

# GALLOWAY HYDROS WATER FRAMEWORK DIRECTIVE: OUR REQUIREMENTS

## Overview

ScottishPower is required to make some changes to the way it operates the Galloway hydro-electric scheme between now and 2015 to meet the objectives of the European Water Framework Directive.

The company is consulting stakeholders about these changes and liaising with the Scottish Environment Protection Agency (SEPA), which has responsibilities under the Water Environment and Water Services Scotland Act 2003 to develop and implement River Basin Management Plans.



## Background to the Water Framework Directive

The Water Framework Directive (WFD) is a substantial piece of environmental regulations which was produced by the European Commission in 2000. Fundamentally, it is a set of guidelines for managing large bodies of water, improving water quality and reducing potential hazards such as flooding. It aims to protect, improve and ensure the sustainable management of water resources to a common standard across the EU. It covers

wetlands, rivers, lochs, estuaries, coastal and underground water.

Under the WFD member states must ensure all inland and coastal waters within defined River Basin Districts reach 'Good Chemical and Ecological Status' by implementing a programme of measures contained in a formal River Basin Management Plan (RBMP).

The first RBMPs were published in December 2009. They contain environmental targets to be met by 2015, 2021 and 2027 which will be delivered by Area Advisory Groups that link in to a National Advisory Group. RBMPs will cover six year cycles, the first from 2009-2015.

## WFD Impact on Galloway Hydros

Heavily Modified Water Bodies, such as the Galloway Hydros, must achieve 'Good Ecological Potential' - this means providing maximum net environmental benefit without impacting on the operation of the scheme.

The Galloway Hydros sits mainly in the Solway Tweed River Basin District, but the upper part of the scheme is within the Scotland River Basin District. The Solway Tweed River Basin District straddles the border with England. As a result, SEPA and the Environment Agency have joint responsibility for co-ordinating key areas of work for Galloway Hydros. These include:

- Publishing environmental and economic characterisations for the river basin district. These are detailed descriptions of pressures and impacts on the water environment and an economic analysis of water use
- Reporting on key water management issues, including pressures on the water environment such as pollution, abstraction and invasive species
- Publishing a strategic environmental assessment of the river basin district
- Introducing a new classification system and monitoring programme
- Developing environmental objectives for each water body and measures to help achieve those objectives
- Co-ordinating the development of a River Basin Management Plan.



Tongland dam

## Achieving Good Ecological Potential

Water management issues relating to the hydros, identified by SEPA, include flow rates in rivers and overcoming barriers to fish migration.

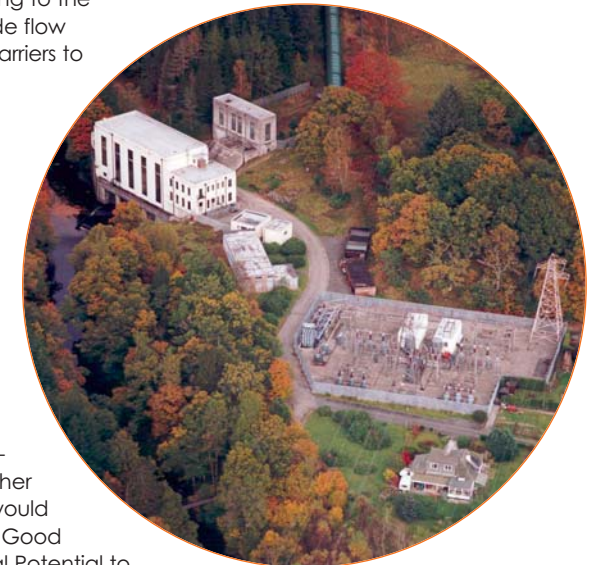
A key area examined by our consultants was compensation flows – water the hydro stations release to rivers to compensate for impounding water in its dams.

Levels of compensation flow in some rivers in the scheme do not achieve SEPA's criteria for Good Ecological

Potential, while flows to others - such as the River Doon - are much higher than SEPA would require for Good Ecological Potential to be achieved.

ScottishPower is a founding partner of the Dee-Ken Catchment Management Plan that promotes the sustainability of the area's water resource. The Plan, published by SEPA, states: 'The amount of water within a river system is paramount to the wellbeing of the catchment.

'Too little water will result in drought and loss of wildlife habitats, whilst too much can cause damage to banks and riparian zones as well as causing great cost to human interests.'



Kendoon Power Station



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## Meeting the Requirements of the Water Framework Directive

To meet the first RBMP target date of 2015 for all the water bodies associated with the hydro-electric scheme, ScottishPower has examined the operation of the Galloway Hydros to determine how we can achieve the 'Best Ecological Outcome'.

We commissioned independent ecology and hydrology consultants to help us ensure that our proposals meet SEPA's requirements.

