

Smaller, faster, better wastewater treatment

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Professor Howard Fallowfield at the trial high-rate algal pond system at Kingston-on-Murray.

In a world first, a Flinders University designed wastewater treatment system has been accepted as an alternative to existing passive lagoon systems for use in South Australia.

The new [system](#) is smaller, faster and more effective at cleaning wastewater and creates the potential to reclaim more water for alternative use, according to Flinders University's Professor Howard Fallowfield.

Wastewater treatment systems are used by councils for towns outside metropolitan areas sewered by SA Water and in locations such as mining camps, and are regulated by the SA Department of Health Wastewater Management Group, which has accepted the new system.

SA's Local Government Association, which administers State subsidies for new Council wastewater treatment systems, will be alerting councils to the new option.

"The new system has the potential to dramatically increase the availability of water for reuse in rural communities," says Professor Fallowfield of the School of the Environment at Flinders.

SA LGA Acting CEO Kathy Jarrett welcomed the news, saying the system might not be suitable in all locations across SA, but would become a key option to be considered for future system design.

After extensive testing in a side-by-side trial with a conventional system at Loxton-Waikerie District Council's Kingston-on-Murray site, the new system was independently evaluated and subsequently approved by the Department of Health.

Centralised treatment systems are commonly installed in non-sewered (mostly rural) areas, generally where disposal of effluent by on-site systems is made difficult by space constraints, poor soil absorption, failed soakages or other issues that create a potential public health issue.

"If you are close to the Murray, where there are sandy soils, there is also

the potential to contaminate the river and groundwater," Professor Fallowfield says.

With funding from the State Community Wastewater Scheme (CWMS) administered by the LGA and the University, the Flinders research team, which also included Professor Nancy Cromar, installed a high-rate algal pond at Kingston-on-Murray where much of the field work was undertaken by Flinders PhD researcher Neil Buchanan, who sadly died of cancer in July last year.

"Our final report demonstrated that our system occupied about 40 per cent of the area previously required, with the smaller footprint opening up the technology to other rural communities that previously had insufficient land area," Professor Fallowfield said.

"These sustainable, low-energy systems are cost effective to run, and the capital cost of construction is also about 40 per cent of the previous system for effluent-only schemes, and marginally higher for blackwater schemes."

Independent reviews of the data by the Australia Water Quality Centre validated the method, and found that its ability to remove pathogens was equal to, or better than, the existing system.

"But whereas the current system takes 66 days to do the treatment, we can do it in between five and 10 days," Professor Fallowfield said.

He says with more reclaimed water available to irrigate woodlots, the new system is a winner, both environmentally and economically.

The adoption moves the high-rate algal pond system from the research sphere into the real world for the first time.

"With the configuration pre-approved, a consulting engineer can apply the technology off-the-shelf," Professor Fallowfield says.

"This is a really good example of a university conducting research in partnership with local government and the community, and of research being taken to implementation."

Provided by Flinders University

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