

# Gardening with greywater



**1** Domestic greywater use in Queensland



**2** Plants and turf suited to greywater



**3** Improving greywater and soil quality

As climate change and population growth put increasing pressure on our precious resources, conserving water, including using greywater, is more important than ever.

There are laws controlling the safe use of greywater in Queensland. The *Plumbing and Drainage Act 2002* outlines the conditions for using greywater in Queensland to protect public health and the local environment.

Using greywater is a great way to save water, but it must be used responsibly.

### What is greywater?

**Greywater** is used water from the:

- ◆ shower
- ◆ bath or internal spa bath (**not** external spas or pools)
- ◆ wash basins
- ◆ laundry.

It does not include wastewater from kitchens or toilets.

### What is the difference between untreated and treated greywater?

Untreated greywater is the water that comes directly from your home. This water can be processed through a greywater treatment plant to improve its quality.

### What can greywater be used for?

**Untreated** greywater:

- ✓ lawns and gardens

**Treated** greywater:

- ✓ lawns and gardens
- ✓ washing vehicles and outdoor areas
- ✓ flushing toilets
- ✓ laundry purposes and in washing machines.

#### Did you know?

Greywater is now widely used on gardens; 30 per cent of Queenslanders with gardens use greywater for watering (DERM, December 2009).

### What about wastewater from the kitchen?

Kitchen wastewater may contain fats, grease, food waste and cleaning products. It is illegal to use kitchen wastewater in sewered areas in Queensland due to health, safety and environmental impacts.

In unsewered areas, kitchen wastewater may need to be filtered through a grease trap before passing on to an onsite wastewater treatment system. The treated wastewater can then be used for watering lawns and gardens.

However, wastewater from peeling and washing vegetables and other kitchen uses can be captured before it goes down the sink for use on the garden. Simply make sure it contains no animal fats and only environmentally friendly cleaning products.

### How can greywater be used?

Greywater can be diverted from laundries and bathrooms by:

- ◆ collecting in buckets
- ◆ connecting a flexible hose to a washing machine outlet
- ◆ seeking council approval to install a greywater diversion device or greywater treatment plant, both of which must be installed by a licensed plumber.

For more information on approved greywater treatment plants and diversion devices, visit the Department of Infrastructure and Planning website <[www.dip.qld.gov.au/sustainable-living/greywater.html](http://www.dip.qld.gov.au/sustainable-living/greywater.html)>.

### Using greywater responsibly in the garden

Installing an approved treatment plant to improve the quality of your greywater can reduce potential side effects on your garden.

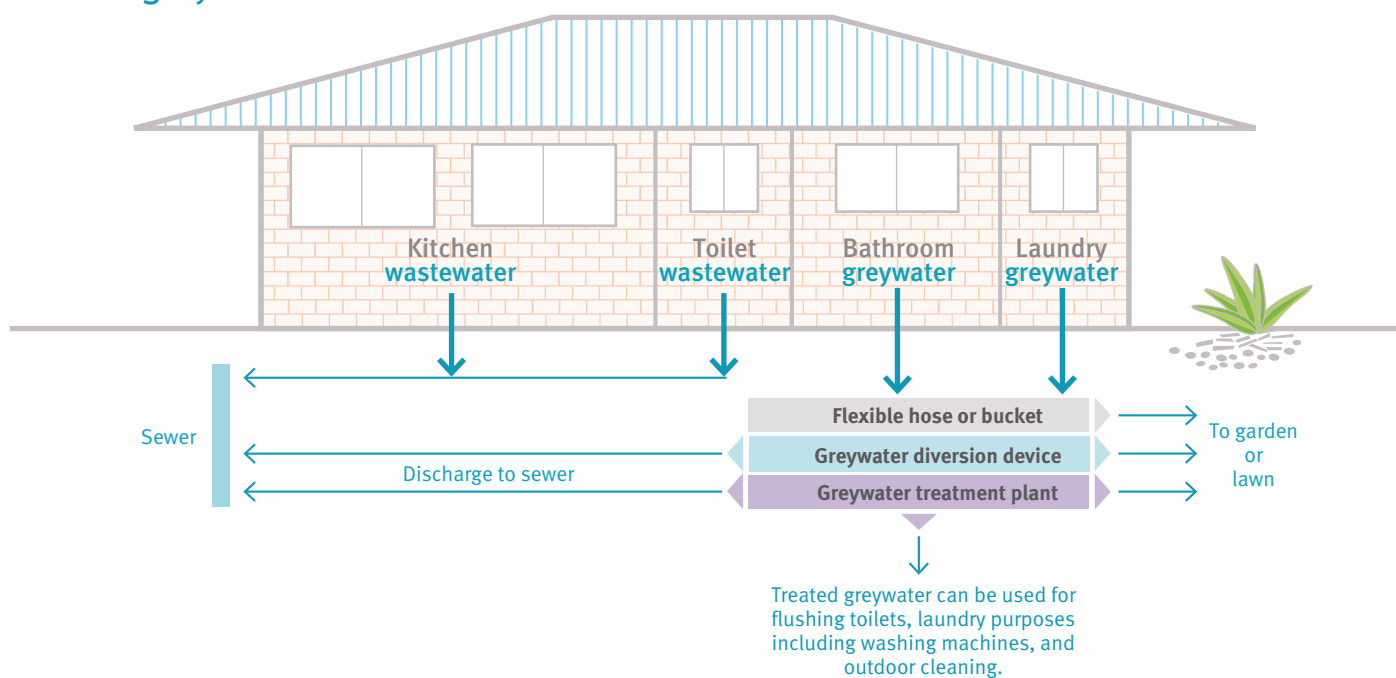
For advice on further improving the quality of your greywater see section 3—*Improving greywater and soil quality*.

