

Case Study Reference: IEM01/2011/001

these case studies highlight actions we are taking to reduce our carbon footprint within the Environment Agency, including benefits and lessons learnt

Broadland Carbon Reduction Case Study

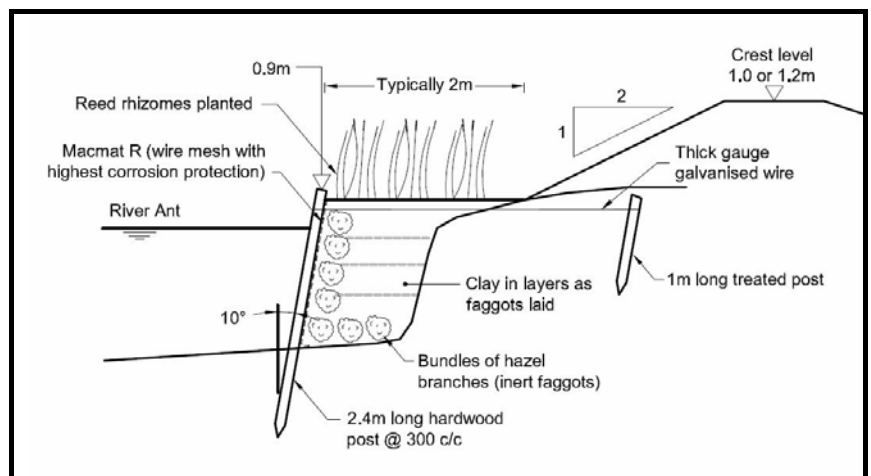
Background

The Broadland Flood Alleviation Project (BFAP) is a twenty year Public Private Partnership Project (PPPP). Broadland Environmental Services Limited (BESL) are responsible for providing a range of flood defence improvements, maintenance and emergency response services within the tidal areas of the Rivers Yare, Bure, Waveney and their tributaries. 240km of floodbanks protect approximately 21,300 hectares of Broadland containing more than 1,700 properties of which more than 1,000 are residential.

Sustainability is embedded in the project design and the vast majority of the materials are obtained on site. Wherever possible piling is removed and replaced with more natural forms of erosion protection. This paper demonstrates ways in which the long-term nature of this project has contributed to controlling CO₂ emissions.



Original design timber posts replaced with recycled timber piles

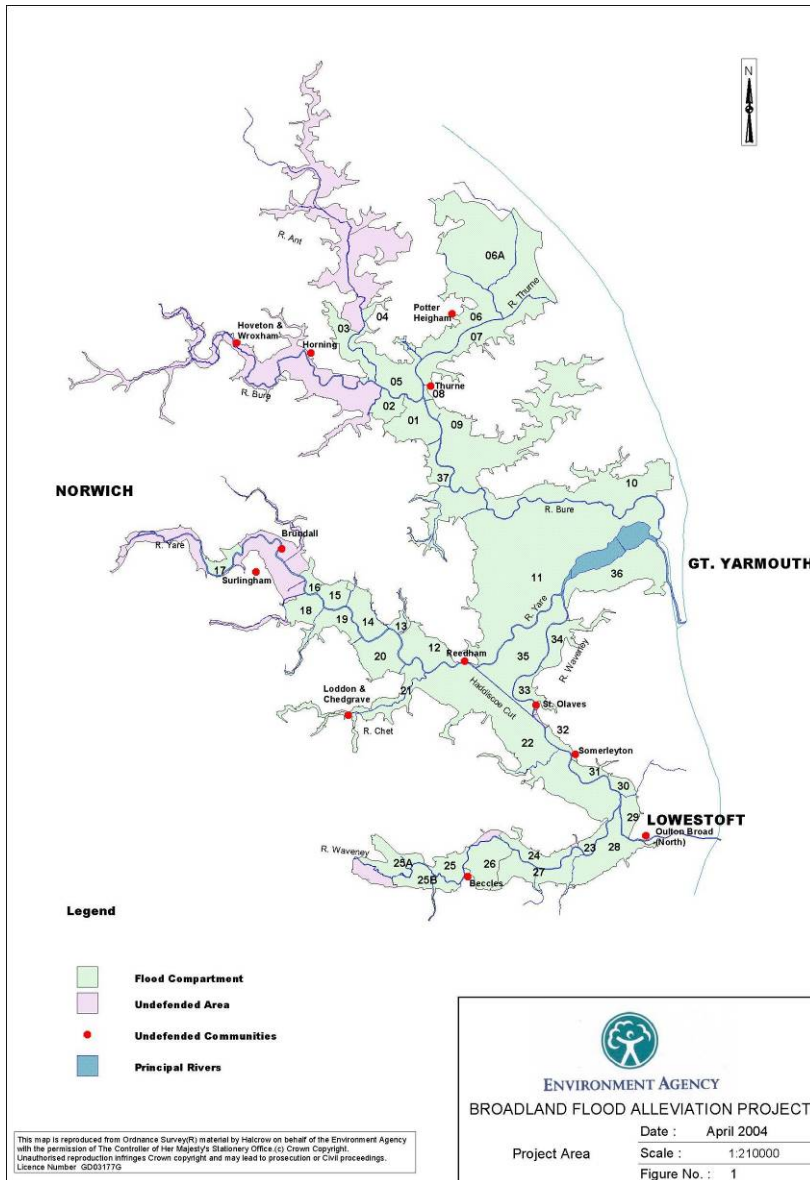


Reducing the Carbon Footprint

Materials reuse

On a traditional “one-off” job piles are often kept in stock for a while with good intentions, but eventually scrapped. The long term nature of the project and security of future work have allowed BESL to actively plan to reuse materials.

We set up a pile handling yard for all timber and steel piles being removed. We are able to identify which future flood compartments they can be reused on. The works can be designed to ensure that the piles are reused (for example, changing to shorter, anchored piles instead of cantilever). On one flood compartment, 262 tonnes of steel sheet piles are being recycled as frontage piling, saving approximately 500 tonnes CO₂.



Plant

The size and long-term nature of the project mean that we can have a significant impact on the local businesses we use. Bryan Banham one of our plant suppliers, took the opportunity to develop his business on the back of the BFAP. Although BESL do not offer any “tie ups” with plant companies Bryan realised that if he provided good machines and operators with a helpful local service then there should be plenty of work available for him. This was only made possible due to the long term nature of the project. In 2002 Bryan had 5 excavators over 5 years old, with fuel usage estimated at approx 15 litres per hour. In 2003 he replaced them with new or nearly new machines. Fuel usage figures (supplied by JCB) approx 13.6 litres per hour. In 2009 / 2010 he replaced them again with new machines meeting Tier 3 standards. Fuel usage figures (supplied by JCB) approx 12.3 litres per hour. During this time, the increased fuel efficiency has saved approximately 260 tonnes CO₂ and the service interval has doubled.

Materials selection

The pricing mechanism and long-term nature of the PPP have also allowed BESL to experiment with using new materials in trial areas. On one of the flood compartments on the Bure we needed to install concrete between two rows of piles as impermeable void filler. We chose to use foamed concrete instead of traditional concrete. This cost 50% more than traditional concrete per cubic metre; however when foamed 1 cubic metre of traditional concrete produces approx 3 cubic metres of foamed concrete. This saved approximately 58 tonnes CO₂.

Labour

The project employs 20 to 25 operatives at any one time. They are all local, and have a natural passion for the area and the environment. Their average distance from home to the project area is only 7 miles. Many of them have joined the company specifically for this project, due to its long term nature.

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Date of Issue: 26 May 2011

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