

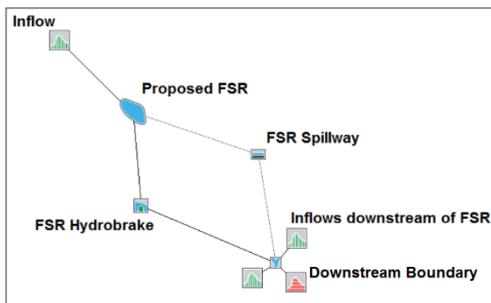
Flood Modeller Pro

Modelling of a proposed flood storage reservoir, Catterick, England

Flood Modeller Pro was a key tool used in the design stages of a proposed flood storage reservoir to alleviate the flood risk in the Yorkshire village of Catterick, United Kingdom.

Both a 1D conceptual model, used to optimise the volume capacity, and a 1D-2D linked model that included the downstream village and floodplain, were constructed as part of the project.

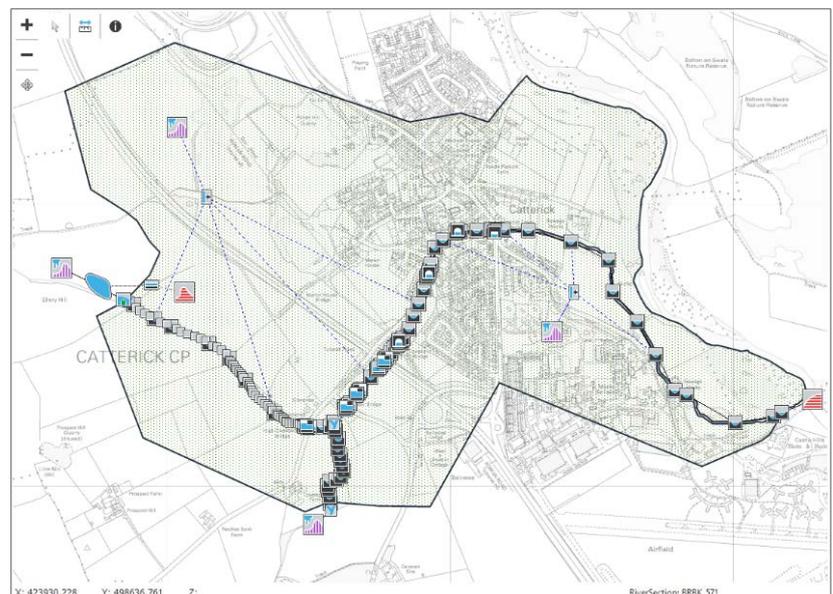
The 1D conceptual model focussed on the proposed reservoir itself and by avoiding unnecessary complexity, enabled quick run times and analysis. The model was an important decision tool in the outline design stage, through sensitivity tests on volume capacities, spillway bund heights and outlet control types and sizes.



The model was also used to provide critical information regarding likely drainage times, frequency of operation and probable maximum flood event water levels and overtopping volumes for spillway slope design.

A hydro-brake outlet was represented using the Flood Modeller Pro QH control node, populated with a standardised hydro-brake curve for the optimised pass forward flow. The conceptual model also included inflows downstream of the reservoir to ensure that a quoted channel flow capacity in the village downstream was not exceeded during the simulations.

Once the reservoir dimensions had been optimised, an existing 1D model of the downstream channel was linked to the conceptual model. The channel sections were also linked to a new 2D floodplain, which was modelled in TUFLOW. The 1D-2D approach enabled the benefit of visualisation, through model animations, of the flow routes and more accurate assessment of flood depths, velocities and hazards within the urbanised village, when compared to a 1D-only approach.



Results from the modelling included maximum water levels, flow and flood outlines for both baseline design events and those predicted to occur following construction of the flood storage reservoir so the potential benefits provided could be easily quantified and reviewed.

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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.