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Casestudy

HydroSlide Rivers
Louth and Horncastle Flood Alleviation

The role of HydroSlide in the development of the Louth Flood Alleviation Scheme

Extract from a paper by David Scopes IEng MICE, Engineer at Atkins Ltd

The market town of Louth, on the River Lud, has suffered from flooding on many occasions, most recently in 2007. Louth is in a ‘flashy’ catchment; in the 2007 floods, it was said that residents went to bed with river levels high but not expecting any problems, and woke at 2am to find that they were flooded. This is backed up by the hydrograph on the northern of the two main tributaries, which shows the peak flow occurring after 12 hours and flows returning to normal after 25 hours.

Atkins was commissioned to conduct a feasibility study into the viability of a flood defence scheme. This paper begins once the preferred option of two online flood storage areas was identified; the brief from this point was to develop their outline design. The maximum allowable outflow (to prevent flooding) for each storage area had been calculated as a part of the preceding hydrological study, and therefore was known at the start of the design. The exact volume of storage, being dependent on the method of controlling flows, had at this stage been calculated assuming no additional flows were impounded.

The control structure design of the project required a balance of two factors: maintenance and storage. Using options with no moving parts (fixed weir, orifice, vortex type flow control etc.), which solely limit the flow, result in increased storage, but are able to offer very low maintenance costs. Conversely, low storage can be achieved through the use of a mechanical and electrical setups, however these would have significant maintenance costs and potential reliability issues

Accepting some moving parts, and therefore maintenance, allowed the HyrdoSlide to be considered. A HydroSlide consists of see-saw on a pivot with a plate at one end and a float as the counter balance at the other. As the water level increases the float rises causing the plate to close across the orifice opening and restricting outflow. Although it has a moving part, the discharge curve holds tightly to the optimum discharge, plus or minus five percent.

The other advantage of the HydroSlide is that it is adjustable by up to 30% during an event (via a spindle) to increase or reduce flows as required. This means that if the actual downstream maximum allowable flow is found to be different than that predicted by the mathematical model due to insufficient data, a change in the structures, or a blockage, the problem could be overcome without having to wait for the flood to subside. The ability to provide the more refined level of flow control, with relatively little maintenance, and the advantage of post-construction in-event adjustment led to the HydroSlide being adopted.

To discuss how the Eliquo Hydrok HydroSlide solutions may be appropriate for future projects contact:

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Designed to maintain a constant discharge flow control without the use of external energy sources.

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