Steart Coastal Management Project

Environmental Statement: Non-Technical Summary

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Non-Technical Summary

i. Introduction

The Environment Agency proposes to carry out the Steart Coastal Management Project to create new intertidal habitat on the Steart Peninsula. The Project will create a major new wetland, including intertidal salt marsh, transitional brackish habitat, coastal grazing marsh, brackish and saline lagoons, freshwater lagoon, reedbed and numerous ponds and ditches. This will benefit plant diversity, animals such as wetland birds and offset the losses of intertidal habitat that are occurring elsewhere in the Severn Estuary as a result of rising sea levels. The amenity value of the peninsula will also be improved. At the same time there are opportunities to provide set-back defences where flood risk management is required to manage risks to people who live on the peninsula and the infrastructure that they need. Through the project, we would be able both to manage current flood risks to people and property and provide more opportunity for those living and working in the area to adapt to sea level rise and plan for the future.

This Non-Technical Summary of the Environmental Statement (ES) and the ES itself have been submitted in support of a planning application to Sedgemoor District Council for the Steart Coastal Management Project.

ii. Background

The Environment Agency has national and international obligations to create intertidal habitat on the Severn Estuary to compensate for losses that are expected due to coastal squeeze. This occurs when sea level rise causes existing intertidal habitat to be submerged and when immovable barriers in the form of existing coastal flood defences prevent new intertidal habitat from being formed further inland. Over the next 100 years, it is estimated that between 1500 to 3500 hectares (depending on the actual rate of sea level rise) of inter-tidal habitat will be lost due to coastal squeeze within the Severn Estuary. Much of this intertidal habitat is designated under European regulations for its importance as wildlife habitat.

Current plans to manage and improve the coastal defences in other areas of the Severn Estuary, where people and properties are at greater risk, can only proceed if sufficient compensation habitat is secured to replace the predicted losses. Of the various habitat creation sites under consideration, the Steart peninsula has the greatest potential. By allowing tidal inundation and managing the entry of water to different parts of the peninsula, we will be able to make a significant contribution to compensatory habitat requirements.

iii. Our Proposals

The proposed project involves creating intertidal habitat, east of Steart Road and north of the pylons crossing the peninsula, by managed realignment of the existing coastal defences (Figure 1, Compartment, or Area D). New banks would be constructed to protect Steart village, Steart Road and the pylons. Tidal water would be allowed to inundate much of the site by constructing a breach in the existing Parrett embankment. The proposed configuration of a single breach towards the northern end of the site has been selected because it minimises the impact on the Parrett estuary of increased tidal flows in and out of the site, particularly with respect to upstream water levels, existing intertidal habitat and recorded archaeological features.
In addition, the project includes creation of brackish habitat through controlled tidal exchange in Compartment E, and freshwater habitat by impounding stream flows in Compartment B, landward of the existing pylons and proposed new defences. This habitat configuration has been selected because tidal flood defences need to be provided to the pylons, so this forms the most cost-effective position for a new shoreline. The resulting mosaic of different habitats maximises the biodiversity gain from the project and makes the most of the opportunities presented by the layout of the peninsula.

It is currently proposed that the Environment Agency land, once the project is operational, will be managed by the Wildfowl and Wetlands Trust (WWT), and there is a Masterplan for the site developed in cooperation with the Royal Society for the Protection of Birds that also includes the adjacent Bristol Ports Company project.

**Figure 1   Proposed Steart Coastal Management Project**

**iv. The Existing Environment**

The Environmental Statement provides detailed information about the existing environment on the peninsula and how it would probably develop in the future with and without the project in place. This Non-Technical Summary summarises the main conclusions.

The Steart Peninsula lies at the junction of the Parrett and Severn estuaries, within Bridgwater Bay. It is likely to have formed as a gravel spit originally, extending eastwards as a barrier beach across the mouth of the River Parrett. Saltmarsh built up on the landward side of the barrier which was later reclaimed for agricultural use by introducing sea defence embankments. The tidal range is large, exceeding 11m. In the absence of continued intervention to maintain defences, it is likely that a continuous, low level barrier beach would remain along the Severn frontage, which would be occasionally overwashed.
Water ingress would happen largely from the Parrett side of the peninsula and would probably result in development of a complex of sand/gravel spit and high level salt marsh.

In terms of its landscape, the Steart peninsula lies within the Somerset Levels and Moors, a broad open landscape where the western edge of the Levels reaches the Bristol Channel. The peninsula is low-lying, with a transition to low hills marked by the villages of Combwich, Otterhampton, Stockland Bristol and Stolford.

