ALDE-ORE ESTUARY PLAN MONITORING AND REVIEW STRATEGY

Natural England considers that the Alde and Ore Estuary Plan potentially represents a likely significant effect on the European Features of the Alde-Ore Estuary Special Protection Area (SPA) and Special Area of Conservation (SAC). An appropriate assessment should be carried out to determine whether the plan represents an adverse effect on the wildlife interests of the estuary due to impacts on estuary form and function, and because of the potential for coastal squeeze effects on habitats. Any resultant degradation of habitat quality could in turn affect populations of dependent plant, invertebrate, and bird species.

Table 1 sets out the SAC and SPA habitats and species which could potentially be affected, along with site specific target ranges for their attributes. These are taken from the site Favourable Condition Table. The potential monitoring requirements are set out against each attribute, and these are collated and summarised in Table 2.

It is essential that the features of the estuary are maintained throughout their range and distribution in the upper, mid and lower estuary as far as possible, but the monitoring and review strategy should also take account of changes in this distribution, where these reflect the natural dynamism of estuary systems, or where features are developing in new re-alignment areas.

There is considerable uncertainty around climate change and therefore uncertainty around timescales and degree of impact on estuary features. For this reason an adaptive approach is proposed, whereby the provision of habitat is informed by regular and comprehensive monitoring to ensure that any replacement habitat can be provided in advance of any effect, as far as this is possible.

The area of intertidal habitat (c.60ha.) created by the unmanaged breach at Hazelwood Marshes following the winter 2013 surge has inadvertently increased the extent of intertidal habitat within the estuary. This is likely to contribute significantly to offsetting the impacts of future habitat squeeze elsewhere within the estuary, but cannot be considered as direct mitigation for the plan.

Monitoring of features across the whole site will be established, and if this shows impacts, then appropriate short and long term measures (e.g. habitat creation or restoration) will need to be provided in the upper, middle, or lower estuary as appropriate, in order to offset impacts.

We would hope to establish a collaborative approach between the community and relevant authorities (NE, EA, Local Authorities), with a monitoring baseline and monitoring programme being agreed in year 1. This will be reviewed every two to five years and

the results of monitoring will be used to inform the need for further measures, should the likelihood of any future effect be identified. The details of this approach could be set out in a memorandum of understanding between parties

DRAFT Table 1: Possible Likely significant effects of the AOEP on SAC and SPA features, target ranges and monitoring.

Feature* considered likely to be affected ***FCT march 2014**	**Attribute of feature considered likely to be affected**	**Site specific target range**	**Monitoring**
Estuary	Extent- No change in extent of estuary feature.	Maintain extent and distribution of estuary.	1. Use remote sensing techniques (CASI/Lidar, AP analysis) to assess extent and distribution of estuary habitats.
Estuary	Distribution/spatial pattern of habitats	Maintain saltmarsh and intertidal mud habitat distribution in upper, mid, and lower estuary.	1. (CASI/Lidar, AP analysis)
Estuary	Morphological equilibrium Tidal prism/CS ratio of selected sites along estuary 'no deviation from baseline'	No decline in TP/CS ratio in estuary. Horizontal boundary of mudflat/saltmarsh interface maintained. Distribution and topography of sedimentary features maintained	2. Measure TP/CS in upper, mid, lower estuary. 5 year cycle 3. Measure distribution of sedimentary features.
Saltmarsh	Extent –no decrease in extent and distribution of saltmarsh subject to natural change	Maintain extent and distribution of saltmarsh in estuary.	1. (CASI/Lidar, AP analysis)

