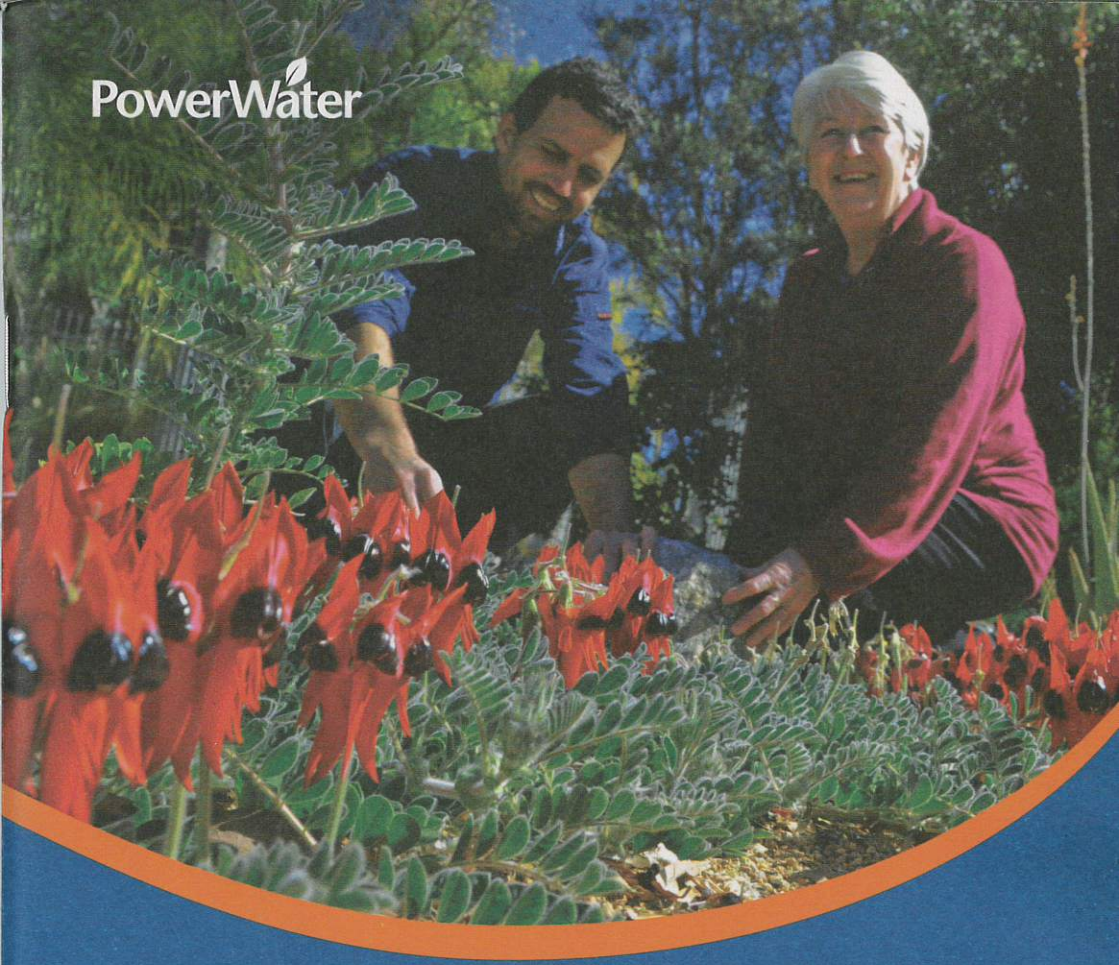
PowerWater



ALICE WaterSmart

Guide

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Introduction

Alice Springs – a great lifestyle!

We all know how great our lifestyle can be in Alice Springs, with beautiful home gardens, backyard BBQs and cooling off in the pool.

Due to our climate, many people think a lot of water is needed to maintain our great garden and lifestyle. There are many ways you can reduce your water use while still maintaining the lifestyle you want.

Alice Water Smart

This Alice Water Smart Guide brings together the results of more than 1000 professional Water Efficiency Consultations in Alice Springs homes and businesses, local knowledge and feedback from community members who participated in a series of public workshops about water use.

Through Alice Water Smart, the Alice Springs community has already saved over 1600 million litres (megalitres) of water – equivalent to two months average water supply.

Alice Water Smart began in July 2011 and over a two year period more than 1000 homes and 50 businesses had a Water Efficiency Consultation to help identify ways to save water.

Homeowners have been making small changes to their water use with big results. Their gardens are as lush as ever and they have more money to spend on other things.

Millions of litres of water were also saved through leak detection. The town's parks and ovals now use smart irrigation technology and a new water recycling and reuse scheme has been developed at the sewerage ponds to substitute our valuable water supply for commercial irrigation needs.

Much has been learnt about water use in Alice Springs and information has been gathered to maintain our water efficiency knowledge within the community.

Many water users have used high volumes of water for many years, so ongoing support is needed to build knowledge and encourage further change to prevent relapses.

The Alice Water Smart Guide

Alice Water Smart worked with the community to create the **Top Six Actions** which have the greatest impact on water savings in Alice Springs.

By implementing the **Top Six Actions** you will not only be helping your household budget along with the environment, you will also feel rewarded knowing you are preserving Alice Springs' non-renewable water supply.

Why these Top Six Actions?

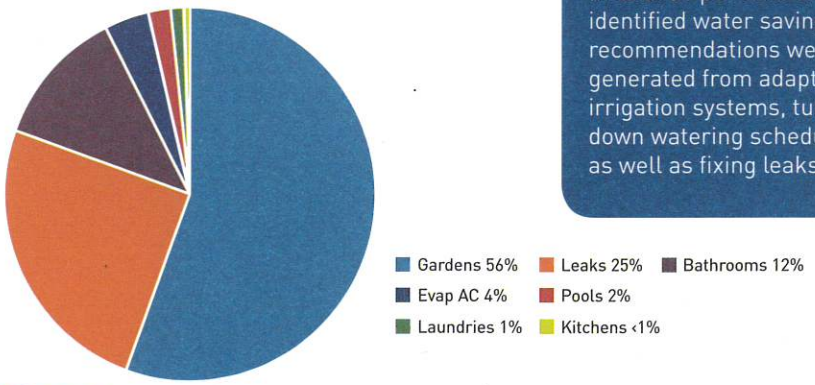
Through Alice Water Smart much was learnt about water use in Alice Springs. For the 1000 households that participated, the following table reveals where the most water savings could be achieved.

Table 1: Average water use and recommended savings in Alice Water Smart participating homes

Area of use	Average	Efficient	Savings	Savings %
	Thousand ('000) litres			
Kitchen	30	29	**1**	0.1%
Showerheads	113	75	**38**	5.0%
Laundry	25	20	**4**	0.6%
Evap. AC	58	46	**12**	1.6%
Pool	30	24	**6**	0.8%
Leaks	83	0	**83**	10.9%
Garden	415	229	**186**	24.7%

The areas of the home that represent the largest identified water savings are gardens and leaks, as indicated in the graph below:

Figure 1: Percentage identified water savings within homes, based on savings in Table 1



Did you know?

It was found that households that participated in Alice Water Smart's program and implemented the recommendations in their Water Efficiency Consultation could typically save half the amount of water they were previously using. They could still maintain their lifestyle choices such as having a pool, a nice garden and keeping cool in summer.

In total 81 per cent of all identified water saving recommendations were generated from adapting irrigation systems, turning down watering schedules as well as fixing leaks.

What's been achieved through Alice Water Smart?

Alice Water Smart worked with several sectors of the community to save water. It helped set the town up for a water smart future and gave us a great base to continue looking after this precious resource. Here's a summary of what has already been achieved:

- Over 1600 million litres (equivalent to 727 Alice Springs Aquatic Centres) of water savings were made or identified through the various projects.
- 72 parks and ovals are now watered using smart irrigation technology.
- 1000 homes and 50 businesses have had Water Efficiency Consultations.
- 330 million litres (equivalent to 150 Alice Springs Aquatic Centres) of water has been saved through leak detection.
- 20 accommodation providers have had Water Efficiency Consultations with over 180 million litres (equivalent to 81 Alice Springs Aquatic Centres) of water savings identified.
- New treatment facilities to produce higher quality recycled water were constructed. The new recycled water scheme is helping some commercial users south of Heavitree Gap to supplement their drinking water supply with recycled water for irrigation and horticultural purposes. The scheme is saving around 200 million litres of drinking water each year.
- Alice Springs residents have embraced the Alice Water Smart Guide to voluntarily maintain a water efficient lifestyle.
- The online Alice Springs Garden Watering Planner was created – alicewateringplanner.com.au.

For two years, the $15 million Alice Water Smart program was jointly funded by the Australian Government's *Water for the Future* initiative through the *National Water Security Plan* for Cities and Towns program. Led by Power and Water Corporation, the program was implemented by the Alice Water Smart Consortium, which included the following organisations:

- Power and Water Corporation
- Department of Natural Resources, Environment, the Arts and Sport
- Alice Springs Town Council
- Arid Lands Environment Centre
- Tourism NT

Where does our water come from?

Alice Water Smart aims to preserve the life of our finite groundwater resource and secure the long term sustainability of Alice Springs.

Our current water supply is drawn from the Roe Creek borefield located 15km south of Alice Springs. Eighty per cent of that water comes from the Mereenie Sandstone and the rest from the Pacoota and Shannon formations. These all lie within an enormous acquifer – the Amadeus Basin.

Since pumping began at Roe Creek in 1964 over 250 000 million litres of groundwater has been extracted (about one metre per year), with minimal replenishment. This is equivalent to half of the Sydney Harbour! The more water we use, the harder and deeper the pumps have to work at the borefield. If water continues to be used at the current rate, we will need a new borefield in 20 to 50 years.

By saving water and reducing our water use, Alice Springs can significantly delay costly investment in new water pumping infrastructure.