#### Helpful hint

Only connect a flexible hose to the washing machine after checking the manufacturer's guidelines to ensure you do not void your warranty. The suitable length of hose and the way it should be connected varies for different washing machines. If not correctly attached, the hose can place unnecessary stress on the washing machine's pump.



## Domestic greywater use



## Responsible use of greywater

### DO

- ✓ check with your local council if your area is suitable for installing a greywater treatment plant or diversion device as specific council requirements may apply, such as proximity to waterways
- ✓ use only the rinse cycle water from your washing machine
- ✓ use greywater only when the garden needs watering as over-watering may damage plants and soil structure
- ✓ check which plants and turf varieties are greywater-tolerant, as not all plants will flourish with greywater (see section 2—Plants and turf suited to greywater)
- ✓ choose greywater-friendly washing machine detergents with low nitrogen, phosphorus and sodium (salt) levels
- ✓ choose the best source of greywater available (see section 3—Improving greywater and soil quality)
- ✓ prevent greywater run-off onto neighbouring properties as this could become a health risk
- ✓ if greywater is not used immediately (such as during rain or when the garden is sufficiently watered) ensure it is diverted to the property's approved sewerage system
- ✓ always wash your hands thoroughly after contact with greywater.

### DON'T

- ✗ store untreated greywater as it contains organisms that can multiply quickly, causing odours and possible health risks
- ✗ use greywater from washing heavily soiled items such as nappies, or clothing exposed to chemicals
- ✗ use greywater when anybody in your home is unwell
- ✗ allow greywater to form ponds, as this could lead to odours and health risks
- ✗ allow greywater to pollute drinking water or groundwater, or to enter a watercourse
- ✗ use greywater on edible parts of herbs, vegetables and fruit, or allow it to splash on them
- ✗ let greywater come directly into contact with humans, as it may contain harmful pathogens (disease producing organisms)
- ✗ let children or pets play with or drink greywater, or allow their toys to come into direct contact with it
- ✗ use greywater from your washing machine if it contains liquid fabric softeners or conditioners as they can alter the mineral content of soil and damage its structure.

### How much water does your garden need?

When planning to use greywater, it is important to consider how much water you actually need to keep your garden healthy.

Excessive watering may:

- ◆ damage plants
- ◆ result in waterlogged soil
- ◆ lead to greywater contaminating natural waterways or seeping into the groundwater.

#### 1. How much garden do you have to water?

Calculate in square metres (m<sup>2</sup>) how much land around your house you can water with greywater. As a legal requirement under the Queensland Plumbing and Wastewater Code, you need to leave a 1.5 m buffer zone from buildings and 1 m buffer zone from the boundaries of your property. Greywater can not be used in these areas.

#### 2. How much greywater do you generate?

Calculate how much greywater you are likely to generate, using the table below as a guide.

Greywater source	Average daily litres per person
Bathroom	60
Laundry	35
<b>Total</b>	<b>95</b>

Weekly greywater volume (litres/week) = usage per person (litres/person/day) x number of persons in the house x seven days.

#### 3. How much water do you need?

A good soil (loam) can absorb about 25 litres of water per square metre each week. This figure will vary depending on your soil type.

Maximum greywater needed per week = land area (m<sup>2</sup>) x 25 litres.

