South Australian Recycled Water Guidelines

Policy developed by: Water Quality Unit, Scientific Services, Public Health Services, PHCS

Approved at Health Executive on: 20 August 2012
Next review due: 30 July 2017

Summary

The South Australian Recycled Water Guidelines are a process document and provide proponents of recycled water schemes with advice on how to obtain licenses and approvals for schemes in South Australia. The Guidelines adopt the Australian Guidelines for Water Recycling (AGWR) 2009 for scientific guidance. They do not contain mandatory provisions and are not a prescribed code. The Guidelines replace the rescinded South Australian Reclaimed Water Guidelines 1999.

Keywords
South Australian Recycled Water Guidelines, wastewater, reclaimed water, greywater, stormwater, guideline

Policy history

Is this a new policy? Y
Does this policy amend or update an existing policy? Y
Does this policy replace an existing policy? Y
If so, which policies? SA Reclaimed Water Guidelines 1999

Applies to Other

Staff impact N/A

PDS reference G0122

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South Australian Recycled Water Guidelines
FOREWORD

This document replaces the South Australian Reclaimed Water Guidelines which were released in 1999 by the Department of Human Services and the Environment Protection Agency.

These guidelines have been prepared by the Department for Health and Ageing and have been developed in consultation with the following agencies to ensure that the information presented is representative of the current formal and legislative requirements for recycled water approval and use in South Australia:

- Environment Protection Authority
- South Australian Water Corporation
- Department of Environment, Water and Natural Resources
- Department of Primary Industries & Regions of South Australia
- Local Government Association
- Land Management Corporation

It is intended that these guidelines are used in conjunction with the Australian Guidelines for Water Recycling to provide guidance on best practice for water recycling. Specific information and advice is provided for proponents seeking approval to use recycled water within South Australia.

This publication does not contain mandatory provisions and is not a prescribed code. Provisions of these guidelines could be incorporated in a licence issued pursuant to the Environment Protection Act or an approval or notice issued pursuant to the Public Health Act 2011 and Regulations.

These guidelines will be reviewed on a regular basis to ensure accuracy of information. Updates will be available on the Public Health SA website at http://www.dh.sa.gov.au/pehs/environ-health-index.htm.
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<tr>
<td>Approval</td>
<td>The provision of official permission. A recycled water approval is issued by the Department for Health and Ageing following an application and accompanying information from a proponent for recycled water use.</td>
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<tr>
<td>Blackwater*</td>
<td>Water containing human excrement.</td>
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<tr>
<td>Consumer*</td>
<td>An individual or organisation that uses drinking water.</td>
</tr>
<tr>
<td>Disinfection*</td>
<td>The process designed to kill most microorganisms in water, including all pathogenic bacteria. There are several ways to disinfect, with chlorine being most frequently used in water treatment.</td>
</tr>
<tr>
<td>Greywater*</td>
<td>Wastewater from the hand basin, shower, bath, spa bath, washing machine, laundry tub, kitchen sink and dishwasher. Water from the kitchen is generally too high in grease and oil to be reused successfully without significant treatment.</td>
</tr>
<tr>
<td>Hazard*</td>
<td>A biological, chemical, physical or radiological agent that has the potential to cause harm.</td>
</tr>
<tr>
<td>Industrial wastewater*</td>
<td>Wastewater derived from industrial sources or processes.</td>
</tr>
<tr>
<td>Non-potable (non-drinking) water</td>
<td>Water not suitable for human consumption, e.g. by drinking or cooking</td>
</tr>
<tr>
<td>Pathogen*</td>
<td>A disease-causing organism (e.g. bacteria, viruses and protozoa).</td>
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<tr>
<td>Potable (drinking) water*</td>
<td>Water suitable on the basis of both health and aesthetic considerations for drinking and culinary purposes.</td>
</tr>
<tr>
<td>Proponent</td>
<td>Business or individual applying for approval for recycled water use.</td>
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<tr>
<td>Rainwater</td>
<td>Water harvested directly from roof runoff from domestic buildings and captured in rainwater tanks.</td>
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<tr>
<td>Recycled water*</td>
<td>Water generated from sewage, greywater, stormwater, rainwater, industrial or animal processes and treated to a standard that is appropriate for its intended use.</td>
</tr>
<tr>
<td>Roofwater</td>
<td>Water falling as precipitation collected from the rooftops of buildings</td>
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<tr>
<td>Risk*</td>
<td>The likelihood of a hazard causing harm in exposed populations in a specified timeframe including the magnitude of that harm.</td>
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<tr>
<td>Risk assessment*</td>
<td>The overall process of using available information to predict how often hazards or specified events may occur (likelihood) and the magnitude of their consequences.</td>
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<tr>
<td><strong>Risk management</strong></td>
<td>The systematic evaluation of the water supply system, the identification of hazards and hazardous events, the assessment of risks and the development and implementation of preventative strategies to manage the risks.</td>
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<tr>
<td><strong>Sewage</strong></td>
<td>Material collected from internal household and other building drains. This includes faecal waste and urine from toilets, shower and bath water, laundry water and kitchen waste.</td>
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<tr>
<td><strong>Source Water</strong></td>
<td>Water in its natural state, before any treatment to make it suitable for drinking.</td>
</tr>
<tr>
<td><strong>Stormwater</strong></td>
<td>Water resulting from rain draining into urban stormwater systems from roofs (rainwater), roads, footpaths and other ground surfaces.</td>
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<tr>
<td><strong>Supplier</strong></td>
<td>A person or organisation that has an approval under the <em>Public and Environmental Health Act 1987</em> to provide recycled water.</td>
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<tr>
<td><strong>User</strong></td>
<td>A person or organisation with approval to use recycled water, e.g. local council, sports ground, golf club.</td>
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<tr>
<td><strong>Water Service</strong></td>
<td>A service constituted by the collection, storage, production, treatment, conveyance, reticulation or supply of water.</td>
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* Definition provided in the Australian Guidelines for Water Recycling

^ Partial definition provided in the Australian Guidelines for Water Recycling

+ Definition provided in the Water Industry Act
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<td>AGWR</td>
<td>Australian Guidelines for Water Recycling</td>
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<td>AHMC</td>
<td>Australian Health Ministers’ Conference</td>
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<tr>
<td>CWMS</td>
<td>Community Wastewater Management Systems (formally known as STEDS)</td>
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<tr>
<td>DAC</td>
<td>Development Assessment Commission</td>
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<tr>
<td>DAFF</td>
<td>Dissolved Air Flotation and Filtration</td>
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<td>DHA</td>
<td>Department for Health and Ageing</td>
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<td>DEWNR</td>
<td>Department of Environment, Water and Natural Resources</td>
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<td>DMITRE</td>
<td>Department for Manufacturing, Innovation, Trade, Resources and Energy</td>
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<td>DPTI</td>
<td>Department of Planning, Transport and Infrastructure</td>
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<td>EP</td>
<td>Equivalent Persons</td>
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<td>EP Act</td>
<td>Environment Protection Act 1993</td>
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<td>EPA</td>
<td>Environment Protection Authority</td>
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<td>EPHC</td>
<td>Environment Protection and Heritage Council</td>
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<td>EPP</td>
<td>Environment Protection Policy</td>
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<td>ESCOSA</td>
<td>Essential Services Commission of South Australia</td>
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<tr>
<td>HACCP</td>
<td>Hazard Analysis and Critical Control Point</td>
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<td>LGA</td>
<td>Local Government Association of South Australia</td>
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<tr>
<td>LMC</td>
<td>Land Management Corporation</td>
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<tr>
<td>MAR</td>
<td>Managed Aquifer Recharge</td>
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<td>MRL</td>
<td>Maximum Residue Limit</td>
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<td>NRM</td>
<td>Natural Resource Management</td>
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<td>Natural Resource Management Ministerial Council</td>
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<td>OCA</td>
<td>Outback Communities Authority</td>
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<td>OHS&amp;W</td>
<td>Occupational Health, Safety and Welfare</td>
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<td>PIRSA</td>
<td>Primary Industries and Regions of South Australia</td>
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<td>RMP</td>
<td>Risk Management Plan</td>
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<td>SARWG</td>
<td>South Australian Recycled Water Guidelines</td>
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<td>SA Water</td>
<td>South Australian Water Corporation</td>
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<td>WIMP</td>
<td>Water Irrigation Management Plan</td>
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<td>Environment Protection (Water Quality) Policy</td>
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1. INTRODUCTION

In 2006, Phase 1 of the Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (AGWR) was released by the Natural Resource Management Ministerial Council, the Environment Protection and Heritage Council and the Australian Health Minister’s Conference. The AGWR were developed as part of the National Water Quality Management Strategy to provide guidance on best practices for water recycling. Phase 2 of the AGWR includes additional guidelines on Augmentation of Drinking Water Supplies (released May 2008), Stormwater Harvesting and Reuse and Managed Aquifer Recharge (released August 2009). The South Australian Recycled Water Guidelines (SARWG) are intended to be complementary to the AGWR. The AGWR provide the scientific guidance for recycled water use while the purpose of the SARWG is to provide information specific to the approval process in South Australia, including appropriate agencies, legislative requirements and the steps involved in obtaining an approval for recycled water use.

