Southern Water Services (SWS)

Lukely Brook National Environment Programme (NEP) Project: Fish Passage enhancements

Project Overview

The Lukely Brook is a designated 'Heavily Modified Water Body' (HMWB) under the Water Framework Directive (WFD). Its HMWB status is due to its historical use to support industry (e.g. Mills) and to provide potable supply; the brook currently flows through a series of Mill ponds, leats and fords as a result.

A National Environment Programme (NEP) investigation undertaken in 2012 demonstrated that the Lukely Brook has a combined ecological potential that is less than good (with failure of an attendant biological element), largely as a result of these historical modifications.

A cost-benefit assessment of measures necessary to upgrade the WFD status of the brook to 'Good Ecological Potential' (GEP) concluded in favour of morphological enhancements to the watercourse to improve fish passage.

The principal driver for this project was, therefore, to satisfy the statutory requirements of the Environment Agency (EA) under its NEP investigations, which form a component of the WFD.

Location: Lukely Brook, Isle of Wight, United Kingdom

Stantec Services

- Selection and outline design of the fish passage enhancement structures;
- Detailed hydraulic modelling to test the efficacy of the fish pass structures and ensure that impacts on flood risk were avoided;
- Environment Agency engagement during the outline design process;
- Review and amendments to detailed design drawings; and
- Flood Risk Activity Permit (FRAP) application support.

Project Outcomes

Mill Pond Technical Fish Pass

An historical sluice structure at the Mill Pond creates a ca. 1m drop in water level between the pond and the downstream reach of the Lukely Brook. This currently represents an impassable barrier to the up and downstream migration of fish.

The project will replace the sluice with a Larinier fish pass and eel ladder to reinstate fish migration, thus helping to contribute to 'Good Ecological Potential' under the WFD.

Waterworks Pond Technical Fish Pass

This existing sluice structure at Southern Water's Carisbrooke Water Treatment Works creates a ca. 1m drop in water level between the pond and the downstream reach of the Lukely Brook. This currently represents an impassable barrier to the up and downstream migration of fish.

The project will replace the sluice with a Larinier fish pass and eel ladder to reinstate fish migration, thus helping to contribute to 'Good Ecological Potential' under the WFD.

'Garden Weir' Replacement

This weir structure is currently located on private land and is a barrier to the upstream migration of fish.

The project will replace the weir with three sequential 'rock weirs' each with a central notch that will enable fish to overcome this obstacle and continue to migrate upstream.

Wellington Road Culvert – 'Pre-barrage' Weirs

The existing stone weir at the Wellington Road bridge culvert presents a barrier to upstream fish migration.

The project will construct four 'pre-barrage' weirs, each with a central notch that will enable fish to overcome this obstacle and continue to migrate upstream. The first 'pre-barrage' weir will be constructed at the location of the existing stone weir to allow these structures to 'tie-in' hydraulically with the existing culvert.

FRAP Application Status (September, 2020)

The Environment Agency has approved the FRAP applications for the Garden Weir and Wellington Road schemes and FRAP approval for the remaining schemes is expected shortly.

For more information contact:

Dr Kelvin Limbrick
Discipline Lead – Rivers and Catchments

Mobile: 07702294318
Email: kelvin.limbrick@stantec.com