

# AINA CASE STUDY

## CLIMATE CHANGE

### Forth and Clyde Canal: Auchinstarry Basin



#### ***A sustainable approach to marina construction***

British Waterways adopted a sustainable approach to the construction of a new 64 berth basin at Auchinstarry on the Forth and Clyde Canal, which includes a slipway, hardstandings for boats and an amenity block for users.

The project has made full use of recycled materials including locally sourced aggregates for sub bases and road surfacings – approximately 15,000 cubic metres were used, saving £35,000 on the contract price. In addition, surplus steel and concrete submarine support pads were obtained, for just the cost of transport, from Rosyth Dockyard and used in the construction of the slipway and crane pad, resulting in a further cost saving of £10,000.

An alternative secondary filtration system was developed for waste water which discharges directly into newly created reed beds, designed with the capacity to accommodate future development on the site. Surface water run-off has been reduced by applying permeable surfacing to car parks and boat hardstandings, and the basin edge incorporates soft edges with reinforced soil techniques. These are not only visually appropriate, but also delivered biodiversity benefits and further cost savings.

Two wind turbines provide all of the electricity demands outside peak periods, and the amenity block incorporates energy conservation mechanisms such as movement-activated lighting and time limited water control. Innovative cost effective heat pump technology has used canal water to generate all heating and hot water requirements for the toilets and shower facilities. These work along similar principles to a refrigerator, which is cooled using a heat exchanger which emits heat to the outside - in a heat pump this process works in reverse.

The heat recovery, particularly suitable for isolated or remote locations, takes place via polyethylene loops simply sunk into the water, through which refrigerant circulates. The anticipated return on an investment of £10,000 is a saving of around £600 on annual operating costs, together with a yearly reduction of what would have been 4.69 tonnes of CO<sup>2</sup> emissions. The heat pump now successfully provides the heating and hot water for three showers, toilets, eight wash basins and one washing machine.

Auchinstarry Basin has been carefully developed as a benchmark for the creation of sustainable inland waterway marinas, and a British Waterways Building Surveyor commented "It's a real eye opener."

Further details of the heat pump scheme at Auchinstarry can be found at [http://www.thegreenblue.org.uk/leaflets\\_resources/case\\_studies.aspx](http://www.thegreenblue.org.uk/leaflets_resources/case_studies.aspx)