

Flood Risk Assessment of Sewage Pumping Stations and Sewage Treatment Works Control Units & Kiosks Severn Trent Water

Severn Trent Water is a water supply and sewage company with over eight million customers. Assets include nearly 1,000 sewage treatment works (STWs) and 3,000 sewage pumping stations (SPSs). In common with most water companies, the need to locate infrastructure such as sewage pumping stations close to watercourses and at topographic low points means that inevitably there will be a degree of flood risk to some assets. Entec has been working with Severn Trent Water to help assess and mitigate these risks.

During the summer of 2007 a series of intense rainfall events led to rapid and severe flooding across parts of the UK. Severn Trent Water's area was one of the worst hit with the Mythe water treatment works being flooded, leaving up to 130,000 homes without water. However, other operational assets such as SPSs and STWs were also affected.

Entec was commissioned to undertake flood risk assessments in support of the refurbishment of 25 existing assets that were flooded during summer 2007. These consisted of six STWs and 19 SPSs.

The assessments concentrated on electronic control equipment located in kiosks ranging in size from small on-street cabinets to larger control equipment buildings at the STWs.

A meeting was arranged with the Environment Agency and a bespoke pro-forma approach agreed. A simplified flood risk assessment would be applied for these existing assets, collating all existing flood risk information. This principally included:

- recorded flood levels from Severn Trent Water (i.e. tide-marks on assets);
- recorded flood levels from the Environment Agency (i.e. trash and wrack marks on bridges);
- modelled flood levels from the Environment Agency; and



- estimates of flood return periods (the severity of the flood events varied markedly over the sites assessed).

Available data were compared and used to establish flood levels and help assess the return period.

Where appropriate, recommendations were made for the incorporation of a climate change allowance and for additional freeboard. Climate Change allowance was only found to be appropriate at some sites where the flooding was less extreme. Incorporation of freeboard was not always possible due to the visual and operational constraints (i.e. no available space for access steps or overhead cables).

Based on each assessment recommendations were made for asset raising. Depending on constraints at the site this consisted of relocation, or else raised concrete plinths for the kiosks and/or freeboard within the lower portion of the kiosks.

The pro-forma approach allowed for a consistent and clear approach to the assessment of these assets. Severn Trent Water was able to pass the report direct to their contractors for detailed design of refurbishment works. The Environment Agency welcomed the methodology used in producing the report.

