



GALLOWAY HYDROS WATER FRAMEWORK DIRECTIVE: OUR PROPOSALS



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.

MEETING THE REQUIREMENTS OF THE WATER FRAMEWORK DIRECTIVE

River Basin Management Plans, to meet the requirements of the EU's Water Framework Directive (WFD) will be delivered in three stages: 2015, 2021 and 2027.

ScottishPower has examined the operation of the Galloway Hydros to determine how we can achieve the "Best Ecological Outcome" under the WFD for all the water bodies associated with the hydro-electric scheme.

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

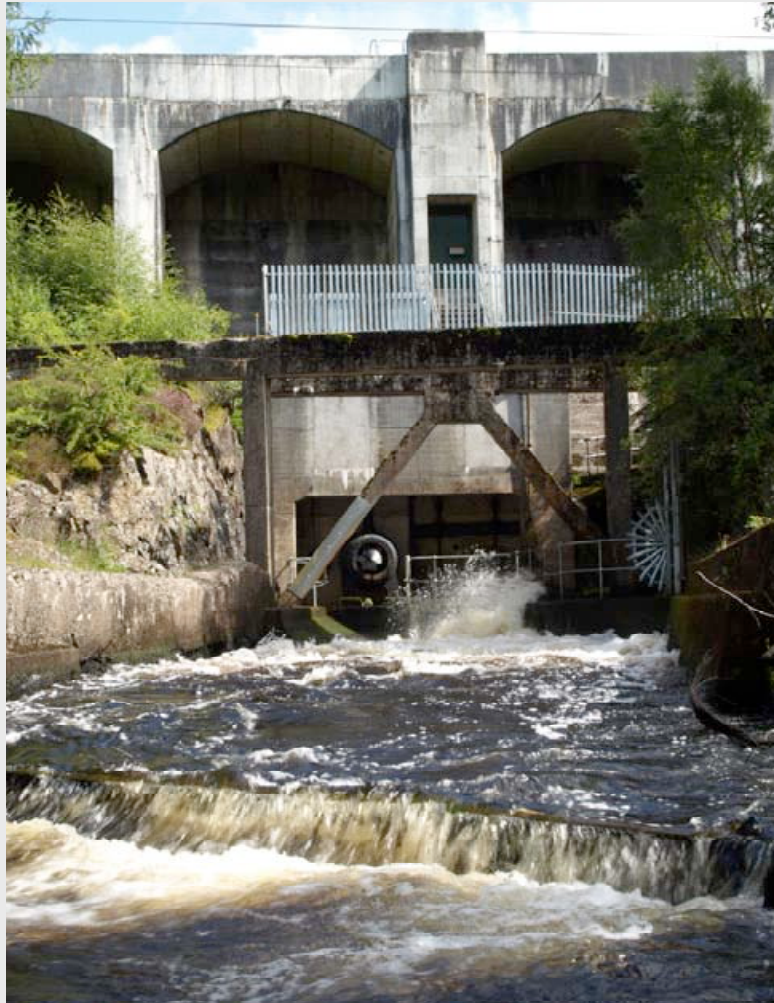
A key area examined by our independent experts was that of compensation flows – water the hydro stations release to local rivers to compensate for impounding water via its dams.

Following extensive consultation with stakeholders, we developed proposals that were submitted in October 2010 to the Scottish Environment Protection Agency, which issues the company's licence under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 – the CAR licence.

SEPA have a period of four months to process our application during which time there will be a period of consultation to allow stakeholders' views to be heard. Should an agreement be reached, the changes would take effect no later than December 2012.

You can view ScottishPower's application on SEPA's website:

<http://www.sepa.org.uk/>



■ Current compensation flow from Loch Doon Dam into the River Doon

	River Doon Compensation Flow	Tongland Compensation Flow	Pullaugh Burn Compensation Flow	Blackwater of Dee Compensation Flow	Comments
Current Status	45 mgd	15 mgd	0	12 mgd	
Preferred Option	36.5 mgd	46.2 mgd	0	12 mgd	Pullaugh Burn & Blackwater of Dee improvements deferred to 2021
Alternative Option	32.1 mgd	46.2 mgd	4.3 mgd	17.4 mgd	All of SEPA improvement objectives achieved by 2015

■ How ScottishPower's Proposals compare with the current status at Galloway

SUMMARY OF OUR PROPOSALS

The Galloway Hydro-electric Scheme provides around 250 GWh of green renewable electricity each year.

During our evaluation of the options to secure the best ecological outcome for the scheme as a whole, we have sought to develop solutions that do not result in a net loss of renewable energy output.

In the first phase of the River Basin Management Plan, SEPA identified three water bodies at the Galloway Hydros, where measures would need to be taken to improve ecological conditions – the Pullaugh Burn, Blackwater of Dee and the River Dee at Tongland.

