

Respondent Information Form

Please Note the respondent form **must** be completed and returned with your response.

To find out how we handle your personal data, please see our privacy policy:

<https://www.gov.scot/privacy/>

Respondent Information Form

Are you responding as an individual or an organisation?

- ☐ Individual
- ☒ Organisation

Full name or organisation's name

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The Scottish Government would like your permission to publish your consultation response. Please indicate your publishing preference:

- ☒ Publish response with name
- ☐ Publish response only (without name)
- ☐ Do not publish response

Information for organisations:

The option 'Publish response only (without name)' is available for individual respondents only. If this option is selected, the organisation name will still be published.

If you choose the option 'Do not publish response', your organisation name may still be listed as having responded to the consultation in, for example, the analysis report.

We will share your response internally with other Scottish Government policy teams who may be addressing the issues you discuss. They may wish to contact you again in the future, but we require your permission to do so. Are you content for Scottish Government to contact you again in relation to this consultation exercise?

- ☒ Yes

☐ No

Where do you live most of the time?

National Representative Body

How would you describe your local area? [SG Classification: Large Urban, Other Urban, Accessible Small Town, Remote Small Town, Accessible Rural Area, Remote Rural Area, Island*, Other (specify)]

*We have included a separate category for island residents in recognition of the potential impacts of decarbonising Transport on these communities.

Scotland-wide

I confirm that I have read the privacy policy and consent to the data I provide being used as set out in the policy (required)



Fisheries Management Scotland Response

Introduction

We have set out our comments below with a focus on the components of the plan which are relevant to rivers and fish. We have therefore chosen not to respond according to the questions set out in the consultation.

Scotland's character and ecology are defined by water. With 125,000 km of streams and rivers, 12.5 times the length of our mainland coastline, and vast, rich seas, our freshwater and marine ecosystems are among the nation's greatest natural assets. Yet this natural inheritance is under threat, with degraded habitats, collapsing biodiversity, and climate change accelerating the decline. From source to sea, our waters connect landscapes, sustain communities, and underpin our economy, yet their ability to do so is increasingly at risk.

Scotland's river catchments are home to many important species, including trout, eels and the critically endangered freshwater pearl mussel. But, at the heart of this story is the wild Atlantic salmon, now classified by the IUCN as endangered in Great Britain. As a keystone migratory species, Wild Atlantic salmon populations indicate the health of our waterways and the choices we make on land and at sea. Beyond their ecological importance, they are a vital socio-economic asset:

- £135 million of angler expenditure each year
- 4,300 full-time equivalent jobs supported
- £79.9 million Gross Value Added to the Scottish economy

To put this in context, the wild fisheries sector employs more people than the Scottish commercial fishing sector. The decline of salmon is therefore not only an environmental emergency, but a social and economic one.

It is disappointing to see how little attention is given to our river catchments and sustainable water use in the draft climate change plan. Scotland's climate is changing fast, with more extreme weather, drought risk, and pressure on our freshwater ecosystems. Rivers and wetlands are lifelines for biodiversity, from wild salmon to dragonflies, freshwater mussels to otters, and they urgently need space to flow freely and allow natural processes to occur. This vital action should be reflected in the Scotland's Climate Change Plan.

Water Scarcity

Scotland has seen significant water scarcity in recent years, resulting in restrictions on water use for agriculture, distilling and other sectors. The climate change plan needs to explicitly recognise that climate change will bring more uncertainty and may exert pressure in areas of Scotland that have not yet experienced water scarcity. The plan needs to set out a just transition to better manage water use, and to ensure that water scarcity situations are not further exacerbated by movement of water out of affected catchments for electricity production (see below). It is clear that Scotland's approach to water scarcity needs to be tightened. Scotland's farmers should be supported to invest in water storage and alternative watering strategies, and this should be coupled with the introduction of conditions in all abstraction licenses which specify the river flow level where water abstraction must stop or be reduced to protect the water environment. This 'hands-off flow' must be set according to ecological need. Such a just transition will be

vital to ensure that important sectors, such as farming, distilling and energy production can coexist alongside healthy, well-functioning river ecosystems.

Wild salmon and freshwater fish require cold, clean water to thrive and water scarcity means that there is an increased risk of higher water temperatures and lower dissolved oxygen levels – both high risk factors for fish welfare and survival. Low water levels can impede fish migration, particularly at man-made barriers, causing fish to congregate in greater numbers. This not only increases stress and the risk of disease outbreaks — including *Saprolegnia*, a damaging fungal infection already affecting some rivers — but also makes fish more vulnerable to poaching. Water quality can also be impacted by water scarcity - with less water in our rivers and lochs, there is less capability for dilution of pollution.

Scotland has one of the highest per capita water usage rates in Europe and the highest in the UK. Reducing water usage must be a priority for all sectors, including significant reductions in leakage through the public water supplies. Water conservation efforts should be promoted through public education campaigns and the adoption of water saving technologies in both residential and commercial sectors, including the use of grey water recycling for flush toilets.

Renewable Energy

Scotland's journey to net zero must go hand-in-hand with the recovery of nature. Poorly sited or designed renewable energy development, including hydropower, pumped storage hydropower and offshore energy developments, can pose risks to biodiversity, including priority habitats and vulnerable species. Atlantic salmon and critically endangered freshwater pearl mussels (which rely on Atlantic salmon and sea trout to complete their lifecycle) are key examples. There remains considerable uncertainty about the impacts of renewable developments and associated infrastructure on wild migratory fish, and it is vital that these knowledge gaps are urgently addressed, both by the Scottish Government and by developers. It is our strongly-held view that a more precautionary approach to impact assessments for proposed developments is required.

