

# GALLOWAY HYDROS ENVIRONMENTAL FACTSHEET

## Overview

Galloway hydro-electric scheme generates 'green' energy by harnessing the force of water. The Galloway Hydros covers an area of 400 square miles in South Ayrshire and Galloway.

The scheme consists of six stations, eight dams, plus tunnels, aqueducts and pipelines. Its construction has created rich wetlands that are home to a diverse range of wildlife. The Hydros strives to minimise the impact of its operations and, over the years, has an excellent record of environmental compliance.



## Introduction

In the mid 1930s, a series of dams were built on the Rivers Deugh, Ken and Dee to store water for the Galloway hydro-electric scheme. This altered the landscape, creating reservoirs, wetlands and fens with their own special biodiversity interest and covered by numerous natural history designations, such as Sites of Special Scientific Interest (SSSI).

The Galloway Hydros was planned and constructed with great attention to the environment, particularly the protection of Atlantic Salmon in the Rivers Doon, Ken and Dee. The hydro scheme celebrated the 75th anniversary of its opening in 2010 – and the focus remains on ensuring high standards of environmental performance to preserve the quality of water, the landscape and its wildlife. ScottishPower is continuing to invest in ensuring the future compliance of the stations, to ensure their future as generators of clean renewable energy. This factsheet describes Galloway Hydros' environmental management system and efforts to conserve the habitats and wildlife on site through a biodiversity action plan.



*The Water of Ken*

## Reducing our Environmental Impact

Hydro power is recognised as being fully renewable and sustainable. Our stations at Galloway produce no direct carbon dioxide (CO<sub>2</sub>) emissions or other greenhouse gases. The only CO<sub>2</sub> produced comes from the electricity consumed in our offices, machinery and emissions from site vehicles.

The Galloway Hydros is located in an environmentally-sensitive areas and operates under a licence issued by the Scottish Environment Protection Agency (SEPA). We take seriously our responsibility to maintain the quality of water in our scheme and have an excellent compliance record.

Oil interceptor systems have been fitted at all sites to capture any oil, should a spill ever occur, before it enters the water course. Further efforts are made to reduce the use of resources, and minimise and recycle waste produced as part of our activities.

Galloway Hydros operates an Environmental Management System (EMS) certified to the standard ISO 14001 and a biodiversity action plan (BAP) to protect habitats and wildlife.

## Environmental Performance Highlights

Galloway Hydros has installed capacity to produce 109 MW of green renewable electricity each year.

The scheme operates a rolling environmental plan that aims to continually improve environmental performance. Some key achievements during 2011 include:

- The five biggest waste streams from routine operations were established so that future reduction targets can be set
- Monitoring of environmental database, to record environmental incidents or near-misses, and identify areas of risk
- We continued to work with SEPA to prepare for new requirements under the Water Framework Directive
- The installation of oil interceptors was completed at Galloway sites
- Automatic noise monitoring equipment was installed at Glenlocharr Barrage
- Continued working with the Loch Doon Ranger (part funded by Scottish Power) in order to deliver projects identified in the scheme's Biodiversity Action Plan.
- The reintroduction of eels upstream from Tongland Dam. Eels provide prey for Otters and act as predators towards invasive species such as the North American Signal Crayfish.
- Mitigation of the spread of invasive species such as Japanese knotweed, Ragwort and Rhododendron scrub.
- Placement of artificial nest sites for bird species such as barn owls, swallow, house martin and kestrel



*From top: Water of Ken at Earlstoun Station, Tongland dam*

# Quick facts:

**Designations:** Loch Ken is a Ramsar site and Special Protection Area for wildfowl, aquatic plants and insects. Loch Doon is one of seven Sites of Special Scientific Interest (SSSI) on or adjacent to the scheme for its relic population of Arctic Char.

**UK BAP species:** Otter, Harvest Mouse, Red Squirrel, Pillwort, Lapwing, Curlew, Willow Tit, Reed Bunting, Skylark, Small Pearl-bordered Fritillary, Atlantic Salmon.

## A Helping Hand for Biodiversity at the Galloway Hydros

The Galloway hydro-electric scheme is situated in an area of considerable conservation and scenic value. Water levels and the quality of water in rivers and reservoirs are vitally important to the ecology of habitats, which affect insects, fish, birds and water mammals.

The Galloway Hydros launched its first biodiversity action plan (BAP) in 2005, aiming to preserve and enhance habitats and wildlife at the schemes. In 2009 a new five-year plan was published, setting out a list of ecological enhancement objectives and a timescale for their implementation.

ScottishPower is working with partners, including Galloway Fisheries Trust, Scottish Natural Heritage and the Royal Society for the Protection of Birds, to achieve our objectives. A key feature of the Hydros' BAP is safeguarding and improving movements of migratory fish, such as Sea Trout and Atlantic Salmon, through the Galloway scheme.

