

CONSERVATION THREAT ADDRESSED BY THE TACTICS PROJECT

The project will address one main conservation threat. This is described below.

Summary: The freshwater and brackish habitats at Titchwell are at risk of being destroyed through incursion of the sea.

Description: The RSPB's Titchwell Marshes nature reserve is an extremely important part of the North Norfolk Coast SPA. It contains a freshwater marsh and freshwater reedbed, both of which are highly valuable bird habitats but are rare within the SPA. In addition, it contains a brackish marsh that supports a significant proportion of the avocets *Recurvirostra avosetta* breeding within the SPA and provides a vital high-tide roost site for wintering waders.

The freshwater and brackish habitats at Titchwell are arranged as a series of broad 'strips' running parallel to the coastline, which trends east-west. The brackish marsh is closest to the sea (i.e. furthest north), followed by the freshwater marsh and then the freshwater reedbed. The entire complex is bordered to the north by a tidal marsh 'strip' and then a sandy beach, and to the east and west by extensive saltmarshes.

The freshwater and brackish 'strips' are separated from the surrounding tidal habitats and from one another by a series of banks or 'walls'. More specifically:

- the brackish marsh is separated from the tidal marsh (and protected from the sea) by the North Wall
- the entire complex is separated from the saltmarsh to the west (and protected from the sea) by the West Wall
- the entire complex is separated from the saltmarsh to the east (and protected from the sea) by the East Wall
- the brackish and freshwater marshes are separated by the Parrinder Wall
- the freshwater marsh and freshwater reedbed are separated by the Reedbed Boundary Wall.

Any breach in the walls protecting the brackish and freshwater habitats from the sea would be disastrous for these habitats and the species that depend on them, as it would lead to inundation of these habitats and major changes in salinity levels. Ultimately, failure of the wall system would result in the freshwater and brackish habitats turning into tidal saltmarsh – which in turn would significantly reduce the value of Titchwell to many of the bird species for which the SPA is designated.

It has become clear recently that the wall system at Titchwell is almost certain to fail catastrophically within the next few years if nothing is done to prevent this. There are three main reasons for this.

- Firstly, the coast at this point is currently eroding and the mean high water mark is gradually moving landwards. As a result, on big spring or surge tides the whole of the tidal marsh can now be underwater and waves can run all the way up to the North Wall. This wall is not reinforced and is therefore vulnerable to erosion and possibly breaching during severe events.
- Secondly, climate change is causing sea levels and storminess to increase, and is predicted to lead to a rise in the frequency and severity of storm surges, exacerbating the effect mentioned above. Storm surges can result in high water levels up to 2 m above predicted levels.

- Thirdly, the wall system is insufficiently robust to cope with the increasing pressures that will be placed on it as a result of the above two factors. The severity of this problem has been revealed through a survey carried out for the RSPB by the engineering company Royal Haskoning. The results of this survey are summarised below.

Defence: East Wall

Condition: Good, but integrity is reduced (to moderate) by the risk of erosion of the saltmarsh in front of the wall (coastal squeeze)

Estimated residual life: >20 years without coastal squeeze, >10 years with coastal squeeze

Defence: North Wall

Condition: Good, but integrity is reduced (to moderate/poor) by the risk of erosion of the dunes that currently afford some protection to this wall

Estimated residual life: >20 years without erosion of dunes, <5 years with erosion of dunes

Defence: West Wall

Condition: Poor integrity of walls compromised by animal burrows and reduced crest width and height in some locations

Estimated residual life: <5 years

Defence: Parrinder Wall

Condition: Moderate for current purpose, very poor (urgent works required) if North Wall breached

Estimated residual life: >10 years if current status maintained, 0 years with unmanaged breach or realignment of North Wall

Defence: Reedbed Boundary Wall

Condition: Moderate – the wall has been subject to recent improvements

Estimated residual life: >10 years

Defence: South-east corner (i.e. the southern end of the East Wall)

Condition: Generally fair

Estimated residual life: >10 years

Location: This threat affects the entire freshwater/brackish complex at Titchwell.

