

Greywater/Recycled Water Reuse

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POLICY

PURPOSE

The principle purpose of this Policy is to:

- Integrate the regulatory requirements for greywater and recycled water management;
- Provide guidance for users of greywater and recycled water systems to prevent any adverse or cumulative impact on the environment and its sustainability;
- Ensure that the cumulative effects of greywater/recycled water reuse, particularly in the urban area, does not contribute significantly to the occurrence of salinity; and
- Provide council officers with specific standards and guidelines to enable them to answer enquiries or assess applications on greywater reuse systems.

BACKGROUND

The use of greywater has many advantages including conserving our drinking water resources. Greywater reuse also carries a number of health and environmental risks which cannot be ignored.

Advantages of reusing water

Greywater/recycled water is a significant water resource, provided it is managed in an environmentally sensitive manner. Reuse reduces pressures on drinking water supplies from:

- Drought;
- Urban growth; and
- Environmental flow requirements in rivers.

Greywater can be used to water gardens and lawns and if treated appropriately, flush toilets, and wash clothes. Reuse can:

- Reduce water bills;
- Conserve drinking water resources;
- Reduce the need for water restrictions;
- Reduce load on existing sewerage systems;
- Use less energy and chemicals;
- Recycle nutrients; and
- Recharge depleting groundwater sources.

Risks of Reuse

Although not as contaminated as raw sewage; greywater/recycled water still presents a risk to public health and the environment by:

- Containing faecal contamination or micro-organisms, many of which are pathogenic and cause disease;
- Being chemically polluted by dissolved salts from detergents and cleaning products, nutrients or by organic chemicals such as oils, fats, milk, etc.
- Containing particles of dirt, lint, food and human waste products.

Therefore, the level of treatment required depends on the potential end use.

a) Public health issues

All forms of greywater/recycled water are capable of transmitting disease, either through:

- Indirect ingestion by contact with contaminated items;
- Inhalation of irrigated spray or contact with broken skin, insects and vermin, or
- Tracking by, or contact with, exposed household pets.

b) Environmental issues

Some chemical pollutants that greywater/recycled water contains may be valuable fertilizer for lawn and watered gardens. However, others may be harmful to vegetation and soils. These include sodium, total salts, chloride and boron. Greywater may harm the environment by:

- Overloading the land application system with nutrients;
- Accumulation of contaminants, such as salts becoming detrimental to the soil and vegetation;
- Degradation of the soil with chemical impurities that affect the soil's capability to assimilate nutrients and water;
- Altering the soil salinity, permeability, pH level, electrical conductivity, sodicity, dispersiveness or phosphorus absorption capacity;
- Causing surges in the system or runoff that overflows to stormwater drains, rivers, streams and neighbouring properties; and
- Raising the water table, water logging the soil and increasing salinity which may affect infrastructure such as buildings and roads.

c) Maintenance issues

Ongoing maintenance is essential to ensure environmental and public health concerns are properly managed. The following needs to be stressed as some property owners may not be as committed to maintaining systems as others.

- Regular monitoring and maintenance must be undertaken as determined by the manufacturer and any approval issued; and
- All greywater treatment systems (as opposed to diversion systems) and recycled water treatment systems must obtain 'approval to operate' (as outlined in Council's Onsite Sewage Management Strategy) from Council to ensure effective regulation of systems and monitoring of the cumulative impacts. Council should also be notified where Greywater Diversion Systems are installed.

RELATED GUIDELINES/LEGISLATION

Guidelines

- *Council Water Connection, Backflow Prevention and Pricing Policy*
This Policy deals with the prevention of backflow of water from private properties back into Council's cold water potable supply
- [*NSW Guidelines for greywater reuse in sewerred, single household residential premises*](#) (NSW Greywater Reuse Guideline, NSW Water and Energy, May 2008)

The guidelines relate to single, detached households only and do not include premises comprising of more than one dwelling. The guideline covers the three methods for distributing greywater, being manual bucketing, greywater diversion and greywater treatment.

