

# What's happening...

# waterRIDE™

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www.waterRIDE.net

The waterRIDE™ developers continue to be busy working on new features for the waterRIDE™ suite of products as well as developing customised, standalone applications using the waterRIDE™ engine for a range of purposes including: asset management, risk assessment, economic assessment, automation, real-time data logging and web enabling, and optimisation using genetic algorithms and neural networks.

## Hydraulic Model Calibration – A Different Approach

waterRIDE™ FLOOD Manager has been used by WorleyParsons to calibrate an hydraulic model to aerial photography of an actual flood event in a non-traditional manner.

Model calibration to actual events is usually carried out by extracting water levels at key locations for the event, then calibrating the model to provide the best fit to these data points.

Traditional methods of surveyed debris lines, or “back-figuring” water levels by comparing digitised flood extents to DEM's can result in sparse, irregular water surface profiles that require smoothing.

In this case, aerial photography showing the actual flood extent along the river at a range of times (from the peak to some hours afterwards) was available. Inflow hydrographs and boundary conditions were known leaving the major unknown as the hydraulic roughness in the various reaches of the river.

The aerial photography from the event was rectified using waterRIDE™'s rectification tools for positioning and freely available image editing software IrfanView for rotation.

An initial model was run using ‘conventional’ roughness parameters and the known boundary conditions with the results mapped to a fine scale DEM “on the fly”. This allowed any iterative changes to the model to be automatically mapped to the DEM when the project was opened, facilitating finer scale calibration.

At tightly spaced intervals, the translucent model results were animated over the event photography until the water surface matched the extents on the photo.

The surface at that time provides a “spatial” match to the flood extent at the time the photo was taken, providing a much more reliable indication of water levels than surveyed ‘debris lines’. The water level in the centre of the river was then read off the surface and recorded. This process was repeated along the length of the river to develop a detailed calibration dataset.

The time at which the photo was taken relative to the flood peak is known and can be used when calibrating the model to account for the time difference in the aerial photography. This also means that the model is being calibrated across time, as well as for the peak water surface.

This surface-based approach provided a hydraulically sound surface, thereby facilitating a tighter calibration to a more detailed dataset. The calibration process was also found to be much quicker overall.

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## Upcoming Feature

### **Automated Flood Certificates – A Simplified Engine**

Traditionally, the automated flood certificates feature in waterRIDE™ has been tailored to suit the, generally, sophisticated requirements of end users.

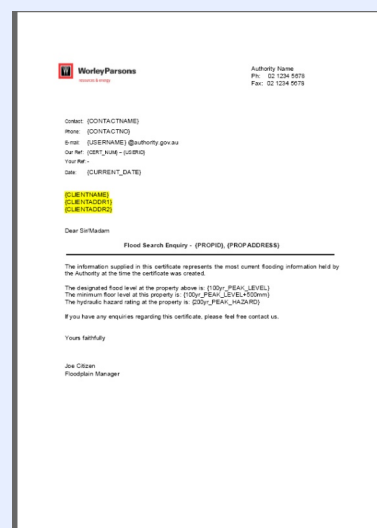
However, there has been increasing demand for the ability to produce simplified, text-only certificates from waterRIDE™ FLOOD Manager, with minimal effort.

A new feature that allows users to setup their own, text-based flood certificates system using a Microsoft Word template as a base is currently being tested.

The Word template contains the general layout and wording of the certificate including corporate logos etc, whilst waterRIDE inserts relevant data as required.

Various data can be extracted from water surfaces and GIS layers and automatically inserted into the word document using ‘keywords’ or ‘tags’, defined by the user. Any hydraulic parameter (such as water level, velocity, VxD, Hazard, Depth etc) can be inserted along with field values from GIS layers for the selected property.

More sophisticated certificates that incorporate data from disparate sources such as corporate databases, classification rules, lookup tables etc, or include waterRIDE™ generated graphics for the property are still available as a customised engine, but will benefit from the improved user interface and custom ‘keywords’ feature.



Simplified Flood Certificate – User generated templates and keywords.

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