

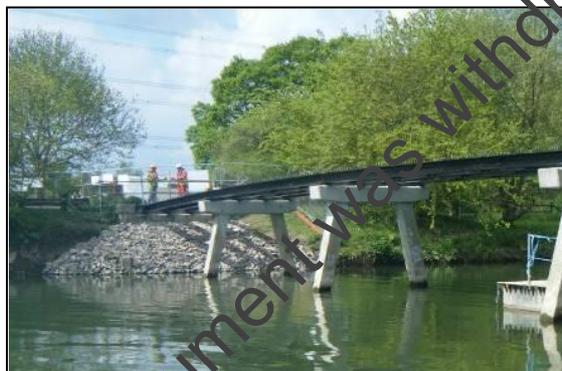
Case Study Reference: IEM/2012/002

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

### Sandford Bridge Carbon Reduction Case Study

#### Background

Sandford Bridge project (£380K) spans the Sandford Lock bypass channel on the River Thames. The bridge is primarily used for access to the lock house and the lock structure, additionally there is a 3m wide roadway spanning 40m across the river. The aim of the bridge refurbishment was to increase the carrying capacity from 3 to 18 tonnes.



#### Reducing the Carbon Footprint

The design team were interested in minimising the environmental impact and maximising carbon savings throughout the duration of the project. Overall the team saved 62 tonnes CO<sub>2</sub> (from 125 tonnes CO<sub>2</sub> to 63 tonnes CO<sub>2</sub>).

The ideal solution was to reuse the existing substructure, replace the old deck with a new one and construct a new vehicle restraint parapet.

The original bridge deck, constructed from large longitudinal concrete slabs, was removed to install a new deck made from a steel frame and comparatively smaller pre-cast concrete slabs. The benefit of the latter was the requirement for a smaller crane for lifting and positioning which reduced the carbon emissions from 48 tonnes CO<sub>2</sub> (tCO<sub>2</sub>) to 8 tCO<sub>2</sub>.

The old deck material was crushed on-site then reused to reinstate the car park saving 2 tCO<sub>2</sub> by avoiding waste off-site and import of aggregates.

The design of the vehicle parapet height was reduced from 1.5m to 1m. This was mainly for aesthetic purposes but it saved 2 tCO<sub>2</sub> from the amount of steel required and transportation.

Instead of using a sheet pile wall to separate the bank from the river we re-used the existing scour pile in the right-bank of the bridge instead of removing it saving 18 tCO<sub>2</sub> in materials and transport.

#### The lessons to take away

The Sandford Access Bridge case study provides an example of a project seeking to maximise the re-use of existing site materials, which has led to a reduction in embodied CO<sub>2</sub> emissions as well as making wider environmental gains and cost savings?.

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