The peninsula has a long history of settlement. It is an historic ‘anciently enclosed’ landscape and archaeologically sensitive zone, featuring several archaeological monuments, including a deserted medieval village, mill mounds, ditched enclosures and wrecks of ships within the estuary. The evidence of past reclamation such as old earth banks, stone walls and a former salt marsh creek system can still be seen from the ground, on aerial photographs and remotely-sensed topographical mapping. In addition, the remnants of ridge and furrow agriculture are visible. No Scheduled Monuments are present but a number of listed buildings lie adjacent to the site, mostly clustered around the villages. These will not be affected by the proposals.

There are currently several residential properties and farms on the Peninsula including 13 properties in the village of Steart and three isolated farms: Marsh Farm, adjacent to Steart Road; Whitewick Farm and Chalcott Farm, both near Stolford. The villages of Stolford, Stockland Bristol, Otterhampton and Combwich are situated outside the project area but close to its boundaries. The only employment within the study area is agricultural and there are 13 farm businesses occupying land in the area that would be affected by the project. Most properties in Steart currently have a 0.5% annual probability risk of flooding but flooding will become more likely in future as a result of rising sea levels. Steart Road, two farms and eight electricity pylons are currently at risk of flooding several times a year, if defences are not maintained.

The study area is crossed by several public footpaths and other permissive and unofficial access routes, including the West Somerset Coastal Path and the Parrett Trail.

The Steart Peninsula is also important for its wildlife. Parts of the peninsula are within the Severn Estuary Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Ramsar Site and Special Area of Conservation (SAC), which also cover the whole of the adjacent Severn and Parrett estuaries. The most valuable habitat is grazing marsh associated with wetland features such as ditches and pools. Intertidal habitats such as saltmarsh, mudflat, shingle, sand and saline lagoons are located mainly around the fringes of the site. Protected species known to occur on the Steart peninsula include water vole, otter, bats, badgers, great crested newts, reptiles, breeding birds and wintering birds, all of which have been surveyed during preparation of the ES so that suitable measures can be put in place to ensure that significant adverse effects are avoided.

Although Steart peninsula is only a short distance from the M5, transport links are limited, with rural and suburban roads connecting to the motorway. The village of Steart is served by a single-track road which is below mean high spring tide level. The implications of the project for this road and its future viability are a key concern of residents. The River Parrett is navigable as far as Bridgwater and is used by around 40 ships annually. There is a wharf at Combwich, likely to be used for construction of a new nuclear power station at Hinkley Point.

v. Environmental Effects and Proposed Mitigation Measures

The Environmental Statement explains the likely impacts of the project and identifies the measures that will be taken to deal with associated adverse effects (“mitigation
measures”). These have been identified through several in-depth technical studies and a comprehensive programme of consultation. In most cases it has been possible to design the project in such a way that significant adverse effects can be avoided.

All modelling and studies needed to inform the Environmental Statement are complete. These include computer modelling to inform the detailed design of the project. It is proposed that the sea will be allowed to flood the site through a single breach located as shown in Figure 1. A creek network will be excavated to allow water to reach all parts of the site.

**Coastal Processes and Geomorphology**

Creating intertidal habitat has the potential to change the speed of tidal flows, water levels, tidal (flood and ebb) characteristics, erosion, suspended sediments and the shape of an estuary. Modelling has therefore been undertaken so that we can understand the effects that the Steart Coastal Management Project will have on the Parrett Estuary.

Modelling shows that the volume of water in the Parrett Estuary during a mean high water spring tide will increase by 2.2%,. This means that the potential for the project to have far-reaching impacts within the Parrett estuary is limited. No effect on beach levels at Burnham-on-Sea is expected and there is unlikely to be a significant shift in the position of the channel downstream of the project.

Within the Parrett Estuary, any significant increases in tidal flow speeds will be limited to the proposed realignment site and the outlet channel from the embankment breach. These changes are not expected to lead to significant changes in the size or position of the estuary channel during low flow or downstream of the scheme. Changes further afield will be small, becoming very small at Burnham-on-Sea. There will be no effects on peak flow beyond the limits of the Parrett Estuary.

Compartment D is likely to gain sediment, particularly in low lying areas of the site where tidal floods will be frequent and tidal flow speeds will be low. Compartment D will continue to gain sediment until the intertidal area reaches the level of saltmarsh habitat that exists elsewhere in the Parrett Estuary.

Sediment will be carried into the estuary but no significant effect is anticipated as suspended sediment concentrations in the Parrett Estuary are already high.

