

Case Study Reference: IEM01/2011/002

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

Nottingham Left Bank Carbon Reduction Case Study

Background

Nottingham Left Bank is a £51 million scheme that will protect 16,000 homes and businesses from flooding. The project spans a 27km reach of the River Trent and comprises flood defences with a mixture of earth bunds, concrete walls and sheet piling.

Due to constraints from working next to a railway and nature reserve and the requirement for preventing groundwater seepage through the underlying sands and gravels, the project team came up with an innovative method which also lowered the total project carbon footprint.

Reducing the Carbon Footprint

Using the [EA Construction Carbon Calculator](#), the total carbon footprint of the Nottingham project is 11 800 tonnes. The most significant contributions are from steel, concrete and material transport. The project team have implemented many innovative changes to reduce the carbon footprint of the project. One of these examples, resulted in changing the material and method of construction saved approximately 2500 tonnes of CO₂ during this section of the works.

Use of TrenchMix

Sheet piles are traditionally used to form a cut off to protect against groundwater seepage through defences, but on this project a large section of piling was replaced by the use of TrenchMix.

This process involves the mixing of the soil with cement, this cementitious material then sets forming a barrier with a greatly reduced permeability. The soil and cement are mixed by a modified drainage trenching machine (see picture).

By using this method the team reduced the amount of steel used on the project by 2/3rds saving around 1876T of CO₂. Another benefit of the reduction in steel is the reduced carbon cost of transportation saving around 700T of CO₂.

The raw materials (Cement) and plant emissions from the operation have a footprint of 330T CO₂.



The learning curve and where we go from here

Even when taking into account the footprint of the materials and emissions from the TrenchMix method; it is still Carbon beneficial by about 70% compared to the Sheet pile option. Other advantages include less noise and vibration than sheetpiling. This could be useful when working near sensitive areas such as nature reserves and residential properties. Further information on the TrenchMix process can be found in the innovation briefing note (ISC5)

Prepared by: Gary Haley SHE Technician (Construction)

Date of Issue: 26 May 2011

Further information available from Gary Haley or Andrew Powell