The future sustainability of Alice Springs' water supply is reliant on managing the existing resource and the demands placed on it. By being water smart, we can all work together to manage this precious resource and create a sustainable future in our arid environment.

Water and climate change

With less water being pumped from underground, we will reduce our energy costs and will save about 1150 tonnes of CO_2 per year.

You might be surprised by the amount of greenhouse gas emitted from:

- pumping water from 150m below the ground
- treating the water
- pumping the water 15km from Roe Creek borefield to your home
- pumping and treating sewage.

In Alice Springs, this adds up to about 8400 tonnes of greenhouse gas per year. That's 0.7 tonnes of greenhouse gas per house, equivalent to a 4000km flight (close to a return trip from Alice Springs to Sydney).

Measuring up

1 kilolitre (kL) = 1000 litres (L) = 100 buckets of water

1 million litres = 1 megalitre (ML)

2.2 megalitres = 1 full Alice Springs Aquatic Centre

1 full Alice Springs Aquatic Centre = 100,000 buckets of water

On your water bill, water use is measured in kilolitres (kL)

Water use in Alice Springs

Water costs in Alice Springs

Water is cheap in the Northern Territory – $1.91 per kilolitre compared to $2.28 per kilolitre in Sydney.

Table 2: Water use in Alice Springs compared to towns with similar climates

	Alice Springs (2012-2013)	Broken Hill (2012-2013)	Dubbo (2012-2013)
Annual household water use	490kL	285kL	368kL
Daily household water use	1342L	780L	1008L
Daily per person water use	477L	389L	433L
Yearly household carbon dioxide equivalent (CO_2e) emissions for water supply	0.694 tonnes	0.536 tonnes	0.308 tonnes

National Water Commission (2014). *National Performance Report 2012-2013:* Urban water utilities, Australian Government Canberra.

Did you know?

- An estimated 80 per cent of Alice Springs gardens are overwatered.*
- In Alice Springs, 56 per cent of home water is wasted through overwatering and inefficient irrigation systems.*
- A well managed lawn should only need watering once or twice per week in summer.
- 25 per cent of water waste is through leaks you aren't even aware of.*

* Results from Alice Water Smart Water Efficiency Consultations

Reading your water meter

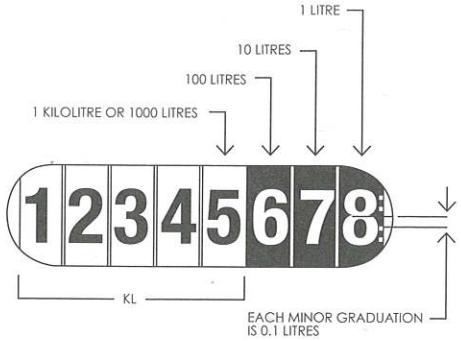
Water meters come in a few shapes and sizes and can usually be found in the front corner of your property on the boundary line. On the right are diagrams of the two main domestic water meters used by Power and Water Corporation in the Northern Territory. **If your meter does not look like either of these, please call 1800 245 092 so we can assist you with reading your water meter.**

To read the meter:

1. Lift the protective flap on the water meter. The engraved number on the metal casing of the meter is the meter serial number, which identifies which property the meter belongs to. This number also appears on your water bill.
2. Read the meter dials from left to right. Power and Water Corporation needs to know the first digits in the white dials to calculate your bill. This tells us how many kilolitres of water you have used. The last three or four dials on the right (depending on the meter) measure litres used. Only kilolitres are used to read your bill.

Figure 2: Typical ITRON residential meter

Figure 3: Typical Elster residential meter



For example, in Figure 2 above, there are four white dials. This household has used 1234 kilolitres of water since the meter was installed.

In Figure 3 there are five white dials. This household has used 12 345 kilolitres of water since the meter was installed.

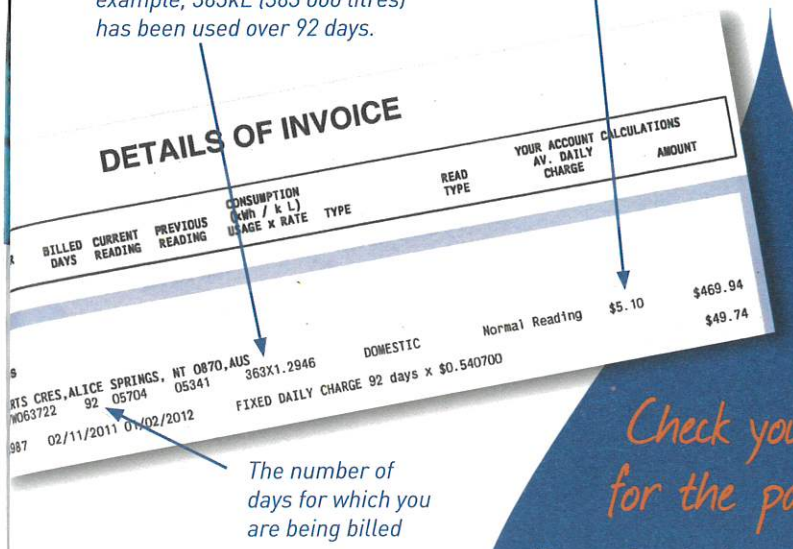
Know your water use

Is your water use above the Alice Springs' average?

Refer to the guide below to understand your water use.

- The average Alice Springs house uses 490kL per year.
- A water efficient house in Alice Springs uses on average 370kL per year.

Figure 4: How to read your water bill

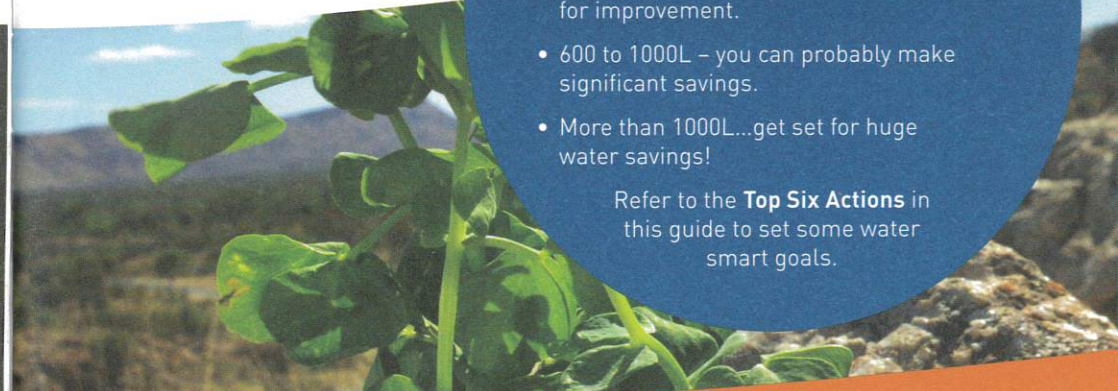


Check your bills for the past year

How much water do you use per day?

- 100 to 200L per person per day – excellent!
- 200 to 600L – good, however there is room for improvement.
- 600 to 1000L – you can probably make significant savings.
- More than 1000L...get set for huge water savings!

Refer to the **Top Six Actions** in this guide to set some water smart goals.



The Top Six Actions for saving water

There are great opportunities to save water in Alice Springs. Alice Water Smart has worked with the community to create the **Top Six Actions** for the greatest impact on water savings, while maintaining the great Alice lifestyle of beautiful gardens, great parks and ovals, and cooling off in the pool.

The **Top Six Actions** have been tailored to make the most water savings in Alice Springs. We can all play our part to make Alice water smart by implementing the **Top Six Actions** to save water:

1. **Use efficient irrigation and adjust water timers seasonally**
2. **Water between 8pm and 8am**
3. **Set an appropriate water schedule**
4. **Find hidden leaks – conduct the hidden leak test**
5. **Fix leaks quickly**
6. **Learn and pass on your skills to be water smart**

Did you know?

Through Alice Water Smart it has been identified that one in three homes in Alice Springs has a leak. Fixing leaks can make up a quarter of household savings.

More than half of all water wasted in Alice Springs is through overwatering plants. If we watered the garden in a smarter way substantial savings are possible.

1 Use efficient irrigation and adjust water timers seasonally

Across Alice Springs, substantial water savings are possible in our gardens. To achieve maximum savings it is important that you use appropriate and efficient irrigation and ensure your water timers are adjusted for each season.

The most important water smart gardening action is to water your plants deeper, longer and less often.

Choose and use the correct irrigation equipment

Choosing the right irrigation equipment for your plants is key to saving water in the garden. There are so many different types available and some are more suited to particular plants than others. Use the following guide to help you decide what will be the most appropriate for your garden's needs.

Drip irrigation

Drip irrigation is the most efficient watering method, but only if it is installed and used correctly.

- It is ideal for catering to individual plant needs.
- Water is delivered slowly to the root zone where it is needed, encouraging deep strong roots.
- Fewer weeds grow because water is applied very specifically.
- It is versatile as you can add or remove drippers as needed.

Handy Hint

Make sure you know what the flow rate of your drippers is and check you have a pressure regulator installed on any natives and vegetable patch irrigation lines. See page 13 for how to check the dripper flow rate and to find out more about pressure management.

Did you know?

- More than two thirds of water used in Alice Springs households is on our gardens.
- An estimated 80 per cent of Alice Springs gardens are overwatered.
- The average mains pressure in Alice Springs is **300 to 600 kilopascals (kPa)**, but the average garden dripper is designed to work at **100 to 200kPa**. Therefore, the amount of water flowing from your dripper can be much higher than advertised, which means you are using more water than you think and more than you need.
- Each square metre of lawn needs **1000 to 1500L** of water each year. Alice Water Smart found that the average Alice Springs lawn is getting **3000L** per square metre per year.
- A water smart lawn needs watering every few days in summer but only every few weeks in winter.
- In winter, overwatered plants cannot physically use the extra water as there is not enough sun to evaporate it from their leaves.

