

Flood Modeller Pro

Case Study

1D-2D modelling of Orton Meadows using Flood Modeller Pro and TUFLOW

CH2M was commissioned by the Environment Agency (England) to conduct a linked 1D-2D flood modelling exercise at Orton Meadows in Peterborough, England. The primary aim of the project was to provide clarity on the potential flood risk to residential properties.

The project involved the development of a 1D-2D model which included the River Nene, the Orton Dyke (one of its tributaries) and the lake system of Orton Meadows.

The model was developed using three different existing 1D models. These models showed the onset of flooding at Orton Meadows at different Annual Exceedance Probability (AEP) events (from 5% to 0.1% AEP).

A review of the three separate models was initially carried out using the 'Health Check' tool within Flood Modeller Pro, which ensured the existing modelling files were suitable for the proposed investigation.

Following the model audit, recommendations were made with regards to how to explicitly represent the potential flooding routes for Orton Meadows including the River Nene and Orton Dyke.

Due to the sensitivity of the water levels on the floodplain, the models were brought together in a single file and converted into a Flood Modeller-TUFLOW (1D-2D) linked model along the Nene and into the Orton Meadows area.

Efficiency savings in the model building stage were maximised by using the automatic Flood Modeller Pro 2D build toolset and its user-friendly mapping interface. The ability to implement operational rules and the geometry of the structures allowed the detailed representation of the complicated system of sluices, weirs and culverts between the river Nene and Orton Meadows.



Following the model build, CH2M carried out a sensitivity analysis on the effect of reverse flow at selected culvert outlets. This was extremely easy due to the explicit representation of the structures' outlet in the software.

Once the model had been run, Flood Modeller Pro was used to extract depth/velocity grids and create animations for the depth layer. The automation tools available within the software were used to post-process model results in order to maximise potential efficiency, productivity and quality gains.

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With a legacy stretching back 40 years, Flood Modeller allows users to model rivers, floodplains and urban areas, using our powerful 1D and 2D solvers.