

Direct drinking water recycling could prevent floods

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The use of a more streamlined process to recycle wastewater could have saved Brisbane from severe flooding in 2011 and mitigated recent flood risks in New South Wales, a leading water expert says.

Direct potable reuse (DPR) of [wastewater](#) could free up billions of litres of water from reservoirs around Australia, giving cities a greater buffer to capture [rainwater](#) and control major flooding events, says Dr Stuart Khan, an [environmental engineer](#) at the UNSW Water Research Centre.

Current plans for water recycling in Australia generally involve Indirect Potable Reuse (IPR), where [reclaimed water](#) is treated to a high standard and then returned to rivers, lakes and [aquifers](#), where it mixes with environmental waters before being re-extracted for further treatment.

But Dr Khan says a better approach, which is more cost effective and less energy intensive, is to skip the dam altogether. With DPR, highly treated wastewater is introduced directly to drinking water treatment plants, without re-entering the natural environment along the way.

In Queensland alone, DPR would be the equivalent of immediately constructing a new 425-billion litre reservoir, without the cost of construction or having to relocate a single home or farm, says Khan.

This added 'virtual' storage space represents a 30% increase on the volume currently reserved for flood mitigation in this region, his research shows.

“DPR probably would have saved Brisbane from the 2011 floods from Wivenhoe,” he says. “The big inflow peak of around 1900 GL that occurred between 9 and 13 January could have been contained in the dam, rather than spilled.”

And he says DPR could have also mitigated recent floods in NSW. For example, it would have enabled Warragamba dam to have been managed with an available “flood control volume”, without compromising the security of future water supply.

“Other dams that have spilled recently should be closely investigated for opportunities to increase the flood control capacity in the future,” he says.

This type of [water recycling](#) also has several environmental benefits compared to IPR: “DPR can mean a reduced need for pumping water, reduced operational costs, reduced energy consumption and a lower carbon footprint,” says Dr Khan.

DPR would also provide an invaluable supply of emergency drinking water in the event that reservoir water quality is compromised, as sometimes happens after high rainfall events, algal blooms and bushfires.

Provided by University of New South Wales

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