climate change

Environment Agency

Carbon reduction case studies

Case Study Reference: IEM/2010/001	*these case studies highlight actions we are taking to reduce our carbon footprint within the Environment Agency, including benefits and lessons learnt*

Construction Carbon Calculator in practice

Background

The construction carbon calculator is used during the design and construction of our Flood & Coastal Risk Management (FCRM) projects to influence choices that reduce the carbon footprint of the construction project. This process starts during the options appraisal stage and continues to decisions made at the construction stage.

Dymchurch Frontage A project is a £30 million scheme currently at the construction phase that includes of 2.2km of coastal defences. Along with a completed phase (Frontage B) the project protects around 2,500 homes from flooding and has a 100yr design life.

Reducing the Carbon Footprint

The total Carbon Footprint is predicted as being ~50,000 tonnes. The most significant contributions are from concrete, steel and transport of materials. By looking at material selection and transport of materials the project team are **saving ~15,000 tonnes of CO_2**.

Transport of materials by water

Pre-cast concrete step units (see photo) and wave walls were manufactured in Belfast and are being transported by water to nearby Rye Harbour with only the last part by road. This saved around 3,000 and 2,500 tonnes of CO_2 respectively (and saved ~1,600 long distance lorry journeys).

Steel for reinforcement was also transported by water (saving ~780 tonnes of CO_2) and also wood for the construction of groynes.

Closer sourcing of concrete for in-situ works

Due to the amount of concrete needed on the scheme, a local concrete batching plant has been reopened, this halves the distance travelled by the concrete lorries saving 600 tonnes of CO_2.

Use of PFA in concrete

Between 5-10% of PFA has been included in the concrete to replace ordinary cement saving ~7,500 tonnes of CO_2.

The learning curve and where we go from here

This example shows how consideration of material selection, transport of materials and local sourcing of materials can significantly reduce the carbon footprint of a construction project. The Construction Carbon Calculator helps to highlight these opportunities/savings throughout the life of a construction project. Whilst this is a very large project and the numbers and savings involved are large, significant reductions can be made by project teams on all construction projects.

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