Recycled water is an integral component of sustainable water use and is strongly supported by the South Australian Government. In the past, the focus has been on providing fresh surface water and groundwater for domestic, municipal, industrial and agricultural purposes. However, recent drought conditions and growing populations are increasing the demand for alternative water supplies. Changes and improvements in technology, increases in the price of water and a drive to reduce environmental impacts of discharges are also factors likely to result in an increase in recycled water use. A range of water sources including sewage, greywater and stormwater are now increasingly seen as valuable water resources.

The identified benefits of recycled water use include:

- Use in applications that do not require water of drinking (potable) quality
- Reduced impact on existing freshwater resources
- Augmentation of existing water sources and the provision of an additional source of water to assist in meeting both present and future water needs
- Reduction of discharges of wastewater and stormwater into receiving waters, reducing levels of nutrients and contaminants entering waterways
- Compliance with environmental regulations and targets through more effective management of water consumption and wastewater discharges.

South Australia currently has a high per capita level of recycled water use with typically 30 percent of wastewater from SA Water wastewater plants being recycled. Due to a number of new recycled water initiatives currently being implemented including the Glenelg to Adelaide Park Lands Recycled Water Scheme (open space irrigation and dual reticulation), the Southern Urban Reuse Scheme and Lochiel Park Stormwater Project and the Statewide Water Recycling Project (community wastewater management systems), the capacity for recycled wastewater usage in metropolitan Adelaide is expected to reach 50 percent by 2025\(^1\).

Although schemes producing highly treated recycled water such as the Glenelg and Southern Urban Schemes often attract the greatest attention, there are many more schemes successfully using lower quality or lesser treated recycled water. As described in the AGWR, secondary treated sewage with or without disinfection can be used safely for a range of uses providing appropriate on-site controls are applied. Recycled water

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\(^1\) Department of the Premier and Cabinet, 2011, *South Australia’s Strategic Plan*
schemes have been used in regional South Australia for over two decades and lower quality recycled water has a variety of applications including irrigation of golf courses, municipal spaces, pastures and woodlots.

The AGWR also provide specific guidance for stormwater recycling and reuse and a wide variety of schemes of varying complexity have been implemented in South Australia. Untreated stormwater can be used for spray-irrigation of parks, sports grounds and golf courses providing irrigation is undertaken at night with limited buffer zones. On the opposite end of the scale is high quality treated stormwater which may be suitable for uses including toilet flushing and unrestricted irrigation.

Water for Good outlines the actions required to ensure South Australian water supplies are secure, safe and reliable until at least 2050. The Plan recognises that water supplies must be able to sustain continued population growth as well as reducing reliance on the River Murray and other rain-dependant sources. Actions 12 and 18 of Water for Good recognise wastewater and stormwater recycling as key initiatives in managing South Australia’s water future.

While the use of recycled water is strongly supported, it is crucial that it is undertaken in a manner that maintains protection of public and environmental health. Application of preventative measures and requirements for water quality should be commensurate with the source of recycled water and intended uses. Figure 1 provides an indication of the relative risk associated with recycled water use. The AGWR adopts a risk management approach with the aim of providing measurable and on-going assurance that performance requirements are met, and that faults are detected prior to recycled water being supplied, discharged or applied. This approach enables risks to be appropriately addressed.

![Figure 1: Relative risk associated with recycled water use](image)

*Note: Water for Good indicates that there is currently no evidence that augmenting drinking water supplies with treated sewage is necessary in South Australia. In addition further research is required to demonstrate whether treated stormwater can be added to drinking water supplies in a safe and economically sustainable fashion. As a result the current focus is directed towards the large range of suitable non-drinking applications such as irrigation, toilet flushing, industrial uses and groundwater replenishment.

These guidelines do not apply to:

- Use of rainwater supplies for drinking (domestic). Information on managing health risks
associated with rainwater collection at residential dwellings is provided in the Guidance on use of rainwater tanks (enHealth 2010).

Desalinated water intended for drinking purposes. Additional information can be found in Desalination for Safe Water Supply (World Health Organisation, 2007).

Onsite systems including septic tanks and aerobic wastewater systems. These systems are covered by a Code (Standard for the Construction, Installation and Operation of Septic Tank Systems in SA) prescribed under the Public and Environmental Health (Waste Control) Regulations 2010 and is supplemented by Supplement A - Aerobic Sand Filters and Supplement B - Aerobic Wastewater Systems. A draft Onsite Wastewater Systems Code and amended Regulations were developed and released for comment in 2006. Further development is envisaged in late 2012.

Currently, there are no recycled water aquaculture projects operational in South Australia. Schemes proposing use of recycled water in food grade aquaculture (for human consumption), pet food or the aquarium trade will be assessed on a case-by-case basis by the Department for Health and Ageing (DHA) and Primary Industries and Regions of South Australia (PIRSA).

PIRSA support and promote the use of recycled water in certain hydroponics applications, e.g. use of drippers for tomatoes. Hydroponics schemes proposing recycled water use will also be assessed on a case-by-case basis by DHA with assistance and advice from PIRSA.
2. RECYCLED WATER SOURCES

2.1. Sewage

Sewage is the material collected from all internal building drains and includes toilet waste and greywater. Sewage contains high concentrations of faecal material and urine from toilets in addition to all the contaminants of greywater (as identified below). Sewage can therefore contain a range of human infectious organisms in addition to wastes from industrial and commercial facilities. Additional contamination, particularly chemical, is likely if trade wastes are discharged to sewer.

Sewage also contains high levels of nutrients particularly phosphorus and nitrogen which have been identified as key environmental hazards. Groundwater infiltrating into sewers can cause substantial increase in chloride, salinity and sodicity which have also been identified as key environmental hazards.

2.2. Greywater

Greywater is wastewater generated from bathrooms (showers, baths, spas and hand basins), laundries (washing machines and troughs) and kitchens (sinks and dishwashers). Kitchen water can contain food particles, grease, oils and fats and is not recommended for use in greywater recycling systems due to the potential for solids to cause odour issues. Greywater does not include wastewater from toilets (blackwater).

Greywater may contain urine and faeces from washing soiled clothing including nappies in addition to soil, hair, detergents, cleaning products, personal care products, sunscreens, pet products, fats and oils. Greywater can contain E. coli at concentrations up to 1-10 percent of those found in sewage. Cleaning products discharged in greywater can contain boron and phosphates and the water is often alkaline and saline which can present potential risks to the receiving environment. Greywater quality can also be affected by inappropriate disposal of domestic wastes.

2.3. Stormwater

Stormwater refers to the water resulting from rain draining into urban stormwater systems from roofs*, roads, footpaths and other ground surfaces. It is usually channelled into local drains and waterways. A range of contaminants can be present in stormwater including animal faeces, nutrients (e.g. nitrogen), suspended solids (or sediments), coloured dissolved organic matter (CDOM), oils, petrol, pesticides, herbicides, soil, rubbish, tree and plant material and debris. Human faecal material may be present in some circumstances. Initial runoff associated with storms with can contain very high concentrations of enteric pathogens (disease-causing organisms) from faeces and physical and chemical contaminants.

*Water from roof run-off (water captured on roofs) is not considered stormwater until it is contained in stormwater infrastructure.

2.4. Roofwater

Rainwater can be collected from roof run-off in above or below ground tanks and used for a variety of purposes including drinking, garden watering, toilet flushing, laundry and bathing. South Australia has the highest proportion of households in Australia (45.4 percent) using a rainwater tank as a source of water. Rural and remote areas of the State are often reliant on rainwater as their primary source of drinking water. Rainwater is

2 Office For Water Security, 2009, Water For Good
also collected in areas that receive a mains water supply to augment supplies or provide an alternative and renewable source of water.

These guidelines follow the approach adopted in the AGWR and only apply to non-drinking uses of rainwater collected from buildings larger than domestic dwellings. The guidelines specifically do not apply to any domestic dwelling or rainwater supplies intended for use as drinking water.

2.5. Animal wastewater

Animal wastewater is wastewater derived from animal industries including abattoirs, sale yards, dairies and feedlots. Animal wastewater typically contains:

- Strong organic content, e.g. blood, urine, faeces, other bodily fluids
- High solids concentration
- Elevated concentrations of nitrogen and phosphorus
- Antibiotics
- Synthetic hormones
- Pathogenic organisms, e.g. Cryptosporidium, Giardia, Salmonella

The reuse of abattoir or sale yard waste presents a potential health risk for ruminants (specifically cattle and sheep) and in particular the transmission of Johne’s disease. The quantity and quality of animal wastewater can be highly variable and treatment requirements and applicability need to be considered on a case-by-case basis. These guidelines do not apply specifically to animal wastewater however the generic approach used in the AGWR may be applied.

2.6. Industrial wastewater

Industrial wastewater is wastewater produced from industrial sources or processes excluding sewage. Sources of industrial wastewater include the iron and steel industry, organic chemical industries (e.g. industries manufacturing paint and dyes, detergents, plastics and pharmaceuticals), food industries and mines and quarries. As with animal wastewater, treatment requirements and applicability need to be considered on a case-by-case basis due to variability in water quality. Where industrial wastewater, also known as Trade Waste, is discharged to a sewer the effect of the waste on wastewater treatment scheme needs to be considered.