- [NSW Guidelines for Management of Private Recycled Water Schemes](#) (NSW Recycled Water Guidelines, NSW Water & Energy, May 2008)
This guideline aligns the principles outlined in the Australian guideline to the approvals process for private recycled water schemes that are larger than a single household (requiring section 68 approval) in NSW. The guideline provides practical advice, including some examples, for obtaining approval to install and operate a private recycled water scheme within the existing NSW legislative framework.
- [NSW Guidelines for Recycled Water Management Systems, NSW DPI, May 2015](#)
Provides guidance on the development and implementation of a Recycled Water Management System for recycled water suppliers in NSW

Legislation

- *Environmental Planning and Assessment Act 1979* – for development approval
- *Environmental Planning and Assessment Regulation 2000* – for further development approval details
- *Food Act 2003* – for suitability of food for sale for human consumption
- *Local Government (General) Regulation 2005* – clause 45 – for technical matters in relation to Section 68 approvals
- *Local Government Act 1993* – Section 60 – for council schemes
- *Local Government Act 1993* – Section 68 – for private schemes
- *Plumbing Code of Australia* – for work carried out
- *Plumbing and Drainage Act 2011* – for work carried out
- *Work Health and Safety Act 2011* - for workplace health, safety and welfare
- *Protection of the Environment Operations Act 1997* – for pollution matters and environment protection licences
- *Public Health Act 2010* – for prevention of public health risks
- *Water Industry Competition Act 2006* – licensing of private water recycling schemes.

SCOPE

This Policy applies to the Dubbo Regional Council Local Government Area. The aims and objectives of this Policy are to:

- Reduce consumption of treated drinking water for purposes other than drinking;
- Maintain ecologically sustainable practice through long term management of water reuse;
- Protect the environment by ensuring that the impacts of greywater/recycled water use is considered in a cumulative context;
- Ensure greywater and recycled water systems are designed, installed and maintained correctly.
- Ensure that lands, surface and ground waters are protected;
- Ensure that the health of human, animal and vegetation communities are not at risk from water reuse in the short or long term.

DEFINITIONS

To assist in the interpretation of this Policy, the following definitions apply:

| Term | Definition |
|-------------------------------------|---|
| Backflow Prevention Device | as defined within Council's Water Connection, Backflow Prevention and Pricing Policy |
| Drinking Water | Refers to water intended primarily for human consumption |
| Greywater | Refers to waste water from washing machines, laundry tubs, showers, hand basins and baths. Greywater does not include wastewater (sewage) from kitchens, toilets, urinals or bidets |
| Domestic Greywater Diversion | Refers to the redirection of household greywater to subsurface irrigation without storage or treatment |
| Domestic Greywater Treatment | Refers to the collection, storage and treatment of greywater to a secondary treatment standard allowing for reuse for garden, toilet or washing machine use |
| Reclaimed Water | Refers to water that has been derived from sewerage systems or industry processes and treated to a standard that is appropriate for its intended use |
| Recycled Water | Refers to water taken from sewage, greywater or stormwater systems and treated to a level suitable for its intended use. Recycled water can include reclaimed water. |
| Residential Premises | Refers to single detached household residential premises. It does not include premises comprising more than one dwelling. |
| Multi-unit dwellings | Refers to those dwellings not defined as a single dwelling but with occupancy less than 2,500 persons. |

POLICY

1. Water reuse and Salinity

Across the Local Government Area salinity is an issue that is being monitored, particularly throughout the Dubbo urban area. Greywater reuse has a potential to contribute to the occurrence of salinity due to the increased volume of water being applied to land and the addition of salts from detergents. Salinity may have adverse effects on vegetation growth, soil structure, buildings and other infrastructure.

Council allows residential greywater reuse within the sewered urban area as provided for in the current legislation. Priority hydrogeological landscapes (HGL) listed in the Dubbo Urban Salinity Management Strategy and Implementation Plan, or areas with known or suspected salinity, are not permitted to dispose of greywater by any form of land application without prior Council approval.

Prior to considering the installation of reuse irrigation systems, it is advisable to check with Council if the proposed location is in a priority hydrogeological landscape (HGL), as indicated in the Dubbo Urban Salinity Management Strategy and Implementation Plan, or considered to be at risk of saline soil.

Greywater or recycled water reuse in larger integrated developments is permitted and will be assessed on a case by case basis. These proposals will be considered in the development application for the overall development which should include a full analysis of the system proposed including a land capability and risk management assessment.

2. Sizing the greywater reuse systems

It is important to determine how much greywater will be generated by occupants before treatment or land application systems are designed. The amount of greywater generated by households will vary depending on the number of occupants, age distribution, lifestyle and water usage patterns.

NSW Guidelines for Greywater reuse in sewerred, single household residential premises (May 2008) estimate that an average of household (3-4 people) with standard water saving fixtures produces 2,031-2,752 litres of greywater per week (290-393L/day). Tables indicating water use are available in Appendix B of the guideline.

Details of the proposed land application area and any other proposed reuse (e.g. toilet, washing machine) must be included in any application for approval submitted to Council.

3. Diversion and treatment of greywater/recycled water

There are two main options for greywater reuse for single dwellings - a greywater diversion device (GDD) or a domestic greywater treatment system (DGTS). Commercial greywater treatment systems or recycled water systems are recommended for developments larger than single dwellings due to the risks associated with untreated greywater.