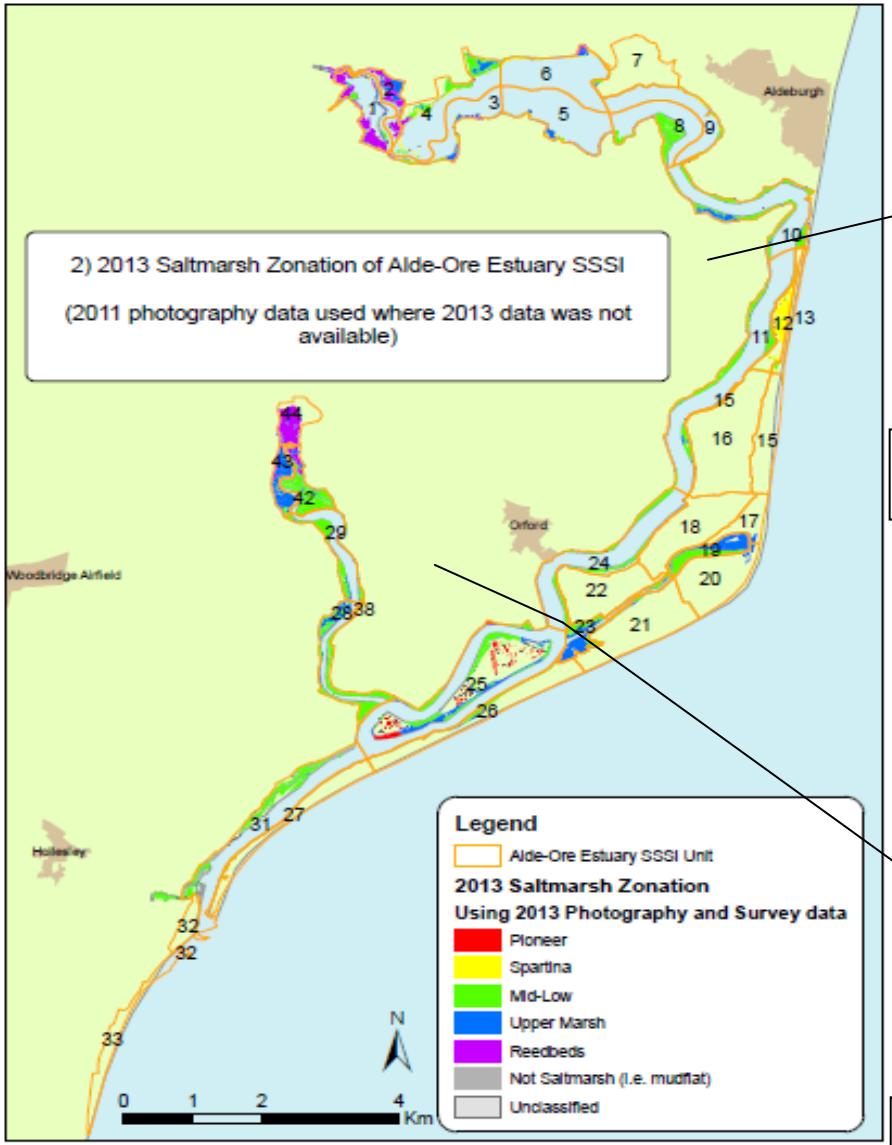
Saltmarsh	Zonation –maintain range and variation	Upper mid and lower marsh distribution should be maintained- see NVC survey and EA map as baseline.	4. Use transects, CASI/Lidar and NVC to assess extent of zones.
Saltmarsh	Characteristic species- of low, mid, upper marsh. Maintain frequency and distribution of species	Maintain in each estuary zone - see NVC survey and EA map as baseline.	4.Use transects and CASI/Lidar, AP analysis to assess extent on each zone.
Intertidal mud	No decrease in extent or distribution	Need to maintain intertidal mud distribution in estuary.	5. Intertidal mud monitoring.
Intertidal mud	Biotope composition	Maintain the variety of biotopes in estuary	6. Biotope sampling
Intertidal mud	Distribution of sediment types	Maintain the distribution of sediment types in the estuary	6. Biotope sampling and 5. Intertidal mud mapping
Intertidal mud	Biotope distribution	Maintain the distribution of biotopes in the estuary	6. Biotope sampling and 5. Intertidal mud mapping
Intertidal mud	topography	Maintain topography in the estuary	3. Measure distribution of sedimentary features.
Wintering Birds		Maintain feeding, roosting, loafing areas in estuary	7. Assess habitat availability in estuary. Monitor to ensure that appropriate habitat is

			maintained.
Breeding Birds		Maintain breeding, feeding, roosting, loafing areas in estuary	7. Assess habitat availability in estuary. Monitor to ensure that appropriate habitat is maintained.

Table 2

Monitoring summary
1. Use remote sensing techniques (CASI/Lidar, AP analysis) to assess extent and distribution of estuary habitats.
2. Measure Tidal Prism/Cross sectional area in upper, mid, lower estuary to assess estuary function
3. Measure distribution of sedimentary features to assess extent of intertidal mud biotopes.
4. Use transects, CASI/Lidar and NVC to assess extent of saltmarsh zones. (Upper, mid, lower, pioneer)
5. Monitor elevation and distribution of intertidal mud biotopes.
6. Monitor in-fauna of intertidal mud biotopes.
7. Assess bird habitat availability in upper, mid, lower estuary. Monitor to ensure that appropriate habitat is maintained.

Upper estuary



Middle estuary

Lower estuary