

(since the end of World War II). Such decisions should be made as early as possible in order to allow significant time periods (i.e. >50 years) for wetland complexes to become established. This approach would enable decisions on the establishment of dynamic coastal functionality to be more easily made and for future management at sites such as Minsmere to be geared towards alternative habitat suites.

A summary of predicted habitat changes within the designated areas (i.e. within the defined boundaries of the cSAC/SPA/Ramsar) is given in Table 5.3. The table relates change to the existing baseline of area of habitat within the site boundaries and provides an indication of the likely habitat creation requirements under the scenarios that have been investigated. As can be seen there is under existing policy unlikely to be a significant requirement for the replacement of designated habitats. Both the loss of heathland and sand dune could be attributed to natural change and therefore there may be no requirement to directly offset their loss. Potentially, in the longer term, there may be a need to replace the freshwater habitat complex at Minsmere (see discussion above) and if this is the case then an area in the order of 350ha would be required. Potential replacement sites include former estuarine areas around the Alde-Ore and the Deben which between them could provide approximately 1500ha of suitable land. Alternatively, the potential exists for the creation of a new wetland complex away from the immediate coastal area (e.g. the Fens). However, significant consideration would have to be given to the likely ecological differences between an inland and coastal site and whether such differences would be acceptable with respect to the Habitats Directive.

Table 5.3 – Predicted habitat changes to designated areas (cSAC/SPA/Ramsar) for the Minsmere frontage.

MINSMERE	Mudflats		Saline lagoons	Reedbed	Wet grassland	Drift line vegetation		Heath
<i>Baseline</i>				155ha	205ha	3.5km	40ha	290ha
Non-intervention	200ha	60ha	0	35ha	65ha	+?km	10ha	270ha
Current policy				155ha	205ha	3.5km	20ha	270ha

5.4 Alde-Ore Estuary and Orfordness

There is recognition in the designation of the Alde/Ore and Butley as a cSAC, that the estuary as a whole, with its varied habitats, is an important functioning system. This same interaction is reflected in the physical performance of the estuary, not least in the balance achieved over the lower reaches between estuary flow and coastal dynamics.

The current management practice for the main estuary and the Butley, in the absence as yet of adopting an estuary strategy for defence, is for ad hoc response maintenance and repair of existing defences. The most critical area of stress within the estuary is around the Aldeburgh bends. Due to increased flows through this area, there is a significant loss of saltmarsh fringe and potential for further loss in the area of Cob Island and along the High Street (East Iken Marsh) frontage.

Under realistic sea level change scenarios, maintenance of all defences would become increasingly difficult and increased flow pressure would increase the loss of fringe habitat. Furthermore, with potential short-medium term failure of defences to Lantern

and Kings Marsh (the defences to these areas are the responsibility of the National Trust) and the consequential increase in intertidal area of some 350ha and increase in tidal volume of some 20%, there would be substantial increased pressure over the lower reaches of the estuary. Almost certainly, an increase in tidal volume of this nature would restrict the ability for realignment elsewhere within the estuary. This overall approach restricts balanced responsive management of the estuary, while resulting in a loss of internationally designated intertidal habitats. This approach would require habitat mitigation and is considered to be unsustainable in the longer term.

The defences to Hazelwood marshes are in generally poor condition and will require upgrading. Even so, there is little stress in relation to estuary behaviour and there is no technical reason for not maintaining these defences, thereby maintaining the SPA/Ramsar designated grazing marsh to landward.

Along the open coast frontage of Orfordness there is a reducing supply of sediment from the north, resulting in an increasing loss of material along the face of the Spit (south of the Ness). In effect this is leading to a gradual straightening of the shoreline between Aldeburgh and Shingle Street. Such change would be over a very long time scale (500 to 2000years) but provides the context over which the change should be viewed. The present day impact of this process is the vulnerability of the neck of land between the river and the sea at Slaughden.

The potential for a breach at Slaughden and the impact that this could have on the rest of the system represents one of the key topics for the management of the estuary. The neck of land between the river and the sea at Slaughden has been variously protected by hard defences and more recently by beach management, bringing material from the beach seaward of Lantern Marshes. In the absence of some form of management it is likely that the neck of land would breach and probably in the longer term remain as a new opening to the Alde Estuary. Based on a best estimate of likely evolution of the estuary it is considered that as a breach or entrance developed at Slaughden, the complex interaction of tide through both entrances would be likely to result in increased water levels in the vicinity of Kings Marsh, although flows would be reduced. This increase in water level would make the Kings and Lanterns Marshes more vulnerable to flooding and, due to the lack of defence maintenance, failure would result. It remains uncertain how flows would distribute between the two entrances but there is a distinct possibility that the northern entrance may dominate. Certainly there would be a reduction in flow within the Ore entrance and, as a consequence, there is likely to be an increased rollover of Orford Spit towards the marshes of Boyton and Orford Haven. Whether the reduced flow within the river Ore would be sufficient to maintain its entrance is again uncertain. There is a possibility that Orford Spit may, in time, attach itself to the shoreline. Although there is the potential that a breach at Slaughden would lead to the development of a more sustainable estuary form the implications for the designated habitats and species (as well as socio-economic interests) are extremely significant. The potential changes have not been investigated in detail in the CHaMP and it is recommended that this would require a separate and more detailed study.

From Orford Spit, sediment moves down the coast and is transferred onto the Shingle Street frontage. This transfer can occur as a gradual feed through the series of banks at Orford Haven or as a process by which the banks detach from the northern side of the Estuary mouth and attach themselves to the Shingle Street frontage. The shoreline to the south of Shingle Street is maintained at its southern end by the promontory of East Lane. The bay between Shingle Street and East lane is relatively stable in alignment,

although material feeding from the north tends to make its way along the frontage and is lost to the coast further south.

