What's Happening...

waterRIDE™

WorleyParsons
resources & energy

Many Councils and Government Authorities are faced with managing masses of flood related datasets, which can be used in different ways by different types of end users.

In this edition, we focus on a common problem of using disparate flooding datasets to establish a consistent, seamless "designated flood" surface across all catchments/waterways, for use in floodplain planning.

Combining Multiple Catchment Models Into A Single Surface

Many Government Authorities manage flooding from multiple waterways across their jurisdiction.

In terms of flood modelling, these waterways are frequently analysed separately.

Different types of flooding such as ocean, riverine and overland are then further analysed with separate models, with even more model runs for varying storm intensity/durations for each ARI adding to the mass of disparate datasets.

From a planning perspective, "flooding" is treated in a more holistic manner, with the designated flood (often the 100yr ARI) being the key driver of planning related controls.

From industry feedback, the ideal outcome of multiple catchment/"flooding type" modelling for this purpose is a single, seamless "risk surface" for the designated flood.

Creating this surface can be a fairly straightforward exercise, although in some situtions, improved results can be obtained with additional processing.

Usually, a seamless surface is created by mapping all model results onto a common framework (usually a gridded DEM covering the entire flooded area) - (*Utilities->Transfer Water Surface to DEM).*

During the mapping process, each water surface is sequentially overlayed onto the common framework.

By selecting "peaks only", in any areas of overlapping model results the maximum value for each parameter (level, velocity, hazard etc) will be retained.

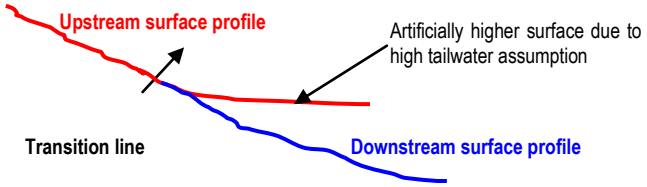
This includes the name of the results that had the maximum water level at all locations, which can be mapped as the "peak level source" parameter.

The "peak level source" provides a rapid means of identifying what caused the maximum designated flood at any location (eg was it ocean or riverine flooding, or was it the 2 hour storm or the 6 hour storm?).

In overlapping areas, occasionally tailwater conditions assumed for the upper catchment in a "two part" model conflict with water levels from the downstream modelling, meaning that the "peak surface" is not correct.

In such cases, clipping along some boundary in each model prior to mapping can result in a better transition between the surfaces.

This transition line may be an hydraulic feature, such as a culvert, or it could be point at which the downstream model reaches the same water levels as the upstream model, or it could be a known boundary between adjacent overlapping models on flat terrain.

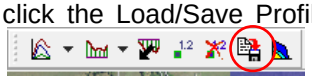


The above image shows the location at which the transition line should be drawn between an upstream model that has a high tailwater level assumed and the downstream modelling.

This line can often be established using difference mapping (*Utilities->wR Differences)* to show where the two surfaces coincide (a difference of 0.0), as there may be "2D effects" across the channel where a straight line is not suitable.

Quick Tip – Batch Plot Extraction

Using an external GIS layer of polylines/points you can readily batch process any of the surface plotting tools.

Simply click the Load/Save Profile points on the water toolbar,  select the GIS layer to use, and specify the plot function.

Each object in the GIS layer will be used to run the selected plot function.

Labels can be applied to each plot using values in the specified field of the GIS layer.

Either double click a cell in the tabular data to save a CSV file, or copy (CTRL-C) into Excel.

waterRIDE™ v7.11 Released

Those with active Annual Maintenance Plan subscriptions will have received notifications of the release of v7.11 of waterRIDE™ FLOOD Manager and Viewer.

Please review the release notes with each version to determine the importance of the update to the work you do.