

Briefing for the Citizen Participation and Public Petitions Committee on petition PE2109: Halt any further pump storage hydro schemes on Scottish lochs holding wild Atlantic salmon

The petitioner is calling on the Scottish Parliament to urge the Scottish Government to create a moratorium on further development of pump storage hydro on Scottish lochs holding wild Atlantic salmon until the impact of such developments on wild Atlantic salmon migrations is understood.

Background – pumped storage hydro in Scotland

Pumped storage hydro is a type of hydropower infrastructure used for energy storage. During periods of low energy demand, or high electricity supply e.g. from renewable energy producers, [electricity is used to pump water from a lower reservoir or loch up to an upper reservoir or loch](#). Schemes can then generate electricity by transferring water from the upper reservoir or loch to the lower reservoir or loch via a turbine e.g. during periods of high demand.

Hydro pumped storage is an established technology, however there are only two operating schemes in Scotland and no new scheme [has become operational in Scotland since 1984](#). The two operational sites are [Cruachan Power Station](#) (Loch Awe and Cruachan Reservoir, 440MW capacity) and [Foyers Power Station](#) (Loch Mhor and Loch Ness, 300MW capacity).

There are three further consented sites in the pre-construction phase. Coire Glas was consented in 2020 (Loch Lochy, 1296MW capacity) and is [awaiting a final investment decision](#) by the developer. [Loch na Cathrach Pumped Storage](#) (Loch Ness, 450MW capacity – formerly called ‘Red John’) was consented in 2021. [Glenmuckloch Pumped Storage Hydro](#) (former open-cast coal site in Dumfries and Galloway, 400MW) was consented in 2022. A 600MW expansion to Cruachan Power Station [was also consented in 2023](#)¹.

There is currently one [live application for a 600MW site at Loch Kemp](#) which would, as well as the operational Foyers site and consented Loch na Cathrach site, abstract water from Loch Ness if consented. The [petitioner has raised concerns about the impact of further abstraction from Loch Ness](#) and

¹ Information on sites (operational, consented and in planning) sourced from [the UK Government Renewable Energy Planning Database](#) (as of April 2024).

commissioned [a review of the impacts of pumped storage proposals on Loch Ness on migrating Atlantic salmon](#).

The Scottish Government [published a draft Energy Strategy and Just Transition Plan in 2023](#) which highlights the benefits of pumped hydro storage (PHS) as a flexible technology, stating it plays a pivotal role in Scotland's energy system, but also describes economic barriers to deployment. It states:

“PHS accounts for 740 MW of Scotland's 864 MW of energy storage. There are currently 1.5 GW of pumped hydro storage projects awaiting construction in Scotland that could deliver vital flexibility for the grid and balance out the intermittent nature of renewables. However, the lack of a dedicated support mechanism means these projects do not have sufficient certainty to proceed. We have repeatedly called on the UK Government to support the development of pumped hydro storage”.

Consenting and environmental assessment

In order to operate, a pumped storage project requires planning permission or a 'section 36' energy consent from the local authority or Scottish Ministers respectively². SEPA and NatureScot would also be expected to comment on any planning or energy consent application as statutory consultees, in respect of impacts on hydrology, the water environment and nature conservation. A licence from SEPA is also required for the abstraction, discharge and impoundment of water (CAR licence), which would control both operations and aspects of construction. Further licences may also be required for aspects of construction e.g. control of contaminated surface water or construction of access bridges.

An Environmental Impact Assessment (EIA) is also likely to be required. [Scottish Government planning guidance on hydro](#) states:

“The EIA would be expected to establish whether or not there are any significant impacts on the biodiversity of an area, including aquatic and terrestrial ecosystems, habitats and species, e.g. breeding birds or freshwater fish. Areas of particular concern may relate to water quality, water quantity and flow, the transport of sediment, water temperature, impacts on migratory fish and freshwater pearl mussels. In designing a hydro scheme, it is likely that special account will have to be given to the ecological status of the water environment, as well as aquatic species and habitats, particularly those protected under the EC Habitats Directive.”

Planning policy

Pumped hydro storage is designated as a Scotland-wide National Development in the fourth National Planning Framework (NPF4) – meaning it

² Development with a gross electrical output above 50 MW require consent from Scottish Ministers under Section 36 of the Electricity Act 1989.

is viewed as of national importance and integral to the delivery of the NPF4 spatial strategy. This needs to be balanced with NPF4 policy 2 on biodiversity – which includes the following on cumulative impacts:

“Any potential adverse impacts, including cumulative impacts, of development proposals on biodiversity, nature networks and the natural environment will be minimised through careful planning and design. This will take into account the need to reverse biodiversity loss, safeguard the ecosystem services that the natural environment provides, and build resilience by enhancing nature networks and maximising the potential for restoration.”

Policy 11 of NPF4 further sets out that for development proposals for all forms of renewable, low-carbon and zero emissions technologies, project design and mitigation should demonstrate how impacts on biodiversity, effects on hydrology and the water environment, and cumulative impacts are addressed.

Atlantic salmon – conservation status, drivers of decline and Wild Salmon Strategy

In December 2023 the International Union for Conservation of Nature (IUCN) published its latest assessment [which classified wild Atlantic salmon populations in Great Britain as endangered for the first time](#). In recognition of declining populations of wild Atlantic salmon in Scotland, the Scottish Government published a [Scottish Wild Salmon Strategy](#) in 2022 setting out a vision, objectives and themes for action to ensure the protection and recovery of the species. The vision set out is that “Scotland’s wild Atlantic salmon populations are flourishing and an example of nature’s recovery.”

The Strategy (see pp9-10) summarises pressures on Wild Atlantic Salmon in the marine, coastal and freshwater environment. These pressures are numerous but include obstacles to fish passage created by infrastructure, or changes to water quantity, quality or to the thermal habitat e.g. due to discharges from dams. The Strategy states that “In most cases pressures do not operate independently of one another but act in conjunction to negatively impact salmon survival and can be amplified by climate change effects”.

In 2023 [an Implementation Plan](#) was published under the Strategy, setting out actions over a five year period to 2028. The Plan does not mention pumped storage but regarding hydropower more generally, includes a main action of “Improving the condition of rivers and giving salmon free access to cold, clean water”. A [progress report was published in March 2024](#).

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19 August 2024

The purpose of this briefing is to provide a brief overview of issues raised by the petition. SPICe research specialists are not able to discuss the content of petition briefings with petitioners or other members of the public. However, if you have any comments on any petition briefing you can email us at spice@parliament.scot

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