Types of drippers

Pressure compensating drippers

Pressure compensating drippers are best for most plants as they are much more likely to put out the water they are rated to, and will emit close to the same amount of water all the way along your irrigation lines. To learn more about regulating water pressure see page 12.

Fixed flow drippers

Fixed flow drippers allow you to quantify the amount of water you are putting on your garden. They are available in a range of flow rates, and are excellent for watering native trees, shrubs, grape vines, and palm trees.

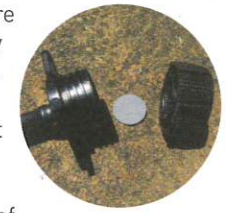
360° drippers

360° drippers have a much higher flow rate than other drippers and are better for watering shallow rooted plants. They are suitable for watering citrus, fruit trees and vegetable patches.

Inbuilt dripper line

Inbuilt dripper line is great for irrigating when lots of drippers are needed close together, such as a grid pattern for watering vegetable patches.

Two piece drippers



Two piece drippers are good as they are easy to clean and unblock. The cap unscrews to allow you to clear dirt and debris and rinse with water. They are available in a variety of flow rates.

Sub-surface dripline

Sub-surface dripline is polypipe with inline drippers at regular intervals. It can be used for vegetable patches, lawns and general landscaping. It is a very water efficient way of watering as all the water goes straight to the root zone, however this system should be professionally designed and requires regular maintenance to ensure roots don't block the emitters.

For advice on the best type of drippers to use for different plant types, see pages 18 to 20 or visit the free online Alice Springs Garden Watering Planner at alicewateringplanner.com.au

Other types of irrigation

Sprinklers and Pop-ups

Pop-up sprinklers are generally used for lawns. There are three main types of pop-up sprinklers – fixed sprays, single stream rotating pop-ups and multi-stream rotating pop-ups. They each have greatly different output rates and some are better at evenly distributing water, meaning less can be applied.

Overall, multi-stream rotating pop-ups are the most efficient and can reduce water use for a lawn by a third. Refer to the schedule or the recommended run times of these different sprinklers on page 18.

Hose connected movable sprinklers can be used but are less efficient. They need to be manually moved and are prone to overspray. Sprinklers are different to micro-sprays and misters, as most water from micro-sprays is lost to evaporation.

Rotating pop-up

Fixed pop-up

Sprinkler

Hose

Hand watering with a hose is ideal for introducing new plants to an established garden or for gardens with just a couple of plants. It is labour intensive and relies on you being home, so no long holidays! Use a trigger nozzle on your hose to save water.

Hose

Handy Hint:
Water longer, less often

In our central desert region watering less frequently and more deeply, rather than frequent light watering, will encourage deep root growth development and make plants more drought tolerant. Wean your garden to longer intervals between watering and gradually increase the length of time it gets watered for.

Regulating pressure and flow rate of your irrigation

Did you know that water pressure can greatly impact the amount of water you use when watering your garden? Pressure management is where irrigation can get a bit tricky, however it is worth paying attention to, as it can literally save you hundreds of litres of water.

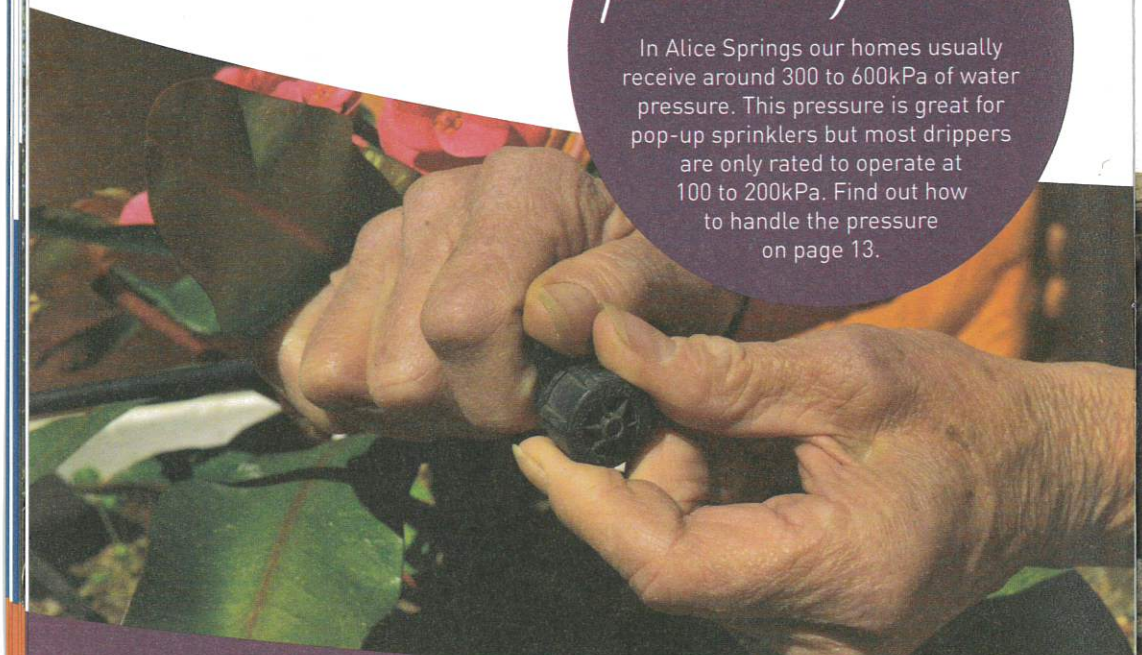
Too much water pressure puts strain on your irrigation system, causing leaks and overwatering. In Alice Springs our homes usually get around 300 to 600kPa. This pressure is great for pop-up sprinklers but most drippers are only rated to operate at 100 to 200kPa and ordinary black poly irrigation pipe is rated to a maximum of 300kPa.

The impact of extra pressure on your water use

This extra pressure means that drippers that are supposed to flow at 4L/hr can flow as high as 20L/hr. If you have 30 drippers on a line with no pressure management and you water your garden for three hours, you may put out 1800L instead of 360L. That's equivalent to approximately five large wheelie bins of wasted water each time you irrigate!

Handy Hint: What kind of pressure are you under?

In Alice Springs our homes usually receive around 300 to 600kPa of water pressure. This pressure is great for pop-up sprinklers but most drippers are only rated to operate at 100 to 200kPa. Find out how to handle the pressure on page 13.



Do you know what your dripper flow rates are?

Dripper flow rates can vary from 2 to 120L/hr, so it is worth checking!

To check your dripper flow rate simply put one in a bucket, run it for half an hour and see how many litres of water you get. To calculate the number of litres per hour, simply multiply this result by two.

Be watchful while you are conducting the test, as faster flowing drippers may fill a bucket in five minutes!

How to handle the pressure

Pressure regulators or flow restrictors ensure that water pressure is kept under 300kPa and will take the strain off your irrigation pipes and joints. Pressure compensating drippers with a fixed flow rate ensure that drippers put out the water they are rated to. Both are cheap to buy and easy to install and will help you save water and money.

Pressure regulators also reduce the chance of pipes and fittings bursting. See page 14 for easy ways to look after your drippers.

Note: The irrigation schedules provided on pages 18-20 assume you are using 4L/hr drippers and 60L/hr 360° drippers.

Handy Hint:

A pressure regulator can reduce the tap flow to 1-5L per minute, enough for an irrigation line with 4L/hour drippers. This is much lower than the 30 to 60L/minute flow from a normal (unrestricted) garden tap.

How to maintain your dripper systems

- Check lines at least once a year for leaks and blockages.
- Cover pipes with mulch or soil. Sun exposure increases calcium build-up and plastic deterioration.
- Drippers can get blocked by ants, dirt, calcium and more. Clear blockages by dismantling drippers and soaking in vinegar.
- Dripper diaphragms can corrode and get eaten by ants so look for ant-resistant ones. Labyrinth-style drippers have no diaphragms but get blocked easily.
- Salt builds up on the edge of the dripper zone in some soils if there has been little rain to wash it down. Give a deep flush watering (about 20-30L) once a year to help reduce this.
- If you cut through the pipe, fix it immediately. Flush any dirt out, cut the pipes cleanly and splice with a joiner and clamps.
- Install a filter and clean it regularly.

Handy Hint:

Avoid putting drippers with very different flow rates on the same line. This will help you manage the pressure and flow of your irrigation system.

Handy Hint:

Check your drippers for redundant outlets. Seal them up or move the dripper to a more useful location. Fix any leaks.

Weather sensors

There are a few really clever bits of technology available these days that fit on most irrigation controllers. These sensors measure solar radiation, soil moisture, rainfall or a combination of these.

Solar sensors are particularly good for Alice Springs. They measure the solar radiation and adjust irrigation accordingly. It's like seasonally adjusting your irrigation every time you water! They are cheap to buy and most new controllers have a port where they can simply be connected.

Adjust water timers for the seasons

Adjusting your irrigation controller or tap timer for each season will save a lot of water being wasted. A good time for seasonal adjustments to occur in Alice Springs is at the end of February, May, July and October.

A watering schedule for different types of plants, in the different seasons can be found on pages 18-20.

For advice on what to do in the garden during each season visit the free online Alice Springs Garden Watering Planner at alicewateringplanner.com.au

It is easy to forget to adjust your irrigation controller! Put a reminder in your calendar to turn the irrigation up or down when the seasons change.

Irrigation controllers and tap timers

Using a tap timer or irrigation controller will ensure your irrigation is not running longer than it needs to and your plants are getting the right amount of water when they need it.

Many different options are available, from easy to install mechanical tap timers that don't need batteries, to hard wired irrigation controllers. Combine them with a solar sensor for the ultimate no-touch water wise irrigation schedule.

To learn how to set your irrigation controller visit the Alice Water Smart website for videos and tips at alicewatersmart.com.au

2 Water between 8pm and 8am

A lot of water can be wasted through evaporation if you water gardens during the hot parts of the day.