2.7. Mixed source water

Includes water derived from mixed sources such as combined stormwater and sewage recycling systems, e.g. Mawson Lakes. Recycled stormwater systems that have been designed to incorporate a sewage component at a later stage should be considered as a mixed source supply. Mixed source schemes which include a sewage component need approval from DHA prior to supplying recycled water.
3. GENERAL REQUIREMENTS

3.1. Agencies Involved

3.1.1. Environment Protection Authority

The Environment Protection Authority (EPA) is South Australia’s primary environmental regulator, responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation.

Operators of recycled water systems and users of recycled water have both general and specific obligations under the Environment Protection Act 1993 (EP Act) and the Environment Protection (Water Quality) Policy 2003 (WQEPP). The EPA authorises (licences) wastewater treatment plants and industries that produce wastewaters above the threshold levels described in Schedule 1 of the EP Act. The operators of these schemes may have either Environmental Improvement Plans to improve the performance of waste water treatment plants or Wastewater Irrigation Management Plans (also known as Environment Management Plans) to guide the reuse of treated wastewater.

If Managed Aquifer Recharge (MAR) is included the EPA licenses the discharge of stormwater to aquifers from a catchment greater than 1Ha within the Greater Adelaide metropolitan area and defined areas within the City of Mt Gambier. Any discharge of treated wastewaters in aquifers, where conditions are suitable, will also require an EPA licence and an exemption under the WQEPP.

3.1.2. Department for Health and Ageing (Public Health Services)

Public Health Services is dedicated to preserving, protecting and promoting good health and preventing illness and injury. The protection of public and environmental health is paramount to recycled water use.

DHA is responsible for providing advice to water providers, local councils, government agencies, proponents and the public on the health implications of recycled water use. The formal role of DHA is to undertake public health risk assessments and establish that the extent of treatment, the method of application and the overall use of recycled water does not create public health risks.

In South Australia, all recycling schemes using treated sewage or greywater require approval from DHA prior to operation. Proponents are required to provide information including design, installation and operation details to DHA prior to an approval being granted.

3.1.3. Department of Environment, Water and Natural Resources

The Department of Environment, Water and Natural Resources (DEWNR) is leading the implementation of South Australia’s water security plan, Water for Good, a plan to ensure our water future to 2050, which promotes recycled water as part of a diversified approach to ensuring the State’s water security. As part of this plan DEWNR is coordinating projects designed to increase the use of stormwater. DEWNR is also responsible for developing new water and wastewater legislation in the form of the new Water Industry Act.

DEWNR is responsible for the permitting, and if applicable, licensing of water that is

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3 In prescribed wells areas, an applicant would require a permit to drain and discharge surface water into an aquifer but a licence to extract the water, while in areas where wells are not prescribed, a permit for draining and discharging is required but no approval of any form is required for extraction.
drained and discharged\(^4\) into an aquifer. The assessment process, timeframe and the level of information an applicant is required to provide depends on whether the area is prescribed or not.

DEWNR also manages a state-wide policy that exempts property owners from requiring a water licence in surface water prescribed areas if less than 500-kilolitres of roof runoff (surface water) is collected. Subject to the conditions in Schedule A of the Government Gazette, dated 28 February 2011, the water may be used for commercial (but not irrigation) use and industrial, environmental or recreational use.

It is important to note that the state-wide policy on roof runoff applies only to surface water prescribed areas (i.e. at the time of publication, Baroota, Barossa, Clare, Eastern and Western Mount Lofty Ranges) and is separate to the state-wide “rainwater tank policy”. (http://www.planning.sa.gov.au/go/rainwater-tanks and http://dataserver.planning.sa.gov.au/publications/1128p.pdf) which requires a rainwater tank plumbed into houses for suitable uses (unless an alternative supply such as recycled water is used for similar purposes).

3.1.4. South Australian Water Corporation (SA Water)

SA Water is a government-owned public corporation and its primary functions are to provide services for the:

- Supply of water by means of reticulated systems
- Storage, treatment and supply of bulk water
- Removal and treatment of wastewater by means of sewerage systems

SA Water presently manages, operates and maintains a number of significant recycled water schemes across South Australia.

3.1.5. Department of Primary Industries and Regions of South Australia

The Department of Primary Industries and Regions of South Australia (PIRSA) is a key economic development agency within the South Australian Government and plays a major role in contributing to the sustainable development of the State’s natural, industrial and community assets. PIRSA’s business activities include:

- Agricultural and horticultural industry and policy development
- Fisheries and aquaculture management and industry development
- Sustainable resources management including soil, land care and productive use of water

The Livestock Act 1997 and Livestock Regulations 1998 specifically prohibit the use of faecally contaminated water in livestock production unless it has been treated in an acceptable manner.

These controls are primarily dictated by the quality of the water (including helminth treatment), with key controls being restrictions on the type of livestock, the potential need to observe brief withholding periods for irrigated pasture and fodder production, and limiting the use of recycled water to wash down stock yards and non-food contact areas of dairies.

Recycled sewage must not be used as drinking water for pigs or applied to pasture or

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\(^4\) The term ‘draining and discharge’ is the legislative terminology used for an activity that may be permitted or licensed, but recently, draining and discharge has been referred to in some government documents as ‘managed aquifer recharge’ (MAR) schemes. However, for the purposes of legislative requirements and to reduce confusion, draining and discharge will be used in this instance.
fodder crops that will be consumed by pigs. This approach is consistent with the AGWR and no treatment standard for recycled sewage has been set. Further advice on recycled sewage and pigs is available from PIRSA.

Aquaculture production can be for the purpose of food for human consumption, bait, pet food or the aquarium trade. Aquaculture production must comply with the requirements of the Primary Produce (Food Safety Schemes) Act 2004 and other relevant Regulations and Standards. Aquaculture schemes proposing recycled water use will be assessed on a case-by-case basis by DHA and PIRSA.

PIRSA support and promote the use of recycled water in certain hydroponics applications, e.g. use of drippers for tomatoes. Hydroponics schemes proposing recycled water use will also be assessed on a case-by-case basis by DHA with assistance and advice from PIRSA.

3.1.6. Department for Planning, Transport and Infrastructure

The Planning Division of the Department for Planning, Transport and Infrastructure (DPTI) is the State Government’s advisory agency on land use planning, development policy and strategy, the building code, and urban design and open space policy. The Planning Division also incorporates the Outback Communities Authority and processes development applications and approvals.

Development approvals are submitted to either local council or sometimes the Development Assessment Commission (DAC). Development applications typically include details about the location and type of waste disposal system where it will not be connected to a service. DAC may assess development applications including where local councils are not the relevant authority and where local council is the developer. If the development is located in the Mount Lofty Ranges region, developments may be assessed to determine whether the waste control system will impact on surface or groundwater resources. Development Applications with Community Wastewater Management Systems (CWMS) are typically forwarded to DHA for comment prior to development approval.

3.1.7. Local Government: Individual Councils

Individual Councils are the relevant authority for the collection, treatment and recycling of onsite wastewater installations, pursuant to various Acts including the Local Government Act (1934 and 1999) and the Public Health Act 2011.

Local authorities and private entities may also build, own and operate community wastewater management systems (CWMS), as approved by DHA, and (in many cases) licensed by the EPA.

Local authorities are both current and potential future developers and managers of major community wastewater schemes, incorporating stormwater, effluent from septic and on-site wastewater treatment tanks, sewage and other wastewaters. CWMS generally include irrigation of public open space with recycled water.

3.1.8. Local Government Association

The Local Government Association (LGA) is the peak body for all Councils in South Australia, particularly in respect of policy, funding and inter-government relations, including all aspects of recycled water.

3.1.9. Essential Services Commission of South Australia

The Essential Services Commission of South Australia (ESCOSA) is the primary independent economic regulator of essential services in South Australia. Under the Water
Industry Act 2012, ESCOSA is appointed as the independent economic regulator for the water and wastewater services sector in South Australia (as per similar existing arrangements for the gas and electricity industries).

As a result, under the Essential Services Commission Act 2002, ESCOSA will:

- Regulate prices and perform licensing in relation to the water and sewerage industry;
- Monitor and enforce compliance with and promote improvements in standards and conditions of service and supply in the water and sewerage industry;
- Make industry codes, standards and rules relating to the conduct and operations of the water and sewerage industry;
- Provide and require consumer consultation processes in the water and sewerage industry;
- Advise the Treasurer generally on matters relating to the economic regulation of the water and sewerage industry; and
- Perform any additional function which may be assigned to ESCOSA under the ESC Act.

ESCOSA will not set prices for recycled water but licensed water industry entities (e.g. SA Water) will be required to set these prices consistent with pricing principles determined by ESCOSA.

3.2. Who to contact to obtain an approval

Proponents are encouraged to contact the relevant agencies for further information and advice early in the planning/concept stage for recycled water schemes. An initial contact agency has been identified for each source of recycled water (see Section 4). For treated sewage and greywater proponents are encouraged to contact DHA while for stormwater, proponents are encouraged to contact DEWNR. Where proponents of stormwater schemes are not from local government contact should also be made with the relevant local council(s).

Section 4 has been developed to assist proponents in understanding the various application processes for recycled water use in South Australia. The information presented in these flowcharts represents a summary of the application processes and may be subject to variation depending on the specific characteristics of the scheme and uses of recycled water.