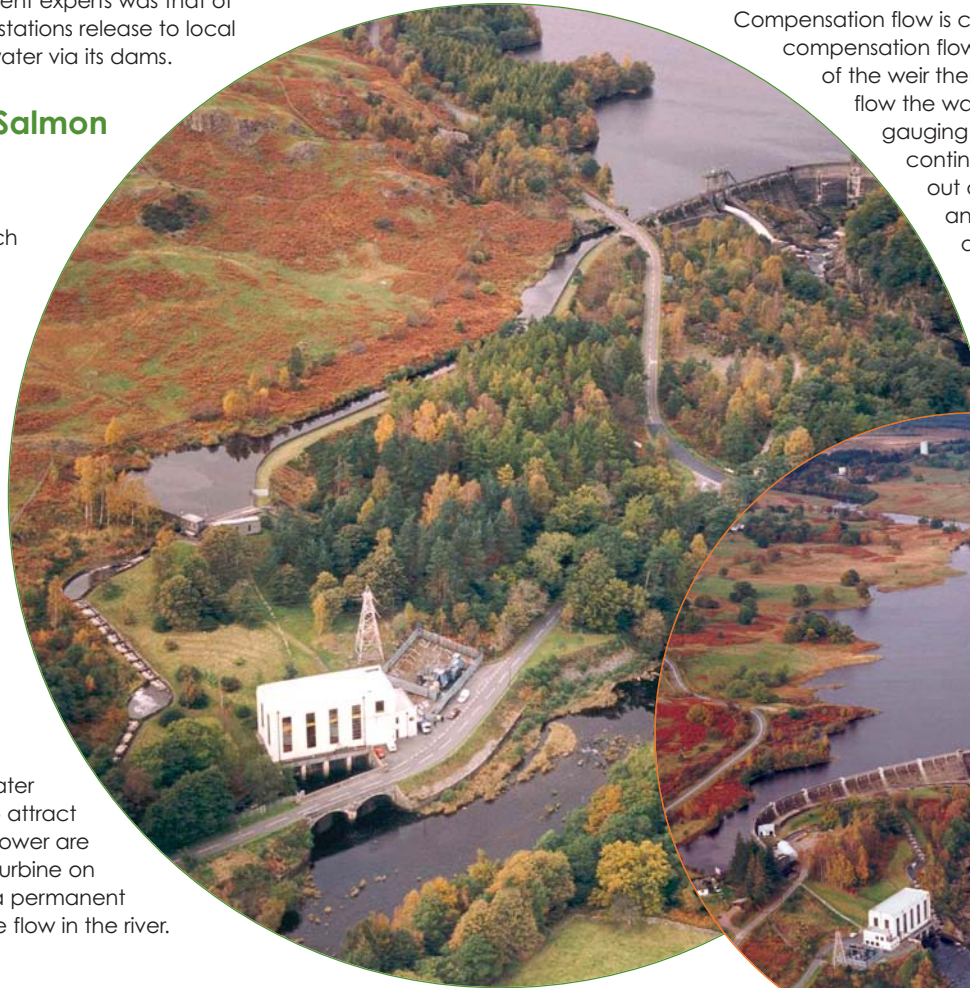
A key area examined by our independent experts was that of compensation flows – water the hydro stations release to local rivers to compensate for impounding water via its dams.

## Improving Conditions for Salmon on the River Dee

The Galloway Hydros will continue to minimise water level fluctuations on Loch Ken, as far as operations will allow, encouraging successful nesting by wading birds and waterfowl at Loch Ken.

We have co-operated with the RSPB to control water levels at Loch Ken since 1996 and the Society has acknowledged that our co-operation has 'greatly enhanced waterfowl breeding success'.

ScottishPower are working with SEPA, the Galloway Fishery Trust and the Dee District Salmon Fishery Board on voluntary measure looking at improving conditions for Salmon returning from the sea and accessing the reservoir at Tongland Dam. This will include looking at means for providing 'freshets' (short duration increases in water flow) to replicate natural events and to attract Salmon up the water courses. ScottishPower are also looking at fitting a compensation turbine on the Dam at Tongland that will result in a permanent and continuous increase in the baseline flow in the river.



Earlstoun Power Station and dam

## Summary of our Proposals

ScottishPower have a revised CAR licence in place which allows the scheme to comply with the 2015 Solway Tweed River Basin Management Plan requirements. This requires increases to compensation flows on the Blackwater of Dee at the Hensol Bridge on the A762 and on the Pullaugh Burn at the Pullaugh Weir intake.

**Hensol Weir** – Compensation flow will be increased from the current level of 0.63m<sup>3</sup>/sec to 0.914m<sup>3</sup>/sec in the Blackwater of Dee at the location known as the Hensol Weir. Grid Ref NX 663 702.

Compensation flow is currently measured at the v notch weir. Current arrangements allow compensation flow to pass through the V notch such that when water level is at the crest of the weir then the compensation flow is being met. With the higher compensation flow the water level will be spilling over the weir by approximately 90mm. A new gauging station will be installed at this location with a data logger that will continuously monitor compensation flow. Regular inspections shall be carried out at this location to ensure that compensation flow levels are being met and to adjust the compensation valve on Clatteringshaws dam accordingly.

**Pullaugh Weir** – A 'hands off' compensation flow of 0.224m<sup>3</sup>/sec (Q95n) is to be released in the Pullaugh Burn at the location known as the Pullaugh Weir. Grid Ref NX 544 742. There is currently no compensation flow released at this location. Flow will be released by means of a sluice gate on the weir. The sluice gate will be opened to a height of 62mm. This is the opening required when the water level is at the intake sill level and water stops diverting towards Clatteringshaws reservoir. This in effect means that when the flow in the river drops to the Qn95 level then all water is being released as compensation flow through the sluice gate. There is no practical means of currently measuring flow at the Pullaugh weir however the compensation flow will be verified using the flow gauge in the Pullaugh Burn flume at Clatteringshaws Dam. This will be done by measuring the flow in the flume before and after the sluice gate on the Pullaugh Weir is opened and the difference in these readings will confirm the compensation flow released through the sluice gate. Regular inspections shall be carried out at this location to ensure there are no blockages at the sluice gate.



Carsfad Power Station and dam