Northern Territory Government

TECHNICAL FACT SHEET

GREYWATER REUSE

Greywater represents a valuable renewable resource that can allow significant household water savings and reduces demand for potable water. Reusing greywater also reduces discharge to the sewerage system, which can lead to community cost savings through reduced pressure on sewerage treatment systems and infrastructure. Greywater consists of wastewater from showers, baths, spas, hand basins, washing machines, laundry troughs, dishwashers and kitchen sinks.

Toilet wastewater, termed "blackwater" must be chemically treated before reuse. NT-approved treatment systems, termed "Alternative Septic Tank Systems" that treat greywater and blackwater are available. For more information visit the Department of Health and Community Services website (www.nt.gov.au/health).

Greywater diversion devices do not treat wastewater, but divert the water directly to the desired end-use rather than to the sewer. This is achieved through gravity or the use of a pump. Gravity fed systems have a simple valve or tap fixed to the waste outlet pipe of a plumbing fixture that can be manually switched on or off by the householder. Those systems that operate a pump incorporate a surge tank that collects greywater before distribution by the pump. Untreated greywater must not be stored.

Health and greywater

There are health risks associated with greywater reuse due to the high levels of disease-causing micro-organisms and pollutants it may contain. To manage health risks, the NT Department of Health and Community Services approve greywater and other wastewater treatment systems on a case-by-case basis before allowing marketing, sale or installation in the Northern Territory. Only approved devices may be installed and used in the Northern Territory. Use of kitchen water is excluded from all greywater diversion devices as contaminants may clog equipment and attract vermin. To prevent greywater from coming into contact with people or animals, only sub-surface irrigation is permitted and irrigation to edible food crops is discouraged.

How much greywater can you expect to reuse?

How much greywater you can expect to reuse depends on the amount of water that can potentially be reused in your home and the amount of land you have available to soak up the greywater. Different soil types have varying capacities to absorb water as indicated in the table below (Refer to AS/NZS 1547:2000).

Soil Texture & Structure	Design Irrigation Rate (DIR) mm/week	Indicative drainage class
Gravel and sands – structure-less	35 mm/ week	Rapidly drained
Sandy loams – weak structure	35 mm/ week	Well drained
Loams – weak to moderately structured	28 mm/ week	Moderately well drained
Clay loams – moderate to high structure	25 mm/ week	Moderately well drained
Light clays – weak to strong structure	20 mm/ week	Poorly drained
Medium to heavy clays – weak to strong structure	15 mm/ week	Very poor draining

You will firstly need to calculate how many litres of greywater are generated in the household each week. Here is an example of a household that wishes to reuse water from the shower and washing machine;

Average daily water consumption from shower and washing machine
4 people x 1 shower / day x 5 minute shower x 9L/min showerhead = 180 litres
1 wash / day x 80L per wash = 80 litres
Total potential greywater reuse = 260 litres per day (1820 litres per week)

Calculate the area of land needed to soak up the greywater
Land area required = greywater use (litres/week) divided by DIR (mm/week) (from table)
= 1820 litres/week divided by 35 mm/week (sandy loam)
= 52m^2 needed to soak up available greywater

Calculate your land area available for greywater irrigation
Land area available = Area of garden and lawns allowing for a 1.5m setback from buildings and a 1 metre setback from property boundaries

To determine how much greywater your household has available for reuse you can conduct a household water audit. A variety of home water audit forms can be found on the internet. Alternatively, contact DKA COOLmob to book a trained auditor who will help you to investigate your household water use and provide tips for saving water in the home (www.dkacoolmob.org).

What type of system do you need?

NT-approved greywater diversion devices range in size, design, function and price. Choose an appropriate greywater system based on how much greywater your household produces and how much you wish to reuse, the area of land you have available (lawn and garden) and how much you wish to spend. Note that young plants and plants with shallow root systems may require a separate surface irrigation system. An updated register of approved greywater diversion devices can be found on the Department of Health and Community Services website (www.nt.gov.au/health).

There are currently five approved greywater diversion devices in the NT. The CSAT Marshall Greywater Reuse System collects water from all appropriate plumbing fixtures in a tank and pump into subsurface distribution points throughout the garden. The GRS SupaFlow system and Aquarius Domestic Greywater Unit incorporate a tank and pump but collect water from the laundry and bathroom that is pumped into sub-surface drip lines.