The design, installation and use of recycled wastewater (sewage) and greywater recycling schemes is regulated by the Public and Environmental Health (Waste Control) Regulations and requires approval from DHA prior to installation. While other recycled water schemes such as stormwater and roof run-off are not specifically covered by legislation administered by DHA, general provisions under the Public Health Act 2011 allow for action including potential cessation of supply if they are deemed to present a risk to public health. Proponents are encouraged to consult with DHA in the early planning stages to ensure recycled water schemes are well designed and operated. Section 5 provides further information on the legislative functions of DHA.

Proponents are required to contact the EPA where irrigation is proposed using recycled water from an EPA licensed wastewater treatment plant and will need to develop a Wastewater Irrigation Management Plan (WIMP).

If the proponent plans to develop a stormwater MAR scheme, collected from a catchment greater than 1Ha within the Greater Adelaide metropolitan area or specific areas within the City of Mt Gambier, they will need to contact the EPA and submit a detailed application for an environmental authorisation. Proponents will be required to undertake a
detailed risk assessment as part of a Development Application (DA) or a Works Approval if a DA is not required. The scheme will be assessed and approved to operate if the risks to the environment have been identified and are able to be managed at a low level. Approval is required prior to water being discharged to the aquifer.

The EPA must also be contacted if the scheme includes discharge of treated wastewaters to an aquifer and if an application is approved it will require an exemption from the WQEPP.

If the area is prescribed or the proposal involves draining or discharging water into a well, which is not licensed by the EPA, the proponent should also contact DEWNR. In some natural resources management (NRM) regions, NRM plans and/or water allocation plans may also require proponents to obtain a water affecting activity permit for the importation of water and/or treated sewage into or within the region. It is recommended that proponents access the NRM website at www.nrm.sa.gov.au for current information and to determine whether this applies in their area and if permit approvals are required for the proposed activity.

Proponents are required to contact SA Water for an initial feasibility assessment if considering using a supply of treated or untreated wastewater from SA Water’s sewerage system. Should a scheme proceed to the approval stage, a customer agreement will also need to be negotiated.

Note: After 1 July 2012 the regulation of plumbing will be transferred from SA Water to the Office of the Technical Regulator, Department for Manufacturing, Innovation, Trade, Resources (DMITRE), as part of the water industry reforms under the Water Industry Act 2012.

Other agencies including local government (Box 1), LMC (Box 2), DEWNR (Box 2) and PIRSA (Box 3) may be involved in the approval process depending on the source of water and the type of recycled water system involved.

Box 1: Port Lincoln Recycled Water Scheme

The Port Lincoln Wastewater Treatment Plant is owned by the City of Port Lincoln and operated under a contract arrangement by SA Water. As the owners of the scheme, the City of Port Lincoln applied to DHA for an approval to use recycled water for irrigation of sports fields and ovals, reserves and for dust suppression. An approval was issued subject to a range of conditions on treatment, use, responsibilities, compliance and reporting.

The City of Port Lincoln is responsible for advising SA Water of the approval conditions to ensure operational procedures meet these requirements.
Box 2: Lochiel Park

Lochiel Park is a model green village incorporating a variety of best practice sustainable technologies including a development aim to achieve 78 percent savings (compared to the average Adelaide household) of mains drinking water for each of the 100 homes. These savings will be achieved through water-sensitive urban design including the collection of stormwater and rain water. Approximately 87 percent of household and public space irrigation is supplied from recycled water.

Stormwater will be collected in a wetland and treated through natural processes. When sufficient water is available it will be pumped to an underground aquifer approximately 188m below the surface or into a buffer tank depending on the demand for water. The discharge of this water to the aquifer is licensed by the EPA. This water will then be disinfected and reticulated around the subdivision for toilet flushing, washing machines and garden and park land irrigation.

All homes in the development are required to have a minimum 1.5 kL rainwater tank connected to the hot water service. Rainwater will be heated to a minimum of 60°C in household hot water services which will act as a form of disinfection.

DHA was approached by the Land Management Corporation in the concept stages of planning to discuss health-based requirements for the proposed recycled water scheme. Although DHA does not formally approve stormwater or rainwater schemes, consultation is strongly encouraged to ensure that such schemes address potential health risks.

3.3. Level and degree of information required for approval

Proponents are required to provide information as requested by the regulating body. The regulating body will provide guidance and advice on the information required. The level and degree of this information will be commensurate with the source of water, intended uses and size and complexity of the scheme. Further information may be requested from the proponent during the application or approval process. Approval may be subject to certain conditions on treatment, operation and maintenance procedures.

DHA approval is subject to compliance with the AGWR. Information is requested from proponents based on the framework for management of recycled water quality and use described by the AGWR (see section 6). Consent from other agencies may also be a condition of approval (see examples provided in Box 3 and Box 4).

DHA and SA Water have a range of information for proponents on approval requirements together with education/guideline material on recycled water systems. Resources can be accessed via the relevant website or by contacting the agency for further assistance (see section 8).
3.4. Approvals for suppliers and users

Box 4: Approval for a small country recycled water scheme based on consent from multiple agencies

The Willunga Golf Course and the Willunga Basin Water Company utilise recycled water from the Willunga WWTP plant operated by Trility on behalf of the City of Onkaparinga. The plant is capable of treating an average of 1060kL of wastewater per day and discharges to a 135 ML winter storage dam prior to use.

Microbial quality was identified as the primary hazard for human health while sodium, salinity, phosphorus and nitrogen were identified as the four key environmental hazards.

Operational procedures and process controls were implemented to manage both the health and environmental risks. Results are provided by Trility on an annual basis to DHA and the EPA as part of the approval conditions.

Box 3: Approval for a large metropolitan recycled water scheme based on consent from multiple agencies

The Virginia Pipeline Scheme (VPS) utilises recycled water from the Bolivar Wastewater Treatment Plant (WWTP) for unrestricted irrigation of commercial crops including salad vegetables. At the time of commissioning in 1999, the VPS was the largest recycled water scheme of its kind to be developed in Australia. The scheme was developed in collaboration with DHA, EPA, PIRSA and food crop growers. Although the assessment and approval of the VPS preceded the release of the AGWR, a retrospective risk assessment indicated conformance to the guidelines.

The human-health risk assessment was undertaken by DHA and considered microbial and chemical quality, treatment processes, validation and food crop testing. The environmental risk assessment was undertaken by the EPA who reviewed microbial and chemical quality and environmental preventative measures. The use or disposal of treated sewage from the Bolivar WWTP was subject to a license issued by the EPA. The EPA also required the development of an Irrigation Management Plan including monitoring of soils, groundwater and surface waters that may be impacted by the VPS. PIRSA provided a letter of approval from the Chief Veterinarian Officer permitting irrigation of lucerne for stock feed (based on provision of adequate helminth control).

The assessments and approvals issued by the EPA and PIRSA were a necessary component to DHA granting an approval for the recycled water to be supplied or used for irrigation.

DHA may provide separate approvals to suppliers and users of recycled water where these activities are undertaken by separate entities. The reason for this is that approval conditions applied to supply and use are usually different in scope. For example it is unreasonable to expect an entity using recycled water to irrigate a food crop to ensure that complex treatment systems operated by the supplier of the water are complying with all conditions specified by DHA. Conversely, a recycled water supplier cannot ensure that the user is using recycled water in a responsible manner therefore it is unreasonable that they should have approval conditions relating to recycled water use outside their own scheme.

Examples of this arrangement are provided in Box 5 and Box 6.
The Willunga Pipeline supplies recycled water from the Christies Beach WWTP to properties in Willunga for drip irrigation of grapevines, fruit trees, nut crops and flowers. The Willunga Basin Water Company (WBWC) has responsibility for the operation of the recycled water scheme including the proper use of recycled water on all sites. WBWC has an approval from DHA to use the water for irrigation. This approval specifies conditions including permitted uses, water quality, signage, non-compliance and OHS & W considerations that must be addressed for the recycled water to be used.

SA Water has a licence and exemption from the EPA to discharge treated wastewater to a designated portion of the aquifer for storage prior to reuse. This is currently a pilot scheme with stringent requirements and monitoring in place.

The Christies Beach Wastewater Treatment Plant (WWTP) is owned and operated by SA Water and utilises an activated sludge process followed by chlorination of the treated sewage. SA Water has an approval from DHA to supply recycled water from the Christies Beach WWTP. This approval specifies certain operational, treatment and water quality criteria that must be met for the supply to continue.

SA Water has a licence and exemption from the EPA to discharge treated wastewater to a designated portion of the aquifer for storage prior to reuse. This is currently a pilot scheme with stringent requirements and monitoring in place.

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Box 5: Supply / use model of approval – Christies Beach WWTP

The Christies Beach Wastewater Treatment Plant (WWTP) is owned and operated by SA Water and utilises an activated sludge process followed by chlorination of the treated sewage. SA Water has an approval from DHA to supply recycled water from the Christies Beach WWTP. This approval specifies certain operational, treatment and water quality criteria that must be met for the supply to continue.

SA Water has a licence and exemption from the EPA to discharge treated wastewater to a designated portion of the aquifer for storage prior to reuse. This is currently a pilot scheme with stringent requirements and monitoring in place.

