintain defences at the entrance. This has been established to sustain the important assets of the communities and use at the estuary mouth, in addition to allowing better management of the defences upstream. A critical aspect of this is in maintaining defences within the lower reaches of the estuary. This would maintain flow within the estuary entrance within manageable bounds. It has been assessed as part of the Felixstowe Ferry strategy that, despite the existing high flows, there is capacity within the entrance channel to manage increased flows that might occur due to an increased tidal prism as a result of sea level rise over the next 100 years. This also assumes the potential for some realignment of defences within the upper reaches of the estuary.

Under this scenario, therefore, the principal assets associated with the entrance to the estuary would be retained and the defence to North Felixstowe and Bawdsey Manor would be retained but managed in a manner responding to periods of pressure.

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

NAI		Present Value Damages (£x1000)
<i>Location</i>	<i>Assets at risk</i>	
Hollesley Bay	20 no. properties.	£585
Deben Bay and North	93 no. properties.	£4,508
Felixstowe		
WPM		Present Value Damages (£x1000)
<i>Location</i>	<i>Assets at risk</i>	
Hollesley Bay	3 no. properties.	£116
Deben Bay and North	No losses.	
Felixstowe		

MDSF ASSESSMENT OF POTENTIAL FLOOD RISK

Hollesley Bay	Property and agricultural land.	£2,231
Felixstowe Ferry and lower estuary	Property and agricultural land.	£21,096

OTHER INFORMATION:

Damages taken from the Hollesley Bay strategy, updated by the East Lane PAR, gave combined damages of £12.4m. This includes values associated with access and loss at Shingle Street and the Martello Towers.
 No amenity losses included in association with the Deben.
 North Felixstowe strategy identified potential damages of £3.4m.

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 Orfordness as a designated site of international and European importance			Acceptable			Acceptable
To maintain biological and geological features in a favourable condition, subject to natural change, and in the context of a dynamic coastal environment			Acceptable		Neutral	
To maintain the core heritage value of the area	Fails			Fails		
To maintain the character and community of Felixstowe Ferry and Bawdsey	Fails					Acceptable
To maintain the semi-natural and unique quality and community of Shingle Street	Fails			Fails		
To maintain the beach use of North Felixstowe	Fails					Acceptable
To maintain the overall and specific recreational features associated with the entrance to the Deben, including the diversity of facilities such as the golf course and water sport activities	Fails					Acceptable
To maintain access to Felixstowe Ferry	Fails					Acceptable
To maintain transport links in the area	Fails			Fails		
To support the adaptation of local coastal communities	Fails				Neutral	
To support the adaptation of the local coastal farming communities	Fails			Fails		
To support the other rural communities in the area and the underpinning agricultural activities	Fails			Fails		
To promote ways to maintain access to and along the coastal path	Fails					Acceptable
To support appropriate ecological adaptation of habitats		Neutral			Neutral	

4.6.3 DISCUSSION AND DETAILED POLICY DEVELOPMENT

The northern section of the zone covers Orford Spit and the area of Shingle Street and Hollesley Bay. There are two essential aspects to management of this frontage. In the case of Orford Spit, extending down from Orford Ness, the intent is to maintain the natural development of this frontage. This maintains a supply of sediment to all areas to the south. At Weir Point the coast is cut by the entrance to the estuary. The variation in estuary behaviour and the development of the spit, the entrance banks and the frontage in front of Shingle Street all determine how sediment is released to the areas to the south. This affects the Hollesley Bay frontage. At the southern end of the bay is East Lane. This headland controls the shape of Hollesley Bay and acts to regulate sediment moving south. Management of East Lane has to be considered together with management of Shingle Street and the response of the estuary mouth. There are uncertainties as to management of the estuary, with the cyclic behaviour of the Spit and banks, and hence in the timing of sediment supply to the bay.

Over the southern half of the zone the choice is between two eventual outcomes:

- to manage the entrance to the Deben; or
- to allow the estuary mouth to widen and adopt a very different form.

The two scenarios set up different configurations of the coastal system, neither of which is unmanageable. The choice is in the intent to maintain the various existing uses of the area, or to lose or adapt these uses to very different estuary and coastal conditions.

The various strategies have concluded that it is appropriate and sustainable to continue management of defences over the 100 years of the SMP and that this is not imposing any significant stress within the present natural system. Given the high economic, socio-economic and environmental value of the area it is concluded that the present policy is sensible.

Sustaining this existing condition is, however, dependent on two factors:

- Maintaining the tidal prism within the estuary with allowance for sea level rise, such that the existing constraint at the mouth of the estuary may be managed. This imposes a constraint on management of the lower estuary such that tidal flows do not exceed certain thresholds. The justification with respect to managing these lower estuary defences is in relation to sustainable management of the whole Deben Bay area. There would be a need to examine how areas further within the estuary could be managed for potential mitigation of loss of saltmarsh over the lower estuary.
- Maintaining sediment supply to the area from the north. This is seen principally in relation to the natural supply/retention regime at the entrance to the Alde/Ore. A secondary consideration is in the effect of management at East Lane.

SUB-DIVISION AND DETAILED ASSESSMENT

Within the intent to maintain supply to the south, management of Hollesley Bay is initially considered.

Hollesley Bay

Both of the two baseline scenarios, with current implementation of a 25 year defence standard to the northern section of East Lane, would eventually lead to failure of the

East Lane promontory. Under this longer term policy the downdrift control point to the bay moves progressively south, extending the bay, weakening and eventually allowing failure of defence to the low lying area behind.

Under present management this would be delayed and would occur in stages. The defence to the East Lane properties would act as a temporary control over the second epoch of the SMP. The present policy is to Hold the Line at East Lane in the short to long term. Natural England has concerns about the impacts of holding the line on the Orfordness-Shingle Street SAC and this is the subject of an Appropriate Assessment under the Habitats Regulations (1994) by the Environment Agency. The potential impacts of this are considered within the development of draft policy within the SMP but, under the Habitats Regulations (1994), this needs to be included in detail within the SMP Appropriate Assessment.

In terms of southerly drift, the supply would still be determined by the entrance to the Alde/Ore. As the system here progresses through its cycle, with the current retention of sediment, the failure of East Lane would result in an initial increase of sediment to the Bawdsey cliff area reducing as the bay adjusts. The retreat of the bay, attempting to adjust to a new equilibrium, would create a situation where sediment released from in front of Shingle Street would tend to be absorbed into the beach of the extending bay and lost as part of the increasing overwash of the banks as the rear flood defence embankment fails. There would be sediment fed through to the southern section of the zone. This would still be an intermittent supply, as at present, but may possibly be reduced in the longer term.

The alternative to the baseline scenarios is that the East Lane promontory is retained over the long term. This promontory is at present under pressure due to the natural retention of material at the northern end of Hollesley Bay. The promontory does, however, still act to retain sediment within the bay, sustaining the beach, the defences and the shingle comprising part of Orfordness-Shingle Street SAC. To the south of East Lane there has been increased erosion locally. This is as a result of the promontory but also in response to the retention of material at Shingle Street. As the entrance to the Alde/Ore works through its cycle, sediment will be released to Hollesley Bay. This flow of sediment will effectively re-establish the width of the beach to the southern end of the bay (to the north of East Lane) and will then overflow to the south. East Lane in this respect acts as a dam allowing the bay to the north to fill before allowing a supply of sediment to the south.