**Geology, Soils and Contamination**

A balance of cut and fill will be achieved from earthworks in Compartments B, D and E so no bulk materials will be moved on or off the site.

Approximately 370 hectares of Grade 3 soils (soils of moderate quality for crop production) will be converted to intertidal and brackish habitat. A Construction Health and Safety Plan and an Environmental Action Plan will set out requirements for managing issues such as any contamination that may be present (though no evidence of contamination has been found). With mitigation, no significant impacts are predicted.
Hydrology, Hydrogeology and Hydromorphology
The proposed intertidal habitat creation will reduce surface freshwater flows to the north and east of the peninsula. Potentially it may raise groundwater levels and increase salinity in shallow groundwater. Only minor negative effects (if any) on consented discharges and private groundwater supplies are predicted and these will be monitored.

There is a low risk of minor adverse impacts on a small number of buildings in Steart village and Stockland Bristol as a result of the potential for rising groundwater levels and salinisation of these. We intend to investigate this further and put in place mitigation measures if necessary.

The two ponds supported by shallow groundwater in Steart may be affected by increased salinity (one of which is populated by great crested newts) and a number of badger setts may be affected by increased groundwater levels (see Flora and Fauna section).

The proposed freshwater habitat creation in Compartment B has been designed to utilise flows in Middle Brook as the source of water. The western end will comprise a constructed treatment wetland to improve water quality. Flows from the existing North Brook will be diverted, partly to feed the new freshwater habitat in compartment B and partly to supply fresh water flows to Compartments D and E. South Brook will be maintained at its existing low level without obstruction or impoundment in order to provide a continued drainage function to properties and septic tanks in Stockland Bristol, so there will be no increase in fluvial flood risk to built properties.

People
The project will provide protection to Steart Road, the pylons, Marsh Farm and the south side of Steart village from tidal flooding by constructing new banks. No properties or public infrastructure will be at an increased risk of flooding as a result of the project.

The project will create a new nature reserve, to be managed by the Wildfowl and Wetlands Trust. This will be managed as a low-key visitor attraction with limited facilities such as toilets, interpretation boards, paths and hides. It is estimated that when mature, 32,984 people will visit annually (rising to a combined total of 43,548 if the adjacent Bristol Port Company scheme, to be managed by RSPB, also goes ahead). The project will provide a major benefit to recreation and tourism on the Steart peninsula. As an ecotourism destination it will effectively link to other initiatives in the Somerset Levels.

Within the project area, a total of approximately 5km of public footpath, approximately 1km of public bridleway and approximately 2.4km of permissive bridleway will be permanently lost. To manage this loss, the Project will create approximately 21km of new access routes, including approximately 14.5km of new public routes (including footpaths and bridleways), plus approximately 6.7km of permissive routes. There will be routes for dual pedestrian and cycle access and approximately 3km of paths suitable for disabled access. This provision is seen as a significant benefits to users and offers opportunities to link access routes between both the Environment Agency and The Bristol Ports Company projects, and will enable walkers and in particular cyclists and horse riders to move across the peninsula on new off-road routes, notably now linking Stolford with Combwich. Clear consistent signage will be provided across both projects to ensure clarity. Compartment B will be maintained as a largely open area for public enjoyment with minimal gates and fences. Access to Compartments D and E will be largely around the perimeters, with viewing points provided, as the new intertidal and transitional habitat will not be suitable for public access.

The existing route of the Parrett Trail will be severed and the Trail re-routed westwards along the new coastline to maintain its overall integrity. New routes will improve the
experience for locals and visitors and be designed to maximise recreational and visual amenity and linked to observation points over the new habitat for watching birds and other wildlife. Interpretation materials will be provided and (subject to third party funding and to be covered by a separate planning application) it is hoped that this will include a visitor centre to provide a central gateway explaining the site. Additional community benefits, including improved access, health and well being benefits, alongside skills learning, education, services and interpretation could also be provided.

Land Use and Agriculture
The Environment Agency has purchased the land required for the project (472.5 ha) from its existing owners by voluntary agreement at market rates. The land is still being farmed but following consent for the project, existing agricultural activities would cease, affecting the 13 existing farming businesses on the peninsula. The Project area currently provides employment for an estimated seven to eight full-time equivalent workers, but most of the reduced labour will occur through reduced hours, reorganisation and retirement, with only two full time jobs actually being lost.