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Box 6: Supply / use model of approval (multiple users approved under one operator) – Virginia Pipeline Scheme

The Bolivar WWTP is owned and operated by SA Water and includes a filtration/disinfection plant (Dissolved Air Flotation Filtration - DAFF) to treat lagoon effluent produced by the WWTP. The DAFF produces high quality recycled water suitable for unrestricted irrigation of commercial crops (including salad vegetables). SA Water has an approval from DHA to supply recycled water from the Bolivar WWTP.

Water Reticulation Systems Virginia (WRSV) constructed an extensive distribution system to transport recycled water from the Bolivar WWTP to the produce market area of Virginia. WRSV operate the Virginia Pipeline Scheme and supply recycled water to a large number of users. As WRSV maintain operational control of the VPS, an approval has been issued by DHA to use the water. Approvals are not issued to individual users however the provision of a listing of users to DHA is a specified approval condition.

3.4.1. Recycled water carting

There are a range of businesses that have been provided with approvals by DHA to cart recycled water. The most common form of carting is from SA Water operated systems using recycled water that is suitable for unrestricted irrigation. Vehicles or containers used for the transport or storage of recycled water should be used solely for this purpose, and should not be used for the storage of drinking water, recycled water of lesser quality or chemicals. The range of permitted uses is dependent on the quality of the recycled water and can range from irrigation of lawns and gardens, commercial washing of buildings and dust suppression.

In addition to an approval from DHA, businesses need to contact SA Water to gain access to recycled water. SA Water has a number of facilities that are purpose designed
for this type of access. DHA has developed guidelines and an application form for businesses in relation to recycled water carting:


There is also guidance available on the DHA website for individuals who wish to use recycled water provided by a water carter. This guidance describes the types of uses that are permitted and how to obtain information on approved water carters. In most cases no specific approvals are required for this type of use.


Examples of a commercial application for use of carted recycled water are provided in Box 7.

**Box 7: Commercial water carting using recycled water**

As described in Appendix A, a proponent should contact DHA to obtain further information on the requirements for recycled water carting. DHA will generally direct the applicant to the Guidelines for the Carting of Recycled Water and will provide the relevant application form.

The proponent will also need to contact SA Water to enquire about availability and access to sources of recycled water. Once this information is obtained, the proponent will need to provide the DHA with a completed application form.

DHA will assess the information provided in the form. If further information is required this will be sought from the applicant. Subject to sufficient information being provided, DHA will issue an approval which will specify permitted uses of the recycled water and general conditions such as vehicle/vessel requirements, signage, occupational health, safety and welfare considerations and the keeping of log books.

3.5. Assessment process

It is essential to protect the health of both the public and the environment when recycling water. Adherence to the framework for management of recycled water quality and use adopted by the AGWR is the best way to achieve these outcomes. The framework involves identifying and managing risks in a proactive way as opposed to remedial or corrective actions after potentially harmful events occur.

Applications for recycled water use are assessed for management of risk including prevention, treatment, use restrictions and on-site controls. Such measures should be detailed in a Risk Management Plan (refer to Section 6).

All types of recycled water can be used safely providing appropriate control measures are applied for the chosen end use and schemes are operated and managed responsibly. The aim of the assessment process is to ensure that appropriate safeguards are in place to protect human and environmental health from risks associated with recycled water use.

Approvals are issued based on information provided at the time of application. In the
event that changes are made to the operation of the recycled water scheme, the proponent should inform the approving agency and in most cases a variation to the original approval will need to be considered. This may require a further risk assessment of the scheme to be undertaken. Changes to recycled water schemes may include (but are not limited to):

- Process changes or variations
- Addition / removal of a recycled water source
- Changes to the use(s) of recycled water (including alterations to irrigation systems)
- Upgrade / downgrade of scheme

3.6. Considerations

3.6.1. Development Assessment

Where recycled water schemes involve land development, an appropriate Development Approval will need to be obtained from the relevant authority. Further information can be found on the Department of Planning and Local Government website www.planning.sa.gov.au.

3.6.2. Setbacks

Setback distances need to be considered for all recycled water schemes. Setback distances should not be confused with buffer zones applied to spray irrigation of lower quality recycled water (as discussed in the AGWR). Setback distances provide protection of sensitive environments and have been incorporated into prescribed codes under the Public and Environmental Health (Waste Control) Regulations. They are applied to control potential impacts from nutrients entering fresh and marine waters and microbial contamination of drinking water supplies and recreational waters.

Setback distances are specified from areas including groundwater supplies, water protection areas, the River Murray and Lakes and coastal areas.

Variations to setback distances may be permitted by the relevant authority providing a risk assessment demonstrates that they can be justified and will represent minimal risks to adjacent communities, water bodies and structures.

3.6.3. Cross connections and backflow protection

A cross connection is any connection which allows non-drinking water to enter a water distribution system, e.g. connection between a SA Water mains supply and a rainwater/stormwater/recycled water supply. Backflow is flow in a direction contrary to the normal or intended direction, e.g. the unintended flow of recycled water into a drinking water supply. There are several devices available to prevent backflow including dual check valves, air gaps and reduced pressure zone devices.

Under no circumstance is there to be an interconnection between a recycled water service and a drinking water service without the installation of an approved backflow prevention device. The nature of the device will depend on the quality of the recycled water with guidance provided in AS/NZS 3500.1:2003. Where potential exists for cross-connection to public drinking water supplies proponents should contact the drinking water provider (usually SA Water).

Audits of recycled water schemes should be undertaken prior to commissioning to ensure there is no unprotected interconnection between the recycled and drinking water service. The Office of the Technical Regulator is responsible for setting and regulating Plumbing Standards relating to on site plumbing systems and may also conduct audits of pipework during construction.
Consideration should also be given for the potential for cross connections to occur with other water supplies. For example, an irrigator who draws water from the River Murray in addition to the use of recycled water for irrigation would require cross connection control in the form of backflow prevention between the recycled water and River Murray irrigation systems to prevent potential discharges of recycled water into the River Murray.

3.6.4. Misuse of recycled water

Recycled water approvals will specify the purposes for which the water can be used. Treatment processes and on-site controls are included in approvals to ensure that the use of recycled water will be safe. Recycled water must not be used for purposes other than those specified in the approval conditions. For example recycled water approved for dual reticulation is not to be used for the following purposes:

> Drinking
> Cooking or food preparation
> Personal bathing
> In swimming pools or spas

3.7. Application fees / costs

Application fees / costs for recycled water use include:

Environmental Protection Authority

Information on licence application (including works approval), renewal and fees including background and current fee schedules can be found on the EPA website:


The Department for Health and Ageing

Approval fees for recycled water use are prescribed under the Public and Environmental Health (Waste Control) Regulations. Current costs can be obtained by contacting DHA (see Section 8 for relevant contact details).

Department of Environment, Water and Natural Resources

The cost of permit, licence and licence variation applications are gazetted in the South Australian Government Gazette and are subject to change each financial year. Current application forms and information on associated charges can be found on the DEWNR website http://www.dwlbc.sa.gov.au/licensing/forms/index.html.

SA Water

There are a number of fees and charges payable to SA Water associated with the provision of recycled water that may apply, including:

> capital contribution by negotiation
> installation of connection including meter
> cost per kilolitre set under the SA Water pricing policy
> fixed annual charge
> service rent for a second recycled water meter, and
> pipework audit fee for on-property plumbing compliance.

Contact SA Water (see Section 8 for relevant contact details) for further details.

3.8. Timeframes

Timeframes for assessment and approval of recycled water schemes can be subject to
variation depending on the complexity of the scheme, proposed treatment and the level of information provided in the application. The location of the scheme can also be a consideration particularly if a site visit is required prior to approval. Applications may require assessment and comment from multiple agencies which may also impact on the time involved in approving the scheme.

Every effort will be made to provide approvals in a timely fashion. However, previous experience has shown that long delays can be caused by provision of inadequate or incomplete information. Proponents are encouraged to discuss timeframes and the level of information required with the appropriate agency during initial contact to obtain an indication of current processing times for recycled water approvals.
4. Approval application process

4.1. Treated sewage or mixed source application process

Mixed source recycled water includes combinations of recycled water produced from different water sources e.g. sewage and stormwater.

Contact the Department for Health and Ageing for initial guidance and direction. All recycled water systems using treated water sewage require DHA approval prior to installation. Note that planning approval through the relevant authority may be required prior to installation. Refer to section 3.2 to 3.6 for further details.

Contact DHA for initial guidance and direction. Additional consultation is required for the schemes below:

- >100EP (in drinking water catchment)? Or >1000EP elsewhere?
  - Apply to EPA for license/approval/Environmental Performance Agreement
  - EPA notifies applicant of outcome

- Aquifer recharge
  - Apply to EPA for license to inject
  - EPA notifies applicant of outcome

- Importation of water or treated sewage?
  - Apply to DEWNR
    - Prescribed well area -- permit to drain & license to extract required
    - Area where wells not prescribed -- permit to drain only required
    - Area where regional NRM plan and/or water allocation plan required permit for importation of water and/or treated sewage
  - DEWNR notifies applicant of outcome

- End use involves stock watering/pasture irrigation?
  - Apply to PIRSA for further advice or approval
  - PIRSA notifies applicant of outcome

- Scheme uses treated or untreated sewage from recycled water provider
  - Consult with water provider for assessment of scheme feasibility
  - Apply to provider for a recycled water supply agreement

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4.2. Greywater application process

The installation of all greywater systems currently requires approval from DHA.

