

# Fact Sheet: Amenities

Water use in toilets, showers and basins in your business can account for up to 50 per cent of your total water consumption. Savings of 25 to 30 per cent are readily achievable by installing water-efficient appliances and maintaining fixtures.

## Best practice

	Best practice	Typical existing usage	Savings per person		Water saving opportunity	Example
	Litres/min	Litres/min	Litres/year	\$/year		
Showers	7	15	12,000	15.85	Replace showerheads with water efficient showerheads and reduce showers to 4 minutes.	Ten four-minute showers with a water efficient showerhead saves 120,000 litres per year, or at least \$155 per year.
Toilets	6/3 dual flush (average 3.5 litres per flush)	11 litres/flush	11,000	14.55	New pan and cistern. Assumes the average person uses the toilet 4 times during the day	If the toilet is used 40 times a day water savings will be 110,000 litres per year, or at least \$145 per year.
Basin	4.2	12	14,000	18.50	Flow control in spout or in taps. Assumes 5 minutes use per person per day.	If a wash basin is used 10 times for an average of 5 minutes each day the water savings will be 140,000 litres per year, or at least \$185 per year.

These savings are based on water savings and do not take into account energy savings from water heating. Savings are based on Western Water charges of at least \$1.3220 per 1,000 litres of drinking water for non-residential customers. If you have a trade waste agreement the savings may be greater.

## Toilets

The amount of water used in public amenities is often overlooked.

Public toilets can account for 15 to 40 per cent of total water usage within each business, depending on the type of business. A single toilet in a public amenity area is typically used 50 times per day.

Various toilet flush types are in common use, for example single and dual flush cisterns, flusherette systems and direct flush valves. Of these, the 4.5/3 litre dual flush cistern is the most efficient. Plumbing policies Australia-wide require or recommend their use in any new installation.

Two main systems are installed in typical commercial and institutional facilities:

- Single flush.
- Flusherette.

Other systems are available such as composting toilets. Composting toilets are more suited to facilities with a small demand. They are mainly used in residential settings.

Composting toilets operate by collecting wastes in a chamber, where the waste is aerated and mixed. Carbon rich mulch is also added to assist with the decomposition process. Composting toilets require significant levels of ongoing maintenance to ensure correct levels of moisture, oxygen, temperature and carbon are maintained for efficient operation.

## Single flush systems

Gravity flush systems are the most common of all toilets and are the most efficient.

## Potential water-saving opportunities

### Behavioural change

- One of the major causes of blocked toilets is their misuse as rubbish bins. Regular inspection and maintenance is therefore necessary. It's important to inform users about the problems associated with flushing wastes and provide waste bins.

### Equipment modifications

- Modify the float arm or install a displacement device to reduce the cistern volume from 11 litres to 9 litres per flush.

### Equipment replacement

- The most effective solution is to replace inefficient toilets with a 4.5/3 litre dual flush system, which are rated 4-star.

Replacing an 11 litre single flush toilet with a 4.5/3 litre dual flush toilet can save about 11,000 litres per year per person.

## Maintenance

- Ensure units are inspected every six months.
- Rubber cistern seals should be replaced about every two years before leaks occur. Leaks can cost thousands of dollars each year.
- Periodically replace valves and ballcocks.
- Check timing cycles and volumes for automatic flushing systems. Automatic flushing should be aligned with the operating hours of the building.

## Flusherette systems

Flusherette systems use water pressure to flush waste into the sewer. They consist of a valve and a toilet bowl fixture. Over time, flow rates and flush durations can alter, resulting in excessive flush volumes of 13 litres or more.

## Potential water-saving opportunities

### Behavioural change

- One of the major causes of blocked toilets is their misuse as rubbish bins. Regular inspection and maintenance is therefore necessary. It's important to inform users about the problems associated with flushing wastes and provide waste bins.

### Equipment modifications

- Flow control regulators inserted into valve bodies by a licensed plumber can reduce volumes by up to 30 per cent and overcome adjustment difficulties due to aged equipment.

### Equipment replacement

- Replacement with a 4.5/3 litre dual flush system is the best solution.
- Replace highest use toilets first to gain fastest payback.
- Know your sewer infrastructure and match the type of toilet with the waste water piping and water pressure.
- Use qualified, licensed plumbers.
- Plan for the legal disposal of old toilets by consulting with your local solid waste authority for recycling options or disposal requirements.