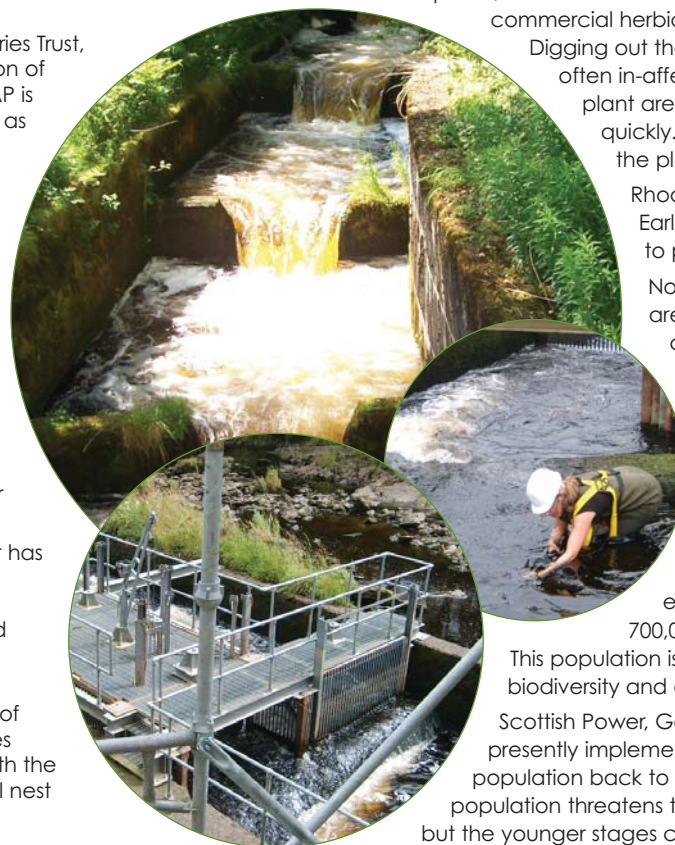
For further details about our areas of co-operation with Galloway Fisheries Trust, please see our information sheet on Fisheries Management.

Galloway Hydros co-operates with the RSPB in managing water levels on Loch Ken, as far as operations will allow, to encourage successful nesting by wading birds and waterfowl. The RSPB leases almost 60 hectares of land from ScottishPower at its Ken-Dee Marshes reserve at Loch Ken. Under the agreement, which started in 1996, water levels are kept high from March to mid April to encourage early breeding ducks and waders to nest above the levels of flash floods that can occur in spring. Levels are then lowered from April until late June, exposing the marshy margins of the loch for feeding wading birds.

The RSPB acknowledges that the co-operation of ScottishPower has 'greatly enhanced waterfowl breeding success' at Loch Ken. Actions adopted in the Hydros' BAP include non-intervention measures to benefit habitats and species, such as leaving dead and fallen trees and reducing the frequency of grass cutting to encourage invertebrates.

Use of herbicide is kept to a minimum to foster the emergence of semi-natural vegetation while all vegetation management takes place outwith the bird breeding season. The Hydros will work with the RSPB to erect nestboxes for birds, bats and Red Squirrel. Artificial nest sites will also be created at Earlstoun, Ken and Deugh.

Outage works at several stations have recently been altered due to the identification of nearby Peregrine nests. Barn owls are also known to nest within the hydro scheme, alongside wading birds and other birds of prey.



*Clockwise from top: The fishladder at Earlstoun, releasing a tagged salmon upriver of Tongland Salmon Trap, Tongland Salmon trap below the power station*

## Removing Invasive Species

Staff at the Hydros are battling to eradicate invasive species such as Japanese Knotweed, Rhododendron and American Signal Crayfish from its sites.

The highly-invasive Japanese Knotweed can grow up to three metres tall and forms dense clumps that shade out native species and damage roads and other structures.

ScottishPower have a legal obligation to prevent the spread of these plants, as such weed is controlled by annually applying a commercial herbicide twice during the growing season.

Digging out the plant is a possible option, although often in-effective as the rhizomatous roots of the plant are so deep that re-growth occurs quickly. This also leads to issues of disposal as the plant is classified as 'controlled waste'.

Rhododendron is being cut back at Earlstoun, Glenlee, Carsfad and Tongland to prevent its spread.

North American Signal Crayfish are non-native alien species that are extremely destructive on native flora and fauna and will consume plant matter, invertebrates, fish and fish eggs. As such, it is illegal to move or keep crayfish.

On the Dee, their population has increased to a massive size in recent years e.g. a trapping experiment in 2009 caught over 700,000 individuals in only a few months.

This population is out of control and is having a severe biodiversity and economic impact on local fish stocks.

Scottish Power, Galloway Fisheries Trust (GFT) and the Dee District Salmon Fishery Board are presently implementing a Salmon Restoration Plan to try and restore a healthy salmon population back to the Dee but the continued spread and growth of the signal crayfish population threatens this objective. Trapping is able to remove the older age classes of crayfish but the younger stages cannot be controlled by such techniques.

The establishment of the European Eel population in the Dee catchment is seen as an essential measure needed to help bring the crayfish population down to a level which will allow natural flora and fauna to co-exist. This population is being boosted through a variety of measures forming the Dee Eel Restoration Project in conjunction with GFT.



*From top: Steam-injecting Knotweed, the North American Signal Crayfish*