At least 110 ha of farm land will be completely lost to agriculture. Other land affected by flooding will be downgraded from Grade 3 (moderate quality) to Grade 4 (poor quality) or 5 (very poor quality). Once new vegetation becomes established, it is proposed to graze beef cattle on 360 ha of new salt marsh, transitional and coastal grazing marsh habitat. This is estimated to generate £100,000 in agricultural income before subsidies after year 10. Other activities for which opportunities may arise include direct marketing of local produce to visitors and services such as accommodation and horse riding. The project is estimated to generate 3.5 full-time equivalent jobs, of which 1.5 would be in agriculture (as grazing tenancies) and two directly employed by WWT in site management.

Wildlife
The project will increase the area and quality of intertidal and other wetland habitats in the long term, benefiting adjacent internationally designated sites through provision of supporting habitat.

The creation of new intertidal habitat will involve a localised impact on existing intertidal and subtidal mudflat in the Parrett Estuary, which forms part of the Severn Estuary Site Special Protection Area and Special Area of Conservation. This is being addressed through the Habitats Regulations Assessment and any necessary compensatory habitat will be identified.

The scheme will benefit wintering birds and great crested newts by creating new suitable habitat. There will be an adverse effect on existing populations of water vole, great crested newt, badger, reptiles, breeding birds and invertebrates (both aquatic and terrestrial). Existing grassland, ditches and hedgerows will be lost. Water voles and great crested newts will be relocated into newly created freshwater wetland habitat within the scheme. Badgers will be translocated into specially constructed replacement setts within their current territory boundaries on the peninsula. Measures will also be taken to rescue reptiles before construction. The overall impact on breeding birds will be neutral as the loss of farmland species will be offset by waders that will use the newly created habitat for nesting. The peninsula is used for hunting by at least nine species of bats and provision of new habitat should ensure no significant effect. There will be a benefit to fish which will use the new intertidal habitat as a nursery and feeding area.

Landscape and Visual Amenity
There will be a major, though temporary, adverse impact on the landscape during construction of the scheme. Immediately following construction, the new habitat will take time to form and there will be a fundamental change from a managed landscape to a wild
and remote one, which in the early years may be relatively un-vegetated. It is proposed that hedgerows will be removed prior to inundation to avoid them dying *in situ*. In general ditches rather than fences will be used to control human access and grazing animals. New embankments will be graded into the landform with surplus spoil where possible and screened from roads by allowing hedgerows to grow up. The proposals will have no impact on any landscape designations, though the landscape conservation aims of the nearby environmental designations, such as the National Nature Reserve, have been taken into account during the design. The proposals will adhere to the policies of Sedgemoor District Council regarding landscape conservation.

In the long term, the replacement of a managed agricultural landscape with a more diverse, sustainable and natural one is considered beneficial to the area’s landscape character and visual amenity. The beneficial characteristics of the peninsula, such as the open, expansive views and the remote and quiet sensibility will be retained and enhanced. The new landscape will be naturally colonised with a range of intertidal vegetation and wildlife, and this diversity will increase the amenity value of the area, especially views from the realigned Parrett Trail.

Landscape planting will be incorporated landward of the new banks to screen these and create an attractive vista from Stockland Bristol, Combwich, Otterhampton and Public Rights of Way.

**Cultural Heritage and Archaeology**

Throughout Compartments B, D and E, the historic landscape of reclamation will be largely erased and replaced by a landscape of intertidal marshes.

No Scheduled Monuments will be affected, and impacts on listed buildings will only be to their settings. However, there will be significant impacts on known archaeological sites, which will be mitigated through a suite of mitigation measures. These will include avoidance of known archaeology in scheme design, targeted excavation in advance of construction, sampling to record the historic environment, topographic survey and archaeological observation during ground works. The mitigation will be informed by a programme of archaeological investigation, comprising fieldwalking of selected areas, geophysical survey, trial trenching, and assessment. The investigations will aim to identify the presence, extent and significance of as yet unidentified and unknown buried archaeological remains.

There will be an onus on implementing mitigation on buried archaeology and landscape features prior to construction, but a programme of archaeological monitoring (watching brief) will also be implemented during construction. This will aim to monitor the creek excavations and mitigate the adverse effects of the scheme on more deeply buried deposits, such as palaeoenvironmental features, relict land surfaces and associated archaeological artefacts and features.

There are two known wrecks in the Parrett, one of which may or may not be the location of a boat called *The Trio*, and the breach location will avoid an erosion impact on them. Following mitigation, significant adverse effects to known archaeological sites will be greatly reduced.

A programme of long-term monitoring of the peninsula will be established in order to chart the level of erosion within the various compartments and implement further phases of archaeological mitigation as appropriate.

