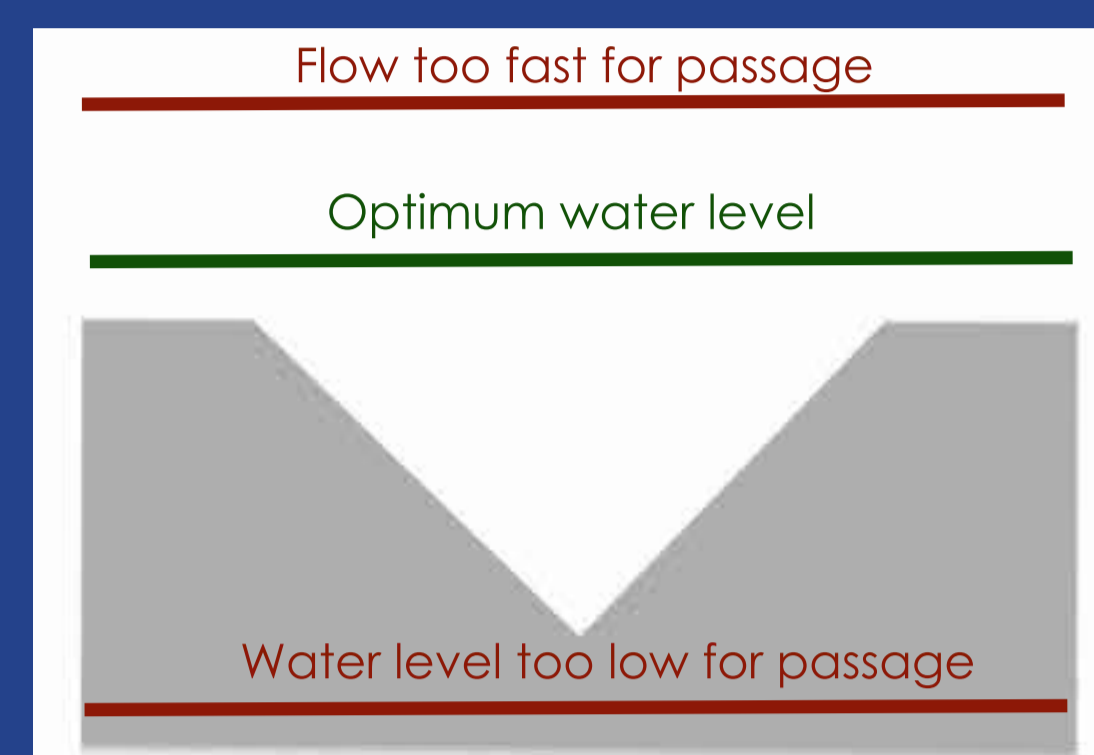


21st Century fish pass

The fish pass that uses new technology to solve an old problem

The Problem

Like most fish passes the V notch fish pass is dependent on water level with little variation. At many locations this will only cause a problem in either extreme low flow or high flow events, but what if dramatic level changes are a certainty? This was the problem confronted at Loch Duntelchaig where several water levels reduced the fish passes performance. The solution came from technology more commonly used in water level control



