Frequently Asked Question – Restoring the River Leven

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Why restore the River Leven?

The River Leven has seen many man-made changes that have been made over time due to its rich industrial heritage which have an impact on the local environment. These include artificial straightening of the river, with gabions (wire baskets filled with stones) and walls, as well as barriers within the river such as the Kirkland and Burn Mill Dams.

Restoring water courses to a more natural condition can bring many benefits, helping to:

- provide a space for local people to enjoy;
- improve local resilience to climate change;
- support biodiversity including fish, mammals, birds and amphibians;
- allow fish passage by removing barriers;
- reduce flood risk, for instance through natural flood management;
- gain space for nature in a more urban environment.

Where is the project happening?

Over a 2½ mile stretch of the river between Windygates and Leven.

Why are you only looking at this section of the River Leven?

SEPA carried out a catchment wide study highlighting opportunities for river restoration. As the initial focus for the Leven Programme was on the most downstream reach of the River Leven, it made sense to work together, co-ordinate action and achieve maximum benefits.

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In terms of fish passage the Kirkland and Burn Mill are the two most downstream barriers to fish migration and it makes sense to focus on these first. The Leven Programme has a long-term vision for change throughout the catchment and this is just the first focussed area of work.

What is the aim of the project?

To look at the potential to restore a 2 ½ mile stretch of the river between Windygates and Leven, including improving the physical condition of the river and its floodplain to provide better habitat, and improving potential fish passage at the Kirkland and Burn Mill Dams.

We are also looking to develop the area with local communities, improving local biodiversity, path networks and blue-green spaces as part of the wider Leven Programme.

Who is undertaking this project and how is it funded?

In conjunction with other initiatives in the Leven Programme, this project has been commissioned by Fife Council and the Scottish Environment Protection Agency (SEPA), supported initially with funding from the Water Environment Fund (WEF).

Fife Coast and Countryside Trust (FCCT) are managing the project on behalf of Fife Council and are working with river restoration specialists cbec eco-engineering (leading on design). The project group are in the process of appointing a contractor to deliver the next phase of physical works.

What restoration improvements were included in Phase 1?

- Creation of shallow ‘ponded’ areas to promote wetland and wet woodland habitat. These areas may not always be wet but will fill during periods of higher river flow or following heavy rainfall.
- Large wood placed along and within the river to provide shelter for fish, birds and invertebrates.
- Reprofiling the banks of the lower Kennoway Burn to improve its connection with the floodplain.
- Planting of native trees and wetland plants along the riverbanks and floodplain areas to improve biodiversity and encourage important wet woodland habitat.

What are the proposed restoration improvements for Phase 2 in a nutshell?

- Construction of a nature-like rock ramp on the Kirkland Dam and extending downstream (using boulders and cobbles to mimic a natural, steep section of river channel) to make it easier for fish to migrate up and downstream.
- The removal of Burn Mill Dam to make it easier for fish to migrate up and downstream and to re-instate the natural movement of flow and sediment through this section of the river.
- Creation of more shallow ‘ponded’ areas (to the south of the river) to promote wetland and wet woodland habitat. These areas may not always be wet but will fill during periods of higher river flow or following heavy rainfall.
- Large wood placed along and within the river to provide shelter for fish, birds and invertebrates.
- Planting of native trees and wetland plants along the riverbanks and in floodplain areas to improve biodiversity and encourage important wet woodland habitat.
- Improvements to habitat along artificial areas of riverbank.
- Modifying and removing rock and stone bank protection and, where needed, replacing with greener more sustainable alternatives.

What is happening at the moment?

This summer sees us entering the construction period of the Phase 2 works. To-date, we have carried out surveys, research, spoken to local landowners and technical experts and reviewed information gathered about the current state of the river and the Kirkland and Burn Mill Dams.

This information has been pulled together into options for potential restoration that can help improve the River Leven for local people and wildlife to enjoy. These options were shared with the wider community and a number of stakeholders for their thoughts and views. Feasible options were then progressed to design phase, and subsequent detailed designs have now been finalised.

When will work start on the ground?

Phase 1 of the restoration designs (to the north of the river at Cameronbridge and Dunniface) was started in September 2023. Both Phase 1 and Phase 2 will be progressed between June - September 2024. Associated tree and wetland vegetation planting will be undertaken in the winter of 2024/25.

How will you work with the local community?

While the key aim of this project is about restoring the river we have been keen throughout this process to connect with the local community, for them to have a say in how the project is developed. A consultation process was undertaken during the feasibility/concept design phase in December 2022. Wider engagement activities have included website and social media updates, local group visits, talks and site visits.

As the project progresses through construction, we hope to work with local community groups and schools through activities such as tree planting, visits to site and family events.

If you are a local community group or organisation and would like to work with us, please get in touch.

