

Water Recycling – Industry

Background

Demand for drinking water can be greatly reduced by replacing it with recycled water. Water is considered recycled when wastewater or drainage water is appropriately treated then supplied for suitable uses such as watering of parks and gardens, golf courses and non drinking water uses by industry and households.

There are 60 water recycling schemes across Western Australia where treated wastewater is recycled - mainly onto parks, golf courses, gardens and race courses.

Current Situation

The Kwinana Water Reclamation Plant treats about 24 megalitres of secondary treated wastewater from the Woodman Point Wastewater Treatment Plant to provide about 17 megalitres per day of high quality water to the Kwinana industrial area.

This replaces about 6 gigalitres a year of scheme water. The plant has been operational since November 2004.

This plant also reduces the amount of treated industrial wastewater discharged into Cockburn Sound by Kwinana industry.



Future of Recycled Water for Industry

In April 2007 the Premier announced the development of a State Water Recycling Strategy to improve water use efficiency and water recycling in Western Australia. This strategy supports the State Water Plan 2007 water policy framework to “Use and recycle water wisely”.

The Water Corporation assisted in the development of this strategy which determined that there are several opportunities for industry to use more recycled water. The first obligation, however, is to improve the efficient use of all water.

Many industries in Kwinana have embarked upon process improvements to reduce the amount of water used, and many already recycle water within their sites. Recent WA legislative changes require all industry using more than 20 million litres per year to undertake mandatory Water Efficiency Management Plans which will further drive water savings and internal water recycling.

The Woodman Point Wastewater Treatment Plant represents a valuable source of recycled water to industry. The Sepia Depression Ocean Outfall Line (SDOOL) takes treated wastewater from the Woodman Point site and discharges it safely to the ocean. There is still considerable capacity to use more water from SDOOL to meet new water demand in the Kwinana industrial area.



The existing Kwinana Water Reclamation Plant can be expanded by a further 10 million litres per day, or 3.6 gigalitres a year. This can be accommodated on the existing site within about 18 months.

Additionally, the Kwinana Wastewater Treatment Plant located east of the industrial area is also a current and future source of recycled water for industrial purposes. It is proposed to expand this scheme which will increase water available for recycling.

The Water Corporation supports the review of the current industrial tariff to better reflect the upper bound of the long run marginal cost of supply for all users in the Perth metropolitan area. This is expected to make water recycling more economically attractive to industry.

There is also an opportunity to ensure that land planning for new heavy and general industrial areas requires the provision of a third pipe to support the use of recycled water. Where feasible and cost effective, existing heavy industrial areas could also be retrofitted to enable the use of recycled water.

Sustainability considerations

Economic	Social and cultural	Environmental
Currently the industrial tariff is considerably lower than the high use residential tariff.	High level of community acceptance for recycling to industry.	Reduces the use of scheme water and private groundwater supplies.
A relatively low cost supply option – compared to scheme water.	Reduces wastewater discharges to the ocean.	Need to consider carbon footprint of highly treated recycled water versus lesser treated water/groundwater.
A relatively high cost supply option – compared to self-supply groundwater.	Promotes community confidence in industries using recycled water.	Retains water in the local water cycle – and promotes water use efficiency.

Potential source yield



The initial expansion of the Kwinana Water Recycling existing scheme could meet demand of about 3.6 gigalitres of recycled water a year. This is enough to save drinking water supplies for about 15,000 houses - water that would otherwise be used by industry.

The future potential of recycled water supplies for industrial purposes is considerable. The Kwinana Industries Council estimates that up to an additional 25 gigalitres of recycled water could be used by industry to 2030. In addition to demand in this area, recycled water could also be supplied to other industrial areas such as Neerabup, Kemerton and Hope-Valley/ Wattleup.

Potential cost





Most recycled water schemes to supply the Kwinana industrial area are estimated to cost \$1-\$2 per kilolitre.

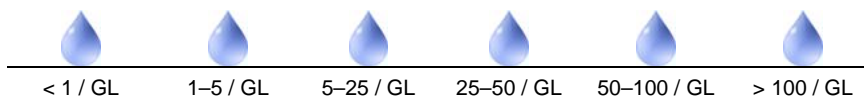
The cost of other industrial water recycling schemes will vary greatly depending on how close they are to a treated wastewater or stormwater supply, the level of treatment required and other factors.

Making the inclusion of a third pipe to support recycled water use in new industrial areas mandatory will substantially reduce the cost and increase the feasibility of the use of recycled water in these areas.

More Information

- Water Recycling, November 2006
Integrated Water Supply Scheme
Security through Diversity, 2005–2050
http://www.watercorporation.com.au/files/PublicationsRegister/22/Recycling_Nov06.pdf
- Kwinana Water Reclamation Plant
http://www.watercorporation.com.au/K/kwinana_wrp.cfm

Key



Potential source yield (in 50 year planning horizon)



Potential Cost (2007 \$)