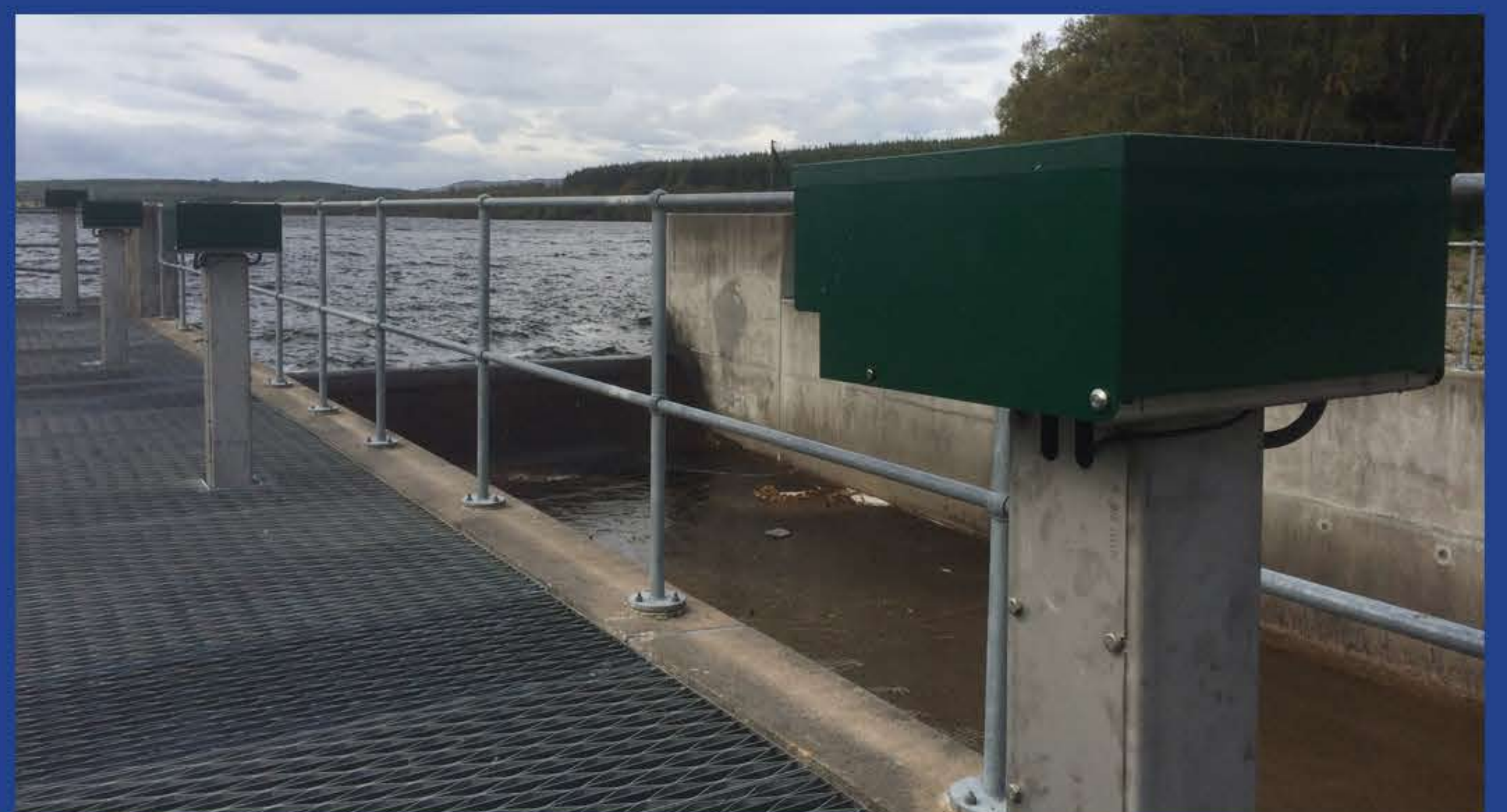
The Solution

Until now fish passes have always been designed to work at a particular water level. The solution came with allowing the parts of the pass to move with the changing water levels. This means that the pools and weirs of the fish pass are always at their optimum level.

To allow the pass to move technology was repurposed from the water flow control industry, in particular replacing fixed concrete walls with tilting weirs that can be adjusted with the water level. The tilting weirs used in the fish pass at Loch Duntelchaig were custom built to include a V notch with adherent nappe to provide fish passage.



Control over the tilting weirs came from another piece of technology found in the water flow control industry. The "Greenbox" is a standalone unit, designed to sense water levels and adjust equipment such as a tilting weir to a suitable position. In the case of the fish pass at Loch Duntelchaig, this meant keeping the upper and lower water levels within the boundaries to allow fish passage.



The Technology

ACE Tilting weirs - ACE Tilting weirs have been used for controlling water levels for years. They consist of a flat plate fitted between two side plates. Each tilting weir also contains a drive system which can be used to adjust the angle of the plate adjusting the level of water being retained or spilt.



Greenbox - The Greenbox is a new product to the UK. Designed to monitor water levels and uses a motor to adjust flow control equipment (such as a tilting weir) to a set parameter. This removes the need for human intervention. The Greenbox's small size and built in solar panel removed much of the need for expensive power cables to a remote location.



ACE and Fishway engineering would like to thank Scottish Water and George Leslie Ltd for making this project possible.



www.kwtgroup.nl



www.aquaticcontrol.co.uk



www.fishways.com