In either scenario given above, Hollesley Bay will continue to provide sediment to the south. Under either of the baseline scenarios, this may be reduced overall in the long term. In the alternative scenario there is an initial deficit which is taken up by erosion of the cliffs to the south.

However, in general the condition for providing supply to the south is met in both cases without significant interruption to the processes at the mouth of the Deben.

With respect to management of Hollesley Bay, retaining the promontory at East Lane acts to sustain and allow realignment due to sea level rise of the natural shingle defence system to the bay. It also acts to support the sustainable management of defence at

Shingle Street. This policy for holding the line at East Lane has been shown to be economically worthwhile over the 100 year period of the SMP, based on the assessment of processes given above. It is recognised that there is still considerable uncertainty as to when the Alde/Ore entrance system may break down and in relation to wave conditions driving sediment along the coast.

Support for the approach to holding the defence at East Lane has been very clearly demonstrated by the private investment in the defence of the frontage. This reinforces the argument that through a collaborative funding there is a realistic expectation that funding would be available. There is a commitment through the East lane trust to support this. As such, the recommended policy for the bay is to Hold the Line at East Lane. This allows for natural realignment within the bay to the north, with the possibility of limited intervention at Shingle Street in response to the cyclic nature of sediment loss and accumulation. This would, however, depend on the results of further monitoring. Notwithstanding the intent of the SMP plan to manage the frontage:

- The uncertainty associated with the behaviour of this frontage needs to be taken into account in considering any policies and/or proposals for development in areas at risk of erosion or flooding.
- There will be continued risk of flooding on extreme conditions and risk to property at Shingle Street from flooding and erosion. Consideration in the longer term will need to be given here in terms of flood warning and emergency response, particularly in relation to safe access and egress.
- Ongoing monitoring and monitoring as part of the current scheme at East Lane should reduce uncertainty about the complex coastal processes acting on this stretch of coast. There remains the possibility that policy would need to be revised in the light of this monitoring. Any revision of policy would take account of potential damages to nature conservation interests and any indicated difficulty in maintaining defences.
- Local funds have already been raised at this location as the national priorities for FRM funds are such that this location does not meet funding requirements. It is therefore likely that future works may have to continue to be funded via alternative sources and not necessarily government funding.

With respect to management within the Alde/Ore, the impact on the actual village of Shingle Street is considered to be quite local. Although this will need to be considered by the estuary strategy in terms of allowance for potential minor control, such works are not significant to the overall policy or management for the open coast. This confirms the conclusion arrived at within PDZ5 that policy within the estuary can be developed as part of an estuary management plan based primarily on the needs and use of the estuary.

In terms of actual intervention at Shingle Street, in general (and assuming the overall shape of Hollesley Bay is retained) little in terms of defence would be anticipated. Depending on whether there is increased or decreased inflow through the estuary mouth, there may be a need for minor works to control flow pressure at the northern end

of the village. This might require rock or timber groynes reinforcing the natural behaviour of the shingle bank.

Over the open coast in front of the village, there may be local areas of the backshore (where the properties are situated) where erosion will continue as at present. This would tend to be quite transient as the mass of shingle moves in response to the long term cycle of the estuary mouth. This local vulnerability may need to be addressed by reinforcing the shingle bank with works at the backshore to contain local erosion. The intent would be to provide additional strength to the backshore slope during periods when the main shingle beach is closest to the property. Typical works might be geotextile support or breastworks (timber piling at the crest of the shingle). Such works are seen as providing limited relief to any developing problem in the expectation that the shingle beach would subsequently rebuild seaward as has happened in the past. Sea level rise will impose greater pressure on the frontage but in this area the principle risk arises from change in the pattern of sediment movement. The policy along this frontage would be to allow the degree of erosion of the shingle that might be expected as the current system breaks down. A policy of Hold the Line is then defined for subsequent epochs reflecting only the potential need to provide local back beach reinforcement. It is not intended in this SMP to indicate major construction works in the future. As with the whole of the bay, there will be a need to monitor the behaviour of the frontage. Should it be found that the existing cyclic behaviour of the estuary entrance was disrupted by change in wave climate or sea level rise such that there was a more persistent pattern of long term erosion, the implications of this policy would have to be reviewed.

It will be important to maintain a policy of No Active Intervention to the south of East Lane. This area of the coast would retreat in either of the baseline scenarios, but acts as a potential source of finer sediment to the coast to the south during periods when sediment is retained by the entrance system at the Alde/Ore.

Deben Entrance

There is no scope for major realignment of the estuary mouth without potentially flipping the estuary system into that envisaged under the No Active Intervention baseline scenario. There may be scope, as undertaken on the southern side of the estuary mouth, to modify flow within the entrance such that the linear defences become a backstop to variation in the general behaviour.

Maintaining the defence to the Bawdsey Manor Cliffs through monitoring and responsive management is in line with the overall intent to manage the entrance to the estuary. It is recognised that these defences are private. However, they do retain an important heritage feature in the artificial cliff gardens and ultimately the Manor and historic site of radar development. Therefore, the detailed economic justification relies in part on the heritage value of the cliffs and Manor, and the amenity value of this section of coast. Furthermore – and possibly strategically important – maintaining this defence, at least in part, is essential if the shape of the estuary is to be retained. Major failure of the control imposed on this northern side of the estuary will tend to disrupt the Knolls system such that sediment tends to enter the estuary rather than feed through the Knolls to the south. The policy is, therefore, for holding the general configuration of this northern section but with detailed management being determined more locally.

As discussed earlier the intent to manage the entrance of the estuary does have implications for management within the estuary. As with all SMP policy, in detail this needs to be developed further at strategy or scheme level. However, the policy and the way in which this steers the strategy provides a realistic framework for development of the strategy and any broader approach taken towards integrated management of the area.

Failure to hold the entrance would allow development of a significantly wider mouth to the estuary. Sediment would tend to build within the mouth, with significant variation in channel positions. This would limit navigational use. It would also make provision of a ferry service linking Felixstowe to the start of the Coast and Heaths Coastal pathway potentially unsustainable.

The policy for the Felixstowe Ferry frontage of holding the line is seen as being an essential component to management of the whole area. Local management of the increasing flood risk to the part of the village seaward of the main defences would need to be considered in specific detail, with regard to anticipated sea level rise.

Management of the North Felixstowe Frontage needs to take a responsive approach to periods when there is a lack of sediment and increased exposure. Typically, this may require improvement to the groyne system to retain a degree of support to the cliff toe defences. The intent would not, however, be to significantly alter movement of material along the frontage, nor to substantially alter the behaviour of the Knolls.

Management Areas

In summary, therefore, the zone is sub-divided into three management areas where policy units are closely associated, these being:

- Orford Ness to Bawdsey Hill (six policy units).
- Bawdsey Hill to Mouth of the Deben (four policy units).
- North Felixstowe (two policy units).