Watering before sunrise or after sunset means more water for your plants and less for the sun. As a general rule, try and water before 8am and after 8pm.

This action is easy and quick to implement.
It might mean a simple change in your watering habits, or adjusting your irrigation controller or timer to change set irrigation times, to make big water savings.

Note: On some occasions it may be necessary for organisations like the Alice Springs Town Council to water parks and ovals during the day, such as when watering in fertiliser, testing irrigation or to avoid vandalism at night.

3 Set an appropriate water schedule

Give your plants just the right amount of water they need for the Alice Springs' climate.

Through more than 1000 Alice Water Smart Water Efficiency Consultations, it has been identified that more than two thirds of water in Alice Springs households is used on our gardens and an estimated 80 per cent of Alice gardens are overwatered.

Imagine just how much water could be saved if everyone used their irrigation systems to the best advantage and watered according to plant needs.

How long and how often to water each plant type, whether it's natives, fruit trees and other exotics, lawns or vegetable patches, is a crucial skill that many people in Alice Springs say they need help with.

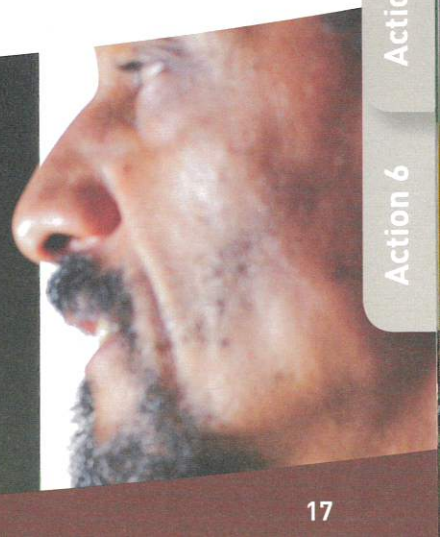
Important: Water deeper, longer and less often. This encourages deep-rooted plants. Plants with deep roots are better able to access water, won't blow over in strong winds and generally thrive in our climate.

Use the watering schedule on the next few pages to work out how much water to give your plants. It includes the plant type to be watered, as well as the season in which you are watering.

For a personalised watering schedule for your garden, visit the free online Alice Springs Garden Watering Planner at alicewateringplanner.com.au

Did you know?

- Smart watering in an average garden would save the amount of water equivalent to 310 hours under the shower over a year.
- Overwatering will not make plants healthier; it adds excessive salt to the soil, increases soil pH, can leach out valuable nutrients and is a waste of precious water.



Ideal garden watering planner for Alice Springs

A 👍 shows the most efficient irrigation device for each plant type.

Visit the online Garden Watering Planner for more information on device suitability at alicewateringplanner.com.au

Lawn and turf

Summer – 3 times a week	Autumn – every 5 days	Winter – once a week	Spring – every 5 days

Rotating pop-up	Fixed pop-up	Sprinkler	Hose
			
80 mins	15 mins	30 mins	2 mins/m²

Native trees and shrubs

Between one and three years old

Summer – once a week	Autumn – once a week	Winter – once a fortnight	Spring – once a week

Dripper	360° dripper	Inbuilt dripper line	Hose
			
330 mins[1]	25 mins[1]	65 mins[2]	3 mins/plant

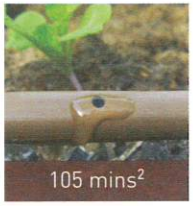
1 Divide by number of devices per plant or tree. Assume you are using 4L/hr drippers and 60L/hr 360° drippers.

2 Divide by length (m) of inbuilt dripper line per plant or tree.

Native trees and shrubs

Between three and six years old

Summer – once a month	Autumn – once a month	Winter – every 2 months	Spring – once a month

Dripper	360° dripper	Inbuilt dripper line	Hose
			
530 mins[1]	40 mins[1]	105 mins[2]	4 mins/plant

Citrus

Summer – twice a week	Autumn – every 5 days	Winter – once a week	Spring – every 5 days

360° dripper	Inbuilt dripper line	Hose
		
250 mins[1]	665 mins[2]	20 mins/tree

Grape vines

Summer – twice a week	Autumn – every 5 days	Winter – once a week	Spring – every 5 days

Dripper	360° dripper	Inbuilt dripper line	Hose
			
660 mins[1]	50 mins[1]	130 mins[2]	4 mins/vine

1 Divide by number of devices per plant or tree. Assume you are using 4L/hr drippers and 60L/hr 360° drippers.

2 Divide by length (m) of inbuilt dripper line per plant or tree.

Palm trees

Summer – twice a week	Autumn – once a week	Winter – once a month	Spring – once a week
Dripper	360° dripper	Inbuilt dripper line	Hose
 330 mins[1]	 25 mins[1]	 65 mins[2]	 2 mins/tree

Vegetables

Summer – every 2 days	Autumn – every 3 days	Winter – twice a week	Spring – every 3 days
Inbuilt dripper line	360° dripper	Hose	Dripper
 40 mins[3]	 15 mins[4]	 2 mins/m²	 215 mins[5]

1 Divide by number of devices per plant or tree. Assume you are using 4L/hr drippers and 60L/hr 360° drippers.
2 Divide by length (m) of inbuilt dripper line per plant or tree.
3 Assumes 30cm spacing between inbuilt dripper lines.
4 Assumes one 60L/hr 360° dripper per m².
5 Assumes three 4L/hr drippers per m².

Handy Hint:

Every now and again when you water ensure the depth of wet soil is enough for your plants to grow deep roots:

- Vegetable patches and lawn 20 to 30cm.
- Fruit trees about 50cm.
- Natives 50 to 100cm.

Simply dig a small area near the plant to see if the soil is wet.

Give your plants time to adjust

Plants will not enjoy a sudden change to their watering. Reduce watering slowly and watch your plants to ensure they are coping. Wean over the cooler months for best results and hand water the more sensitive ones if needed.

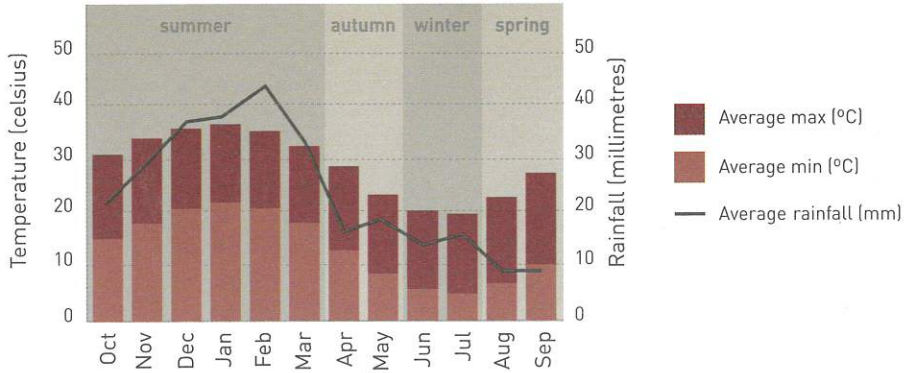
For example, if you are watering established natives every day:

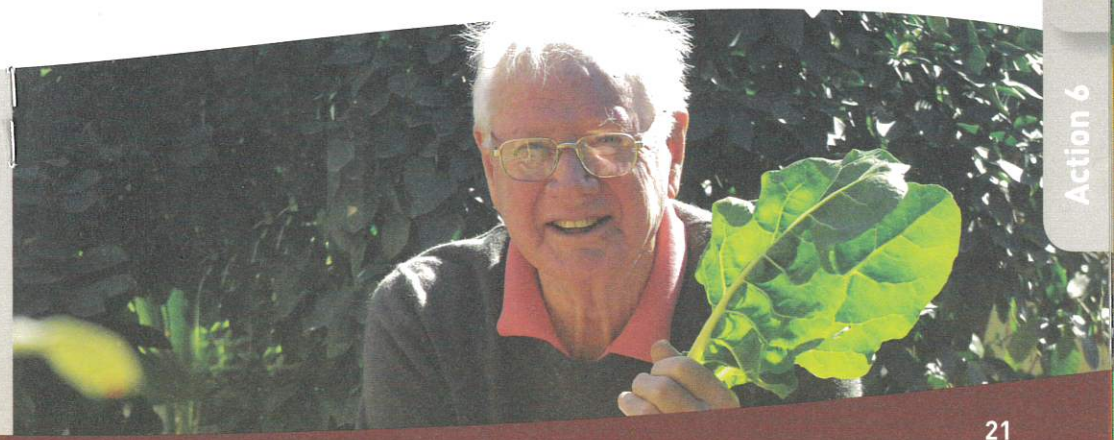
- Reduce watering to every second day.
- After two months, water twice a week.
- After another two months, water once a week.
- Consider adding more drippers to thirsty plants.
- If most other plants are thriving, accept the loss of a few non-hardy plants.

Using a fixed pop-up sprinkler, a lawn watered for 10 to 15 minutes a day in summer can be weaned (with correct management) to 15 minutes, three times a week.

Make scheduling changes gradually and keep an eye on your plants, especially in summer.

Figure 5: Alice Springs climate throughout the year





Other resources for designing your garden in Alice Springs

For more detailed garden design information, refer to the **Alice Water Smart Garden and Irrigation Guide**.

You can also visit the free online **Alice Springs Garden Watering Planner** at **alicewateringplanner.com.au** for:

- Water efficient garden design information.
- A list of plants indigenous to Alice Springs that will do well in local conditions and support the local ecosystem.
- Local climate and watering information.
- An online tool to create an ideal Alice Springs' watering schedule for your plants.

Garden design

How you design your garden will have a big impact on how water smart it is, as well as the general wellbeing of your plants. The following are just a few practical and helpful hints on designing a water smart garden.