## Maintenance

- Ensure units are inspected every six months.
- Rubber cistern seals should be replaced about every two years before leaks occur. Leaks can cost thousands of dollars each year.
- Periodically replace valves and ballcocks.
- Check timing cycles and volumes for automatic flushing systems. Automatic flushing should be aligned with the operating hours of the building.

## Urinals

Single stall, manual flush cisterns are the most efficient and cyclic flushing cisterns are the most inefficient type of urinal.

Sensor or 'on-demand' urinal flushing systems are now becoming common. These systems provide increased water management and, if well maintained, increase water efficiency. Ideally, sensors should be installed on individual stalls.



## Potential water-saving opportunities

### Equipment modifications

- If on-demand controls are preferred for single stall cisterns, install automatic individual sensor flush units because they are the most efficient. Alternatively, sensor units controlling up to three stalls will still save water and money.

### Equipment replacement

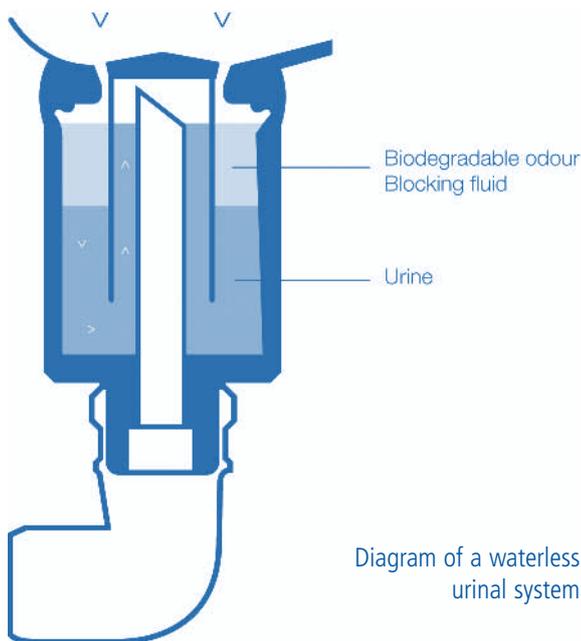
- Waterless urinals may be an option to consider. See waterless urinals below.
- Replace current units with water-efficient models that are rated at least 3-star.
- Replace cyclic flushing cisterns with sensor-operated flushing units. The payback period is typically less than six months.

## Maintenance

- Motion sensors require routine maintenance and adjustment in order to function well and be water efficient. Set the systems to flush no more than once every six minutes regardless of the number of users.
- Ensure the battery or power supply to the sensor is maintained.
- If the solenoid valves are suffering from pitting corrosion, replace them immediately. Corrosion can result in water passing through the valve even when shut, wasting water.
- Ensure the time between automatic flushes is at least 6 to 8 minutes.

## Waterless urinals

Waterless urinals are currently best practice. They function on gravity flow and use no water. They generally resemble conventional wall hung fixtures and are easily retrofitted in existing installations. Urine enters the toilet and flows through a layer of oil that floats on top of the urine, trapping it and forming a barrier against vapour escape. It then flows through a drain that collects impurities before it enters the sewer.



Replacing one cyclic flushing system with a single waterless urinal can save up to 1.4 million litres of water a year.

As well as not using water, benefits of this system include:

- Improved hygiene – bacteria are unable to grow in the waterless system, and the no-touch feature also provides better hygiene.
- Reduced repairs – the lack of flush valves means less line encrustations, no plugged drains, no overflows, less potential for leaks and no sensors.
- Payback periods are usually one to three years.

Before installing a waterless urinal it is advisable to:

- Replace any copper waste piping with PVC piping, ensuring pipework complies with AS/NZS 3500. Urine breaks down to ammonia and can cause corrosion of copper piping. Waterless urinal systems can also increase scale formation in the waste piping system.
- Assess aesthetic and health issues.
- Investigate whether such a system is suitable for your facility.
- Consider the associated chemical and maintenance costs.
- Educate users and cleaning staff to ensure all involved parties will operate them correctly.

## Showers, baths & spas

In a residential home, showers, baths and spas use about 30 per cent of total water. Depending on your type of business, e.g. hotel, these facilities may also account for a large percentage of water use.