†Other relevant agencies requiring consultation may include local councils, water supplier and the community wastewater system operator and may impose their own requirements/conditions.

Refer sections 3.2 to 3.6 for further information.
4.3. Stormwater application process

Stormwater may be managed by a number of government agencies (e.g. EPA, DEWR, NRM & local councils). Proponents are encouraged to contact DHA for guidance on appropriate treatment and/or onsite controls for stormwater reuse schemes.

**Source approval**

Is the stormwater from an area where surface water is prescribed?

- **If YES**
  - Water licence and allocation or Authorisation under the NRM Act NOT required
  - The water is considered surface water and therefore Water License and surface water allocation or Authorisation is required under the NRM Act from DEWR

- **If NO**

**Drainage to groundwater approvals**

Is the discharge of stormwater to aquifers from a catchment greater than 1 ha, within the Adelaide metropolitan area and the City of Mount Gambier?

- **If YES**
  - EPA Licence for the discharge of stormwater to an aquifer (MAR) under the EP Act required

- **If NO**
  - Drain and Discharge Permit under the NRM Act is required from DEWR

**Extraction approvals**

Is the discharged water taken from a groundwater prescribed area?

- **If YES**
  - Water licence and groundwater allocation or Authorisation is required from DEWR

- **If NO**
  - Water licence and groundwater allocation or Authorisation under the NRM Act NOT required

*This process does not negate the need to obtain approval from the relevant NRM Board for the construction/alteration of any wells*
5. FORMAL / LEGISLATIVE REQUIREMENTS

Recycled water use in South Australia is governed directly or indirectly by a range of legislation, codes and guidelines. Such formal requirements ensure that recycled water use is undertaken in a consistent, safe and reliable manner to safeguard human health and the protection of the environment.

Appendix A provides a detailed listing of the formal and legislative requirements in relation to recycled water use in South Australia.
6. RISK MANAGEMENT PLANS

6.1. Developing a Risk Management Plan

The focus of the AGWR is a risk management approach for the design, operation and management of recycled water systems to ensure safety and the protection of public and environmental health. This approach is being adopted across Australia. Development of a recycled water Risk Management Plan (RMP) is required by DHA for all new schemes and is particularly important for high exposure applications such as dual reticulation and unrestricted irrigation. The level of information required in RMPs will be commensurate with the size, complexity and nature of the recycled water scheme. For example a RMP for supply of treated sewage for dual reticulation will be far more detailed than a RMP for use of recycled water for irrigation of a park or sports ground.

Section 2 of the AGWR describes the 12 elements of the recycled water quality management framework which forms the basis for a RMP. DHA has developed two information guides to assist in the development of RMPs:

- **Recycled water systems: information guide for applicants** provides information on the application process and requirements for recycled water schemes, with a particular focus on schemes proposing use of recycled water for high exposure applications such as dual reticulation.

- **Irrigation with recycled water: information guide for applicants** details the information to be provided when making an application to DHA for approval to use high quality recycled water suitable for unrestricted irrigation. It is intended for use by third parties accessing SA Water or local government sources of recycled water.

Proponents are encouraged to utilise the application guides in determining the appropriate level of information and detail to provide to DHA in RMPs. Any areas of uncertainty should be discussed with DHA prior to the RMP and application for approval being submitted.

The EPA should be contacted to determine if there are any specific environmental considerations associated with the scheme and recycled water use to ensure the appropriate inclusion of environmental controls in RMPs.

If the scheme incorporates MAR further information can be found on the EPA website. The EPA and DEWNR are developing a MAR Guide: Planning, Building & Operating a MAR Scheme that will soon be accessible via the website below. In the meantime requirements can be obtained from the EPA.

6.2. Software tools

A Decision Support Tool for managing health and environmental risks has been developed to assist users of the Australian Guidelines for Water Recycling (Phase 1) to develop Recycled Water Management Plans for recycled water supply and use. The Decision Support Tool is available at:
7. ADDITIONAL INFORMATION AND RESOURCES

7.1. Australian Guidelines for Water Recycling: Managing Health and Environmental Risks - Phase 1

Phase 1 of the Guidelines provides a generic ‘framework for management of recycled water quality and use’ that applies to all combinations of recycled water and end uses. It also provides specific guidance on the use of treated sewage and greywater for purposes other than drinking and environmental flows. Phase 1 and 2 of the guidelines can be accessed by the link below.


7.2. Australian Guidelines for Water Recycling – Phase 2

Phase 2 of the Guidelines extends the guidance given in Phase 1 and includes the following modules:
- Augmentation of Drinking Water Supplies
- Stormwater Harvesting and Reuse
- Managed Aquifer Recharge

7.3. Code of Practice for Wastewater Overflow Management

This code of practice applies to all wastewater systems that collect, treat and dispose of wastewater from multiple domestic, commercial and industrial sources and to all schemes where reuse of such wastewater occurs in South Australia. The code provides guidance and in some cases instruction to assist wastewater system operators to prevent the occurrence of overflows whenever possible, and to minimise the frequency and volume of such overflows. Wastewater system operators are obliged to comply with this code. If there is the potential for environmental harm from a wastewater overflow, the wastewater system operator is also obliged under section 83 of the Environment Protection Act 1993 to notify the EPA. The Code can be accessed by the link below:


7.4. Code of Practice for Aquifer Storage and Recovery

This code of practice provides a general guide to conducting Aquifer Storage and Recovery (ASR), a form of MAR, in a manner that protects the environment. While still current (2004) it has be reviewed and will be replaced by the MAR Guide: Planning, Building & Operating a MAR Scheme with a MAR web portal, accessed via Water for Good, and the MAR Guide.


7.5. Code of Practice for Milking Shed Effluent

This code of practice applies to the management of liquid, semi-solid and solid wastes derived from milking activity in structures where cows, sheep or goats are milked in any number and at any frequency. It provides guidance to the management of these wastes, including the application to land and meeting obligations in accordance with environmental legislation.


7.6. Livestock and aquaculture

Recycled water is a potentially valuable resource for the agricultural sector and when used properly can provide a reliable and cost effective alternative to traditional water sources. There are, however, certain requirements which should be taken into consideration when using recycled water for agricultural applications. For additional guidance on appropriate treatment processes and additional control for use of recycled water in agricultural applications see Table 3.9 in Phase 1 of the
Guidelines.

7.6.1. Recycled water - use in livestock and cattle production

Recommendations for the use of recycled water have been developed for livestock species (other than pigs) depending on the quality of the water involved. Specific treatment guidelines for helminths have been developed for cattle. The Victorian Department of Primary Industries has developed Agriculture Notes on recycled water use in livestock and cattle production which are applicable to recycled water use in South Australia. Note that these guidelines make reference to the different “classes” of recycled water (i.e. Class A, B etc.). See Appendix E for a conversion from “class” categories to the approximate log removals.

> Reclaimed water – use in livestock production (AG1090)

> Reclaimed water – use in cattle production (AG1089)
8. CONTACTS

Environment Protection Authority (EPA)
For further information on licensing, application requirements and associated cost please contact:

Environment Protection Authority
Postal Address: GPO Box 2607, Adelaide SA 5001
Telephone: (08) 8204 9095
Email: epainfo@epa.sa.gov.au

Department for Health and Ageing (Public Health Services)
For further information on applying for approvals for recycled water supply or use and associated costs please contact:

Department for Health and Ageing
Public Health Services
PO Box 6, Rundle Mall
ADELAIDE SA 5000
Phone: (08) 8226 7100

Department of Environment, Water and Natural Resources (DEWNR)
For further information on the policies mentioned in the guidelines and current costs or to apply for a permit or licence for draining and discharge into an aquifer or a licence for roof runoff, please contact:

Department of Environment, Water and Natural Resources
Water Resources Allocation Division
Licensing Administration
GPO Box 2834
ADELAIDE SA 5001
Phone: (08) 8463 6863

Forms are available from the DEWNR website at: http://www.waterconnect.sa.gov.au

SA Water
For further information on applying for a recycled water supply and associated costs please contact: 
Primary Industries and Regions SA (PIRSA)
For further information on the use of recycled water use for
- crops, pasture and fodder production,
- livestock drinking water,
- wash down of stock yards and non-food contact areas of dairies, and
- aquaculture production.

General enquiries
Outline the nature of your enquiry and ask to be transferred to the relevant government department.

Phone: (08) 8226 0222

Control of stock movement and fodder for animals (including cattle)
Specific written approval from the Chief Inspector of Stock is required for fodder production and use by livestock. Project proposals should be discussed prior to forwarding a written proposal to the:

Chief Inspector of Stock
PIRSA Biosecurity SA - Animal Health
GPO Box 1671
ADELAIDE SA 5001

Wash down of stock yards and non-food contact areas of dairies
Contact your local dairy advisor or animal health officer.

Aquaculture production
Including food for human consumption, pet food or the aquarium trade:
Phone: (08) 8226 0222

Local Government Association of South Australia
General enquiries
Postal Address: GPO Box 2693, Adelaide SA 5001
Telephone: (08) 8224 2000
Email: lgasa@lga.sa.gov.au
Appendix A. Formal and legislative requirements

A.1. Legislation administered by the Environment Protection Authority

A.1.1. Environment Protection Act

Operators of recycled water systems and users of recycled water have both general and specific obligations under the Environment Protection Act 1993, namely;

Section 25: General Environmental Duty - provides the requirement not to pollute the environment and where pollution is likely to occur, that all reasonable and practicable measures are taken to minimize any resulting environmental harm.

