

## Water Recycling – Agricultural Uses

### Background

Water is considered recycled when wastewater and / or stormwater is appropriately treated and then supplied for suitable uses such as the watering of parks and gardens, golf courses, industrial uses and household non-drinking uses.

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

There is an agricultural water recycling scheme at a winery in Mount Barker.

### Current Situation

Most agricultural water needs in Western Australia have been met through irrigation cooperatives, self supply groundwater or on-site dams.



Across the State approximately 860 gigalitres of water is used for agricultural activities. In the Gnangara Mound area alone, 66 gigalitres of groundwater a year is allocated for agricultural use by the Department of Water.

Due to the growing scarcity of water available for agricultural needs we are beginning to explore water recycling as a potential source of water for this industry segment.

In other parts of Australia, mainly Victoria and South Australia, there are some large schemes that enable wastewater recycling to agriculture.

In April 2007 the WA Premier announced that a State Water Recycling Strategy would be developed to improve water use efficiency and water recycling in Western Australia. This strategy supported the State Water Plan 2007 water policy framework to “Use and recycle water wisely.”

Among other uses, the strategy explored the potential to reuse treated wastewater for a horticultural precinct near Perth.

### The Future

The Water Corporation has completed some preliminary planning to investigate the development of a horticultural precinct in Carabooda, north of Perth.

This area is consistent with the findings of the *The Future of East Wanneroo Land Use and Water Management in the Context of Network City* published by the Western Australian Planning Commission and the Department of Planning and Infrastructure in 2007.

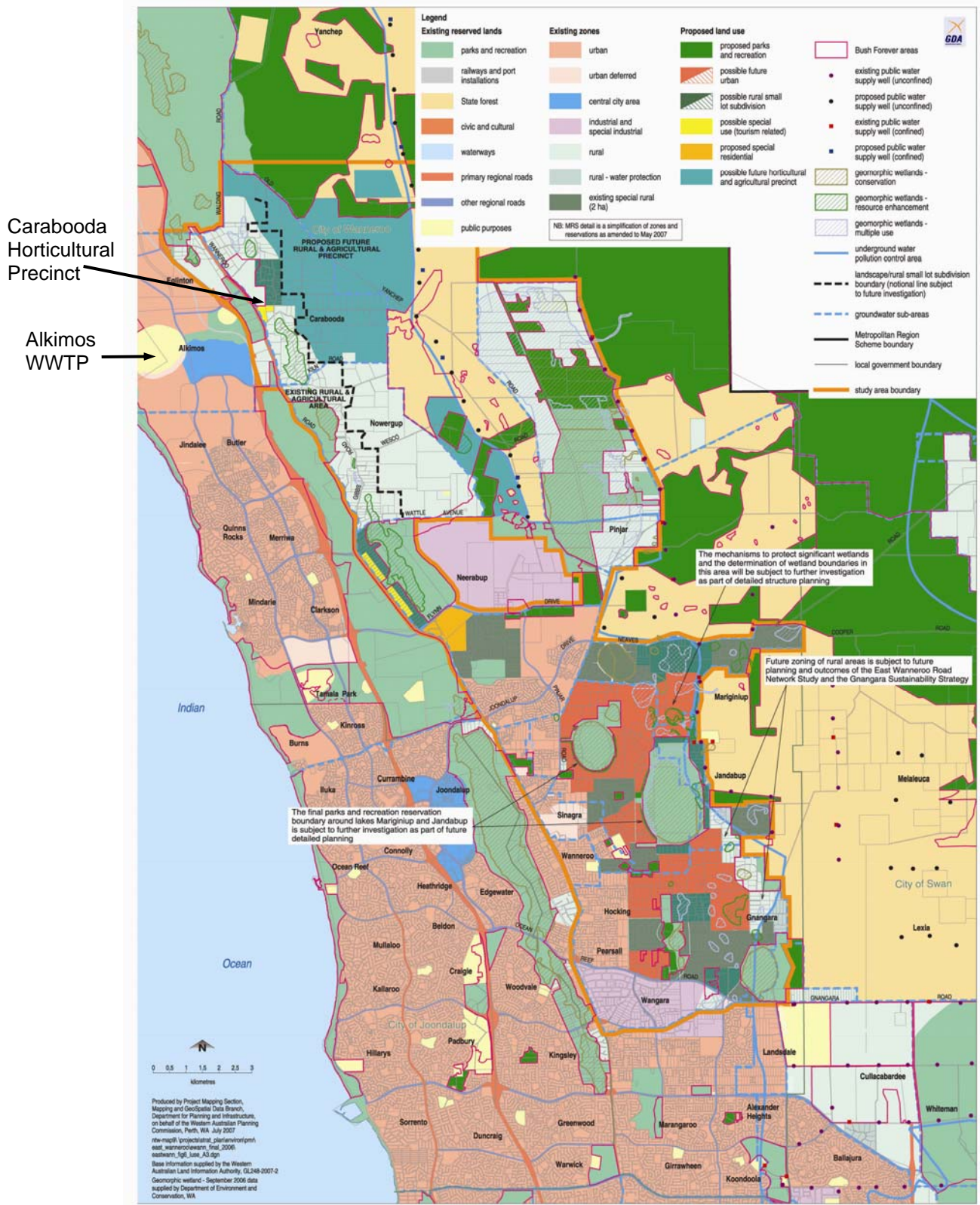


Fig.1 - Land Use Concept (Source: *The Future of East Wanneroo Land Use and Water Management in the Context of Network City*, 2007)

The scheme assumes a 10 gigalitre supply from the Alkimos Wastewater Treatment Plant. A number of factors require further consideration to progress this scheme. They include:

- Land zonings
- Economic feasibility
- Environmental considerations including pesticide and nutrient management
- Impacts on groundwater
- Acceptability to the horticultural industry
- Crop suitability
- Soil condition
- Adjacent land uses
- Costs and funding.

The sustainability of this precinct is being evaluated through the Gngara Sustainability Strategy. Strategy development is being led by the Department of Water with assistance from the Department of Agriculture and Food, the Water Corporation and other agencies.

*Sustainability considerations*

Economic	Social	Environmental
Wastewater needs to be treated to an appropriate level for use on food crops	High level of community acceptance for recycling to agriculture	Improved water conservation and efficiency in irrigated horticulture is required regardless of water source
Schemes generally require a capital subsidy from Government	Contributes to a diversified economic and employment base	Replaces the use of groundwater supplies
Seasonal demand for recycled water reduces the efficiency of the system (no demand during wet months)	Reduces wastewater discharges to the ocean	Need to manage other environmental issues including nutrients, pesticides and adjacent land uses

*Potential source yield*



One scheme under consideration (Alkimos Wastewater Treatment Plant to Carabooda horticulture precinct) could support 10 gigalitres a year of recycled water use. The slow growth of flows at Alkimos would mean that the 10 gigalitres would not be fully available until 2040.

Note that this scheme does not impact or replace the demand for drinking water supplied through the Integrated Water Supply Scheme water grid.

Decisions in this regard will be made as part of the Gngara Sustainability Strategy due for completion in 2009.

*Potential cost*





The unit cost of the recommended option is estimated to be less than \$1 a kilolitre. Cost is significantly impacted by scheme design including factors such as proximity to source, level of treatment required and the size of the scheme.

## Key



*Potential source yield (in 50 year planning horizon)*



*Potential Cost (2007 \$)*