Group plants with similar watering requirements

How you group your plants in the garden is crucial to saving water. Group plants with similar water needs together. For example, group native plants separately to fruit trees. This will mean they are all on one irrigation line. You can then control the amount of water that goes to plants on different lines. If zoning is poor, for example if citrus trees and natives are on the same line, the citrus will be underwatered and the natives will be overwatered.

Location of your plants

We all know the sun rises in the east and sets in the west, but did you know the best place to plant thirsty plants is on the eastern side of your house block? Here they will receive less of the hot western afternoon sun and therefore will require less water.

Plant thirstier plants or a vegetable patch on the eastern side of your block to reduce the hot summer sun they receive.

Mulch

Use mulch to reduce evaporation and improve the soil.

4 Find hidden leaks – conduct the hidden leak test

Sneaky leaks

Leaks can go unnoticed for years and you may not even notice any obvious signs. If you have had a leak for many years, you may not necessarily even notice it with an increased water bill.

Luckily there is a simple test you can do at home to test for hidden leaks, called the **'Two Step Hidden Leak Test'.** It only takes around 10 minutes to complete.

The 'Two Step Hidden Leak Test'

Ask people in your home or business not to use water while you do the test.

Step 1: Take a reading of the two right hand digits on your water meter.

Step 2: Wait 10 minutes, remember not to run any water during this time. If after 10 minutes there has been any movement in your meter reading, you have a leak. Even the smallest movement in your meter reading can add up to a lot of water over a year.

For more information you can watch the 'hidden leak test' video on the Alice Water Smart website.

5 Fix leaks quickly

Finding and fixing leaks is an easy and common sense way to avoid water waste and save money on your water bill.

In Alice Springs, one in three homes that Alice Water Smart conducted a Water Efficiency Consultation in had a leak.

Leaks account for **25 per cent of potential water savings for households.**

If your water bill is higher than normal, it may be due to a leaking pipe or appliance.

Leaks waste our precious non renewable water resource and waste your money.

Simple leaks can be easy to fix yourself if you learn how

Alternatively find out who can fix leaks for you:

- Identify a local handy person to help fix simple leaks.
- Get advice about fixing simple leaks in your home by talking to your local hardware store person.
- To have more significant leaks fixed, contact a plumber.
- Keep the numbers for handy persons and plumbers in a convenient location.

Found a leak?

- In the street – report it within 48 hours to Power and Water Corporation by calling 1800 245 092.
- In your home or garden – let the handy person or landlord know.
- At work – report it to the manager and/or maintenance person within 24 hours.
- At school – tell the maintenance person.

Become a leak detective

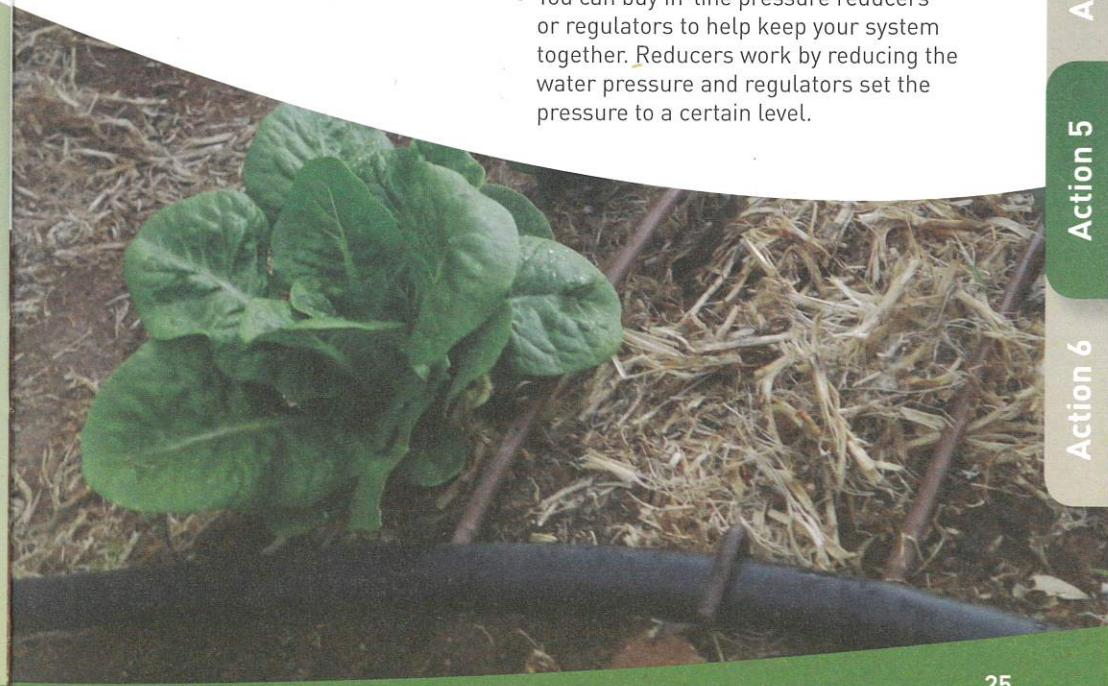
You are responsible for the pipes on your property, so here are a few signs to look out for to see if you have a leak and some tips on how to fix them:

In the garden

Leaks can occur regularly in the garden. Check for wet patches, green spots, popped off drippers, joiners or disconnections in the garden irrigation system every couple of weeks. Irrigation lines should be turned on during the day and inspected several times a year. If they are set to come on only at night you may never discover you have leaks or blown and blocked drippers.

If you do find a leak they are often quick and easy to repair:

- If your drippers are blowing off, your pipes continually split or your joints just don't seem to stay together, it's probably a sign that you have too much pressure running through your irrigation lines.
- You can buy in-line pressure reducers or regulators to help keep your system together. Reducers work by reducing the water pressure and regulators set the pressure to a certain level.



- Estimate how many drippers you have on the line and visit your local garden shop for some advice on which option (reducer or regulator) would best suit your situation.
- Sometimes when dripper lines get to a certain age they can become brittle and leaks keep reappearing. If that's the situation in your garden there is not much else you can do but replace them.
- Leaks in your lawn irrigation system can reduce water pressure, causing your pop-ups to stop popping up.
- The type of pipe you have connecting your pop-ups can affect how easy or hard these leaks are to fix. These pipes could be white PVC, or the more DIY user friendly black polypipe.
- Often it's easier to call in a garden expert to fix leaking pop-ups.
- When cutting pipes make sure the cuts are nice and square so they join easily to other pipes.
- If using joiners, push the pipes on as far as they go for a good seal.

Toilet leaks

Toilet leaks deserve a special category all to themselves as they can be responsible for wasting huge amounts of water. You might be surprised how much.

Leaking toilets can leak far more water than a tap. Alice Water Smart has found that on average in Alice Springs a leaking toilet can waste 200 000 litres per year – more than the national average household use in a year! Toilet leaks can also be much bigger than this.

Handy Hint:

Use a handy reminder to complete a quarterly 'hidden leak test' such as when your water bill arrives.

Toilet leaks can be hardly noticeable but are easy to find if you know what you are looking for. Any noise (such as hissing) or water movement (such as trickling) in the bowl can mean hundreds or thousands of litres a year is wasted.

How to check for toilet leaks:

- Add a few drops of food dye into the cistern.
- Leave the toilet for one hour without flushing it.
- If the dye ends up in the bowl your toilet has a leak.
- Leaks can happen at any time so be sure to conduct this test regularly, around every two to three months. A good reminder is every time your water bill arrives.

Other common household leaks

Check for dripping taps and showerheads on a regular basis.

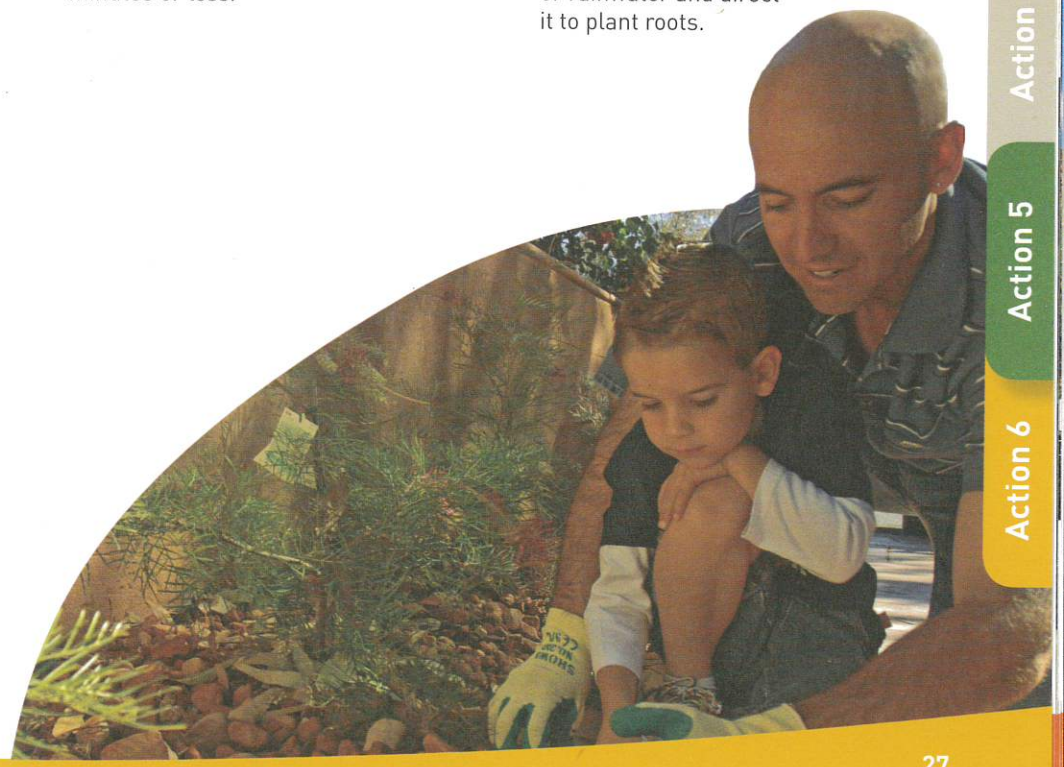
6 Learn and pass on your skills to be water smart

Water smart skills are invaluable. If you have water smart knowledge or skills don't forget to pass them on!

