



Bird-in-Hand WWTP Recycled Water Scheme



Information for Customers

January 2011

Prepared by Treatment Group, Water Quality & Environment, SA Water

Background

SA Water is making recycled water from the Bird-in-Hand Wastewater Treatment Plant (WWTP) available to interested landholders in the local area.

The Bird-in-Hand WWTP will have been upgraded by late-2011 to a modern biological treatment process, followed by filtration and disinfection with UV light. The treated wastewater will be suitable for discharge into the Dawesley Creek, and for recycling (with restrictions) as outlined below.

Approvals

A written and signed Agreement must be in place with SA Water before a customer can begin using recycled water.

All customers must also have approval to use recycled water from the SA Department of Health (DH) and it is the customer's responsibility to arrange this. However, SA Water may be able to assist with applications.

Recycled Water Quality

The expected typical quality of recycled water supplied from the Bird-in-Hand WWTP is presented in the table below:-

Table 1 - Recycled Water Quality

Parameter	Value
Biochemical oxygen demand (BOD)	10 mg/L
Suspended solids (SS)	5 mg/L
Total nitrogen (TN)	10 mg/L
Total phosphorous (TP)	0.5 mg/L
pH	6.5 to 8.5
Salinity	Less than 1,000 mg/L
<i>E coli</i> micro-organisms	Less than 100 org/100 mL

Note: mg/L = milligrams per litre

Potential customers should consider whether this quality of recycled water is suitable for their individual applications.

Instantaneous flow to each customer connection is restricted to 5 litres per second. Scheduling may need

to be implemented, depending on future uptake by customers.

It is expected that, initially, the water supply pressure will be sufficient to operate irrigation equipment, but this will depend on instantaneous demand and future growth of the scheme. Daily on-farm balancing storage could be necessary in the future (see below).

Permitted Uses

Recycled water from Bird-in-Hand WWTP is suitable for the following uses:

- dust suppression;
- compaction on construction and roadwork sites;
- restricted, non-residential, irrigation of turf, pasture, trees and some commercial crops.

The appropriate controls associated with various crops are outlined in Tables 2 and 3 below:

Table 2 - Commercial Food Crops

Crop	Restrictions
All above ground crops	<ul style="list-style-type: none"> • no restrictions with sub-surface irrigation.
Crops with no ground contact and skins removed before consumption (eg. citrus, nuts)	<ul style="list-style-type: none"> • no harvest of wet or dropped produce; and • with spray irrigation, a minimum of 2 days between final irrigation and harvest;
Crops with limited or no ground contact and eaten raw (eg. tomatoes, capsicums)	<ul style="list-style-type: none"> • sub-surface irrigation only
Crops with ground contact with skins removed before consumption (eg watermelons)	<ul style="list-style-type: none"> • no restrictions with sub-surface or drip irrigation; • if spray irrigation, minimum 2 days between final irrigation and harvest;
Crops with no ground contact and heavily processed (eg wine grapes, cereals)	<ul style="list-style-type: none"> • no restrictions unless public exposure is a risk
Crops cooked /processed before consumption (eg. potatoes, beetroot)	<ul style="list-style-type: none"> • no restrictions unless public exposure is a risk

Crop	Restrictions
Raised crops (eg. apples, apricots, table grapes)	<ul style="list-style-type: none"> drip irrigation; and no harvesting of wet or dropped produce

Table 3 – Non-Food Crops

Crop / Use	Restrictions
Trees, turf, woodlots, and flowers (non-household uses)	<ul style="list-style-type: none"> No restrictions on crop or access with sub-surface irrigation; If drip irrigation, no public access during irrigation If the public is nearby and spray irrigation is used buffer zones and spray drift control will be needed (see below)
Pasture or fodder crop irrigation	<ul style="list-style-type: none"> Lactating dairy cattle must be excluded from pasture for 4 hours or until pasture is dry and fodder dried or ensiled
Livestock drinking water	<ul style="list-style-type: none"> Cattle greater than 12 months of age only
Dairy shed wash-down	<ul style="list-style-type: none"> Excludes washing milking machinery

In general, if human activity occurs close to farms using recycled water (eg. nearby residence, farm house, roadway, recreational area or school), drip or sub-surface irrigation is suggested, with no access during irrigation.

