

Flood Studies Update: Work Package 3.3 – Floodplain Attenuation Analysis

Category: Flood Risk Management



Floodplain attenuation analysis: Case study on the river Suir

Description:

The effect of floodplain storage is to delay and attenuate a flood wave as it passes down the river network. This is thought to explain in part why many flood growth curves in Ireland are mildly graded. The remit of Work Package 3.3 was to explore and analyse floodplain attenuation effects. The research aims to increase understanding of the influence that floodplain storage has on flood flows and how this can be effectively accounted for in flood risk estimation.

There is a growing appetite to combine hydrological and hydraulic models in a manner that reflects the structure of a catchment: including the arrangement of tributaries and the location of major floodplains. Intended to provide a more detailed, and spatially coherent, representation of flood risk, this “river modelling” approach will become more widely used in Ireland once the Flood Studies Update delivers flood estimation methods based on digital catchment data.

Embedding flood estimation methods within such river models is, however, problematic. WP3.3 will address one of these difficulties: the potential to double-account for the attenuating effect of floodplain storage. This occurs when the effect is represented explicitly in the hydraulic modelling when it is already represented implicitly in the flood frequency estimation. The double accounting can arise through use of a local gauged record (i.e. data transfer) or more generally through pooling flood data from stations that are influenced by floodplain storage effects.

The output from Work Package 3.3 was a Final Report, which details methodologies and includes all aspects of the methodologies developed, describing strategies for



estimating the effect of floodplain storage on the flood frequency curve. This also includes illustrative applications of the said methodologies.

For further information about this work, please contact: oliver.nicholson@opw.ie

Design Team:

The OPW is responsible for the specification, procurement and direct management of the Flood Studies Update Programme, with technical direction provided by a Technical Steering Group, comprising representatives of the primary state / semi-state organisations involved with hydrology, hydrometric monitoring and associated research in Ireland, viz. OPW, Met Éireann, Environmental Protection Agency, Electricity Supply Board, IHP / ICID National Committee, and has two technical experts.

Construction Team:

Research Contractor: Centre for Water Resources Research,
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Dates:

Work Package 3.3 of the Flood Studies Update Programme was completed in September 2010.