#### Helpful hint

Turn off your greywater system and divert your greywater to the property's approved sewerage system during wet weather or when your garden doesn't need the water.

### Products in greywater can be harmful to your garden

Some chemicals commonly found in greywater can be harmful to your soil and garden. The most problematic chemicals come from laundry detergents and surface cleaners. These types of products are often high in salts (sodium) and phosphorus.

### Effects on your garden

**Sodium**—using greywater with high sodium levels will affect soils and sensitive plants. It will reduce the plants' ability to take up water from the soil, impairing growth. Over time, salinity build-up in soil reduces the amount of water that can be retained.

**Phosphorus**—most plants have a low phosphorus tolerance. Symptoms of phosphorus toxicity include slow growth and possible stunting. Leaves turn dark and develop a purplish tinge, with some yellowing or bronzing.

To choose a washing powder low in phosphate look for the symbol **NP** (no phosphorus in the product) or **P** (small amount of phosphorus in the product but complies with the industry standards). Also look for detergents that state they are 'low in sodium'.

**Chlorine**—if you use bleach products, investigate using alternatives to chlorine such as hydrogen peroxide, as chlorine may be harmful to your garden.

For more information on laundry detergent ingredients and their potential effects on your garden, visit Lanfax Laboratories <[www.lanfaxlabs.com.au](http://www.lanfaxlabs.com.au)>.

### Turf and greywater tolerance

Watering turf is a great way to use greywater, particularly considering the range of salt concentrations that turf can potentially tolerate. The following table provides a list of turf species commonly grown in Queensland and indicates their tolerance to greywater.

For more information on greywater-tolerant turf species, speak to your local garden centre or horticultural consultant.

Turf species	Greywater tolerant	
	More	Less
Zoysia grass/Manila grass ( <i>Zoysia matrella</i> )	alternate fresh water with greywater	
Zoysia grass/Japanese lawn grass ( <i>Zoysia Japonica</i> )	alternate fresh water with greywater	
Seashore paspalum ( <i>Paspalum vainatum</i> )	✓	
Green couch, Bermuda grass ( <i>Cynodon dactylon</i> )	alternate fresh water with greywater	
Buffalo/St Augustine ( <i>Stenotaphrum secundatum</i> )	alternate fresh water with greywater	
Broadleaf carpet grass ( <i>Axonopus compressus</i> )		✓
Blue couch ( <i>Digitaria didactyla</i> )		✓
Durban grass/sweet smother grass ( <i>Dactyloctenium australe</i> )		✓

### Did you know?

The average Australian generates 95 litres of greywater each day. Reusing this water is a great option for residents wanting to keep their gardens and lawns green, especially when water restrictions are in place.

### Tips for using greywater on plants

#### DO

- ✓ use greywater on established plants, not on seedlings or young plants that are more vulnerable to high concentrations of salt and nutrients
- ✓ select plants local to your area that are greywater tolerant
- ✓ water during cooler periods of the day when there is less direct sunlight. Longer, deeper watering, for 30–60 minutes, once or twice a week is better than frequent shallow watering. This allows plants to absorb water more efficiently and prevents salt build-up
- ✓ apply greywater to the base of plants to prevent leaf burn
- ✓ stop using greywater if plants show signs of distress (such as burning of leaf edges). Water the area with fresh water to remove possible salt and nutrient build-up before using greywater again.

#### DON'T

- ✗ use greywater on plants in pots as the risk of salt and nutrient build-up is heightened by the limited soil volume
- ✗ use greywater on edible parts of herbs, vegetables and fruit, or allow it to splash on them
- ✗ store greywater if it can't be used immediately on the lawn or garden.

### Plants and greywater tolerance

Most plants will tolerate good quality greywater at least occasionally. A selection of plants commonly grown in Queensland that are known to be highly tolerant or less tolerant of greywater are shown below.

For advice on other greywater-tolerant plant groups, speak to your local garden centre or horticultural consultant.

#### ✓ Plant groups more tolerant of greywater



Bird of Paradise



Melaleuca



Dietes



Gardenia



Callistemon



Conifers



Liriope



Yucca



Hibiscus

#### ✗ Plant groups less tolerant of greywater



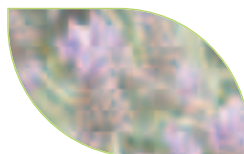
Grevillea



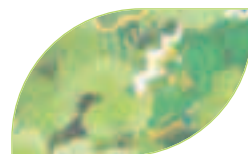
Bougainvillea



Camellias



Lavender



Herbs



Ferns



Citrus



Azaleas



Vegetable seedlings



## Quality of your greywater

The quality of your greywater will vary depending on its source within the home and the size and habits of the household.