Alternatively, if human activity is close to the irrigated crop land and spray irrigation is used, a typical minimum 25 to 30 metre buffer zone may be required between the human activity and the irrigated area. Alternatively, spray drift control using part circle sprinklers, vegetation screening or anemometer switching could also be needed.

The above is for general information only. Use of recycled water requires approval from the Department of Health. Potential users must discuss their particular requirements with Department of Health prior to applying for approval. Telephone 8226 7100, or email public.health@health.sa.gov.au

Non - Permitted Uses

Recycled water from Bird-in-Hand WWTP is not allowed to be used for the following purposes:-

- irrigation of food crops that are consumed raw or unprocessed (eg lettuce, cabbage, carrots etc);
- filling of domestic, commercial or industrial rainwater tanks;
- filling of swimming pools or spas;
- personal washing (baths, showers);
- domestic garden watering;
- drinking by humans or food preparation;
- wash-down of hard surfaces (such as pavement);
- filling of fountains, lakes or other water storages, unless the customer has approval from SA Water and Dept of Health.
- recreational activities involving water contact (eg children playing under sprinklers);
- household cleaning;
- any purpose within a food premises (including outdoor dining areas).

On-site Storage

In order to provide continuity of supply into the future, it is suggested that an on-site storage sufficient to hold at least one days irrigation volume be provided on properties using recycled water. The storage could be covered to minimise the potential for algal growth, if this is required for a particular use or method of irrigation.

Good practice dictates that earthen dams and basins should be constructed using a clay liner, as is commonly done, or a synthetic liner if preferred, to ensure minimal leakage from the storage. Leakage is a costly waste and it may impact groundwater and surface water, which is contrary to the requirements of the *Environment Protection Act*.

A control valve should be installed at the inlet to allow automatic filling of the tank during off-peak periods.

Control of cross-connections and backflow prevention devices will be needed to protect on-site drinking water supplies.

Precautions for Safe Use

Customers must take due care when using recycled water:-

- minimise contact with recycled water, including ingestion and inhalation;
- wash your hands with soap after use of recycled water and before eating, smoking etc.;
- do not allow contact of recycled water with any open wounds;
- mark pipework and fittings (eg signage/ lilac colour coding of pipework, valves and fittings). Existing below ground pipework will not need to be colour coded.
- clearly display approved "RECYCLED WATER : DO NOT DRINK" signage;
- take precautions to minimise public access (eg locked valve boxes, tap handles removed);
- protection of the drinking water supply through cross connection control and backflow prevention;
- do not apply recycled water if there is a risk that neighbours or the public will sustain skin or aerosol contact;
- seek medical advice if required.

Further precautions may be required by Dept. of Health for individual applications.

Environmental Considerations

Users of recycled water will need to take reasonable and practicable measures to prevent environmental harm. For the design and operation of a recycled water system this means:-

- avoid irrigation on sloping land, to minimise erosion and run-off;
- use an irrigation method to limit off-site movement of spray-drift or run-off;
- employ buffer zones to prevent recycled water run-off from reaching water-courses;
- avoid irrigating on shallow soils, to reduce the risk of erosion;

- avoid irrigating where the water-table is shallow, to avoid impacts on groundwater aquifers;
- be aware that recycled water may not be suitable for salt intolerant plant species.

Other matters that users need to consider include:

- the suitability of recycled water for the crop/vegetation type proposed;
- the volume of recycled water that can sustainably be applied on a short and long-term basis;
- the impacts of recycled water nutrient (nitrogen and phosphorous) levels on crops;
- the impacts of recycled water salt levels on crops and soils.

Consultation with a local agronomist may be required to determine suitable irrigation rates and crop types.

Environment Protection Authority (EPA) approval is not required for small-scale recycled water irrigation systems. However, there is an obligation on users to minimise environmental harm from irrigation (and storage) of recycled water, as per the *Environment Protection Act*.

Contact the Team Leader (Wastewater) within the EPA's Industry Services Branch on 8204 2004.

Contact

For further information please contact:

Peter Murphy
Business Development, SA Water
GPO Box 1751
ADELAIDE SA 5000

Tel: 08 7424 1924

Mob: 0438 814 884

Email: peter.murphy@sawater.com.au