**Air Quality, Climate and Noise**

The only air pollutant of concern is dust from construction and with suitable controls,
impacts are likely to be negligible. The scheme is designed to accommodate predicted climate change including sea level rise. By achieving a balance of cut and fill within the site, emissions of carbon dioxide from transport will be minimised.

Although most construction will take place far from properties, construction noise may give rise to minor negative impacts on residents. This will be mitigated through controls on working hours, provisionally 8am to 7pm on weekdays within 500m of residences.

**Traffic and Transport**
A balance of cut and fill will be achieved on site to reduce bulk material movements on public roads. Our assessment of both the construction and operational phases of the project show that the effect of construction and subsequent visitor traffic on the road network will be minor adverse. A Traffic Management Plan will be prepared by the contractor to show in detail how construction traffic will be managed. A new car park will be constructed south of Marsh Farm to accommodate visitors and reduce the impact to Steart Road. A secondary car park will be provided south of Steart village. Improved flood risk management to Steart Road will be a benefit of the project.

The impacts on navigation due to changes in flow speed or bed levels are predicted to be minimal. At high water the entrance to the scheme will be approximately 200m wide which may have some potential to cause confusion as to the navigation route up the Parrett. Consideration will be given to the use of navigation buoys to mark the navigable channel of the Parrett.

**vi. Meeting the Objectives of European Legislation**

**The Water Framework Directive (WFD)**
The WFD requires surface waters to meet a suite of biological, chemical and hydromorphological objectives. Draft River Basin Management Plans are produced to assess compliance of targets set out within the Water Framework Directive and classify the local coastal and estuarine water bodies ecological and chemical status as follows:

- Bridgwater Bay Coastal Waters are classified as ‘Moderate Ecological Status’ with High Chemical Status.
- The River Parrett Estuarine Coastal Waters are classified as ‘Moderate potential ecological status’ and ‘High chemical status’.

Bridgwater Bay is predicted to retain this status by 2015; River Parrett is predicted to retain moderate potential ecological status and achieve at least good chemical status. A consideration for meeting these criteria may be pollution from industrial sources in the Parrett and Severn estuarine and coastal areas as well as agricultural run off and sewage causing enrichment.

As a result of the project a number of small freshwater surface water bodies within the site will cease to exist as such once the site is breached and flooded. The The Environment Agency and Defra have produced a position paper on managed realignment and compliance with Water Framework Directive (WFD) requirements which clarifies that where managed realignment is the most appropriate and sustainable flood risk management solution or it is required to meet the Habitats Directive the loss of such surface water bodies does not contravene the requirements of the WFD.

**The Habitats Directive**
The project is intended to benefit European sites designated under the Habitats and Birds Directives (the Severn Estuary SAC, SPA and Ramsar site and the Somerset Levels and Moors SAC/SPA) by offsetting losses from coastal squeeze and improving the amount and quality of supporting habitat for birds. An assessment under the Habitats Regulations has been carried out to determine whether temporary habitat losses resulting from project
development might have any adverse effects on the integrity of any of these European sites, and to ensure that suitable mitigation measures are identified. The assessment shows that these losses will be small relative to overall habitat extent and that birds can adapt to temporary local losses by utilising habitat elsewhere. Consequently there will be no adverse effect on the integrity of any European nature conservation site.

In the longer term the project is expected to benefit European nature conservation sites by offsetting predicted losses caused by coastal squeeze and by increasing the availability of supporting habitat which can be used by the species for which the sites are designated.

vii. Conclusion

The project will generate substantial net environmental benefits in the form of a major new wetland, including some 194 ha of intertidal salt marsh, 67 ha of transitional brackish habitat, 106 ha of coastal grazing marsh, 17 hectares of brackish and saline lagoons, 8 hectares of freshwater lagoon, 12 ha of reedbed and numerous ponds and ditches. This will offset some of the losses of intertidal habitat that are occurring elsewhere in the Severn as a result of rising sea levels and provide extensive biodiversity gain. It will benefit plant diversity, breeding and wintering wading birds, wintering wildfowl, amphibians and fish.

There will also be substantial benefits to people in the form of improved flood risk management to properties and infrastructure and valuable new recreational amenity. An extensive semi-natural landscape will be formed on the peninsula.

There will be some residual adverse effects on some environmental receptors, in particular on hydrology and hydrogeology, recreation and amenity, agriculture and land use, some flora and fauna, landscape, cultural heritage and noise. Mitigation measures have been identified, where possible, to reduce these to acceptable levels. Impacts on geomorphology, coastal processes and navigation will be slight and no adverse changes within the Parrett Estuary are anticipated. An Environmental Action Plan is being prepared to ensure that potential adverse impacts are correctly managed.