New ECS stainless-steel ballast tanks keep Pillings radial gate open

30 November 2021

ECS Engineering Services has completed the overhaul of the radial gate at Pillings on the River Soar in Leicestershire. A vital asset for controlling water levels upstream, ECS has replaced the ballast tanks and carried out comprehensive preventative maintenance on the gate for the Environment Agency.

With its shallow gradient, the River Soar has been prone to flooding during heavy rainfall in the past. To combat this, the Soar Valley Improvement Scheme was implemented to install a water control infrastructure along the river's course.

One key asset is the radial gate at Pillings. Usually, the gate is closed, sending water over the adjacent weir. However, when water levels rise, counter-weight ballast tanks automatically open the gate, providing another outlet for water to flow through and reducing the risk of flooding upstream.

The Environment Agency approached ECS to carry out an overhaul of the site when it identified corrosion on the corner joints of the existing mild steel ballast tanks. To ensure the future reliability of the installation, ECS suggested the best value solution would be to fabricate new replacements in stainless steel, while carrying out preventative maintenance on the structure.

Mick Smith, Project Manager at ECS Engineering Services, said: “We are established framework contractors for the Environment Agency, having previously carried out a number of radial gate projects on the River Thames. Our experience as an engineering services provider to the water sector and our in-house facilities mean we can deliver turnkey refurbishments of these structures.”

ECS operates an in-house fabrications department certified to fabricate in stainless steel up to EXC4, against the BS EN 1090 CE standard. The fabrications team designed and fabricated two 3 m x 1.5 m x 1 m stainless-steel ballast tanks, each weighing in at 1.3 tons. Stainless steel is highly durable and offers inherent resistance to corrosion - ideal for a long service life in submerged applications.

Before the new tanks could be installed, the area around the gates needed to be isolated with stop logs. ECS installed seven stop logs upstream and downstream of the gate, using a dive team to ensure that no sand or silt would compromise the seal. This was especially important, as a scaffold would be erected in the dry channel for maintenance work. Once sealed, water in the channel was pumped out. Subsequently, the gate could be raised and pinned into its maintenance position to allow ECS to remove the old, corroded tanks.

“With the new tanks ready for installation, the principal challenges were presented by the site itself. It is only accessible via a private driveway, which has a railway bridge at the end. This limited the mobile cranage we could use, which meant we had to pay extra attention to crane placement so we could achieve maximum reach on both sides,” Mick explains.

Another space constraint was created by the chamber that housed the ballast tanks, offering only just enough room for a three-man confined space team. With the tanks in place, there was barely 30 centimetres clearance between the chamber and

tanks. Filling the tanks with ballast also required working in an area of confined space.

To safeguard the future reliability of the gates themselves, ECS blasted and repainted the structure with a high-performance coating designed to provide protection against impacts and corrosion. Furthermore, both the side and sill seals were replaced with new items.

The radial gate at Pillings is controlled by six cast-iron penstocks, which also received attention from ECS. As part of its seven-year maintenance service for penstocks, ECS engineers completed a comprehensive list of specific assessments and tasks to ensure continued reliability.

“We were able to complete the work to schedule within five weeks,” Mick explains. “Our experience, backed by our extensive in-house facilities, ensures that we can deliver high-quality, turnkey projects to deadline. In this instance, the new stainless-steel ballast tanks will greatly reduce future maintenance requirements at the site, reducing the whole life cost of the asset. Our work will enable this vital water control structure to continue to provide increased protection from local flooding long into the future.”

Image captions:

Image 1: ECS has completed the overhaul of the radial gate at Pillings on the River Soar in Leicestershire

Image 2: The ballast tanks were fitted on behalf of the Environment Agency

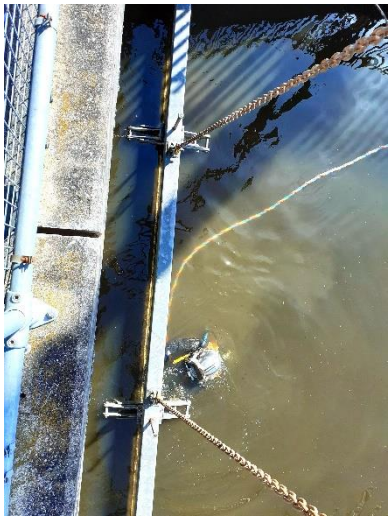

Image 3: A dive team was organised by ECS to support the project

Image 4: The new stainless-steel ballast tanks will greatly reduce future maintenance requirements at the site

Image 5: The work will enable this vital water control structure to continue to provide increased protection from local flooding

About ECS Engineering Services

ECS Engineering Services has over 30 years experience in delivering high quality, reliable and cost effective engineering solutions, specialising in bespoke design and construction of water, energy and environmental processing and management projects.

In conjunction with key supply partners, ECS has the expertise and capacity to design and install a wide range of water control engineering projects. With in-house fabrication services, which have CE Marking approval to EXC4, well equipped and highly skilled engineers can also complete structural steelwork, bespoke fabrication work and access metalwork to the highest standard.

With a complete range of site services available, ECS offers a full turnkey project managed service for mechanical and electrical installations including managing civils contractors and supplying pipework, control and automation work to ensure that every installation is installed and commissioned to the highest standard. Existing clients include the majority of the UK Water Utility companies, Government Agencies and Internal Drainage Boards.

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