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

PDZ6

HOL 16 - ORFORD NESS TO BAWDSEY HILL (CH. 53 TO 66.5)

DEB 17 - BAWDSEY HILL TO MOUTH OF DEBEN (CH. 66.5 TO 71)

DEB 18 - NORTH FELIXSTOWE (CH. 71 TO 73)

4.6.4 HOL 16 - ORFORD NESS TO BAWDSEY HILL


Location reference:	ORFORD NESS TO BAWDSEY HILL (CH. 53 TO 66.5)
Management Area reference:	HOL 16
Policy Development Zone:	PDZ 6

* 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:

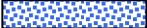
-  With Present Management.
-  Draft Preferred Policy.

-  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. 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 6 - Orford Ness to Cobbolds Point
Management Area 16 - Orford Ness to Bawdsey Hill (Ch 53 To 66.5)

- 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:\94195\Technical_Data\GIS\Projects\Figures\Policy Development Zones\With Present Management

SUMMARY OF PREFERRED PLAN RECOMMENDATIONS AND JUSTIFICATION

PLAN: The intent of the plan is to manage the supply and distribution of sediments along the coast so as to maintain both Shingle Street and the agricultural value of the area in a sustainable manner, supporting existing habitat development and adaptation. Estuary policy to increase the tidal prism may increase pressure on Shingle Street, but the intent would be to manage this local vulnerability. Change in the main inlet of the estuary is likely to have relatively minor impacts on sediment processes. The intent in management of this area would be to manage the configuration of the whole of Hollesley Bay but in a manner allowing and supporting the mobility of sediment along the frontage, while maintaining and allowing a roll back of the wide shingle beach. To achieve this it would be necessary to maintain East Lane as a control point in the system. To the south of the various defences at East Lane the intent would be to allow the cliffs to erode back naturally. In setting policy there are important caveats. It has to be appreciated that there is still considerable uncertainty associated with behaviour of the frontage, in particular in relation to the release of sediment from the northern end of the bay. This means that the southern end of the bay can go through periods of erosion. The long term sustainability of East Lane remains uncertain. In addition there are potential impacts on the important natural conservation interests that need to be considered. While the proposed management plan is realistic when set against anticipated change, this will need to be monitored and reviewed. Notwithstanding the intent of the policy to manage the frontage, therefore:

- The uncertainty associated with the behaviour of this frontage needs to be taken into account in considering any policies and/or proposals for development in areas at risk of erosion or flooding.
- There will be continued risk of flooding on extreme conditions and risk to property at Shingle Street from flooding and erosion. Consideration in the longer term will need to be given here in terms of flood warning and emergency response, particularly in relation to safe access and egress.
- Ongoing monitoring and monitoring as part of the current scheme at East Lane should reduce uncertainty about the complex coastal processes acting on this stretch of coast. There remains the possibility that policy would need to be revised in the light of this monitoring. Any revision of policy would take account of potential damages to nature conservation interests and any indicated difficulty in maintaining defences.
- Local funds have already been raised at this location as the national priorities for FRM funds are such that this location does not meet funding requirements. It is therefore likely that future works may have to continue to be funded via alternative sources and not necessarily government funding.

Subject to this:

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	The short term implementation would be the planned improvement of defences at East Lane.
Medium term	Maintain defences and undertake any compensatory works necessary to protect Shingle Street should tidal flows into and out of the estuary be increased.
Long term	Undertake further work at East Lane to maintain the control point and potential need for increasing the level of flood defence to the north.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
HOL 16.1	Orford Beach	NAI	NAI	NAI	Maintain supply to south.
HOL 16.2	North Weir Point	MR	MR	NAI	Potential need to manage changes in estuary.
HOL 16.3	Shingle Street	MR	HTL	HTL	Manage periodic loss of width to beach.
HOL 16.4	Hollesley Bay	MR	MR	MR	Allowing rollback of the front line shingle beach defence.
HOL 16.5	East Lane	HTL	HTL	HTL	Maintain control of drift.
HOL 16.6	Bawdsey Hill	NAI	NAI	NAI	Maintain supply to the south.
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, although the strategy policy for long term management of East Lane is confirmed subject to continued and long term monitoring.

IMPLICATION WITH RESPECT TO BUILT ENVIRONMENT

Economics		by 2025	by 2055	by 2105	Total £k PV
Property	Potential NAI Damages/ Cost £k PV	-	-	-	12,366
	Preferred Plan Damages £k PV	-	-	-	1,627
	Benefits £k PV	-	-	-	10,739
	Costs of Implementing plan £k PV	2,000	800	534	3,334

Strategic Environmental Assessment summary table for preferred policy MA HOL 16

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
ISSUE - Maintenance and Enhancement of Biodiversity on a Dynamic Coastline	
<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 Alde-Ore Estuary SSSI, Alde-Ore Estuary Ramsar/SPA, Orfordness and Shingle Street SAC and Alde-Ore & Butley Estuaries SAC. Policy seeks to allow natural processes in the north of the area, whilst acknowledging the natural fluctuations which occur at the estuary mouth. The overall intent is to provide some degree of stability to a dynamic system, to allow response to the overall dynamism of the estuary mouth. Holding the line at East Lane will involve addition of shoreline managing structures (preventing the destabilization of the coast to the north)</p> <p>The policy takes an active approach to managing wider coastal processes; however the degree of management required may not be sustainable in the long term. Overall the policy is considered to be a minor negative.</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 provides a holding point at East Lane and an MR at the estuary mouth, which are intended to ensure that a degree of balance is maintained within a dynamic context. This option is considered to provide the most robust approach to the management of the international features in this area. The policy includes detail relating to the conditions to support sediment flow etc to prevent any adverse effect on the integrity of the features. The overall effect is considered 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 policy seeks to provide the balance between dynamism and overall stability which will encourage the creation of saline lagoons (which may be lost elsewhere in response to loss within a dynamic coastal system in this frontage). The overall effect is therefore neutral.</p>

ISSUE	DETERMINATION
<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 actively seeks to encourage the conditions for the formation of coastal lagoons. The effect is therefore minor positive.</p>
<p>Coastal squeeze has the potential to lead to the loss of UK BAP (priority & 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: Shingle, Mudflat, Coastal Floodplain and Grazing Marsh, Maritime Cliffs & Slopes and Saline Lagoons. The management area promotes a degree of balance to this area, with dynamism and coastal change being framed within a holding point at East Land. The shingle ridge will roll back landward at a rate which is controlled by East Lane. Whilst there may be some transition and exchange between habitat types, the overall effect will be provide a relatively stable provision of BAP habitat. The overall effect is therefore minor positive.</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 SSSIs in this management area is designated for mud flat, saltmarsh, vegetated shingle and coastal lagoons. The management area provides for a balance between static and dynamic habitat, the intent being to provide a longer term degree of stability to shingle frontages north of East Lane. Whilst this may be desirable in terms of overall habitat management, there may be ongoing coastal squeeze issues associated with management leading to sites falling into or remaining in unfavourable condition.</p> <p>The overall effect on SSSIs therefore neutral or minor negative.</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>	