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How does this project link to the other work happening within the Leven Programme?

Working collaboratively with Restoring the River Leven Project, the Levenmouth Connectivity Project - River Park Routes is looking to upgrade and add walking and wheeling routes along and across the river that will connect up to the wider Active Travel Network that is also being developed.

The River Park project is designed to deliver an accessible, attractive and biodiverse public park for the local community either side of the River Leven.

We have also liaised closely with the Levenmouth Rail Link project as the new line to Levenmouth has been implemented.

Have local landowners affected by the proposals been consulted?

Yes we have spent time talking to local landowners to share the restoration proposals and discuss timescales and access, and to ensure that all necessary permissions are in place ahead of works happening on the ground. We are very grateful for the support that we have received from landowners to-date.

What is Large Wood and why is it used in river restoration projects?

The restoration proposals for the River Leven include design features involving the placement of large pieces of natural wood consisting of tree trunks with root plates attached. These features often occur naturally and help shape the flow and nature of the river. They help create pools of deeper slower water which provide habitat and nursery areas for fish and invertebrates.

Being a natural material, wood is not only sustainable with a minimal carbon footprint but also provides important ecological benefits such as cover for fish, invertebrates and birds. The use of large pieces of wood in river restoration is a tried and tested approach and there are numerous examples where it's use has resulted in significant improvements to the river and the quality of the habitats it supports.

Why is improving fish passage at the Kirkland and Burn Mill Dams important?

The Kirkland and Burn Mill Dams were constructed to support local industry along the River Leven. The factories are now gone, and options are being considered for both dams to make it easier for fish to move up and down the river as they would do naturally. This will help improve the health and variety of fish as well as other wildlife along the River Leven. Whilst neither of the structures are listed as protected historic structures, the important role they played in the area's history will be highlighted as part of the restoration project.

Has the historic significance of the Dams been considered?

In our experience, restoring our natural river environments often involves finding a balance between the removal of artificial constraints to natural river processes (of which both dams are a significant constraint to fish passage, flow and sediment), whilst also preserving a record of features of historic or archaeological importance. As a result, this was considered early on in the project, with archaeological and heritage records reviewed, consultation with a County Archaeologist, and other modification options considered and subsequently ruled out.

Specific to the Kirkland Dam, the 'nature-like' rock ramp design proposed offers a compromise in terms of retention of an importance structure for the heritage of the Leven area, whilst still offering significant improvements to fish migration, which has been significantly impacted by this artificial barrier. We've sought to ensure that the design remains as sensitive to the structure as possible, whilst achieving significantly improved fish passage upstream and downstream of the dam. Structural assessments have also been undertaken to assess the integrity of the structure. The engineers engaged in this process have confirmed that the design will alleviate any future risk posed by the flow to the dam and that the dam itself will not be compromised structurally by the proposed design.

Whilst the core objectives of the River Leven restoration project are to reinstate natural process and the removal of artificial constraints as much as possible, we do appreciate the historic value of both dams for the local area and within the Leven catchment. We are therefore also engaging with the wider River Park Project to assess ways of educating river park users on the history of the dams following the works (e.g. through information boards, viewing platforms, etc) as well as planned photographic records of the dam before, during and after the works.

What is the benefit of reconnecting a river to its floodplain?

Natural connectivity between a river and its floodplain is very important. During flood events, flow from a river will naturally spill out onto the surrounding floodplain. However, man-made features such as embankments disconnect a river from its floodplain, keeping flood water within the river channel, which increases flood risk to areas downstream.

In contrast, when rivers are reconnected to their floodplains the flood water can be directed to areas where it is temporarily stored. Not only does this decrease the severity of floods but it also reinstates floodplain habitats upon where our native species thrive.

Will the construction work disturb local wildlife and habitats? How has this been considered?

A large number of wildlife surveys have been undertaken over recent years and have identified a number of species present or potentially present at the site.

Before any construction works start, another set of surveys will be undertaken to provide an up-to-date record of wildlife at the site. This will be undertaken by a qualified ecologist, who will be able to recommend any mitigation measures to the contractors, to minimise any disturbance to those species.

All works within the river are planned to take place within the 'in-river' working window of May – September, to avoid disruption to fish such as salmon and trout. Where required (e.g. for the work at the dams and the large wood), fish rescues will be undertaken by a qualified fish ecologist.

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An Ecological Clerk of Works (ECoW) will also be involved in the construction phase to monitor the ongoing works and ensure all ecological aspects of the site and works are considered on a day-to-day basis.

How has contamination been considered?

Key areas of the design (i.e. where earth is to be dug up and moved), have been sampled by contaminated land specialists to make sure that there are no hazardous levels of contamination within the soil that is to be dug up and redistributed.

The Leven
Growing with the Flow