Fisheries Management Scotland are members of the ScotMER Diadromous Fish Receptor Group, which is concerned with evidence gaps related to the health, distribution, and impacts on diadromous fish (salmon, sea trout, etc.). This group has worked together to identify and prioritise evidence gaps associated with the planning and consenting processes for offshore renewable developments. The first version of the resulting evidence map was published in June 2019, but we remain hugely disappointed at the lack of progress in filling these gaps, despite the ongoing scale of proposed and constructed developments. These evidence gaps must be filled with great urgency and any necessary and appropriate mitigations put in place. It is crucial that the same mistakes are not repeated for other forms of energy production.

We have particular concerns about the scale of proposed development of pumped storage hydro in Scotland. Whilst we recognise the imperative to be able to store energy for use when demand is high, this must be done in a way that recognises the twin crises of climate change and nature loss. Pumped storage hydropower, while providing grid storage and balancing capabilities, can damage ecologically sensitive landscapes. Beyond immediate habitat destruction, the rapid and frequent water level fluctuations required for scheme operation significantly alter watershed hydrology and loch shoreline dynamics. These changes can profoundly disrupt aquatic food webs and damage

sensitive spawning grounds crucial for migratory fish species, particularly Atlantic salmon.

Scotland is still addressing the legacy of large-scale hydropower developments from the last century, with a great deal more to be done to address impacts on fish passage, habitat quality and water flow essential for biodiversity. Any proposals to further develop hydropower must undergo the most stringent environmental review and stakeholder consultation. The bar for environmental sustainability must be extremely high, given the inherent risks posed by hydropower infrastructure and the sensitivity of our iconic river catchments and the vital species that depend on them.

Building Climate Resilience

Building resilience to the climate and nature crises must go hand-in-hand with ambitions to reach net zero. Restoring our freshwater habitats, in particular, can make an important contribution to building resilience to flooding and mitigating for increasing water temperatures. Nature-based solutions allow for a long-term and sustainable approach to climate resilience and should be a key priority for action.

The Scotland River Temperature Monitoring Network (SRTMN) has provided important information about river temperatures in Scotland. River temperature is a critical control on the health of freshwater ecosystems, and thermal shifts in river temperature have profound implications for temperature sensitive species including fish and invertebrates whose life cycles are dependent on cooler environments. During the summer of 2018, it is estimated that around 70% of Scotland's rivers experienced temperatures that exceeded thresholds for thermal stress for Atlantic salmon. UK climate change projections provided by the MET Office (UKCP18) indicate that summers like 2018 could occur every other year by 2050, with increasingly high air temperatures and low summer flows (<https://www.gov.scot/publications/scotland-river-temperature-monitoring-network-srtmn/>).

Natural regeneration and targeted planting of native trees along rivers will help to shade river channels to reduce river temperatures and mitigate some of the effects of climate change. Increased shading can also help to mitigate other pressures which are expected to be exacerbated by climate change, including the impacts of eutrophication and algal blooms. There is considerable potential to increase riparian woodland on Scotland's rivers as it is one of the Europe's most sparsely wooded countries. Scotland has ca. 108,000 km of rivers, of which only ca. 35% are protected by any substantial tree cover. Given the time taken to plan and implement appropriate planting, and for trees to grow to a height where they provide meaningful shading, it is important that efforts are made increase the spatial extent of riparian woodland as a matter of urgency.

Fisheries Management Scotland are partners in the Riverwoods Initiative, which has highlighted the transformative potential of native woodland restoration along riparian corridors. Beyond providing shade that moderates water temperatures, these woodlands create intricate root systems that stabilise banks, filter agricultural runoff, and slowly release groundwater during dry periods. The fallen woody material they contribute to waterways creates flow diversity and habitat complexity that helps aquatic communities withstand climate extremes. Clear targets for native riverside woodland restoration should be specifically included in the Climate Change Plan.

In addition to water scarcity, peak rainfall intensities and river flows are expected to increase markedly under current climate change projections. Providing more space for rivers to move and adjust naturally will regenerate habitat, improve wildlife, and help us adapt to climate change. Large proportions of rivers are disconnected from their flood plains, due to current land use priorities, limiting the scope of those floodplains to hold water during high flows and contributing to downstream flooding issues. Protecting and restoring river corridors through the creation of adequate buffer strips, riparian woodland and the restoration and recreation of wetlands, will make a significant contribution to securing biodiversity and is crucial to the protection and enhancement of rivers, lochs and other freshwater habitats. This will require a just transition to reforming public funding for agriculture and forestry subsidies to provide greater incentives for land use changes which benefit climate resilience, water quality, water quantity, and biodiversity.

The underground water flow amongst stones and gravels below rivers forms crucial habitat for invertebrates and influences river chemistry. These invertebrate populations support fish, and climate resilience depends on this underground flow, which can be damaged by abstraction, development, and sedimentation.

Connectivity is a key attribute required for healthy, functioning ecosystems. Scotland's industrial heritage has left over 2,200 barriers in rivers that block natural flow and fish migration. Efforts need to be accelerated to remove these barriers, ensuring free-flowing rivers, natural processes and free access to habitat. Rivers need space to move naturally, helping regenerate habitats and adapt to climate change. While fish passes allow migratory movement, only complete barrier removal restores natural flow processes and sediment movement.

Conclusion

In conclusion, we are strongly of the view that the draft Climate Change Plan should be further revised to reflect the importance of Scotland's river catchments, and the important species that rely on them. The plan should include specific targets to build climate resilience and address human impacts which can reasonably be expected to be exacerbated by climate change.