### Potential water-saving opportunities

#### Behavioural change

- Encourage users to take shorter showers, and aim for a four-minute. Stickers and timers are available to assist.
- Encourage users or employees to inform maintenance personnel if they notice a leak and ensure that maintenance procedures are in place to solve the problem.

#### Equipment modifications

- Install flow restrictors. These washer-like disks fit inside the showerhead and limit water flow. Alternatively, they can be fitted to the shower taps.
- Adjust the water pressure (the lower limit is 500kPa) to minimise water flow from the showerhead.

#### Equipment replacement

- Replace the showerhead with a 3-star rated showerhead, which uses about 9 litres a minute. These showerheads have a narrower spray area and a greater mix of air and water than conventional showerheads.

Note: Modern high efficiency showerheads are mainly designed for storage hot water systems. Their lower flow rate may not activate instantaneous hot water systems, an important consideration when mixed hot and cold water is being used in showers. Water-efficient showerheads may also be prone to blockage in hard water areas, leading to increased maintenance. If this is the case, flow restrictors within the tap may be preferable.

- Install fixed flow taps that deliver a set quantity of water when operated (e.g. push button showers).
- Ensure spa jets are located low in the spa bath so that it can be operated properly with minimal water.

#### Maintenance

- Check showerheads and replace worn heads with efficient 3-star rated showerheads.

## Taps & hand wash basins

Several different types of taps are available for the vast range of potential end uses. Tapware rated 6-star is available with flow rates as low as 3.2 litres a minute. Much waste occurs when users leave taps running.

### Potential water-saving opportunities

#### Behavioural change

- Encourage users to turn the tap off when not in use.
- Use stickers or posters to inform users about the amount of water they are wasting when they leave a tap running.
- Encourage users or employees to inform maintenance personnel if they notice a leak.

### Equipment modifications

- Adjust flow valves or install flow control regulators to reduce water flow where appropriate.
- Use aerators in existing taps to maximise flow efficiency by increasing airflow in the stream.
- Install pedal-operated tap controllers to ensure valves are closed when the basin is not in use.
- Update the tap system to include:
  - › Automatic shut off – when the handle is released, the valve shuts off.
  - › Metered shut off – when a lever is depressed the tap delivers a water flow for a pre-set time, then shuts off.
  - › Sensor activated – a beam of infrared light detects the user then delivers a fixed quantity of water, preventing taps from being left on and improving user hygiene.

### Equipment replacement

- Replace the tap with one that has at least a 3-star rating. Quarter turn taps with ceramic seats give greater flow control and are less prone to leaks.
- Install fixed flow taps that deliver a set quantity of water when operated (e.g. push button taps).
- Install spring-loaded taps that shut off immediately after use.
- Consider installing small hand basins with a pop-up plug that closes the drain until a lever or button is pressed, to help prevent over-filling.

### Maintenance

- Check flow rates and install restrictors where required.
- Regularly check for leaks.

### Sensors

Electronic eye sensors are used for plumbing applications including taps, toilets and urinals. These devices deliver a metered flow only when the fixture is in use. Both the flow rate and activation time can generally be adjusted.

Door-activated or movement sensors often need adjustment and enhancement to remain or become efficient; people sensors are the most efficient. Sensors commonly use an infrared beam, which requires concealed installation for aesthetics and/or vandal prevention.

Sensors can be connected to mains power or run on batteries. While battery life can be up to five years, a flat battery means continuous running, filling or flushing. Modern sensor units can be combined with lighting, saving more money (through energy and water savings) for a marginal increase in initial cost.

The no-touch activation is hygienic and useful for users with disabilities.

### Hints for use

- Ensure that shut-off valves are included when the system is installed. This will prevent continuous waste of water when sensor units or solenoid valves occasionally fail. It will also allow the system to be isolated for maintenance.

- If available, install sensor units with an LED that indicates operation of the sensor and simplifies maintenance.
- The systems can be programmed for an occasional 'sanitary' flush to occur during quiet or out-of-hours periods, reducing problems with hygiene or odour.
- Provide information for users on how sensors work.



**Information for this fact sheet has been adapted from the City West Water "Water Conservation Solutions Handbook"**

### Further information

**Western Water**

**1300 650 425**

**[www.westernwater.com.au](http://www.westernwater.com.au)**