Wastewater Recycling
Assessment and Treatment
Option Analysis

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Executive Summary

Wastewater recycling for the purpose of public open space irrigation in regional Western Australia (WA) has become quite common. New Department of Health (DoH) guidelines governing water recycling in WA have recently been published. One of the main aims of this project is to help the Water Corporation’s Wastewater Process Expertise Group (PEG) with the assessment of their recycling schemes. Eight schemes were assessed, for various parameters. A desktop assessment was initially conducted before a field visit and onsite assessment. The desktop assessment focused on Wastewater Treatment Plant (WWTP) effluent quality and the presence of past approvals and a recycled water supply agreement. The onsite assessment’s main components were the storage areas, further treatment systems and the irrigation areas. The onsite assessment found that most schemes were generally non-compliant in a minor way, such as insufficient signage. However, serious irrigation management issues and inappropriate end-use sites were found in Northam. The desktop assessment found that two sites are currently operating without DoH approval, Northam and Wagin and also that there are issues with WWTP effluent quality in Kojonup and Mundaring. Suitable recommendations to overcome these issues were made.

Another main aim was in investigating alternatives for WWTP capital expansion to achieve wastewater treatment capacity increase or inflow reduction for selected sites. A Multi-Criteria Analysis (MCA) was performed to select the most suitable option from WWTP expansions works, residential greywater reuse and septic tanks. Water efficiency measures were also considered in the analysis but not considered further, as they were not seen as a suitable engineering measure. Residential greywater reuse was found to be the most preferred option and two systems were designed; an R20+ system for higher density town centre lots and a Rural Lifestyle system for larger plots. The R20+ system used a cluster-scale Nubian advanced greywater treatment system and the greywater can then be used indoors, for irrigation and stored over winter when not required. The Rural Lifestyle system used diversion devices for irrigation with untreated greywater. The R20+ system can successfully reduce inflows to a WWTP considerably and is also financially viable. However, the Rural Lifestyle system was found to achieve neither of these objectives. Recommendations were made for further study on the R20+ system and to integrate it into planning in the selected sites.
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