



Avonmouth Severnside Enterprise Area (ASEA) Ecology Mitigation and Flood Defence
Avonmouth, Somerset
Environment Agency, BMMjv

BIG Biodiversity Challenge Award Category: *Construction Phase Award*

Project overview

17km of improved flood defenses from Lamplighter’s Marsh to Aust. Within ASEA there are areas at risk of tidal and fluvial flooding. There are some existing defenses, but these do not provide consistent levels of protection. The new flood defenses will reduce flood risk to 2,500 homes and businesses.

What were the biodiversity conditions on site, prior to the enhancement?

There is a wide diversity of land uses across the project, from industrial, farming, PRoW to the Severn Estuary which is internationally important for biodiversity.

The site is partially within the Severn Estuary Special Protection Area / Site of Special Scientific Interest / Special Area of Conservation / Ramsar site. Works were subject to Habitats Regulations Assessment and CRoW / SSSI assent. Natural England licenses have been obtained for work that may affect protected species (Great Crested Newts, Bats, Otters). Works have been undertaken in accordance with license conditions, supervised by a suitably qualified ecologist.

What were the reasons behind this project ?

When complete in 2026/2027, the project will help protect communities from the increased risk of flooding from climate change and rising sea levels. Flood risk will be reduced for at least 60 years.

The new flood defences will also create improved walking routes, making it easier for everyone to enjoy nature and the spectacular views of the Severn Estuary.

There are also 117ha created of new wetland designed to attract waders and ducks including the European white-fronted goose, shelduck, gadwall, dunlin, redshank, wigeon, teal, pintail, pochard, ringed and grey plover, curlew and whimbrel.



Earth embankment construction with outfall structure in the foreground which we raised the height of.



Glass panels in the flood defence walls at New Passage with an outfall structure which has been increased in height.....



What were the biodiversity measures taken?

- Ponds built to relocate GCN's to protect them during the construction phase
- Working collaboratively with landowners to help them continue to use their land as before i.e. providing water for animals and temporary fencing to allow the movement of animals
- Creating a wellbeing garden, bug hotel and local litter pick
- High tide roost restrictions and nesting bird restrictions have been programmed so that works can progress elsewhere during these times
- A badger sett was found in the work area, license granted and works reprogrammed to avoid the area
- Habitat shelves installed along concrete walls and sheet piles, these act as microhabitats for rare plants looking for small cracks in which to set seed
- Earthworks carried out to create wetland habitats created excess material which has been re-used to construct the main flood embankment. Previous construction rubble has been reused under rock armour to save it having to be disposed of off-site
- Any trees removed were turned into mulch to put around the new trees planted
- ~15,000 native trees/shrubs will be planted and ~13ha seeded
- Silt fencing has been installed where we are working near water courses
- Hydrocarbons found on site, background levels assessed and remediation strategy created which enabled the minimum amount of material to be remediated and treated off-site for reuse
- Rare moss has been fenced off and protected whilst works are ongoing. We are maintaining the current soil type and fertility ratio of the new construction works to maintain the current rare flora and fauna
- Various Non-Native Invasive Species found, plan created to set out a strategy to manage plants on site and prevent the spread. Due to limited storage on site we have removed the minimum quantity of material and placing copper infused geotechnical liners to prevent regrowth
- Kestral nesting boxes installed to offset habitat lost



Habitat shelved installed on concrete walls to create microhabitats



Ornithological watching brief being carried out during high tide roost restrictions

Further information

Due to the highly varied site conditions we have had to tailor our construction works to accommodate, maintain, protect and improve the biodiversity found across the project.

In many cases we have programmed our works around birds and animals so that their habitats remain and they are unaffected and not disturbed.

As well as planting new trees and shrubs and grasslands, we have disturbed the minimum amount of existing established areas. We have protected rare species and also removed invasive non-native species to improve the environment.

As far as possible all materials have been re-used on site which also results in the minimum amount of materials having to be imported. The earth embankments for flood defence have been constructed of excess site won material and also from other local projects with excess materials. Innovative uses of construction waste such as beneath rock armour and in hibernaculum, material testing carried out to make sure materials are inert and suitable for re-use.

Throughout the project we are working with many different authorities to make sure that the project is enhancing rather than damaging biodiversity.

Project Team

- The project is a partnership between South Gloucestershire Council, Bristol City Council and the Environment Agency
- Design and build joint venture between Mott McDonald and BAM Nuttall

What was the motivation for carrying out the enhancement?

The Severn Estuary is internationally important for biodiversity, large areas of mudflat, salt marsh and coastal floodplain provide feeding grounds for populations of several species of waterbirds.

ASEA and the surrounding areas of coastal floodplain continue to be the focus for development. This has reduced the amount of available habitat for wetland birds. For economic development to continue within ASEA without adversely affecting the Severn Estuary, we have provided ecological mitigation via newly created wetland habitat. We are ensuring that a thriving environment will be established for people and wildlife, to last the rest of this century and beyond.



Avocet nest found in works area, works reprogrammed until nest was empty



Invasive species warning signage at Holes Mouth