ISSUE	DETERMINATION
<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 of protection?</p> <p>Does the policy work with or against natural processes?</p>	<p>The Policy seeks to provide a dynamic coastal system which is framed primarily by a holding point at East Lane. Whilst elements of the coast will function naturally, holding points are required to provide this, as such the coast can only respond in a semi-natural fashion. The overall effect is considered significant negative, however this should be considered in the context of the desire to provide some degree of balance to the dynamics of this area of coastline as whole.</p> <p>The policy will not increase flood risk. The overall effect therefore is minor positive due to the stability brought to this area of coast.</p> <p>The management area will require ongoing management to HTL; the overall effect therefore is minor negative.</p> <p>The overall intent of the management area is to promote a balance of providing a holding point at East Lane, to offer balance to the coastline to the north. This does require a degree of intervention and the overall effect is therefore minor negative.</p>
<p>ISSUE - Maintenance of water supply in the coastal zone</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 ongoing stability of the coastal system. The overall effect is therefore minor positive.</p>

ISSUE	DETERMINATION
ISSUE - Maintenance of the values of the coastal landscape & Area of Outstanding Natural Beauty (AONB)	
<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 a degree of stability to the coast in a dynamic setting, which protect Martello Towers and the settlement at Shingle Street. Although key assets (including historic landscape assets) will be protected, many parts of the remaining coastline will be allowed to naturally evolve. The landscape is one that is dominated by the dynamic nature of the coast and therefore this approach will ensure this dynamism is maintained.</p> <p>Overall the benefits of this are minor positive.</p> <p>The management area will not lead to any new features (East Lane is currently defended). Overall the effect is considered to be neutral.</p>
ISSUE - Protection of historic and archaeological features on a dynamic coastline	
<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 policy will provide for the ongoing protection of Martello Towers and the settlement of Shingle Street (SAMs). The benefit is therefore minor positive.</p>
<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>SMP policy advocates NAI and MR, which has the potential to lead to the loss of heritage assets (including Roman salterns, Roman settlement and Bronze Age barrow cemetery) at Gedgrave, Boyton and Hollesley Marshes. However, on balance and due to the timing of policy and location of assets, the effect is neutral.</p>
ISSUE - Protection of coastal communities and culture	

ISSUE	DETERMINATION
<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 policy will maintain Shingle Street, via an approach of using natural processes with a view to offer a balance of dynamism, whilst offering stability to certain areas. The approach is therefore minor negative, given that the requirement for management (as defined by policy increased over time).</p> <p>The policy will maintain the 'living on the edge' character of Shingle Street, by providing for its protection through stability of the system rather than localised defence. The effect is therefore significant positive.</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 policy would not lead to any loss of continued access along the coast and the effect is therefore neutral.</p>

APPROPRIATE ASSESSMENT - PREFERRED PLAN MA 16

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)**.

HOL 16.1

<p>Alde-Ore Estuary SPA and Ramsar site features</p>	<p>Article 4.1 Qualification During the breeding season the area regularly supports: Marsh harrier Avocet Little tern Sandwich tern Over winter the area regularly supports: Ruff Avocet</p> <p>Article 4.2 Qualification During the breeding season the area regularly supports: Lesser black-backed gull Over winter the area regularly supports: Common redshank</p> <p>Ramsar criterion 2 The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates.</p> <p>Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds.</p> <p>Ramsar criterion 6 – species/populations occurring at levels of international importance Qualifying species/populations (as identified at designation): Species regularly supported during the breeding season: Lesser black-backed gull</p>
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	Species with peak counts in winter: Pied avocet Common redshank	
Sub Feature(s) Vegetated shingle - shingle heath communities well established and showing zonation of shingle vegetation	Sensitivity The shingle supports a number of rare and scarce invertebrates and is an important breeding place for many bird species including terns and avocet. Trampling and damage along designated walkways and unauthorised areas. Potential problem with access from water-skiers. Risk of loss due to coastal erosion and sea level rise.	Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain*, in favourable condition, the habitats for the populations of the regularly occurring Annex 1 bird species and migratory bird species +, of European importance, with particular reference to grazing marsh, saltmarsh, intertidal mudflat and shallow coastal waters. +avocet, Sandwich tern, little tern, ruff, redshank, lesser black-backed gull * maintenance implies restoration if the feature is not currently in favourable condition.
Reedbed - particularly around Havergate Island	Dry reedbed home to specialist dry-litter beetle species. Increase in <i>Juncus</i> spp. on some marsh areas which provides cover for redshank. Risk of loss due to coastal squeeze.	
Saltmarsh - fringe along stony ditch and extends out to significant areas towards south	Risk of loss of important saltmarsh species through sea level rise and coastal erosion.	
Intertidal mudflat - on both sides of the channel	Risk of loss from coastal squeeze and sea level rise.	
Brackish lagoons	Brackish lagoons at risk of overtopping and becoming more saline. Risk of loss from coastal squeeze and sea level rise.	
Neutral grassland - with ditches. Progression from the saltmarsh areas	Risk of loss from coastal squeeze and sea level rise.	

Aide, Ore and Butley Estuary SAC site features	Annex I habitats (that are a primary reason for selection): Estuaries Annex I habitats (present as a qualifying feature but not primary reason for selection of this site): Mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows	
Sub Feature(s) Shingle bar - only bar built estuary in UK with a shingle bar. Vegetated and dynamic shingle habitat.	Sensitivity Coastal accretion - bar has been extending rapidly along the coast since 1530 through longshore drift from the north, pushing the mouth of the estuary progressively south-westwards.	Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain*, in favourable condition, the Atlantic salt meadows, estuaries, mudflats and sandflats not covered by the seawater at low tide, saline lagoons, annual vegetation of drift lines and perennial vegetation of stony banks.
Mudflats and sandflats - not covered by seawater at low tide	Risk of loss from coastal squeeze and sea level rise.	
Atlantic saltmeadows	Past canalisation and erosion together with sea level rise has resulted in the loss of much of the saltmarsh.	
Vegetated shingle	Many plant species that are nationally rare are found here in abundance, particularly on Havergate Island.	
Lagoons	At risk from sea level rise and coastal squeeze.	

Orfordness-Shingle Street SAC site features	Annex I habitats (that are a primary reason for selection of this site): Coastal lagoons *priority feature, annual vegetation of drift lines, perennial vegetation of stony banks	
Sub Feature(s) Shingle spit	Sensitivity Acts as a barrier providing sheltered habitats landwards of the spit. Also provides habitats for transitional vegetation.	Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain*, in favourable condition, the Atlantic salt meadows, estuaries, mudflats and sandflats not covered by the seawater at low tide, saline lagoons, annual vegetation of drift lines and perennial vegetation of stony banks.
Vegetated shingle - for annual vegetation of drift lines this is considered to be rare as its total extent in the UK is estimated to be less than 100 hectares.	This is a sensitive habitat. Sea level rise will result in loss of this feature. The northern part of Orfordness has suffered considerable damage from defence-related activities.	
Annual vegetation of drift lines	Drift line vegetation occurs on the sheltered western side of the spit at the transition from shingle to saltmarsh as well as on the exposed eastern coast. Sea level rise will result in loss of this feature.	
Saltmarsh	The saltmarsh provides an important habitat for birds and invertebrates as well as supporting a large number of rare saltmarsh plants.	

