

# River Itchen Eel Screens

**Client:** Portsmouth Water

**Location:** Hampshire

**Value:** £1.26m

**Duration:** 10 Months

## In Brief...

Barhale was contracted by Portsmouth Water to design and build appropriate infrastructure at its abstraction intake on the River Itchen. The scheme aimed to align the structure with the recently imposed England and Wales Regulations (Eel), whilst also screening for Brook Lamprey.

To achieve this, 4No. S1800 Hydrolox screens were retrofitted to the existing intake structure in place of the existing raked course bar screens. This required structural modifications and an additional cantilevered 12m walkway over the river for maintenance access.



Porta-dam in position



River side view of screens and cantilevered access platform

## In Brief Cont...

The new screens needed a supply of wash water delivered at 26l/s at 6 bar to the cleaning spray bars. This was achieved through the installation of a wash water booster pump set comprising of 3No. 11kW rated variable speed multi-stage pumps in a Duty / Assist / Standby arrangement, complete auto filter and all associated pipework, valves, trace-heating and thermal insulation.

The EICA element of works included the new power and control cabling, modifications to existing MCC cubicles to accept the new screens, upgrade of software, upgrade of telemetry and the integration of all new equipment in to the existing PLC system, located within the ICA compartment of the existing MCC.

## Technical Features...

The River Itchen is an SSSI and SAC designated river. As a result, a Flood Risk Activity Permit was obtained from the Environment Agency (EA), which imposed rigorous constraints on carrying out the works. To comply with the permit conditions, a dry working area within the river channel was constructed as part of the temporary works. A Porta-dam was also constructed in two phases to maintain 50% of the abstraction intake area as required by Portsmouth Water.

Once the Porta-dam was in place, the team carried out modifications to the existing concrete structure. This involved the cutting and removal of a 12m length of 280mm x 220mm reinforced concrete beam, and the cutting back and removal of 6 No 380mm x 280mm x 2.05m reinforced concrete pillars.

8 No new structural steel columns were then installed in to the existing structure to accept the installation of the new screens. On completion of the structure modifications, a new 12m cantilevered access walkway was installed over the river to give maintenance access to the screens.

The new wash water booster pumps with all new cabling, pipework, instruments and software upgrades were installed simultaneously with the structural modifications, in anticipation of the screens installation. This approach ensured an efficient transfer from the old screens to the new, by minimising the amount of work required. It also enabled the installation, connection and commissioning of the new screens earlier than originally programmed. The installation of the screens was carried out over the weekend to avoid any disruption to the commercial resident's car parking. All four screens were installed in one day; the final electrical and mechanical connections were completed the following day in readiness for final testing and commissioning.

## Customer Benefits/Feedback...

The site was located in a congested commercial and residential area, with limited access. The river also needed to be accessed at all times by the local fishing club. Despite these constraints, the project was completed with zero complaints from residents. The team achieved this through close interaction with all stakeholders, meticulous planning and weekly meetings with all concerned, and a flexible approach that often entailed carrying out-of-hours working to minimise disruption to local residents or fishing activities.



Front end view screens with completed pipework



Wash water booster pumps

### Customer Benefits/Feedback Cont...

Moreover, despite stringent environmental constraints and the technical complexity of the project, the team completed it with zero accidents or incidents, zero environmental or quality issues, and 100% of Key Performance Indicators.

The project was delivered under NEC4 with clause X22 for Early Contractor Engagement. This entailed a phased approach to present the optimal solution and it reduced the impact on all stakeholders by agreeing upfront an outline design, programme hold-points, budget control, and a robust approach to public consultation.