The overall prediction for the Alde-Ore system is that the designated internationally important features cannot be retained in their existing extent and distribution either by intervention or by allowing the natural systems of the coast and estuary to continue. Allowing 'natural' change to occur could have significant consequences with respect to the entire morphology of the estuary and its associated habitats and socio-economic interests. While significant gains in coastal intertidal habitats could be gained the overall change is of such a scale that it would be difficult to justify

In order to address potential habitat change within the system a number of alternative defence scenarios and overall approaches to the management of the estuary have been considered. The main objective behind the alternatives is to allow a more controlled and adaptive approach to be taken.

The main scenario considered is one whereby all defences within the estuary are maintained apart from those to Kings and Lantern Marshes on Orfordness. This is because it is considered that it is almost inevitable that there will be change to Orfordness and in order to prevent significant disruption to the rest of the estuary system and allow a more natural transition to a new ecological state/equilibrium this change should be managed. It is proposed that the line and integrity of the estuary defences to Kings and Lantern Marshes should be maintained but no attempt made to raise their level, in effecting lowering the defence level as sea level rise occurs. This would allow, gradually, more frequent tidal inundation from extreme events over the next 50 years. A similar attitude would be taken to the seaward defence in not attempting to maintain the current defence standards in the face of sea level change. The management of this in relation to the use of the marshes to act as control to mitigate extreme increases in tidal volume would need to be examined in more detail. The longer-term intent of this approach would be to allow movement to a saline dominated environment, over the next 50 to 100 years, which would minimise the need for future intervention.

The ecological interest of the Ness would therefore largely be left to evolve, albeit through a more controlled and gradual process. The main impact would be a change from existing terrestrial grassland habitats at Kings and Lantern marshes into saline features, probably intertidal mudflat and saltmarsh. This would provide benefits with respect to SPA estuarine bird populations. It is likely that there would be a loss of saline lagoon interest due to the overall development of intertidal habitat. The approach is sustainable but would require a long-term programme of mitigation for the loss of terrestrial SPA/Ramsar designated features and the cSAC saline lagoons.

A summary of predicted habitat changes within the designated areas (i.e. within the defined boundaries of the cSAC/SPA/Ramsar) is given in Table 5.4. The table relates change to the existing baseline of area of habitat within the site boundaries and provides an indication of the likely habitat creation requirements under the scenarios that have been investigated. The loss of the existing SPA/Ramsar brackish grassland, grazing marsh and reedbed at King's and Lantern Marshes (approximately 350ha) could be offset by the management of land around the estuary in order to re-create these habitat types. Suitable areas include the main block of Sudbourne and Orford Marshes (approximately 500ha) and Gedgrave Marshes (approximately 200ha) where wet grasslands and potential reedbed development could be undertaken at the heads of freshwater flows into the area. Similarly, areas adjacent to the Butley would provide appropriate mitigation for these wetland habitats (e.g. Stone Marshes, 150ha).

Offsetting the long-term loss of shingle habitat from Orfordness and the loss of saline lagoons from Kings and Lantern Marshes is more problematic. It is considered impractical and unsustainable to replace the shingle habitat, as this would require the import and retention of sediment in place. Potentially, saline lagoon habitat could be engineered and incorporated into wetland habitat creation schemes to replace the brackish grassland lost from the estuary (see above).

Two other potential habitat creation areas are Boyton Marsh and Aldeburgh Town Marsh. Both areas offer the potential for the creation of either wet grassland or intertidal habitat. Re-alignment of Aldeburgh Town Marsh may be advanced as a solution to dealing with the stress on the defences in this area rather than solely as a habitat creation measure. There is therefore quite extensive scope for a balance of habitat extent and distribution to be achieved, while still maintaining the control of the estuary.

Table 5.4 – Predicted habitat changes to designated areas (cSAC/SPA/Ramsar) for the Alde-Ore Estuary and Orfordness.

ALDE-ORE	Mudflats	Saltmarsh	Saline lagoons	Reedbed	Wet grassland	Drift line vegetation	
<i>Baseline</i>	600ha	310ha	Approx65	50ha	430ha	17km	500ha
Non-intervention	980ha	280ha	10No.	15ha	5ha	15km	375ha
Current practice	850ha	345ha	10No	15ha	75ha	17km	450ha
Reduce defence to Kings and Lantern	750ha	445ha	10No.	15ha	75ha	17km	480ha

5.5 Deben Estuary

The Deben Estuary has developed, over the last several centuries, with reclamation, principally within the lower estuary, up to the principal low water channel. In the upper part of the estuary there has not been a similar restraint, reclamation being confined to offshoot valleys. There has been considerable development of saltmarsh within the natural width of the upper estuary. This is now suffering from erosion due to coastal squeeze.

Current management practice is to maintain the existing defences throughout the estuary. This would require significant investment but is sustainable. The approach would, however, lead to a continuing loss of SPA designated saltmarsh habitat which would require mitigation in order to offset loss. This policy would also maintain the potential for freshwater grassland habitat creation within areas of low-lying land on either side of the estuary.

Selective realignment from critical defences would provide the opportunity for the creation of intertidal habitat and offset the loss of saltmarsh vegetation while maintaining control of the development of the estuary. This provides a more sustainable approach without extensive disruption to the rest of the estuary system or open coast processes. Particular areas identified for realignment within the estuary strategy are at Melton, Martlesham Creek, White Hall, Waldringfield, Ramsholt Lodge and Ramsholt and at Nursery Wood.