In October 2010 we submitted two options to SEPA for a variation in our CAR licence to enable compliance with the Water Framework Directive.

Option 1 is fully compliant with SEPA's requirement for improvements by 2015 but it would require a reduction of compensation flow to the River Doon to a minimum of 32.1 million gallons a day (mgd) from its current rate of 45 mgd.

Option 2, the company's preferred

solution, would result in a smaller reduction of the minimum compensation flow to the River Doon to 36.5 mgd – the equivalent of the volume of water in 66 Olympic-sized swimming pools.

Under both of our options, minimum compensation flows to the River Dee downstream of Tongland would be increased from 15 mgd to a flow of 46.2 mgd, resulting in compliance by 2015.

However, under Option 2, proposed compensation flow changes for the Pullaugh Burn and Blackwater of Dee would be deferred until 2021.

Despite this deferment, our consultants believe Option 2 would deliver a greater level of ecological benefit overall when both river catchments are considered together.

ScottishPower will not be installing new turbines or generating additional electricity under these proposals – in fact, both proposals are "energy neutral", with no gain or losses of renewable energy output.

MOVING TOWARDS MORE NATURAL FLOWS FOR THE RIVER DOON

Our hydrological and ecological consultants advise that current levels of compensation flows to the River Doon keep water levels unnaturally high, particularly during periods of low rainfall.

They state that while, from a salmon fishing perspective high summer flows may be perceived as the best solution, consistently high flows are not necessarily better for the salmon population and are detrimental to the overall ecological health of the catchment.

Under Option 2, the minimum levels of compensation flow delivered would be lower than at present, but would remain sufficiently high to support the migration and breeding of salmon.

ScottishPower will consider replicating more natural seasonal river levels in the Doon and Dee by the use of variable flows, timing freshet releases in harmony with rainfall to benefit the overall environment in both river systems.

This more natural flow pattern could increase successful spawning for salmon, sea trout and trout, with potentially greater survival rates, due to more safe areas for fry.

It is also believed that lower summer compensation flows could result in more natural upstream and downstream running of migratory fish, more in tune with natural fluctuating water levels.

This will result in some adult fish spending less time in the lower and mid river, potentially reducing parasites and disease.

The lower minimum flows would also increase habitat and foraging for birds and small mammals along the banks.



■ *The River Doon, close to Loch Doon Reservoir*



■ *The River Dee south of Tongland*

IMPROVING CONDITIONS FOR SALMON ON THE RIVER DEE

Our Options to SEPA include provision for a minimum compensation flow of 46.2 mgd (up from 15 mgd) to the Solway Estuary from Tongland Reservoir Dam.

ScottishPower's ecological consultants believe that increasing the flow will have several ecological benefits.

It will assist the migration and breeding of Atlantic Salmon, and benefit other aspects of river and marine ecology on the lower River Dee.

The increased flow at Tongland will require alterations to the existing fish screen and compensation valve.

Our preferred option involves deferring increases in compensation flows to the Pullaugh Burn and Blackwater of Dee until

2021. We have adopted this approach because:

- Increasing flows to the Pullaugh Burn and Blackwater of Dee would mean a bigger reduction in compensation flow to the Doon (to 32.1 mgd). This may impact ecological conditions on the river, when the aim of the WFD is to make improvements.
- The Pullaugh Burn has not had a compensation flow since 1935, so deferral will not result in ecological deterioration. (The Blackwater of Dee has received a compensation flow of 12 mgd since 1936).
- In making improvements to the Dee, we have agreed with SEPA that a "bottom up" approach is best for a scheme of this size.

CONTROLLING THE RISK OF FLOODING

Our consultants have concluded that compensation flow changes proposed by ScottishPower are highly unlikely to increase the risk of flooding in either the Dee or Doon catchments.

Our consultants suggest that as the compensation flow changes proposed are relatively small, there is minimal risk of the new regime contributing to flooding on either catchment, or tidal flood risk at Ayr and below Tongland.

It is a requirement of the Hydros' CAR licence that the operation of the scheme's reservoirs does not exacerbate flooding that would occur under natural conditions.

We take this responsibility seriously and our operating procedures are designed to help reduce the flooding risk during times of heavy rainfall – for more details see our **Flood Management** factsheet. For instance, we have recently changed the management of levels on Loch Doon to release water earlier during extreme rainfall to maintain the dam at a lower level and prevent reservoir water spilling via the dam's siphons.

This means making improvements at Tongland first, to monitor the effects on migratory salmon. If salmon are making their way further up the scheme, improvements such as fish ladders will be considered at sites such as the Pullaugh Burn, about 25 miles upstream.

The Galloway Hydros will continue to minimise water level fluctuations on Loch Ken, as far as operations will allow, to encourage 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".