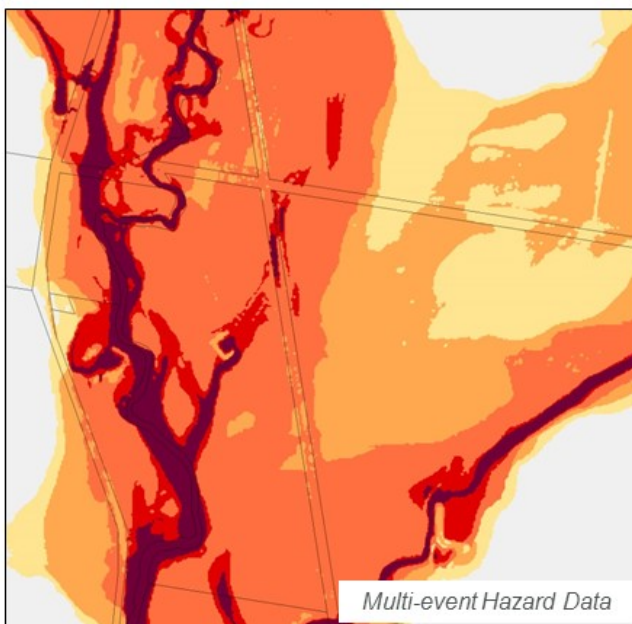


A New Approach to Risk Mapping

Carrie Dearnley and Chris Huxley, TUFLOW

Following the widespread and catastrophic floods of 2010 and 2011 in Australia, the assessment of flood risk has become an increasingly important aspect of land use planning decisions. Subsequent to the Commission of Inquiry, the new Queensland State Planning Policy highlights the importance of sound land use planning in the management of future floods. The new Policy has helped to shift thinking from the traditional flood hazard based 'line on a map' (defined flood event) approach, to a more holistic, risk-based methodology that considers a full range of flood probabilities and their consequences.

The weakness of the traditional 'defined flood event' approach is that it does not reflect the spectrum of possible flood risk; simplifying flood risk to either inside the line (flood liable), or outside the line (flood free). The current approach recommended by the State Planning Policy and National Australian Guidelines, recommends that practitioners synthesise mapping of hydraulic hazard for multiple flood sizes, in addition to flood characteristics such as speed of onset, and community vulnerability and tolerability as part of a holistic flood risk assessment.



Risk = Likelihood x Consequence

- Multi-Event Flood Hazard
- Vulnerability
- Tolerability
- Exposure

Flood behaviour analysis and community consultation is required to define Consequence inputs (2 examples shown below)

Risk exposure to planning level assumptions

Low Consequence

High Consequence

Flood Hazard Category ¹	AEP		
	20%	1%	PMF
Low			
Medium			
High			
Extreme			

¹Velocity x Depth criteria is used to define Flood Hazard Category

Evacuation considerations

Rate of flood rise

- Red: < 3 hours
- Orange: 3 - 6 hours
- Blue: > 6 hours

In response to this challenge, TUFLOW has developed a streamlined approach to flood risk assessments at both regional and individual property scales. The output on a regional scale is a single, continuous flood risk map covering the entire floodplain that accounts for a range of flood events and specific flood characteristics. A similar approach is also applied on a property-by-property basis to assess the flood risk on individual dwellings and their access and evacuation routes.

Although developed in response to Commission of Inquiry requirements, these new risk mapping approaches may also be of value to practitioners in the USA who are interested in staying aware on new international floodplain management approaches. The Queensland State Planning Policy is available for download: <http://www.dilgp.qld.gov.au/resources/policy/state-planning/state-planning-policy-jul-2014.pdf>