Some detergents, soaps, shampoos and cleaning products contain salts, bleaches and fat preservatives, which can damage plants and soil. To produce more garden-friendly greywater, choose these products carefully.

To improve the quality of your greywater and make it more garden friendly, take care when choosing laundry detergent, cleaning products and personal hygiene products (soaps and shampoos).

### Avoid using:

- ◆ detergents with high sodium (salt) or potassium content
- ◆ chlorine bleaches
- ◆ greases and oils
- ◆ corrosive chemicals
- ◆ water softeners and conditioners, as they replace the magnesium and calcium in hard water with sodium
- ◆ greywater from washing heavily soiled or contaminated clothing such as nappies or work uniforms exposed to chemicals
- ◆ greywater when anybody in your home is unwell.

### Helpful hints

1. Reduce salt concentrations by choosing detergents with low sodium levels.
2. Use liquid rather than powdered detergents as they are often lower in sodium.
3. Frequently change the location where greywater is used in the garden.
4. Occasionally use alternative water sources (where permitted) to avoid a build-up of contaminants.

## Maintaining your soil

Some soils tolerate greywater use better than others.

Water moves slowly through clay soil and more readily through sandy soil. This means sandy soils minimise the build-up of chemicals; however, it is possible that chemicals will seep into groundwater.

### Helpful hints

1. Use detergent sparingly—definitely do not use more than the manufacturer recommends.
2. Minimise the use of bathroom products containing lanolin, perfumes and other chemicals.
3. Clean your greywater filter regularly to prevent solid objects, such as hair and lint, from going onto your garden.





## Fertilisers and nutrients

Greywater may have an impact on the effectiveness of some fertilisers, and lead to over supply of some nutrients.

Nutrient loads applied to the soil when using greywater may be similar to those applied by following the directions on common fertiliser packages. Using greywater can reduce the need to fertilise your garden and lawns.

Using detergents with low nitrogen and phosphorus levels will help to avoid a build-up of these nutrients. Too much phosphorus can be toxic to some native plants and harmful to the environment. Excess nitrogen can leach nitrates from soils and make them acidic.

## pH levels

The pH level of soil is very important to plant health. The contaminants in greywater can directly impact pH levels and soil structure—greywater can increase soil pH.

When soil is strongly alkaline (high pH) vital minerals such as iron and zinc are locked up in the soil and become less available to plants. This can cause an iron deficiency in plants; new leaves may be yellow with green veins.

You can purchase a soil pH test kit and check the levels yourself, or speak to your garden centre about how to measure and correct soil pH.

## Conduct a regular health check on your gardens and lawn

Conducting regular health checks on your garden will ensure the use of greywater is not damaging your soil, lawn and plants.

Signs of unhealthy soil, lawn and plants include:

- ◆ damp and boggy ground hours after irrigation
- ◆ burnt or wilting foliage
- ◆ poor or excessive plant growth with reduced fruit
- ◆ evidence of pests and disease on plants
- ◆ unusual odours
- ◆ clumping of soil
- ◆ surface ponding and run-off of irrigated water
- ◆ a fine sheet of clay covering the surface of the soil.

If you notice any of the above signs, reassess the amount and quality of greywater you are using or check that your irrigation system is working correctly.

## Helpful hints

1. Reassess how much fertiliser you apply to your garden as greywater may contain high levels of nitrogen and phosphorus.
2. If the pH level is too high, adding elemental sulphur will gradually reduce the pH.
3. Adding gypsum and compost can reduce excess sodium and enrich the soil, especially on dune sand or shallow rocky soils.
4. Add a soil wetting agent every six months because the fats in greywater generated from soaps and fabric softeners can make the soil water repellent.





### *For more information*

#### *Legal use of greywater in Queensland*

- ◆ Department of Infrastructure and Planning,  
<[www.dip.qld.gov.au](http://www.dip.qld.gov.au)> or phone (07) 3227 8548

#### *Waterwise Gardening*

- ◆ Department of Environment and  
Resource Management  
<[www.derm.qld.gov.au](http://www.derm.qld.gov.au)>

#### *Ingredients in laundry detergents and greywater use*

- ◆ Lanfax Laboratories <[www.lanfaxlabs.com.au](http://www.lanfaxlabs.com.au)>

DERM thanks the Department of Employment, Economic Development and Innovation, and Lifestyle Horticulture Industry members for their assistance in producing this information and providing photos.

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