- Show a friend how to fix a simple leak.
- Help a neighbour to understand their irrigation timer
- Show your kids how easy it is to do the 'hidden leak test'.

Here are some more water smart actions to remind each other of:

- Sweep leaves with a broom or rake, not a hose.
- Ensure you have a water efficient showerhead and try to shower in four minutes or less.
- At the start of summer, check your evaporative airconditioner (swampy) 'bleed off' is set at 10 to 15 litres per hour and direct it into the garden.
- Use water efficient appliances where possible, including washing machines, dishwashers and car washes.
- Use a pool cover as often as possible.
- Consider reducing lawn areas. Even an efficiently irrigated lawn uses about 1400L/m²/year.
- When designing a new garden, consider water smart landscaping, such as swales. Swales are dry ponds and channels that collect irrigation water or rainwater and direct it to plant roots.



Other ways to be water smart around the home

There are many more ways to be water smart around the home. While the following actions won't have as big an impact on your water savings as the Top Six Actions, they will help to add up to even more savings.

KITCHEN

The dishwasher is the highest consumer of water in the kitchen. Installing a water efficient model will save you water and money.

Do dishwashers really use less water than washing by hand? It depends how you wash and rinse. A sink holds 10 to 20L. Dishwashers use 7 to 15L per load – older models use more. So for most people dishwashers use less water!

Before purchasing a new dishwasher or other appliances, check for a WELS (Water Efficiency Labelling and Standards scheme) label. The WELS scheme labels products for water efficiency – the more stars, the more water efficient the product. For more information visit waterrating.gov.au

Dishwasher tips

- Look for dishwashers that have a WELS Label. The best water rating achieved by dishwashers is 6 stars.
- Only use the dishwasher when you have a full load.
- Use the rinse-hold setting on the dishwasher, if it has one, rather than rinsing dishes under the tap.
- Use the dishwasher 'eco' setting if it has one.

General dish washing tips

- Only wash dishes when you have a full load or sink.
- If handwashing, rinse dishes in a tub or in half a sink of hot water, or wipe them with a damp cloth instead of rinsing.
- When washing dishes by hand, don't rinse them under a running tap. If you have two sinks, fill the second one with rinsing water. If you have only one sink, stack washed dishes in a dish rack and rinse them with a pan of hot water.
- Use washing-up liquid sparingly as this will reduce the amount of rinsing required when washing dishes by hand.
- Use a plugged sink or a pan of water. This saves running the tap continuously.
- Wash vegetables over a bowl and use the leftover water on the garden.
- Garbage-disposal units use about 6L of water per day. Put suitable food scraps into a composter or worm farm rather than down the kitchen sink. This will also cut down on landfill and improve your soil productivity.

TAPS

The amount of water from a tap depends on water pressure and tap type. An outdoor tap runs at up to 60L/minute. An inefficient indoor tap can use almost as much. A 3-star indoor tap uses 6L/minute.

Flow regulators and tap aerators are simple devices which regulate the flowrate of water coming out of taps. They can either maintain a set pressure or can vary with supply pressure. Different forms are available including tap inserts, in-line regulators, water-saving showerheads and tap outlet aerators.

Tap aerators screw on to the tap opening and restrict flow without affecting pressure. Check whether your tap needs a male or female fitting before you go shopping.

Top tap tips

- To avoid wasting drinking water from a running tap, collect it in a bottle or jug and store in the fridge until cool enough to drink.
- When boiling vegetables, use enough water to cover them and keep the lid on the saucepan. Your vegetables will boil quicker and it will save you water, power and preserve precious vitamins in the food.
- Flow-controlled aerators for taps are inexpensive and can reduce water flow by 50 per cent.
- Don't use running water to defrost frozen food. Ideally place food in refrigerator to defrost overnight.
- If you have a leaking tap, replace the washer or other components as required. Dripping taps can waste 30 to 200 litres of water per day.

Are your taps low flow?

Look at your taps and showerheads. Are they low flow? If unsure, check using a 10L bucket by turning the tap on for one minute. Less than a bucket per minute (around 9L/minute) is considered low flow.

LAUNDRY

Front loaders use less water than top loaders (typically 70L compared to 100L). A 5-star front loader uses about 60L/wash. When purchasing a new machine, check the WELS rating.

Other things you can do:

- Wait until you have a full load before washing.
- Use the water saving or eco function if your machine has one.
- Divert the greywater onto plants, but make sure you are using an eco-friendly phosphate-free washing product. Products like fabric softeners, brighteners and bleach are not good for your garden.
- Install a flow restrictor on your laundry tap if it is used for lots of hand washing and rinsing.

Are flow restrictors right for your house?

Calcium scale from hard water can quickly build up on flow restrictors and block the tap. Before kitting out every fixture, see how much the tap is using. If your water pressure is low you may not need restrictors. If a restrictor is needed, try installing just one and check for scale after a month.

Some old hot water systems cannot handle low-flow devices and will cut out. Some garden irrigation control boxes won't work well if flow restrictors are in place. Speak to a plumber for further advice.

BATHROOM

Toilets

Old-fashioned single flush toilets can use a whopping 12L per flush. In contrast, a 4-star dual flush toilet uses 4.5L for a full flush and 3L for a half flush.

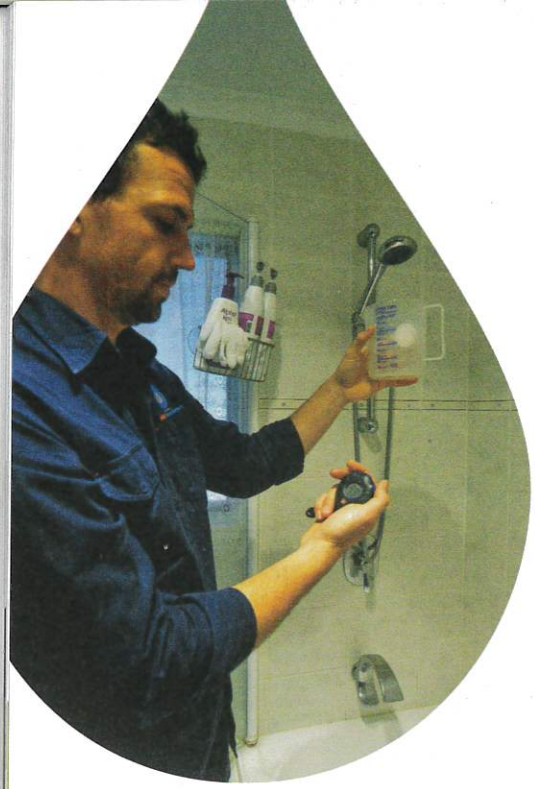
Single flush toilets can be replaced, however modern dual-flushes have a different shaped pan and you may need a new cistern as well. Check at the plumbing shop.

Other things you can do:

- Put a brick or full 2L water bottle in the toilet cistern to reduce the flush size.

Don't forget to check for toilet leaks

Leaks are the biggest culprit when it comes to water waste in toilets. Leaking toilets can leak far more than a tap – on average a leaking toilet can waste up to 200 000L per year. Fixing a leaking toilet is easy – it is part of Action 5 in the **Top Six Actions** for saving water in Alice Springs (refer to page 26).



Showers

Many people think that low flow showerheads mean a poor quality shower. Earlier low flow showerhead models aerated the water or simply reduced the number of outlet holes. No consideration was given to water pressure or temperature. These showerheads were generally not as good as the higher flow models.

Lots of research has gone into developing low-flow showerheads, which are now often 'laminar flow'. These showerheads produce a better stream that doesn't splash much, giving excellent coverage at a lower flow rate. They take into account water pressure, droplet size and temperature loss, so if you have tried one in the past and not been impressed, it might be time to try again.

Many people don't even realise they already have a relatively low flow showerhead (9L/min or less).

All new showerheads are 3-star showerheads which use less than 9L/minute or less, even the large rain style heads. These will use much less water than older models and not reduce the quality of your shower.

Check your showerhead flow rate

If there is no flow rate written on your showerhead, you can measure it by turning on the shower at its normal rate for 10 seconds and capturing the water in a bucket. Measure how many litres of water are in the bucket and multiply the figure by six to get the flow rate per minute.

Things you can do:

- Challenge everyone in your household to shower in less than four minutes.
- Catch water from showers in a bucket while waiting for it to warm up and use it on your garden.

How to replace a showerhead

1. Turn off shower taps (you don't need to turn off the mains water).
2. Remove existing showerhead (turn anti clockwise) using a spanner and cloth at the base next to the wall. Do not force it or use the shower arm for leverage.
3. Clean and dry the thread of supply outlet.
4. Wind several rotations of teflon tape around the supply outlet, keeping the outermost thread clear of tape.
5. Place a flange over the supply outlet.
6. Screw a new showerhead arm onto the supply outlet (turn clockwise to tighten).

Got solar hot water?

