

Hertford Theatre Weir  
East Herts District Council  
October 2014



**Client Overview:** East Herts District Council covers an area of 476 km<sup>2</sup> in the south east of England, just north of the capital. There are three main river systems that pass through the district, the River Lea, the River Rib and the River Stort, all of which are hosts to main towns under the responsibility of the district council.

**Problem:** During the autumn of 2014 East Hertfordshire experienced high levels of precipitation which led to flooding in the central town of Hertford and the surrounding areas. Many local homes and businesses were impacted by the flood water with residents being forced to evacuate their homes in some of the worst cases. Investigation after the event uncovered that unbeknown to the Council, a flood alleviation structure located directly next to the Theatre in Hertford town centre had been operated by a local farmer during previous heavy rainfall periods. The farmer owned land upstream of the flood structure and operated the sluice gates manually to help prevent his land from flooding. However, in 2014 this manual intervention did not occur and as a result the rising water levels were not addressed in time to prevent serious flooding upstream of the structure

**Solution:** Initially the site was surveyed and evaluated by a Senior Engineer from PowerPoint. With years of experience working on and designing control & monitoring systems for flood defence and water control schemes, our Engineer concluded that whilst the existing cast iron sluice gates had suffered from many years of neglect, it should be possible to restore the gates back to a fully operational status with a little care and attention. Our Engineer also noted that whilst the existing sluice gates were fitted with old electric actuators, no form of automatic control of the sluice gates existed on site. PowerPoint therefore recommended a phased approach to upgrading the system to minimize disruption at this sensitive theatre side location and to also help reduce costs by using as much of the existing equipment as possible.

The first phase of the work involved the design, build and installation of an automatic control system, complete with hydrostatic water level measurement transducers and

Telemetry Monitoring System. It was decided that the Telemetry System should be capable of conveying the site status and conditions via a mobile phone text message service (SMS). Implementation of this first phase of works would not only provide some form of automatic flood control and alarm condition monitoring but would also allow PowerPoint to further evaluate the existing structure, sluice gates and associated electrical actuators.

Over a period of time, PowerPoint repaired and refurbished the existing sluice gate mechanisms, fitted replacement electric actuators and supplied and installed aluminium stop log facilities to each sluice. Due to the age of the existing cast iron sluice gates, we were also called upon to design replacement parts needed for the sluice gates and arrange for these to be specially fabricated and machined to our specification.

To allow us to complete the refurbishment work without involving the need for a major civil works programme, we constructed a 12 Metre Wide Temporary Dam across the river to allow us to inspect and repair the sluice gate mechanisms. These mechanisms had been permanently submerged in over two metres of water for many years and had received little or no regular maintenance. We also took this opportunity to install stop log guides on the upstream side of the sluice gates, thus avoiding the need for future dewatering of the complete river channel. This environmentally sensitive work phase also involved the need for us to implement a fish rescue and repatriation programme in accordance with Environment Agency Directives. We were also requested by the E.A. to investigate the possible integration of an eel passage within the existing structure in the event that, larger scale maintenance to the structure should be required in the future.



**Conclusion:** Utilizing PowerPoint's vast experience and knowledge in providing control, warning & monitoring systems for flood defence and flood alleviation schemes nationwide, East Herts Council are now equipped with a fully automatic flood management system at this sensitive location. Water levels upstream of the structure are now being constantly monitored, as is the condition of the sluice gate mechanisms and associated control equipment. Alarm conditions, faults and impending problems at the site are conveyed automatically to both the Councils Engineers Staff and PowerPoint's own Technicians. We are also able to interrogate the site remotely to check both live and historical events and conditions that may have occurred.

PowerPoint also provides a full Operation & Maintenance Service for the site and attend to both planned and emergency maintenance works as the need arises.