

What's Happening...

waterRIDE™



Advisian

WorleyParsons Group

The recently released version of waterRIDE™, v8, represents a significant expansion of waterRIDE™'s unique capability and also brings a range of specifically "urban" toolsets to users, including pipe model results, detailed hydrology model interrogation, enhanced "direct rainfall/rainfall on the grid" cleaning, and property tagging.

In this newsletter, we take a brief look at the concept of property tagging, particularly in urban environments where very shallow water depths must be assessed to determine if a property should be considered "flood affected"

Property Tagging – Managing Urban Flooding

In recent times, increasing amounts of urban flood modelling has been carried out to determine so-called "overland flow" or "surface water" issues across a city, driven largely by growing community demands from increased flood awareness.

The nature of this type of flooding generally means flows are quite shallow, with varying, and localised velocity profiles.

Common, rapid modelling approaches involve "rainfall on the grid"/"direct rainfall" methods which leaves most model cells with at least a small amount of water on them at some stage of the flood (ie they are marked as "wet").

Generally, these results are cleaned using depth, velocity and VxD criteria in a Boolean query (eg (WHERE depth > 0.1) OR ((Depth > 0.05) AND (Velocity > 0.4))) and removal of puddles – a process made easier in v8.

Once a cleaned surface has been established, further analysis of the results is needed to manage the flooding.

There are a wide range of approaches to managing overland flow, and waterRIDE™ functionality has been expanding to accommodate these varied approaches.

For example, should a land parcel with a small amount of "overland flow" in the back corner be tagged as flood affected?

Or should the building footprint itself be considered against the cleaned flood surface?

And what should be considered flood affected? One cell in the property? Five cells?

In the UK, a detailed approach is used to determine whether a property is considered affected by surface water flooding.

This approach involves determining the percentage of the exposed building perimeter along which flooding exceeds various thresholds (eg 50% of the perimeter greater than 0.5m deep).

Whilst not prescriptive in its criteria, this approach provides a consistent means of tagging properties.

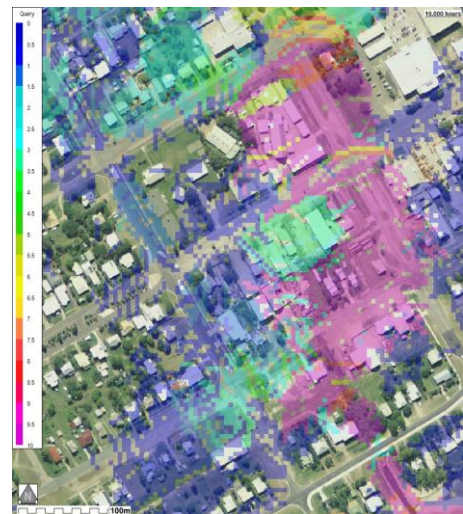
Approaches in other regions involve determining the maximum overland flow level on the building perimeter and integrating this against the building floor level to determine if the property is affected above floor.

Other approaches involve classifying overland flow paths using minimum total flow criteria (eg flow must be greater than 2m³/s to be considered a flow path).

Yet others have different criteria based on whether the flow is moving (flowpath), or static (ponding area).

Others still, have used criteria involving the minimum percentages of a lot inundated by floodwaters greater than 0.3m deep.

The latest toolsets available in v8 provide a ready and flexible means of addressing the above questions, and will continue to expand as processes evolve.



Peak Flow Surface (m³/s)

waterRIDE™ v8 Release

Those with current Annual Maintenance Plans should have received email notifications of the v8 release of waterRIDE™ FLOOD Manager and Viewer. Please let us know if you did not receive an email and believe your maintenance plan is current.

v8 releases of waterRIDE™ 1D Surface and waterRIDE™ Forecast Console will be made available shortly.

Australian Rainfall and Runoff National Hazards

[AR&R](#) have released their national flood hazard categories associating risk to life and damage to structures with combinations of depth, velocity and VxD.

You can download the hazard categories [here](#). Use utilities->Flood Hazards->Hazards Manager to install these categories.