Section 36: Licensing; Environmental Authorisation – Recycled water schemes are not in their own right, activities of Environmental Significance and do not therefore, require an EPA licence. On some sites however, such as licensed waste water treatment plant sites, the use of treated wastewater may occur in which case management of the reuse may be referred to and controlled by the treatment plant licence.

Section 83: Notification – This section of the Act refers to the need to notify the EPA immediately that an event (e.g. spill) threatens environmental harm. Recycled water can, in some receiving environments, cause harm and operators/users must be aware of their obligations to report spills to the EPA.

Section 59: Environmental Performance Agreements - Most recycled water in SA is used on unlicensed premises and as such the general provisions of the Act apply. Where the reuse is on a large scale and or of a type that has high community interest, the EPA can enter into an Environmental Performance Agreement with the operator/user. In such a case, the parties to the document agree where the water is to be used, how it will be used and what monitoring and reporting will be undertaken.

A.1.2. Environment Protection (Water Quality) Policy (WQEPP)

Policy provides for the strict offence for the discharge or the placement of waste on land or in a place where it can be washed into waters. The discharge of recycled water to ‘waters’ or its use on land in a place where it can be washed into waters, may breach the policy and result in enforcement action, even if no environmental harm results.

* Note: Readers of this guideline should be aware that the EPA is currently reviewing the WQEPP and the requirement (or non requirement) for Wastewater Irrigation Management Plans may change as a result of that review.

A.1.3. Wastewater Overflow Management Code of Practice (under the WQEPP)

Provides both guidance and direction on the management of waste water systems, including recycled water systems. The operators of a recycled water system can be compelled to comply with the code.

A.1.4. Wastewater Irrigation Management Plans (WIMPS)

Wastewater Irrigation Management Plans are required by the EPA where the irrigation water is sourced from an EPA licensed site. WIMPS also assist unlicensed sites develop a plan for the sustainable application of wastewater to land in accordance with environmental legislation. On other sites however, they are not required.

A.1.5. Code of Practice for Aquifer Storage and Recovery

Provides a general guide to conducting Aquifer Storage and Recovery (ASR), a form of MAR, in a manner that protects the environment. While still current it has be reviewed and will be replaced by the MAR Guide: Planning, Building & Operating a MAR Scheme.

A.1.6. Wastewater lagoons guideline (draft)
Provides guidance in planning, site location, construction and lining of wastewater lagoons to assist with meeting obligations in accordance with environmental legislation.

**A.1.7. Code of Practice for Milking Shed Effluent**

Applies to the management of liquid, semi-solid and solid wastes derived from milking activity in structures where cows, sheep or goats are milked in any number and at any frequency. It provides guidance to the management of these wastes, including the application to land and meeting obligations in accordance with environmental legislation.

**A.1.8. Guidelines for Wineries and Distilleries**

Provides information to assist wineries and distilleries to develop an environmental monitoring program to meet obligations in accordance with environmental legislation. The monitoring program focuses on the load of winery wastes discharged to the environment and includes the use of wastewater for irrigation. While targeted at licensed sites it will be applicable to unlicensed facilities.

**A.1.9. Liquid biosolids from domestic septic tanks: Disposal onto agricultural land**

Provide guidance to ensure that beneficial agricultural reuse of liquid biosolids from domestic septic tanks can be safely practised in a sustainable manner in South Australia while meeting obligations in accordance with environmental legislation.

**A.1.10. South Australian biosolids guidelines (draft)**

Provide guidance to ensure that beneficial reuse of biosolids from municipal wastewater can be safely and sustainably practised in South Australia while meeting obligations in accordance with environmental legislation.

**A.2. Legislation administered by the Department for Health and Ageing**

**A.2.1. Public Health Act**

The *Public Health Act 2011* does not specifically regulate recycled water however regulations will be developed to replace the current Public and Environmental Health (Waste Control) Regulations 2010 (see section A.2.2 for further information). The *Public Health Act* contains general requirements (under which recycled water use can be controlled) including:

**Section 4: Objects of the Act**

The Act has been developed to protect individuals or communities from risks to public health. Health officials have the ability to take immediate action on a health hazard that presents a serious and immediate public health risk.

**Section 6: Precautionary principle**

DHA may take immediate action to remove a hazard or risk where there is a perceived public health risk.

Recycled water (including stormwater) schemes can be closed down in the event that the DHA has concerns or knowledge of inappropriate use which may lead to a risk to public health through consumption of polluted water, e.g. inappropriately designed/operated dual pipe schemes.

**Part 6 – General Duty**

Reasonable steps must be taken to ensure that a public health risk is prevented or minimised

**Part 7 – General Public Health offences**

Sections 57 and 58 address penalties and expiations for people who cause material or serious risks to public health through negligence or intentionally.

**Section 59: Defence of due diligence**
Due diligence may be demonstrated if the person has taken reasonable steps to prevent or avoid the public health risk. Reasonable steps could include undertaking a risk assessment for the scheme and using a risk management approach such as that outlines in the Australian Guidelines for Water Recycling.

A.2.2. Public and Environmental Health (Waste Control) Regulations

The safe collection, treatment and disposal of non-industrial wastewater (sewage and wastewater of domestic origin) is managed in South Australia under the Public and Environmental Health (Waste Control) Regulations 2010.

About one third of South Australians (400,000 people) are serviced by wastewater systems administered under the Waste Control Regulations. Several categories of wastewater systems and a requirement for product approvals are covered by the Regulations.

Approvals for recycled water use are generally issued pursuant to the following Regulations:

- **Regulation 7: Installation or alteration** – waste control systems must be installed and altered as approved by the relevant authority.
- **Regulation 8: Disposal or use of waste** – waste must be disposed of and reused as approved by the relevant authority.
- **Regulation 11: Use** – a person must not use a waste control system except as approved by the relevant authority.
- **Regulation 14: Conditions** – approval is subject to compliance with prescribed codes and other approvals imposed by the relevant authority.

New waste control regulations are currently being developed under the *Public Health Act 2011*.

A.2.3. Food Act

Section 14 of the *Food Act 2001* prohibits the sale of unsafe food. Unsafe food is defined as being likely to cause physical harm to a person through consumption. The Food Act also specifies that a person must not sell food that does not comply with the requirements of the Food Standards Code (Section 21). Standard 1.4.2 of Part 1.4 (Contaminants and Residues) of the Food Standards Code specifies maximum residue limits (MRL) for a wide range of contaminants that may enter the food chain during the production of food. If a chemical is detected in food that is above the MRL for that chemical or is detected at any level for a chemical for which there is no MRL then that food would not be in compliance with the requirements of the Food Act.

This has implications on the quality of recycled water suitable for the irrigation of food crops. Consideration must be given to the degree of risk associated with the particular food crop, e.g. food crops likely to be consumed raw or unprocessed represent a higher risk than those that will be cooked or processed before consumption.

A.3. Legislation administered by the Department of Environment and Natural Resources

A.3.1. Natural Resources Management Act

The *Natural Resources Management Act 2004* (NRM Act) applies to the management of water, soils and pest animal and plant control across South Australia. The Department of Water, Land and Biodiversity (DWLBC) and regional natural resource management (NRM) boards administer the NRM Act.

The objects of the Act include to assist in the achievement of ecologically sustainable development in the State by establishing an integrated scheme to promote the use and management of natural resources, which include as water resources a watercourse or lake, surface water, underground water, stormwater, domestic wastewater and industrial wastewater.
The NRM Act promotes ‘the sustainable and integrated management’ of South Australia’s natural resources with specific provision for the ‘management of and protection of water resources’, through using measures such as:

- prescription of a water resource;
- restrictions on water use;
- authorising certain water uses;
- permitting of water affecting activities;
- development and implementation of regional NRM plans;
- development and implementation of water allocation plans for all prescribed water resources in the State;
- extensive community consultation during the preparation of all NRM plans (including water allocation plans);
- review of the condition of the State’s natural resources (including water resources); and
- Compilation, maintenance and updating of information.

The principles of the NRM Act support ecologically sustainable development including prevention of environmental degradation.

The NRM Act regulates the taking of water from various surface water areas, watercourses and groundwater aquifers and a number have been or are in the process of being prescribed.

Water allocation plans guide the management of water quantity within a prescribed surface water area, watercourses or aquifer and may include clauses specific to the draining and discharge of water into aquifers.

In unprescribed areas, permitting for draining and discharge of water into aquifers is managed through regional NRM plans.

Water allocation plans and regional NRM plans are developed by regional NRM boards, in collaboration with DWLBC and with broad community consultation.

Relevant NRM Act sections include:

- **Section 124** – Right to take water (including stormwater) subject to certain requirements.
- **Section 126** – Designates the relevant authority for water affecting activities.
- **Section 127** – Water affecting activities. Authorised by water licence or permit granted by the relevant authority:
  - drilling, plugging or sealing or a well;
  - repairing, replacing or altering the casing, lining or screen of a well;
  - draining or discharging water directly or indirectly into a well (if not subject to requirements under the *Environment Protection Act 1993*).
- **Section 128** – certain uses of water authorised.  
- **Section 135** – Permits, which include the regulation of the draining and discharging of water to

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5 The term ‘draining and discharge’ is the legislative terminology used for an activity that may be permitted or licensed, but recently, draining and discharge has been referred to in some government documents as ‘managed aquifer recharge’ (MAR) schemes. However, for the purposes of legislative requirements and to reduce confusion, draining and discharge will be used in this instance.