HOL 16.1

Potential effect of policy: It is considered that this Management Areas would not on consideration, have an adverse effect on the integrity of the International sites. There will undoubtedly be an effect in certain areas; however, no examples have been identified where this effect would be contributory towards an adverse effect on site integrity.

Implications for the integrity of the site: None

HOL 16.2 to 16.6

<p>Alde-Ore Estuary Ramsar and SPA site features</p>	<p>Ramsar criterion 2 The site supports a number of nationally-scarce plant species and British Red Data Book invertebrates.</p> <p>Ramsar criterion 3 The site supports a notable assemblage of breeding and wintering wetland birds.</p> <p>Ramsar criterion 6 – species/populations occurring at levels of international importance Qualifying species/populations (as identified at designation): Species regularly supported during the breeding season: Lesser black-backed gull Species with peak counts in winter: Pied avocet Common redshank</p> <p>Article 4.1 Qualification During the breeding season the area regularly supports: Marsh harrier Avocet Little tern Sandwich tern Over winter the area regularly supports: Ruff Avocet</p> <p>Article 4.2 Qualification During the breeding season the area regularly supports: Lesser black-backed gull Over winter the area regularly supports: Common redshank</p>	
<p>Sub Feature(s) Vegetated shingle - shingle heath communities well established and showing zonation of shingle</p>	<p>Sensitivity The shingle supports a number of rare and scarce invertebrates and is an important breeding place for many bird species including</p>	<p>Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain*, in favourable condition, the habitats for the populations of the regularly occurring Annex 1 bird species and migratory bird species +, of European importance, with particular reference to grazing marsh,</p>

<p>vegetation</p> <p>Reedbed - particularly around Havergate Island</p> <p>Saltmarsh - fringe along stony ditch and extends out to significant areas towards south</p> <p>Intertidal mudflat - on both sides of the channel</p> <p>Brackish lagoons</p> <p>Neutral grassland - with ditches. Progression from the saltmarsh areas</p>	<p>terns and avocet. Trampling and damage along designated walkways and unauthorised areas. Potential problem with access from waterskiers. Risk of loss due to coastal erosion and sea level rise.</p> <p>Dry reedbed home to specialist dry-litter beetle species. Increase in Juncus spp. on some marsh areas which provides cover for redshank. Risk of loss due to coastal squeeze.</p> <p>Risk of loss of important saltmarsh species through sea level rise and coastal erosion.</p> <p>Risk of loss from coastal squeeze and sea level rise.</p> <p>Brackish lagoons at risk of overtopping and becoming more saline. Risk of loss from coastal squeeze and sea level rise.</p> <p>Risk of loss from coastal squeeze and sea level rise.</p>	<p>saltmarsh, intertidal mudflat and shallow coastal waters.</p> <p>+avocet, Sandwich tern, little tern, ruff, redshank, lesser black-backed gull</p> <p>* maintenance implies restoration if the feature is not currently in favourable condition.</p>
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Aide, Ore and Butley Estuary SAC site features	Annex I habitats (that are a primary reason for selection): Estuaries Annex I habitats (present as a qualifying feature but not primary reason for selection of this site): Mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows	
Sub Feature(s) Estuaries Annex I habitats (present as a qualifying feature but not primary reason for selection of this site): Mudflats and sandflats not covered by seawater at low tide, Atlantic salt meadows	Sensitivity Past canalisation and erosion together with sea-level rise has resulted in the loss of much of the saltmarsh. There are plans for managed coastal retreat which in the long-term will result in the creation of saltmarsh.	Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain*, in favourable condition, the Atlantic salt meadows, estuaries, mudflats and sandflats not covered by the seawater at low tide, saline lagoons, annual vegetation of drift lines and perennial vegetation of stony banks.

Orfordness-Shingle Street SAC site features	Annex I habitats (that are a primary reason for selection of this site): Coastal lagoons *priority feature, annual vegetation of drift lines, perennial vegetation of stony banks	
Sub Feature(s) Coastal lagoons (priority feature), annual vegetation of drift lines, perennial vegetation of stony banks	Sensitivity The coastal habitats which are important at this site need to be dynamic in order to function, and to respond to coastal change and sea level rise. Currently this dynamism is constrained by shingle re-cycling works at the northern end and coast protection works at the southern end. Recreational use of the coast is an issue because rare shingle vegetation is highly sensitive to trampling damage, and rare birds which nest on shingle (such as Little Tern) are easily scared away. Vegetated shingle is a sensitive habitat. The site is managed to limit recreational pressures. Much of the interest is	Conservation Objective The conservation objectives for this site are, subject to natural change, to maintain* in favourable condition the saline lagoons, annual vegetation of drift lines and perennial vegetation of stony banks. * maintenance implies restoration if the feature is not currently in favourable condition.

	<p>self-sustaining with little need for intervention. Natural coastal processes will lead to changes in the extent of lagoons at Shingle Street over time.</p>	
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HOL 16.2 to 16.6

Potential effect of policy:

The overall intent of management is to maintain this system (an estuarine mouth fronted by extensive shingle habitat) in as natural a manner as possible. The intent of policy is to maintain the dynamism required for the shingle and saline lagoon systems, to maintain the estuary mouth and to prevent the rapid loss of habitat through squeeze (shingle and saline lagoons, an SAC interest feature). The critical elements to support this are the policies to support the maintenance of the estuary mouth (HOL 16.2 – 16.3) and the provision of some degree of stability to the overall system (HOL 16.5 at East Lane), although this may have a significant effect on SAC features.

The SMP explicitly mentions the requirement to manage the estuary mouth in a manner which enables coastal lagoons to form on the south shore. The policy at East Lane (HOL 16.5) seeks to provide limited control to avoid the rapid loss of shingle from a system that has historically benefited from previous management. It is an intent to protect the integrity of intertidal and freshwater habitat in a dynamic context (encouraging natural change) whilst not abandoning the sites (where the loss of an established holding point at East Lane would lead to acute shifts, not considered to be, or moving towards – natural change).

This series of units, does however, require an approach of monitoring the coast, to establish how the features are affected in response to SMP policy. To this end, a detailed site specific study is required to monitor key elements of this wider area and to feed the results of this into the SMP3 process. In this manner, the initial management provision of this SMP can evolve to ensure that there is no adverse effect on the integrity of the site based on the provision of future management (in SMP3).

Implications for the integrity of the site:

No adverse effect on integrity is expected in the short term. Any longer term effects will be addressed through a site specific study based on monitoring of the response of the coast to policy. This process will inform the provision of policy in subsequent SMPs.

The intent of policy for the SACs, is to enable a dynamic system to function naturally whilst providing limited management to protect Shingle Street. The policy is considered to enable the natural development of the shingle and the estuary and it is not considered that the management required to protect Shingle Street, would be of a magnitude to affect the wider processes driving natural change.

Avoidance measure:

The management of the estuary mouth to provide the appropriate conditions for the formation of saline lagoons, especially with regards to maintaining the width of shingle foreshore. In addition to this, a site specific study should be implemented for the entire area, to monitor the manner in which the coast is evolving in response to sea level rise and SMP policy. The study would be developed in regard to the input of Natural England and the Environment Agency and would provide the feed for the provision of policy in SMP3. Additionally, monitoring will be reviewed annually, and if short term adverse effects become evident, provision for an action plan to address this will be included.