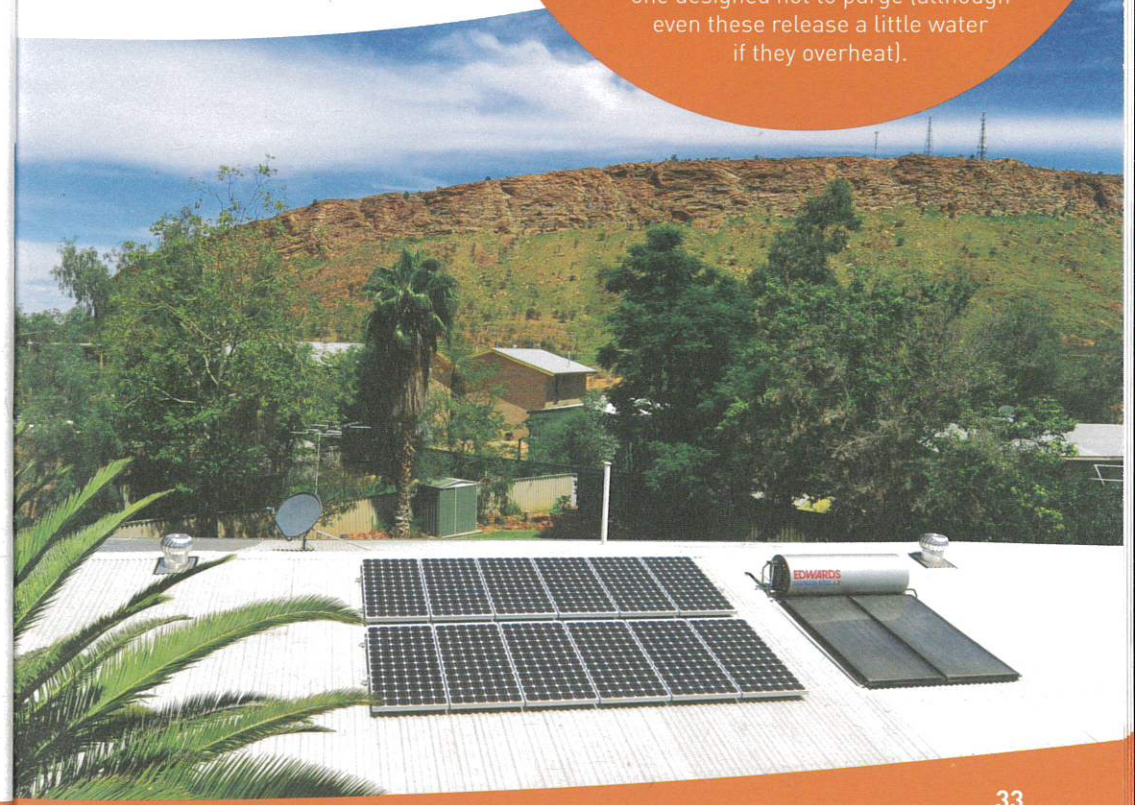
Reducing your hot water use is a great way to save power used to heat the water. If you have a solar hot water system, you can still take action.

- Insulate your pipes with lagging to help keep the water hot.
- Install a hot water recirculator that keeps water in the hot tap hot, so you don't waste cold water.

Is the solar hot water system meant to be dumping water?

Yes. Water is purged when older-style solar hot water systems overheat. However, excess purging is wasteful and it can be dangerous to have all that hot water coming off the roof. Try:

- having the valve checked or replaced at the next service
- covering half of the solar panel with shadecloth in summer
- replacing your system with a newer one designed not to purge (although even these release a little water if they overheat).



In summer in Alice Springs there can be up to three metres of water evaporation from your pool per year, about twice the average pool's volume.

How much water is lost through backwashing?

- Sand filters: 400 to 450L per backwash.
- Dichotomous earth: 100L.
- Cartridge filter: 0L.

The cleaner the pool, the less backwashing needed!

POOLS

Pools can account for nearly one fifth of a household's water use. Some evaporates, some leaks and some goes to backwash. If you have a pool:

- Use a pool cover to reduce evaporation and keep the pool clean.
- Shade the pool to help reduce evaporation. In summer 1-1.5cm of water will evaporate per day when a pool is in the sun or in breezy shade and about half that amount in winter. This equates to about 3m of evaporation, or twice the average pool's volume each year.
- Keep the pool clean and empty the skimmer basket daily to reduce filter back flushing.
- Experiment with how little you can run the filter pump and still maintain a healthy pool.
- Consider turning the system off (with a pool cover) over winter and rebalancing for summer.

EVAPORATIVE AIRCONDITIONING

An evaporative airconditioner or a 'swampy' is the most common system used in Alice Springs. Did you know they can use 20 litres of water per hour? Refrigerative airconditioners don't use any water, but can dry the air and use a lot of power.

To increase the water efficiency of your swampy:

- Have the pads cleaned regularly.
- Adjust bleed to 8 to 15 litres per hour for Alice Springs town water (bleed needs to be higher if water is saltier).
- Use bleed on salt-tolerant plants or to top up the pool.
- Turn off bleed if rainwater is used.
- Close down the house at the start of the day (shut windows and pull down blinds etc) to keep cool and to minimise amount of time the airconditioning needs to run.

GREYWATER

The shower, bath and washing machine water are good sources of greywater. Water from the kitchen sink is usually unsuitable as it contains a lot of fats and oils.

Greywater regulations

Regulations are set by NT Department of Health. Permanent systems must be installed by a licensed plumber and the model must be NT approved. Check the Department of Health website for an up to date list. The following information provides general guidance only.

Do it yourself greywater diversion

Ways of collecting greywater include:

- Running a hose from your washing machine to the garden. Move the hose around; don't always water the same patch.
- Bucketing greywater from your bath or shower.
- Siphoning water from a bath or laundry tub (don't suck to create the siphon!).
- Pumping water out of the bath with a small low-voltage pump.
- Divert from exposed outlets using a rubber funnel or diversion valve.

Permanent greywater diversion devices

Most commercially available greywater systems are greywater diversion devices (GDDs). They take the greywater from your house, store it in a surge tank and deliver it to the garden.

This greywater is essentially untreated. Large objects like hair and lint are removed however bacteria, chemicals and nutrients are not. It is important to follow the Environmental Health guidelines.

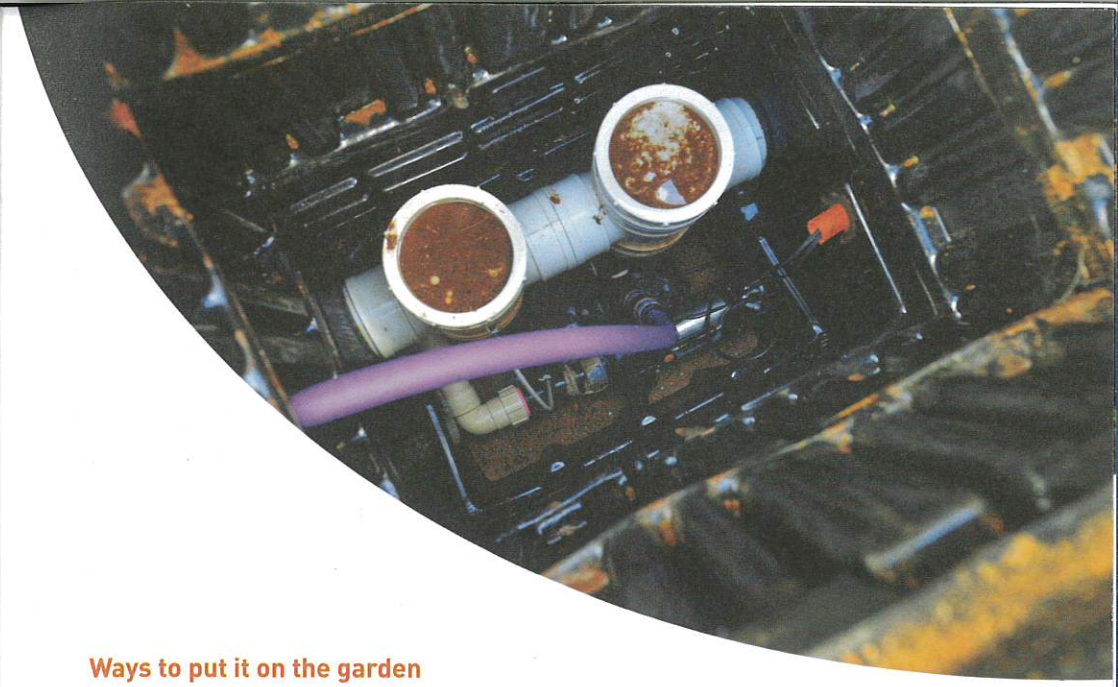
Installation is easiest where greywater pipes are accessible (not under a concrete slab) and are separate from blackwater pipes.

Greywater treatment systems

Untreated greywater is unsuitable for indoor use. If you want to use greywater to flush toilets or wash clothes, you could install a greywater treatment system. Treated greywater is better quality and you can store it, however these systems cost more to set up and service.

Some important requirements include:

- Don't let greywater puddle on the ground.
- Use greywater within 24 hours of collection so bacteria doesn't breed.
- Bury dripline (or crates or slotted flexi-pipe) under at least 10cm of soil or mulch.
- Don't use it on root vegetables or let it come into contact with the parts of the plant you eat.
- Use lilac-coloured pipe to show where greywater is being used.
- The irrigation set-back is 1.5m from buildings and 1m from the property boundary.
- Divert greywater back to sewer if it is too dirty or contaminated. Don't use on the garden.



Ways to put it on the garden

Gravity feeding may be possible if the greywater source is high above the garden. If not, you will need a pump. Feed diverted greywater into:

- Irrigation cones or crates
- Gravel trenches
- Slotted flexi-pipe
- Sub-surface dripline (use a filter!)
- Bucketing or hose diversion (temporary systems only).

Never use greywater with sprinklers. Remember to alternate greywater with tap water or rain water.

Garden friendly greywater

Greywater can contain salts, chemicals and nutrients. This can cause soil problems if the garden relies totally on greywater.

Older citrus and mulberries can often tolerate up to three washing machine water loads a week in the warmer months.

Some plants (indoor plants, ferns and some natives) are too sensitive for greywater. To care for the garden:

- Minimise use of products like detergents, fabric softeners, brighteners and bleaches.
- Look for biodegradable, low phosphorus 'greywater safe' detergent. Laundry liquids contain less salt than powders.
- Remember that greywater tends to be alkaline. Don't put it on acid loving plants.
- Use greywater on well-draining soils.
- Alternate the plants you use it on.
- Supplement with mains or rainwater.
- Don't use greywater if you have put chemicals in it.