Table 1 outlines the options and reuse applications for single dwellings.

| Reuse Method | Greywater Reuse Application |
|----------------------------------|---|
| Manual bucketing | Limited irrigation |
| Greywater diversion device (GDD) | Sub-surface irrigation (at least 100 mm below surface) |
| Greywater treatment system (GTS) | Surface or sub-surface irrigation Toilet flushing Washing machine |

Table 1. Reuse applications for single dwellings

3.1 Greywater Diversion Devices (GDD)

Greywater diversion devices (GDD) allow the redirection of household greywater through specialised plumbing fixtures to sub-surface irrigation pipes within the garden. Flows are usually controlled by a tap or switch, allowing the discharge to be directed to sewer during wet weather or when water is not needed. These devices can be gravity fed, or can rely on a pump and surge tank arrangement which will automatically regulate flows during sudden surges. The surge tank should never be used as a storage tank. The system does not allow for storage or treatment, apart from a coarse screen filter to remove coarse particles.

Greywater Diversion Devices (GDD) can be installed without Council approval providing the conditions outlined in section 3.1 are met. Council does not recommend the use of GDDs in locations that have limited area available for disposal or where salinity is or is likely to be an issue. GDDs must not be connected to any fixtures or irrigation systems that are connected or used with a domestic water supply.

3.2 Domestic Greywater Treatment Systems (GTS)

Domestic Greywater Treatment Systems (GTS) collect, store and treat greywater to a secondary treatment standard which will allow reuse of the treated greywater for garden purposes or toilet flushing and washing machine use. The treatment process varies according to the reuse option of the treated greywater. The treatment process may include aeration, clarification, membrane filtration and disinfection using chlorine or UV.

Greywater Treatment Systems require approval from Council for their installation and operation as outlined in section 3.2. All domestic GTS must be accredited by NSW Department of Health.

Note: The primary treatment will only reduce the solids in the wastewater, secondary treatment is necessary to remove pollutants from the remaining liquid. Disinfection is usually the last treatment process commonly consisting of chlorination of clarified water, and it is undertaken to eliminate pathogenic micro-organisms.

3.3 Recycled Water Systems

Recycled Water is water taken from sewage, greywater or stormwater systems and treated to a level suitable for its intended use. Recycled water can include reclaimed water. Potential uses may include:

- Garden irrigation (with uncontrolled access)
- Toilet flushing
- Car washing and similar outdoor use
- Fire fighting
- External ornamental bodies (not involving water contact)
- Cooling towers
- Laundry and clothes washing machines on a case by case basis

Recycled water schemes may be considered for developments larger than single residential dwellings and require approval from Council for their installation and operation. The treatment required will vary depending on the source of the recycled water and its intended use. A risk management approach is required to manage the environmental and health risks associated with its use. An example risk management framework is provided in the Interim NSW Guidelines for Management of Private Recycled Water Schemes (May 2008). This framework should be considered prior to lodging an application with Council.

4. Installation and Operation Approvals

4.1 Residential Greywater Diversion – Conditions for exemption of approval

(a) Local Government Act 1993

Under Section 68 of the Local Government Act 1993, domestic greywater diversion is prescribed as an activity that requires the prior approval of Council. However, Section 75A of Local Government (General) Regulation 2005 allows domestic greywater diversion to be carried out without the prior approval of Council (or are 'exempt' development) if:

- 1) It is carried out in accordance with the Plumbing Code of Australia, and
- 2) A sewage management facility is not installed on the premises concerned, and
- 3) The following performance standards are achieved:
 - i) The prevention of the spread of disease by micro-organisms,
 - ii) The prevention of the spread of foul odours,
 - iii) The prevention of contamination of water*,
 - iv) The prevention of degradation of soil and vegetation*,
 - v) The discouragement of insects and vermin,
 - vi) Ensuring that persons do not come into contact with untreated sewage or effluent (whether treated or not) in their ordinary activities on the premises concerned,
 - vii) The minimisation of any adverse impacts on the amenity of the premises concerned and surrounding lands.

*Contamination of water and the prevention of degradation of soil and vegetation include potential effects on groundwater and soil salinity. Approval from Council is therefore required in priority HGLs in the Dubbo Urban Salinity Management Strategy and Implementation Plan or areas with known or suspected salinity issues.

b) Plumbing Code of Australia

The requirements of the Plumbing Code of Australia must be satisfied to be exempt from obtaining Council approval. The *Plumbing Code of Australia* states that whilst on-site wastewater management systems (Part F1) are regulated under the *Local Government Act 1993* and the *Local Government (General) Regulation, 2005* that the *NSW Plumbing and Drainage Act, 2011* applies to the plumbing and drainage system as defined by that Act.

c) Council's Water Connection, Backflow Prevention and Pricing Policy

The requirements of the Council Water Connection, Backflow Prevention and Pricing Policy must be complied with when installing and operating any domestic grey water diversion system, particularly in relation to backflow prevention devices.