6 In the case of rainwater collected from roof runoff, a Notice of Authorisation to Take Water pursuant to section 128 of the NRM Act was gazetted in the Government Gazette on 16 March 2006, exempting roof runoff volumes of less than 500-kilolitres from requiring a water licence in surface water prescribed areas for commercial (but not irrigation) use and industrial, environmental or recreational use (subject to the conditions in Schedule A)
Section 146 – Licences to take water from a prescribed well, watercourse or surface water area.

A.4. Legislation administered by the Department of Primary Industries and Regions SA

A.4.1. Livestock Act and Regulations

The Livestock Act 1997 and the Livestock Regulations 1998 prohibit the use of faecally contaminated water in livestock production unless it has been treated to an acceptable standard. Specifically the Act and Regulations state:

> Section 6: Interpretation: controlling or eradicating disease or contamination – specifies actions for the purposes of controlling or eradicating disease or contamination affecting livestock including investigating the existence or source of disease affecting and preventing or minimising the risk of spread of a disease affecting livestock.

> Section 32: Feeding of products that may cause livestock to become affected with notifiable condition – a person must not feed livestock products that may cause them to become affected with a notifiable condition or dispose of a product in a manner that livestock may gain access to it if the product may cause livestock that consume it to become affected with a modifiable condition.

> Regulation 38: Feeding of stock foods containing faeces – prevents livestock being fed stock foods that consist wholly or partly of faeces.

A.5. Legislation administered by Local Government

A.5.1. Local Government Act

The Local Government Act 1999 provides a legislative framework for an effective, efficient and accountable system of Local Government in South Australia, and encourages Local Government to provide appropriate services and facilities to meet the present and future needs of local communities.

Schedule 1A of the Act deals with the implementation of the Stormwater Management Agreement entered into between the State Government and the Local Government Association on 14 March 2006, which applies throughout the State.

Section 4 establishes the Stormwater Management Authority which has a Board and has the following key functions:

> to liaise with relevant public authorities with a view of ensuring the proper functioning of the State’s stormwater management system;
> to facilitate and co-ordinate stormwater management planning by Councils;
> to formulate policies and facilitate programs for Councils in relation to stormwater management planning and promote the use of stormwater to further environmental objectives and address issues of sustainability.

Section 7 of the Act sets out the functions of Councils which includes the following:

> to plan at the local and regional level for the development and future requirements of its area;
> to provide services and facilities that benefit its area, its ratepayers and residents and visitors to its area which includes the provision of electricity, gas and water services, waste collection control and disposal services, and health, welfare and community services facilities;
> to manage, develop, protect, restore, enhance and conserve the environment in an ecologically sustainable manner, and to improve amenity;
> to provide infrastructure for its community and for development within its area; and

7 As specified under Section 4 of the Livestock Act 1997
to manage, improve and develop resources available to the Council.

Section 13 contains guidelines for the preparation of stormwater management plans by Councils and section 14 provides the process for the Stormwater Management Authority to issue Orders for any failure of Councils to comply with the requirement to prepare a stormwater management plan or failure to comply with an approved plan.

A Stormwater Management Fund is established under section 17 and payments may be made out of the Fund for a variety of purposes including the preparation of stormwater management plans; carrying out works or the acquisition of land for the purpose of stormwater management; community education and awareness programs; and projects relating to water quality or pollution abatement or stormwater management in general.

The Schedule also contains powers of the Stormwater Management Authority in relation to land dealing with entry, occupation, construction and maintenance of infrastructure, excavation, carrying out inspections and any other work for the purposes of stormwater management or flood mitigation.

Section 23 deals with the vesting of infrastructure by the Stormwater Management Authority in a public authority.

A.5.2. Technical Regulator


The scope of the Plumbing Code covers technical performance requirements for on property plumbing covering the design, construction, installation, replacement, repair, alteration and maintenance of:

- Water services
- Sanitary plumbing and drainage systems
- Stormwater drainage systems
- Heating, ventilation and air conditioning systems
- On-site wastewater management systems

The purpose of the code is to ensure that any plumbing and drainage installation is fit for its intended purpose, protects public health, does not have any adverse impact on the environment and can continue to function as intended without the need for excessive maintenance.


The Australian/New Zealand Standard for Plumbing and Drainage (AS/NZS 3500.1:2003) specifies design, installation and commissioning requirements for cold water services (drinking and non-drinking) on property. This standard is referenced by the Plumbing Code of Australia 2004 and is given legal effect by both the Waterworks Act 1932 and Sewerage Act 1929 in South Australia. It is also adopted as a prescribed code in the Public and Environmental Health (Waste Control) Regulations 1987.

A.5.4. WSAA Code - Dual Water Supply Systems (supplement to the WSAA Water Supply Code of Australia)

The WSAA Water Supply Code of Australia (WSA 03-2002) is the industry standard covering design and construction requirements for water supply reticulation systems (i.e. off-property). A supplement to this code specifically covers dual water supply systems for recycled water, WSAA Code Supplement Dual Water Supply Systems (Recycled Water)

The requirements of this code are generally enforced via contractual obligations between the developer and ultimate asset owner.
A.5.5. **SA Water’s Authorised Products Dual Water Supply (Recycled Water)**

SA Water provides an authorised products list for dual water supply (recycled water) systems that are
designed and constructed on behalf of SA Water. This list specifies types of pipes, fittings, valves, etc
that must be used.

A.5.6. **Rainwater Plumbing Guide**

SA Water has developed a Rainwater Plumbing Guide covering plumbing requirements for connection
of rainwater tanks to plumbing outlets within properties. The guide provides educational material and
supplements the requirements of AS/NZS 3500.1:2003

A.5.7. **Recycled Water Plumbing Guide**

SA Water has also developed a Recycled Water Plumbing Guide covering plumbing requirements for
the connection of recycled water plumbing within properties (i.e. dual reticulation schemes). The guide
provides educational material and supplements the requirements of AS/NZS 3500.1:2003 and any
DHA approval conditions applying to a specific recycled water schemes.

A.6. **Legislation administered by the Department of Environment, Water and Natural Resources**

A.6.1. **Water Industry Act 2012**

The Water Industry Act was released by the Office for Water Security (now the Department of
Environment, Water and Natural Resources) for public comment in November 2010 and the second
reading occurred on 27 July 2011. It was assented by parliament on 5 April 2012.

Under the Water Industry Act, the water and sewerage wastewater industry will be regulated for the
purposes of the Essential Services Commission of South Australia Act 2001. This will allow the
ESCOSA’s to undertake specified water regulatory functions including licensing, pricing, service levels
and performance monitoring.
Appendix B. Indicative Pathogen Log Removal Values

The rescinded South Australian Reclaimed Water Guidelines (1999) classified recycled water according to the indicative water quality. Water quality requirements included microbiological, chemical and/or physical criteria achieved by typical treatment process trains and based on these the recycled water was classified as Class A, B etc. Table E1 gives the indicative log removals for the various classes of recycled water as identified in the AGWR.

For lower class schemes (e.g. Class B and lower) the indicative log removals may be achieved primarily through the application of on-site controls. Further information on treatment requirements and log removals for various uses of recycled water may be found in Table 3.8 of the Australian Guidelines for Water Recycling: Managing Health and Environmental Risks (Phase 1).

Table E1: Indicative minimum treatment required for various uses of recycled water

<table>
<thead>
<tr>
<th>Indicative log removal (V, P, B) †</th>
<th>Microbiological criteria ‡: <em>E. Coli</em> (median org/100mL)</th>
<th>Typical Treatment Process Train</th>
<th>Scheme Class/type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual reticulation</td>
<td>&lt;1</td>
<td>Full secondary treatment plus tertiary filtration plus disinfection</td>
<td>Class A</td>
</tr>
<tr>
<td>Unrestricted municipal irrigation</td>
<td>&lt; 10</td>
<td>Full secondary treatment plus tertiary filtration plus disinfection</td>
<td>Class A</td>
</tr>
<tr>
<td>Municipal use with restricted access and application</td>
<td>&lt; 100</td>
<td>Full secondary plus disinfection</td>
<td>Class B</td>
</tr>
<tr>
<td>Municipal use, with enhanced restrictions on access and application</td>
<td>&lt; 1000</td>
<td>Primary sedimentation plus lagooning, or Full secondary (disinfection if required to meet microbiological criteria)</td>
<td>Class C</td>
</tr>
<tr>
<td>Landscape irrigation</td>
<td>&lt; 1000</td>
<td>Secondary treatment or primary treatment with lagoon detention</td>
<td>Class C</td>
</tr>
<tr>
<td>Non-food crops e.g. trees, turf, woodlots</td>
<td>&lt; 10000</td>
<td>Primary sedimentation plus lagooning, or Full secondary</td>
<td>Class D</td>
</tr>
</tbody>
</table>

† Specific removal of viruses, protozoa and/or helminths will be required in addition to bacteria
‡ V: Virus, P: Protozoa, B: Bacteria