Refer to the Department of Health website for more information.

Buying water efficient products

WELS stands for Water Efficiency Labelling Scheme. The WELS water rating label provides water efficiency information for water-using household products (ie taps, toilets).

The label carries two important pieces of information to help you compare products – stars and water consumption or water flow figures. The more stars and the lower the number means the better the product. Compare products at waterrating.gov.au

Smart Approved WaterMark

SAWM stands for Smart Approved WaterMark. It is a voluntary label used on outdoor products such as pool covers or trigger nozzle hoses. It indicates that the product is water saving but does not give it a rating. For more information visit smartwatermark.org

WaterMark confirms that a product complies with the Plumbing Code of Australia. Products certified under the WaterMark scheme include innovative designs that are specifically aimed at reducing water usage.

Did you know?

While it is very worthwhile choosing water efficient equipment to contribute to your household being water smart, it is the **Top Six Actions** described in this Guide that are going to make the most difference to your water use.

Are you renting your home?

Whether you are renting or own your home, you can always implement water smart measures. If renting, seek permission to install these temporary items:

- Tap aerators
- A laundry greywater diversion hose
- Water efficient showerheads
- A brick in the toilet cistern.

You might need to discuss with your landlord more permanent items like rainwater tanks. Emphasise the water bill savings and offer to contribute to the project. At least source quotes and research rebates. Visit alicewatersmart.com.au for more ideas and information.

Water harvesting

Rainwater is fantastic for plants. It is:

- Low in salt
- Not alkaline like mains water.

Unlike the Alice Springs mains supply it is "soft" and is good for:

- Washing clothes or hair – more suds with less soap.
- Using in a hot water system or evaporative airconditioner to prevent scale.
- Supplementing mains groundwater supply to help conserve supplies for the future.
- Taste! Many people prefer the taste.

Water harvesting covers a range of techniques that allow you to collect, store and use the rain that falls onto your block.

Landscaping

Direct and channel water run-off from roofs and other hard surfaces. Swales (contoured ditches), low ridges and sumps add interest to a garden and also channel and collect rainwater. Rainfall is unlikely to sustain a garden, however you can still make the most of it.

- Divert run-off from roofs, paved areas and driveways with shallow spoon drains or simulated creek lines to high water usage areas like garden beds or under fruit trees.
- A dry creek bed with a large central sump can be a landscape element and a large reserve for water run-off.
- Install gravel or sand ditches.
- Plants that need more water should be put in swales.
- Terrace sections of slope to hold run-off.
- Build paved areas slightly higher than garden areas so water runs off instead of puddling.
- Put pot plants outside when it rains.
- Create dishes around trees and channel water into them.

When creating water harvesting structures keep in mind that big rainfall events will create large water flows. Make sure water flows end up in channels or spoon drains low to avoid erosion.

Rainwater tanks

Types of tanks

There are many tank styles - big, small, round, tall and rectangular, underground tanks (to save space) and bladders for storing water under the house. Materials include concrete, fibreglass, galvanised iron and stainless steel. Think about how much space you have and how much storage you need.

It is estimated that installing a 10 000 litre tank on a medium sized house would save an average 40 000 litres per year*. For a comparison you could save 30 000 litres per year just by reducing showers from seven minutes to four minutes (based on a three-person family).

*Using desertSMART COOLmob rainwater tank calculator.

Other items you need

As well as space for the tank, you will need gutters, a first flush diversion device (this stops the dirtiest roof water from getting into your tank), leaf guards and insect screens.

If you plumb the tank to a fixture, you will probably need a pump and a filter.

A filter will help prevent drip irrigation from getting clogged.

Tank maintenance

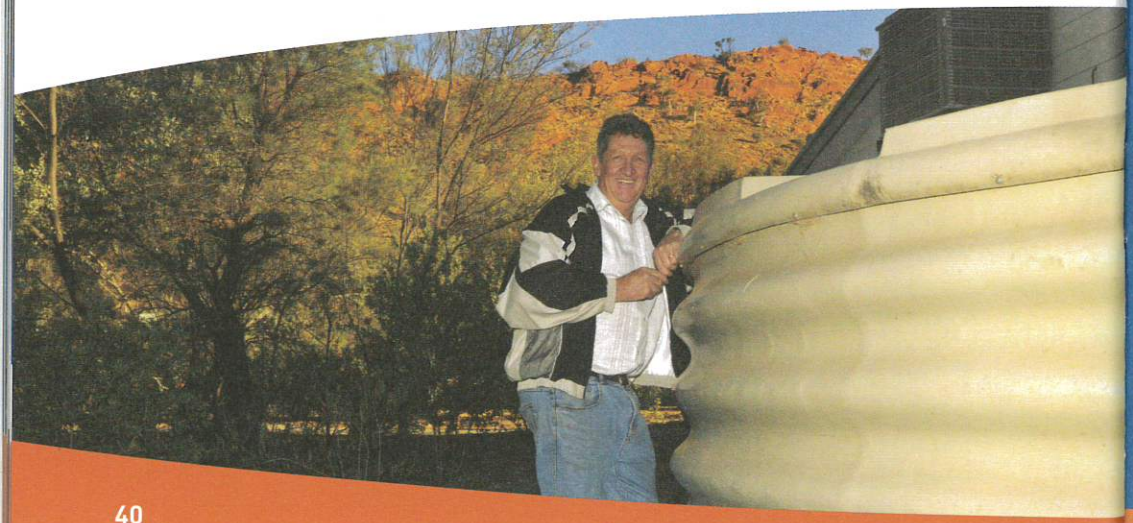
Tanks should last at least 20 years. Position your tank in the shade to extend its life.

- At the end of a dry period and between big rain events clean gutters and screens and flush out first flush tanks.
- Make sure the roof is clean.
- Clean out sludge in the bottom of the tank every few years.
- Check screens are in good condition to keep animals and insects out.

Approvals and guidelines

Building approval is needed for tanks on stands, however not for tanks sitting on the ground. Depending on the rainwater tank set up you may need back-flow protection on the mains supply. Consult a back-flow accredited plumber for advice.

Refer to the Department of Health website for more information and consult a licensed plumber for installation advice.



Acknowledgements

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Further Information

Alice Water Smart alicewatersmart.com.au

Arid Lands Environment Centre alec.org.au

Department of Land Resource Management lrm.nt.gov.au

Department of Health health.nt.gov.au

Master Plumbers mpasa.com.au

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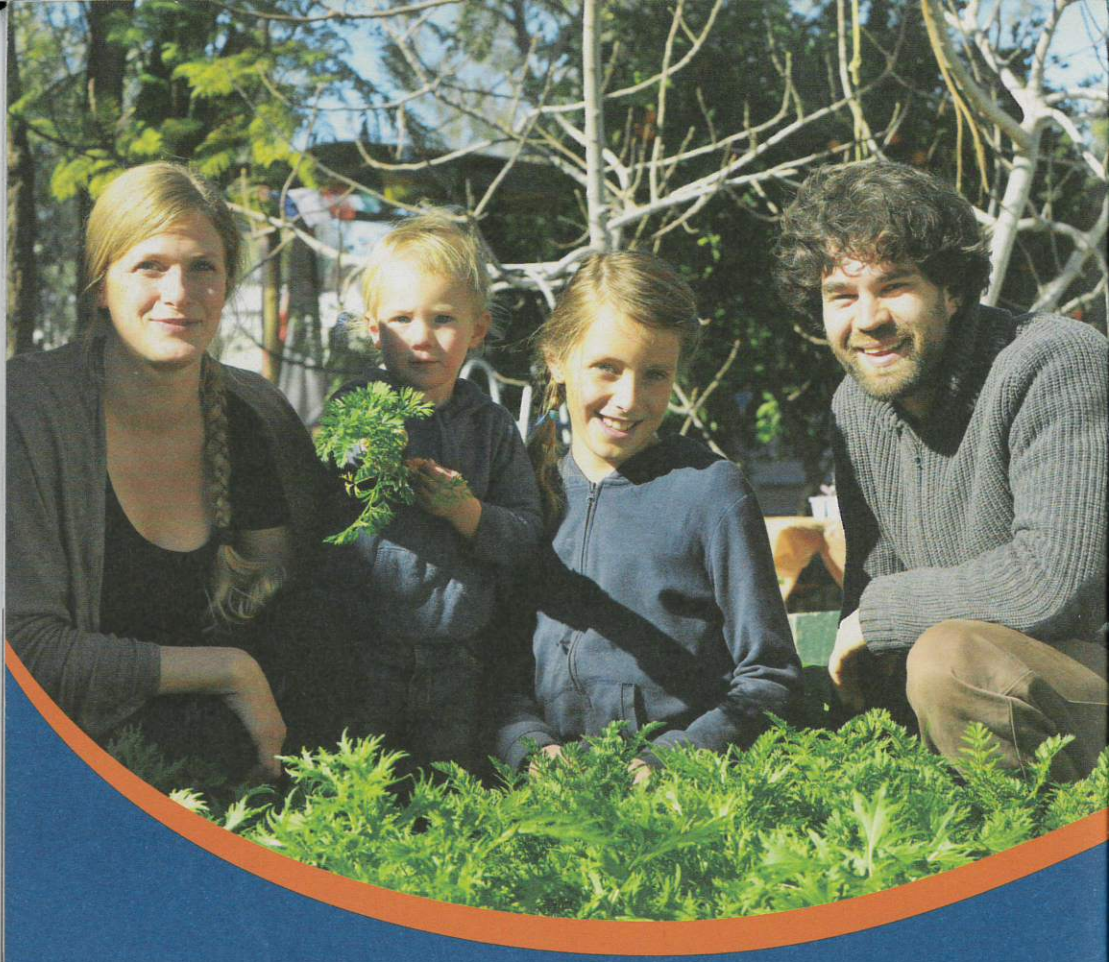

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