The GFlow and Nylex greywater diversion devices are gravity fed and collect greywater from the washing machine, air-conditioner or shower. Subsurface irrigation occurs through a drip-line or piping system in which water collects in drainage cells positioned along the piping.

GRS SupaFlow System *redirects greywater from the bathroom or laundry through a filter, which is then pumped into a subsurface dripper line.*

CSAT Marshall Greywater Reuse System *collects water in a tank, pumps it through a series of pipelines and disperses water through Atlantis cells.*

GFlow Waste Water Reuse System *diverts water from the washing machine or air-conditioner into a sub-surface dripper line.*

Nylex Greywater Diverta *redirects water from the washing machine or shower and diverts to subsurface irrigation.*

Greywater diversion device features					
	GRS Supaflow	**CSAT System**	**GFlow System**	**Nylex Diverta**	**Aquarius Domestic Greywater Unit**
Fixtures/areas connected to	Bathroom and/or laundry	Any suitable fixture	Washing machine or air-conditioner	Washing machine or shower	Bathroom, spa and washing machine
Greywater volume capacity	Limited	Unlimited	Limited	Limited	Unlimited
Diversion method	Pump	Pump	Gravity	Gravity	Pump
Irrigation method	Dripper line	Pipes with outlets at intervals releasing water into cavities	Dripper line	Pipes with outlets at intervals releasing water into cavities	Dripper line
Price	$2500 full kit ~$2000 installation	~$1500 parts ~$1500 installation	$690 (RRP) full kit plus installation	$495-699 for Nylex Diverta and irrigation system plus installation	$2376 RRP Greywater unit and irrigation plus installation
Availability	Sold directly by WA distributor	Parts sourced individually (no kit)	Supplied locally	Can be ordered by local suppliers	Contact distributor

Greywater diversion device installation and maintenance

Installing greywater diversion devices can involve a degree of disruption in terms of earth moving in the garden or accessing pipes. Some household plumbing arrangements are unsuitable for connection to greywater systems, such as where wastewater exits the home in a single pipe, greywater mixing with blackwater.

There is some uncertainty as to the long term effect of diverting greywater on soils and plants. Choose detergents with a neutral pH (pH 6), low Sodium (less than 20mg Sodium per wash) and low Phosphorus. High pH and Sodium (Na) can affect plants and soil structure while Phosphorus (P) can contaminate groundwater.

All greywater diversion devices require a degree of maintenance, such as flushing pipes and cleaning tanks or filters. Manufacturers' guidelines should be adhered to during installation and operation.

Relevant regulations on greywater diversion device installation

Installation of greywater diversion devices must comply with NT Department of Health and Community Services (DHCS) guidelines including approval of greywater system installation by DHCS Environment Health Branch. Visit the DHCS website **www.nt.gov.au/health** for more information on the greywater approvals process.

The greywater systems described here are for single domestic dwellings only and only direct re-use of greywater is permitted (untreated greywater cannot be stored). All greywater systems must be installed by an NT-licensed, self-certifying plumber in accordance with the requirements of the *Building Act*, administered by the Department of Planning and Infrastructure's Building Advisory Services. Greywater diversion devices must exclude kitchen water and an overflow connection to the sewer must be maintained at all times.

Greywater systems must be labelled as per the Australian Standard AS2700. See a licensed plumber for advice.

NT Waterwise Central Australia Rebate Scheme

The Northern Territory Government is offering a Plumbing Rebate of up to $500 (incl. GST) to households in Alice Springs and Tennant Creek for eligible services associated with installing an NT Government approved greywater diversion device. Refer to the Waterwise website **www.nt.gov.au/waterwise** for more information.

For assistance, contact the Water Management Branch:

- **Palmerston**
  4th Floor Goyder Building, PO Box 496, Palmerston NT 0831 Ph: 8999 3678
- **Katherine**
  Randazzo Arcade, 16 Katherine Terrace, Katherine NT 0850 Ph: 8973 8100
- **Alice Springs**
  1st Floor Alice Plaza, Todd Mall, PO Box 1120, Alice Springs NT 0871 Ph: 8951 9209

  www.nt.gov.au/waterwise