Impact on species targeted: Loss of the freshwater reedbed would render Titchwell useless for breeding and wintering bittern *Botaurus stellaris* and greatly reduce its value for breeding marsh harrier *Circus aeruginosus*. In addition, it would have a negative impact on other, non-target species such as bearded tits *Panurus biarmicus*. Even a short-term incursion of sea water into the reedbed would be extremely damaging, as it would kill the fish on which bitterns depend. Impacts on bitterns are particularly noteworthy, as there are only about 50 calling or 'booming' males of this species in the UK each year (the number of booming males being the standard index of the breeding population) – and Titchwell is one of only three sites in the North Norfolk Coast SPA where these 'boomers' occur.

Loss of the freshwater marsh would be detrimental to wintering pintail *Anas acuta* and wigeon *A. penelope*, as these species need open areas of fresh water and there are few of these along the North Norfolk Coast. It would also affect other, non-target wildfowl. Loss of the brackish marsh would have an adverse impact on breeding avocet, which rely on the islands in this habitat to nest. It would also have a

significant negative impact on wintering waders, as the brackish marsh is one of the few high-tide roost sites in the SPA for these birds.

How threat will be dealt with: This threat will be dealt with as follows. The walls protecting the freshwater marsh and reedbed will be raised and strengthened so that they are able to maintain these habitats for at least the next 50 years. However, the walls protecting the brackish marsh will not be strengthened. Instead, the brackish marsh will be allowed to revert to tidal saltmarsh, and this loss will be mitigated through the re-profiling and enlargement of islands in the freshwater marsh, and compensated for through the creation of new habitat for breeding avocets in the RSPB's Lincolnshire Washes reserve, which is located some 30 km to the west of Titchwell.

The RSPB has invested a great deal of time and effort in assessing how to tackle the threats facing Titchwell, and is convinced that the approach outlined above is the best possible solution. The reasons for this are as follows.

- Protection of the freshwater habitats in the long term is a realistic, achievable goal. Strengthening the walls defending these habitats so that they survive for at least the next 50 years will require a significant but not disproportionate amount of engineering work. After this time, it is predicted with a high degree of confidence that the coast at this point will cease to erode and will in fact begin to build up again. This is because the erosion focus or 'sediment drift divide' that is currently located directly off Titchwell will gradually move westwards along the coast. As a result of this change, the pressure on the sea defences will decrease and the freshwater habitats will be secured indefinitely.
- In contrast, protection of the brackish marsh in the long term is not a realistic goal. This habitat is closer to the sea and would therefore be significantly harder to defend. Moreover, strengthening of the walls protecting the brackish marsh would be inconsistent with the Shoreline Management Plan for North Norfolk. This plan does not permit simple reinforcement of sea defences along existing lines, because this would lead to Natura 2000 intertidal habitats being 'squeezed' between these defences and the eroding coastline. However, it does allow for managed realignment schemes, such as that proposed here.
- Re-profiling and enlargement of islands in the freshwater marsh will mitigate the loss of the brackish marsh partially but not completely. In particular, it will provide breeding habitat for some but not all of the avocets that currently use the brackish marsh. In order to ensure that the net impact of the loss of the brackish marsh is reduced to zero, it will be necessary for us to create new, compensatory habitat nearby. Ideally, this compensatory habitat would be created adjacent to the SPA affected by the loss of the brackish marsh – i.e. the North Norfolk Coast SPA – and then incorporated into this SPA. However, there are no suitable sites adjacent to this SPA. Therefore, the most appropriate option is to create habitat adjacent to the neighbouring Wash SPA – and more specifically in the Lincolnshire Washes reserve – and then incorporate this habitat into that SPA. We are confident that this habitat will be found and used by breeding avocets, because it is close to Titchwell and because there is already a small colony in the area where it will be created.

We believe that the approach we plan to take to tackle the threats facing Titchwell is entirely consistent with the requirements of the Birds and Habitats Directives and with recent guidance on compensatory measures for damage to Natura sites issued by the EC and the UK government.