4.6.5 DEB 17 - BAWDSEY HILL TO MOUTH OF DEBEN


Location reference:	BAWDSEY HILL TO MOUTH OF DEBEN (CH. 66.5 TO 71)
Management Area reference:	DEB 17
Policy Development Zone:	PDZ 6

* 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:

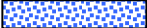
-  With Present Management.
-  Draft Preferred Policy.

-  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:

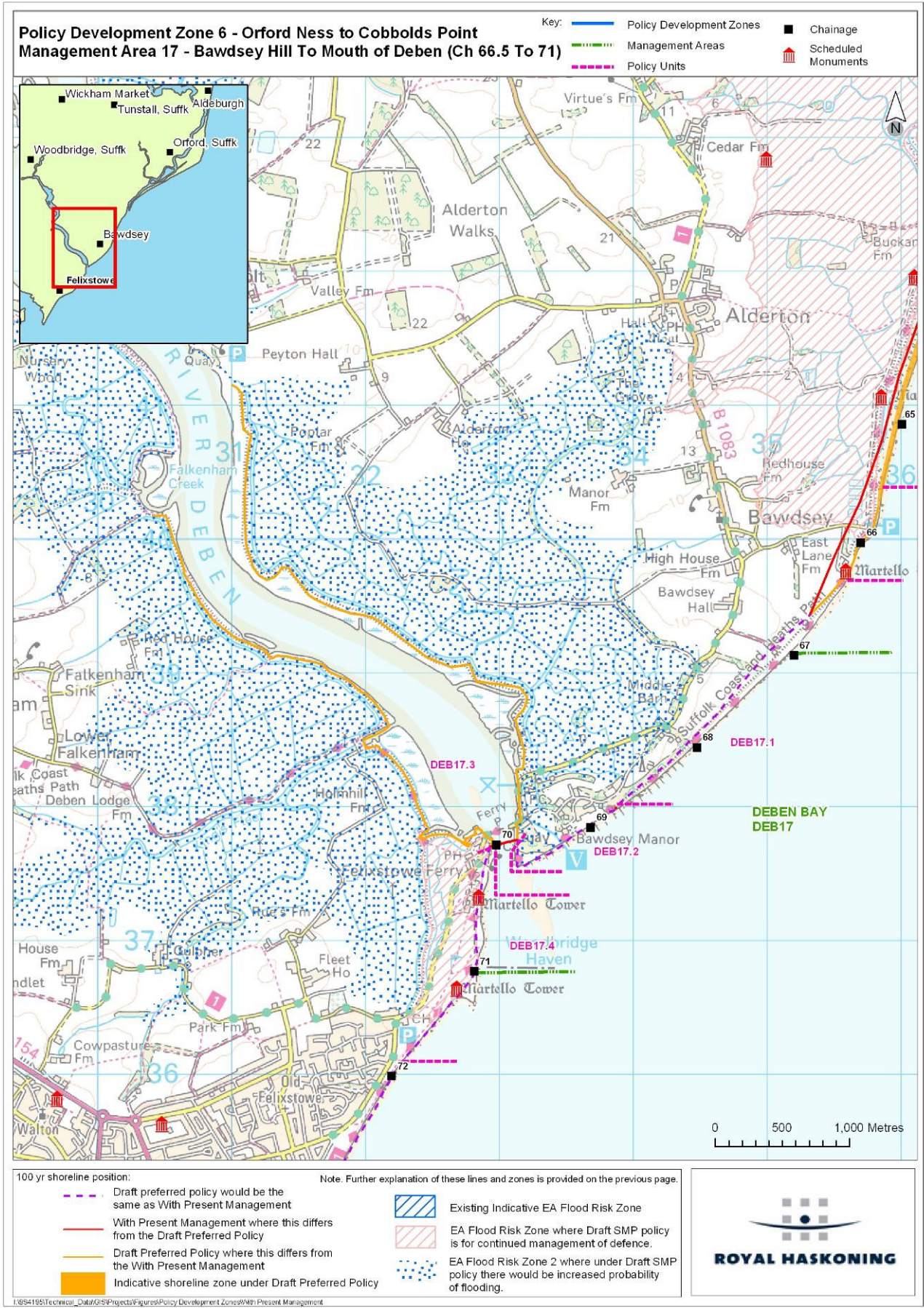
Flood Risk Zones

 General Flood Risk Zones. The explanation of these zones is provided on the Environment Agency’s web site www.environment-agency.gov.uk. 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 aim is to maintain the natural throughput of sediment both along the cliffs and across the Deben, providing the opportunity to manage defence of assets in a sustainable manner with minimal intervention in the coastal processes. This cannot be achieved through loss of the estuary mouth. The intent is to maintain the existing constraints on the estuary entrance, although allowing general variation within these limits. The behaviour of the Knolls is the subject of continuing monitoring, which needs to be continued. The plan imposes policy on the lower part of the estuary where management of defences should not result in unsustainable management of the current entrance width to the estuary. The intent is to maintain existing land use and water use either side of the lower estuary. Areas further within the upper estuary need to be examined as potential mitigation for loss of saltmarsh over the lower estuary. Management of defences within the lower estuary needs to consider how flooding during extreme events can be managed. The policy at the coast in the long term would be subject to successful resolution of these issues.

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Improve defences to Bawdsey Manor in a manner consistent with maintaining the estuary mouth configuration. Maintain protection to locally vulnerable sections along the Felixstowe Ferry frontage.
Medium term	Maintain defences.
Long term	Maintain defences and improve or adapt defences within estuary.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			Comment
		2025	2055	2105	
DEB 17.1	Bawdsey Cliffs	NAI	NAI	NAI	
DEB 17.2	Bawdsey Manor	HTL	HTL	HTL	Maintain estuary configuration with local decisions on management of individual sections. This may require private funding.
DEB 17.3	Lower estuary	HTL	HTL	MR	Manage potential flood compartment in a manner to allow sustainable management of the estuary entrance.
DEB 17.4	Felixstowe Ferry	HTL	HTL	HTL	Manage alignment of the coast. This is dependent on cyclical coastal process moving sediment onto the frontage. May need to review policy at the end of the first epoch.
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
Property	Potential NAI Damages/ Cost £k PV	8,880	9,820	4,993	23,693
	Preferred Plan Damages £k PV	805	660	450	1,915
	Benefits £k PV	8,075	9,160	4,543	21,778
	Costs of Implementing plan £k PV				

