

Further information:

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Project Description number:

EVY0437

Project Type

Flood Risk/Consequence Assessment

Flood Forecasting

Detailed Design

Calibration & Optimisation

Flood Map Challenges

Scour & Geomorphology

Water Framework Directive

Environmental Impact Assessment

Training

Key Words:

Flood Risk

Hydraulic Modelling - TUFLOW FV

SMS Mesh Generation

Client and stakeholders:

Ludlow Hydro Cooperative

Environment Agency

Ludford Mill, Flood Flow Assessment

Edenvale Young Associates were commissioned to investigate the impacts of proposed changes to the weir at Ludford Mill, Ludlow, Shropshire, on flood levels in Ludlow. These proposed alterations to the weir crest involve the installation of a screw-type low-head hydroelectric generation scheme in the south end of the weir with an associated by-wash and eel pass.

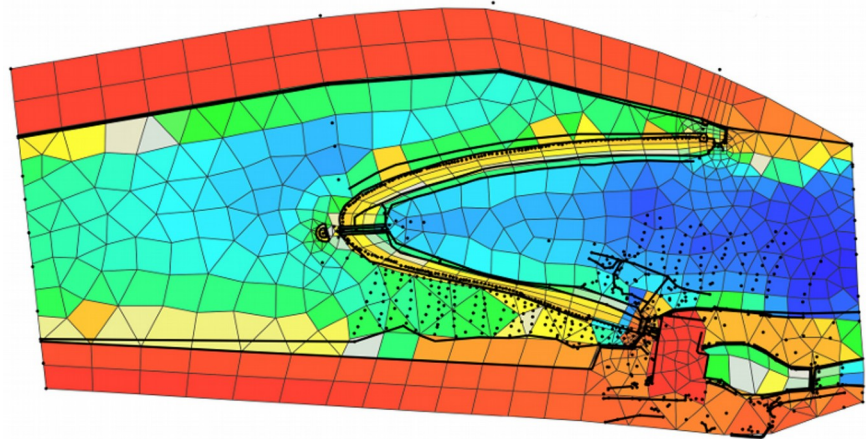


Illustration 1: TUFLOW FV Modelling results of the weir

Project Details

Ludford Mill is associated with a large horseshoe weir which appears to have been used to drive off-takes for mills on both the north and south banks of the Teme.

This weir is the third in a chain of four significant weir structures through Ludlow all of which appear to be associated with former mill races.



The existing Environment Agency modelling of the River Teme at Ludlow has been undertaken using the ISIS one-dimensional hydraulic model, however in order to represent the flow transverse to the direction of the watercourse it was decided to model the weir in the TUFLOW FV two-dimensional finite-volume solver. This code allows water levels and velocities to be represented on a grid (or mesh) of cells making up the channel and, unlike the more widely used TUFLOW Classic code, allows those cells to be either triangular or quadrilateral and does not restrict the arrangement of those cells. This allows the cells forming the mesh to conform to the contours of the weir crest and accurately pick out the changes in bed elevation that form the weir crest.