Realign flood defences to increase coastal and intertidal habitat

Project Summary

Title: Great Bells Farm Habitat Creation project
Location: Isle of Sheppey, Kent, England
Technique: Managed realignment
Cost of technique: £££££
Overall cost of scheme: £££££
Benefits: £££££
Dates: 2012 - 2013

Mitigation Measure(s)

Realign flood defences to increase coastal and intertidal habitat
Improve channel geomorphology to create habitat
Reposition or alter river embankments to create a natural floodplain

How it was delivered

Delivered by: Environment Agency
Partners: RSPB

Aerial view of Great Bells Farm after completion
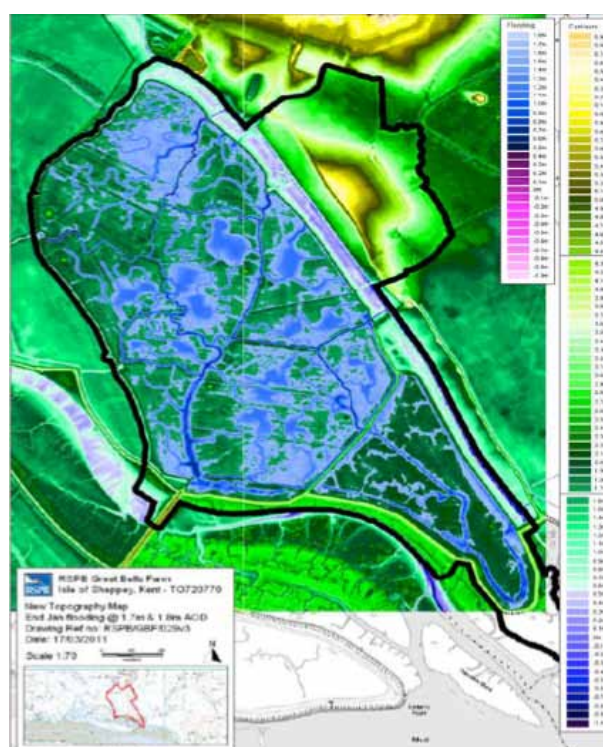© Environment Agency copyright and database rights 2013

Background / Issues

The Great Bells Farm site lies to the north of Windmill Creek, which is the northern boundary of the Elmley Marshes Nature reserve on the Isle of Sheppey. The site was purchased by the Environment Agency to allow the managed realignment of flood defences by removing embankments adjacent to the river channel. This would mitigate for coastal habitat losses identified in the Medway and Swale Shoreline Management Plan (SMP), through the restoration of remnant creek and fresh water features reclaimed from the sea during the last 500 years.

The Environment Agency commissioned the RSPB to design and build the new wetland habitat and grazing marsh, due to their experience in creating similar habitats in their reserves.

Detailed topographical survey of the area
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Where historic hydromorphological features such as former creeks and drainage channels were still present in the drained landscape, these were used as a guide to restore a fresh or brackish wetland and coastal grazing marsh habitats, in order to offset coastal grazing marsh losses. The total area of new habitat created was 145 ha. Additional issues at the site included its proximity to a World War II air base and the presence unexploded ordnance (UXO) was discovered prior to excavation.

Step-by-step

The implementation of the Great Bells Farm Habitat Creation project was achieved through the:

- Use of LIDAR data for detailed topographical mapping of historic hydromorphological features in the landscape.
- The use of GPS equipped excavators loaded with maps detailing what levels the embankments were required to be excavated to.
- Installation of a pump to assist in raising water levels from the surrounding ditches in dry months.
- Creation of a long term storage area to maintain area wet throughout the year.
- Reuse of all excavated material on site.
- Use of magnetometer surveys, specialist site investigation and army specialists for controlled UXO detonation.

Project area shortly after project completion (2 months after) © Environment Agency copyright and database rights 2013

Benefits

- Restoration of the hydrological connectivity between the river channel and the floodplain.
- Contribution to SMP habitat creation targets.
- Restoration of historic hydromorphological features. By allowing floodplain inundation and restoration of relic water pathways.
- Creation of new habitat for the nationally rare Maid of Kent beetle.
- Increased habitat availability for water voles, local bird species and nationally scarce flora.

- Improvement of the visual enjoyment of the landscape, transforming a marginal poor quality grazed area of land into a biodiverse new wetland reserve, which is expected to support thousands of key Special Protected Area wetland bird species.

Example of water storage on site © Environment Agency copyright and database rights 2013

Lessons Learnt

- Properly costed risk registers and a healthy risk budget are key to success, especially if there is a risk of UXO and archaeology.
- Good project design and procurement of a contractor that understand the schemes objectives are vital.
- Careful site selection is key, to limit expensive unnecessary earth work costs.
- A good working relationship and close project team who trust and understand each other's goals is essential.

Project contact: National Environmental Assessment Service, Kent & East Sussex Area, South East Region, Environment Agency