Strategic Environmental Assessment summary table for preferred policy MA DEB 17

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
ISSUE - Maintenance and Enhancement of Biodiversity on a Dynamic Coastline	
<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 Deben Estuary and Bawdsey Cliff SSSI, Deben Estuary Ramsar/SPA.</p> <p>The policy seeks to provide stability to the estuary mouth, whilst allowing natural processes in the north. The mouth of the estuary has been defended for a considerable period, with estuarine habitat responding to this, with subsequent designation in the lower estuary. Overall the policy is considered to be neutral as a continuation of historical management.</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 provide a degree of stability to the estuary shifting management and the estuary towards a more natural approach/system. The overall effect is therefore minor positive.</p>
<p>Coastal squeeze has the potential to lead to the loss of UK BAP (priority & 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: Mudflat, Saltmarsh, Reedbeds, Maritime Cliffs and Slopes. The management area promotes a degree of stability to the estuary whilst allowing coastal cliffs in the north to behave naturally. The overall effect is therefore minor positive.</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 SSSIs in this management area is designated for geological significance, mudflat and sandbank. The management area provides for a balance between static and dynamic habitat, the intent being to provide a longer term degree of stability to the estuary mouth whilst realigning at the inner estuary. The geological interest at the cliffs is maintained via NAI. The overall effect on SSSIs therefore neutral or minor positive</p>

ISSUE	DETERMINATION
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 of protection?</p> <p>Does the policy work with or against natural processes?</p>	<p>The Policy seeks to provide stability at the estuary mouth in a dynamic context (areas to the north being allowed to evolve naturally). In this context the policy maintains the historical defence of the estuary, but allows natural change to the north, thereby bringing balance to the coast. The overall effect is therefore neutral</p> <p>The policy may lead to a likely increase in flood risk to some properties within the flood zone. The overall effect therefore is minor negative.</p> <p>The management area will require ongoing management to HTL; the overall effect therefore is minor negative.</p> <p>The overall intent of the management area is to promote a balance of providing stability at the estuary mouth and to offer balance with the coastline to the north. This does require a degree of intervention and the overall effect is therefore minor negative.</p>

ISSUE	DETERMINATION
ISSUE - Maintenance of water supply in the coastal zone	
<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 increased incursion with the estuary which may lead to salinisation of the aquifers. The overall effect is therefore minor negative.</p>
ISSUE - Maintenance of the values of the coastal landscape & Area of Outstanding Natural Beauty (AONB)	
<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 a degree of stability to the coast in a dynamic setting. However, the effects of SLR in response to HTL may lead to increased risk of flooding two Martello Towers at the southern edge of the estuary mouth. Overall the benefits of this are minor positive.</p> <p>The management area will not lead to any new features. Overall the effect is considered to be neutral.</p>
ISSUE - Protection of historic and archaeological features on a dynamic coastline	
<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 policy may lead to increased risk flooding of Martello Towers on the Southern bank of the estuary mouth. However, the HTL policy will protect the settlement at Bawdsey Manor (and the Grade 2 listed Lemonary just to the north). The overall effect is therefore neutral.</p>
<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</p>	<p>No known features on this site. However estuary mouths would be typical for signs of historic development. Since the policy is HTL, the effect is therefore neutral.</p>

ISSUE	DETERMINATION
<p>where loss is expected.</p>	
<p>ISSUE - Protection of coastal communities and culture</p>	
<p><i>Protection of key coastal infrastructure</i></p>	
<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 policy would not lead to any loss of continued access along the coast (the viability of the foot ferry will not be compromised) and the effect is therefore neutral.</p>

APPROPRIATE ASSESSMENT - PREFERRED PLAN MA 17

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>Deben Estuary SPA and Ramsar site features</p>	<p>Article 4.1 Qualification Over winter the area regularly supports: Avocet</p> <p>Article 4.2 Qualification Over winter the area regularly supports: Dark-bellied Brent goose</p> <p>Ramsar criterion 2 Supports a population of the mollusc <i>Vertigo angustior</i> (Habitats Directive Annex II (S1014); British Red Data Book Endangered). Martlesham Creek is one of only about fourteen sites in Britain where this species survives</p> <p>Ramsar criterion 6 – species/populations occurring at levels of international importance Qualifying species/populations (as identified at designation): Species with peak counts in winter: Dark-bellied Brent goose</p>	
<p>Sub Feature(s) Saltmarsh</p>	<p>Sensitivity The saltmarsh and intertidal habitats are vulnerable to sea level rise and coastal squeeze. These issues are being addressed through the Environment Agency LEAP, the estuary Shoreline Management Plan and research into possible managed retreat in parts of the site</p>	<p>Conservation Objective The Conservation Objectives for this site are ,subject to natural change, to maintain*, in favourable condition, the habitats for the populations of Annex 1 species and the regularly occurring migratory bird species +, of European importance, with particular reference to intertidal saltmarsh and mudflats . + Avocet, Brent goose * maintenance implies restoration if the feature is not currently in favourable condition.</p>

DEB 17.1 to 17.4

Potential effect of policy: This Management Area seeks to provide stability to the mouth of the Deben Estuary and its lower reaches. This policy is based on the expectation that managed realignment is likely to be required in the middle and upper reaches to allow the estuary to respond to sea level rise, without threatening the stability of the estuary mouth. The intent of this area is to provide natural management of the system to enable the development of the estuary and avoiding the loss of intertidal habitat through accelerated squeeze. The estuary itself is designated as a SAC/Ramsar for Dark Bellied Brent Geese *Branta bernicla bernicla* and Avocet *Recurvirostra avosetta*, both of which require intertidal habitat.

It is likely that holding the line in the estuary over Epoch 1 and 2 may lead to a loss of intertidal habitat and subsequent requirements for realignment. The overall intent of this management area is to respond to sea level rise in a manner which will enable the estuary to function naturally, albeit within the confines of human activity at the estuary mouth. However, until the strategy for the estuary strategy has been developed, it is difficult to determine whether there will be an adverse effect on the SPA as the estuary strategy may give rise to a managed realignment policy which would serve to mitigate any losses due to holding the estuary mouth.

Implications for the integrity of the site: The HTL policy in the estuary under DEB 17.3 may lead to a loss of intertidal habitat that would have an adverse effect on designated bird species. This policy may therefore have an adverse effect on the integrity of the site.

Avoidance measure: Completion of the estuary strategy.

4.6.6 DEB 18 - NORTH FELIXSTOWE


Location reference:	NORTH FELIXSTOWE (CH. 71 TO 73)
Management Area reference:	DEB 18
Policy Development Zone:	PDZ 6

* 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:

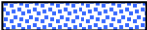
-  With Present Management.
-  Draft Preferred Policy.

-  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. The maps within this Draft SMP document show where SMP policy might influence the management of flood risk.

