

Flooding – Is The Risk to Life Really Understood?

Councils have a duty of care to the community but do they fully understand the risk to life associated with flooding?

Predominantly, Councils throughout Australia use a GIS system to map peak flood levels, flood extents and hazards along various waterways. This provides Council staff with ready access to flooding information for property management purposes and provides an understanding of the likely risk to *property* for a specific flood event.

The risk to *life* in a flood, however, cannot be appreciated fully from a single set of peak hydraulic parameters, as it involves the interaction between human behaviour and the



Properties isolated (and later inundated) in a flood event

way in which a floodplain is inundated during a flood event (ie over time). The time it takes for an area to be inundated, if an area is first isolated before being devastated by large flows, and the time available before various evacuation routes are cut by rising flood waters are important factors to consider in understanding the risk to life.

Similarly, the way in which hazards develop during a flood can have serious implications for the risk to life. For example, can flood hazards at any time during a flood be high enough to severely damage or possibly

destroy a building which may contain marooned persons. This is particularly relevant to flash flood scenarios.

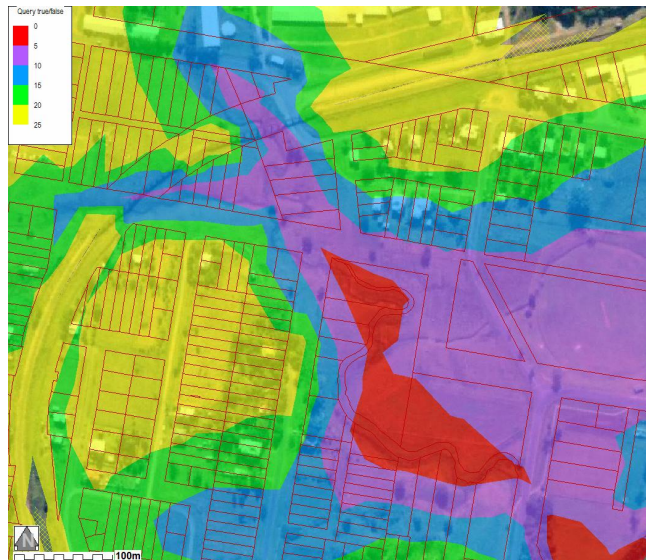
In order to understand these factors one must look at the entire flood (a time series), rather than just the peak. A GIS environment, with it's rich array of spatial information (DTM's, aerial photography, property and infrastructure information etc) is ideal for this purpose. However, the most difficult task is to integrate the time varying flood surface in a live GIS when conventional GIS packages do not support time varying surfaces.

waterRIDE™ was developed in Australia by Patterson Britton & Partners expressly for this purpose. It integrates the time varying results of any hydraulic model (including 1D or 2D models such as MIKE11, MIKE21, HEC-RAS, SOBEK, RMA, TUFLOW, ESTRY, XP-SWMM, EXTRAN, RUBICON and DRAINS) within it's own full GIS environment, providing interaction between any GIS layer and the flood surface. Aside

from automatically calculating and facilitating interrogation of peak hydraulic datasets at any point in the floodplain (including exporting to conventional GIS packages), it also allows visualisation and interrogation of the entire time varying model results set.

Having access to the entire model results set has allowed many Councils using waterRIDE™ to interrogate the flood behaviour of their floodplains, and to understand a number of issues affecting the risk to life including:

- Isolation
- Development of flood hazards during the course of a flood
- Risk of building failure
- Rates of rise of floodwaters
- Time to inundation
- Time available to evacuate along evacuation routes
- The difference between early stage flooding and ultimate flooding
- The importance of community education and understanding of flood behaviour



Number of hours to inundation in an area

To find out more about how you can better understand the risks to life by integrating your time varying flood model results with GIS, please contact Cameron Druery of Patterson Britton & Partners, on 02-9957-1619, or visit www.waterRIDE.net