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*

Shaldon and Ringmore Carbon Reduction Case Study

Background

The villages of Shaldon and Ringmore are located on the Teign Estuary, South Devon. This £7.6 million project involved the design and construction of raised flood defences along 1.7 km of the existing walls, incorporating 10 flood gates, 25 flood windows and doors, access steps, ramps and a pump station with outfall to alleviate the current surface water issues.

Reducing the Carbon Footprint

The carbon footprint was reduced by 47% reduction compared to the initial design (from 2,195 tonnes CO_2 (tCO_2) to 1,156 tCO_2). The final out-turn cost was £1.2M (16%) below the PAR budget.

Repairing not replacing

The original wall proposed wall design was dowelled reinforced concrete walls clad with masonry. Through investigation the project team established that many of the existing walls were in better condition than initially expected and these were repaired and incorporate into the defences. They also developed a mass masonry wall design not requiring a the reinforced concrete core. By changing the proposed design, approximately 150 tCO_2 (7% of the original forecast) was saved from the reduction in concrete and nearly 400 tCO_2 (18%) was saved in steel reinforcement and dowels which would have been required as wall support. In addition to this, a saving of approximately 15 tonnes of CO_2 was made through the reduced waste material by not removing the original masonry walls.

The project team, client and community reviewed the need for handrails where the combined width and height of wall reduced the risk of falls. This reduced the length of steel handrail by 750 metres saving £162,000 and a carbon saving of 12 tCO_2.

Further carbon savings were made from efficient design of temporary works cofferdams with reduction of piles and concrete and using recycled piles. This generated a carbon saving of 46%.

The lessons to take away

This example shows through both active planning and by applying creative solutions to unforeseen project circumstances the carbon footprint of a construction project can be significantly reduced. This saving is based on design progression and the innovative solutions made by the designers and contractors.

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