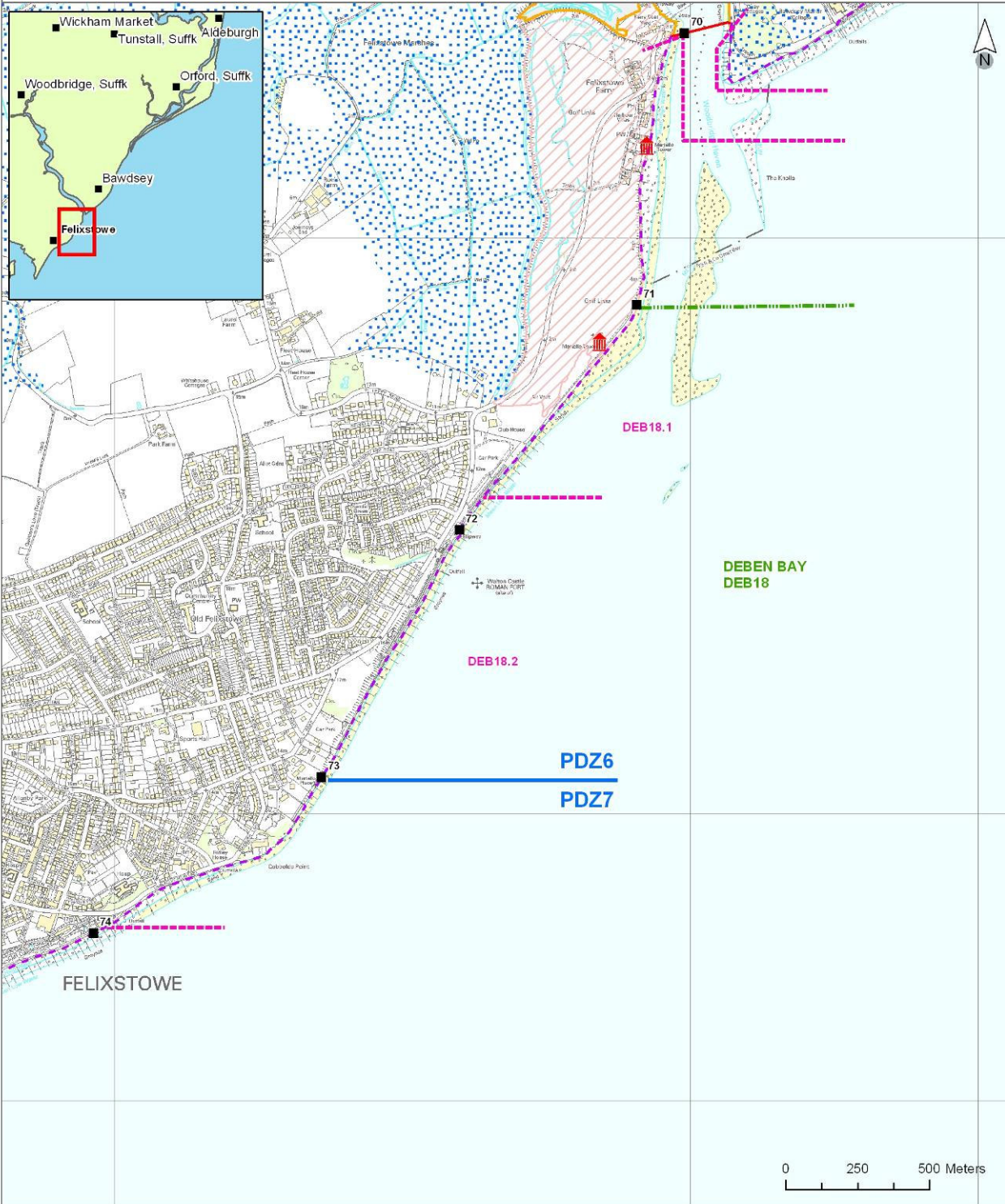
 Indicate areas where the intent of the SMP draft policy is to continue to manage this risk.

 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 6 - Orford Ness to Cobbolds Point
Management Area 18 - North Felixstowe (Ch 71 To 73)**

- 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 aim of the plan is to maintain the defence at North Felixstowe overall but in a responsive manner, taking account of periods of likely good sediment supply and periods of little sediment, thereby allowing the need for less overall control of coastal processes.

PREFERRED POLICY TO IMPLEMENT PLAN:	
From present day	Maintain defences with potential need for improvement to groynes and addressing undermining.
Medium term	Maintain defences with potential need for improvement to groynes and addressing undermining.
Long term	Maintain defences with potential need for improvement to groynes and addressing undermining.

SUMMARY OF SPECIFIC POLICIES

Policy Unit		Policy Plan			
		2025	2055	2105	Comment
DEB 18.1	Golf Course	HTL	HTL	HTL	Long term response management.
DEB 18.2	North Felixstowe	HTL	HTL	HTL	Long term response management.

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
Property	Potential NAI Damages/ Cost £k PV	-	-	-	3,392
	Preferred Plan Damages £k PV	-	-	-	0
	Benefits £k PV	-	-	-	3,392
	Costs of Implementing plan £k PV	-	-	-	1,904

Strategic Environmental Assessment summary table for preferred policy MA DEB 18

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
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 of protection?</p> <p>Does the policy work with or against natural processes?</p>	<p>The Management Area provides protection for established urban frontages and represents a holding point on the coast</p> <p>Overall, the Management Area will have a minor negative benefit in regard to this issue.</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 HTL policies within this Management Area will protect the communities of Felixstowe but, such defences will need to be increased in regard to SLR. The effect is considered therefore to be minor negative.</p> <p>The overall intent of the Management Area is to defend Felixstowe. The overall effect is therefore minor negative.</p>

ISSUE	DETERMINATION
ISSUE - Maintenance of water supply in the coastal zone	
<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 HTL policy adjacent to Felixstowe will provide a minor positive contribution to the defence of freshwater aquifers and infrastructure.</p>
ISSUE - Maintenance of the values of the coastal landscape & Area of Outstanding Natural Beauty (AONB)	
<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 provides a balance of natural and anthropogenic features in this area and the effect is therefore minor positive.</p> <p>No new features are proposed by this policy.</p>
ISSUE - Protection of historic and archaeological features on a dynamic coastline	
<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>Policy in this Management Area will continue to maintain such features including the maintained defence of an SAM.</p> <p>Therefore there is an overall minor positive benefit.</p>

ISSUE	DETERMINATION
<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 protection for urban areas and features within them.</p> <p>The Management Area provides minor positive benefits.</p>
<p>ISSUE - Protection of coastal communities and culture</p>	
<p><i>Protection of coastal towns and settlements</i></p>	
<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. The settlements are listed in Section 3.4.4.</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>The HTL policies for defended areas provide sustainable defence and so the policy has a minor positive benefit.</p>
<p>Coastal communities in Suffolk may be dependent on key features which are located outside of the settlement area (for example the relationship of Southwold Harbour (on the Blythe Estuary) to the economy of Southwold). There is a need therefore to ensure that features which support communities are maintained, or the actual utility is maintained) – will SMP policy maintain the form or function of features located outside of established settlements, which are essential to the economy and quality of life of key coastal settlements?</p>	<p>The policy at DEB 18.1 maintains the location of the golf course and car park to the north of Felixstowe and the effect is therefore minor positive.</p>
<p><i>Protection of key coastal infrastructure</i></p>	

ISSUE	DETERMINATION
<p>The Suffolk coast is served by a network of roads along the coast (primarily the A12) and a network of smaller roads to coastal settlements. The maintenance of these roads is important in regard to the utility it provides for the coastal economy and quality of life etc. The roads themselves are of secondary importance (they could be replaced), the important feature is the actual access provided as a social and economic function. The potential exists for this network to be affected by coastal processes – will SMP policy maintain road based transport connectivity between settlements on the Suffolk coast?</p>	<p>The Management Area HTL will provide ongoing defence of coastal roads in Felixstowe.</p> <p>The Management Area provides minor positive benefits.</p>
<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 HTL policy will maintain coastal footpath in urban.</p> <p>The Management Area provides minor positive benefits</p>