4.2 Residential Greywater Treatment

Council approval is required for the installation and operation of all residential greywater treatment systems as detailed in item C6 of Section 68 of the Local Government Act, 1993 and Part 2, Division 4 Local Government (General) Regulation, 2005.

The system to be installed must be accredited by the NSW Department of Health. A list of accredited systems is available of the NSW Health website.

Installation approval must be obtained by lodging a *Sewage Management Facility Application* with Council. The application must include details of the system to be installed, intended use of treated greywater (e.g. toilets, irrigation), and any other information detailed on the application.

Operational approval must also be obtained by lodging an *Application for Approval to Operate an On-site Sewage Management System* with Council.

Failure to obtain approval or comply with the conditions of an approval is an offence. Council has the authority to issue on the spot fines for these offences.

4.3 Recycled Water Schemes

(a) Local Government Act, 1993: Section 68 Approval

An approval is required from Council, under Section 68 of the Local Government Act, 1993, for water supply, sewerage and storm water drainage work as well as the installation and operation of a sewage management system. A section 68 approval may also be required for the installation of other types of recycled water schemes but approval to operate is only required where the source includes greywater or sewage.

Council approvals for installation and operation are not required where an environmental protection license under the Protection of the Environment Operations Act 1997 is in force. Where Council is the proponent, the approving authority is the NSW Office of Water. The Local Government (General) Regulation 2005 provides detail on the approval to operate as well as the broad performance standards and other criteria for the operation of a recycled water scheme (clauses 42 to 47).

(b) Environmental Planning and Assessment Act, 1979: Development Approval

Recycled water schemes undertaken by a private developer (not being a public authority) require a development application to be lodged with and approved by Council in accordance with the provisions of the *Environmental Planning and Assessment Act 1979*. Any development application will be assessed in accordance with the Act and Council's Local Environmental Plan.

A recycled water scheme may be classed as designated development depending on capacity, or location. Further information is available under *Item 29, Schedule 3, Environmental Planning and Assessment Regulation, 2000*.

The risk management framework suggested in *Interim NSW Guidelines for Management of Private Recycled Water Schemes* should be considered prior to lodging an application with Council.

RESPONSIBILITIES

This Policy is to be referred to by Building and Development Services when assessing applications for installation. Approvals to operate and non-compliances are managed by Environmental Control staff.

FURTHER INFORMATION AND FACT SHEETS

For further information please refer to the following information sources:

- *NSW Office of Water*
The NSW Department of Primary Industries – Office of Water has information and fact sheets on greywater reuse for households available online.
- *NSW Ministry of Health*
Copies of Accreditation Guidelines and Accredited Greywater Diversion and Greywater Treatment Systems are available from NSW Health online.
- *Master Plumbers Association*
The Master Plumbers Association offers training programs designed to assist plumbers to understand their role in relation to environmental and public health issues, and to provide their customers with up to date information and advice.
- *Dubbo Regional Council*
Council's Onsite Sewage Management Strategy outlines further information regarding Sewage Management Applications and Approvals to Operate. The Dubbo Urban Salinity Management Strategy and Implementation Plan outline priority landscapes for salinity issues in the Dubbo area. The strategies are available on Council's website.

APPENDICES

Appendix A - Additional information for development applications for greywater/water reuse systems

ADDITIONAL INFORMATION FOR DEVELOPMENT APPLICATIONS FOR GREYWATER/WATER REUSE SYSTEMS

1. Detailed hydraulic diagram showing:
 - Location and design of pipework and disposal area and trenches
 - Location and design of other fittings such as filters and valves
 - Connection for overflow to sewer
 - Method for automatically switching off the subsurface disposal device when the disposal area has become saturated.
2. Assessment of capacity of diversion area to receive recycled water (identifying a maximum daily diversion flow)
3. Measures to ensure that all pipes and fittings and the diversion area are adequately identified as being used for wastewater reuse purposes
4. Maintenance regime to ensure that the device is in good working order
5. In the case of multi-unit dwellings and commercial premises a management plan detailing:
 - The treatment process
 - Risk Assessment
 - Routine sampling program
 - Maintenance emergency contact numbers
 - System failure procedures
 - Auditing procedures to detect cross-connections and contingency plans for the management of sewerage and water requirements in the event of system failure.