

**O**MAGH District Council has recently commenced work on a hydro project utilising the weir on the Camowen River, adjacent to Omagh Leisure Complex, to generate electricity through an Archimedean screw hydro turbine.

The development of the hydro scheme on the Camowen River will generate sufficient power to meet the needs of Omagh Leisure Complex with excess electricity sold back to the national grid.

Rated at 121 kilowatts, the hydro turbine is predicted to save in excess of 133 tonnes of carbon dioxide (CO<sub>2</sub>) annually and will make a major contribution to the council's green philosophy.

This project will complement the council's initiatives to develop 'green' energy from renewable sources, including the installation of a biomass boiler at Omagh Leisure Complex.

The revenue generated by the electricity from the hydro scheme will be contributed to a sustainability fund, which would become a resource to support other sustainability projects in the district.

Omagh Leisure Complex is amongst the most modern leisure facilities, having almost doubled in size from its opening in 1982, with further expansion planned.

Set in 26 acres of landscaped grounds, the complex caters for everyone from the casual swimmer to the serious athlete.

This project to develop a hydro turbine on the Camowen River will create a very valuable resource for renewable energy, with many benefits being re-invested to the community and providing a valuable educational resource for Omagh.

Not only will the provision of this renewable energy help protect the environment, but it will also contribute to achieving the council's target for energy consumption from renewable sources.

The council is very conscious of the importance of the Camowen River as a fishery, and of the concerns of anglers.

After various consultations it was decided that the most suitable turbine for the site was an Archimedean screw.

The Archimedean screw turbine provides a fish-friendly alternative to conventional turbines, ideally suited to low-head (1m-10m) sites, and sites with fish protection issues.

Extensive fish passage tests have conclusively demonstrated that the large water chambers and slow rotation of the Archimedean screw allow fish of all sizes, and debris, safe passage through the turbine.

As a result, the Environment Agency has agreed that no screening is required.

Literally thousands of fish passages have been monitored and recorded using underwater cameras at the intake, inside the chamber of the screw itself and at the outflow to assess the effect of the screw on salmonids (including smolts and kelts), brown trout and eels.

The trials looked at fish passage across a broad spectrum of sizes and turbine speeds, possibly the most impressive of which was the safe passage of a kelt measuring 98cm in length and weighing 7.6kg.

In addition, behavioural and migrational patterns across the species have been shown to be entirely unaffected by the turbine.



■ **LEFT:** An artist's impression of the Archimedean screw hydro turbine on Camowen River in Omagh, which will generate sufficient power to meet the needs of the Omagh Leisure Complex.

# Fish-friendly hydro for Omagh

This hydro project is the second of only two Archimedean screw hydro projects to date in Northern Ireland.

Mann Power Consulting and Eco Evolution are installing both turbines. Mann Power Consulting, based in Yorkshire, is the pioneer of the Archimedean screw in the UK and Ireland, and Eco Evolution, based in County Wexford, is the authorised representative for the whole of Ireland.

Mann Power Consulting and Eco Evolution are the Archimedean screw generating specialists in the UK and Ireland.

Mann Power Managing Director Dave Mann brought the Archimedean screw as a generating turbine into the UK for the first time in 2004.

Dave commissioned the fish

passage studies, instrumental in persuading the Environment Agency to accept the technology.

Mann Power has a proven track record of successful installation throughout the UK and Ireland and its services are split into five distinct stages, allowing clients complete flexibility to decide their own project timescale.

It offers a fully integrated 3-D design and build capability and is the sole distributors of Rehart Archimedean screws in the UK and Ireland.

Rehart GmbH is an engineering company based in Germany with a 25-year history of excellence.

Rehart has developed a unique lower bearing system that addresses the reliability issues experienced by other manufacturers.

The new compact screw design radically reduces the amount of civil engineering work required for installation.

The first ever Archimedean screw generator in Northern Ireland was only recently installed at Shane's Castle in Antrim.

Rated at 214 kilowatts, this is the largest single Archimedean screw generator ever manufactured.

Eco Evolution and Mann Power recently installed the massive Rehart manufactured machine at Shane's Castle. It is expected that the scheme will be commissioned shortly and it will then be fully operational.

The predicted annual output is a massive 1,125,000 kilowatt-hours. To put this in perspective, an average household uses less than 5,000 kilowatt-hours per year, so

this hydro scheme has the potential to power more than 225 houses.

This scheme will also save an impressive 484 tonnes or more of carbon dioxide (CO<sub>2</sub>) emissions by generating clean, green electricity.

Eco Evolution is also currently working on a smaller 20 kilowatt private scheme in County Antrim that is at the early stages of development.

This scheme will provide power to a farm with excess electricity sold back to the national grid.

Incentive payments in way of Northern Ireland Renewable Obligation Certificates (NIROCs) are available for renewable generators including hydro.

NIROCs are available for the electricity generated by the hydro turbine. This electricity can then be used on site with the excess exported to the national grid.

There is an Export Tariff available for any excess electricity that is exported to the national grid.

The Eco Evolution professional team offers a friendly one-stop shop for hydro development, from feasibility studies to licensing, to installation and commissioning and everything in between.

Eco Evolution is also currently seeking suitable investment sites for hydro development around the country. Leases on suitable sites with potential in excess of 50 kilowatts would be considered.

□ For further information contact Eco Evolution, Efferogue, Ferns, Enniscorthy, County Wexford. Telephone +353 53 93 67617, Website [www.EcoEvolution.ie](http://www.EcoEvolution.ie)

■ **LEFT:** The Archimedean screw turbine provides a fish-friendly alternative to conventional turbines.

