



**As the Environment Agency (EA) continues its work to improve flood defences around the country, they have chosen ECS Engineering Services to install a new hydraulic, multi-turn actuator as part of a new penstock control system, which will make the flood defences at Market Weighton, in East Yorkshire, compliant with the 1975 Reservoirs Act.**

Mill Beck flows into Market Weighton through a general amenity area which includes a football pitch. During periods of heavy rainfall however, the flood water is held back in this area, which is classed as a flood storage reservoir. The EA has a responsibility to ensure that as the water level in Mill Beck subsides, the flood water is allowed to return to the river under controlled conditions, without any erosion to the embankment.

# New Flood Defence Scheme

# Case Study: O10 New Flood Defence Scheme



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Therefore, as part of a £3 million scheme the EA appointed Jackson as the main civil engineering contractor to design and construct a weir, spillway and a stilling basin at the site together with a new inlet structure on the culvert. A new cast iron penstock will replace the old penstock and will be controlled by a hydraulically powered, multi-turn actuator from Centork, which was acquired by Rotork in 2011. ECS was responsible for the installation of the penstock and the new control kiosk, which is located on higher ground to avoid the flood water.

A hydraulic actuator is powered by pressurised oil and provides a 4-20mA position signal back to the control panel, which is located in the kiosk along with the hydraulic power pack. This design was chosen because of the location of the penstock, which could become submerged during periods of especially heavy rainfall, making a more common, electrically powered actuator unfeasible.

The actuator will be used to control the new cast iron penstock, which was supplied by Waterfront Fluid Controls, which has an agreement with ECS as its distributor and installer for both

standard and bespoke water control products. The design has been made as simple as possible so as to ensure complete reliability and thus providing the residents of Market Weighton with improved flood defences.

In the event of heavy rainfall, the improved containment system will collect the flood water and then release it back into Mill Beck under the control of the penstock. This can be controlled from a central control point via the telemetry station located in the control kiosk. This allows an engineer to adjust the position of the penstock remotely, allowing a much quicker and safer response which can start to allow the flood water to dissipate at the earliest opportunity.

Jamie Wesley, Commercial Manager - Water Control Division at ECS comments: "This is an important project for the local area and it is vital that we install a reliable system with the minimum of impact on the surrounding area. This new actuator, the design of which allows it to operate while submerged, combined with the Waterfront penstock provides an excellent solution."



Engineering Services ■■

Water Control ■■ Site Services ■■  
Environmental ■■ Fabrications ■■