



# Welcome to Living Smart Week 8

## Water Smart



# Course Outline



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<i>Wk 1: May 27</i>	<i>Intro to Living Smart</i>
<i>Wk 2: June 3</i>	<i>Power Smart</i>
<i>Wk 3: June 10</i>	<i>Waste Smart</i>
<i>Wk 4: June 17</i>	<i>Gardening for Food</i>
<i>Wk 5: June 24</i>	<i>Travel Smart &amp; Peak Oil</i>
<i>Wk 6: July 1</i>	<i>Gardening for Biodiversity - Fieldtrip</i>
<i>Wk 7: July 8</i>	<i>Healthy You, Home, Office</i>
<b>Wk 8: July 15</b>	<b>Water Smart</b>
Wk 9: July 22	Beyond Living Smart
Wk 10: July 29	Community
TBA	Follow up



Slide 2

# Today's Program



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11:00-11:15	Start-up, review goal achievement
11:15-11:25	Where does all the water go?
11:25-11:40	Water saving – home and work inside and out
11:40-11:45	Drinking water
11:45-12:00	Goal Setting
	Eat!

# What Have You Done Since Last Week?



- In Table Teams:
  - Discuss what you have done since last week – did you contact your goal buddy?
  - Prepare to report back to main group;
- Time: 5 minutes

# Water



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# Where does it all go?



- What percentage of water used where?
- Total average household water use per person per year in Perth?



# Where does it all go...?



The Answer...

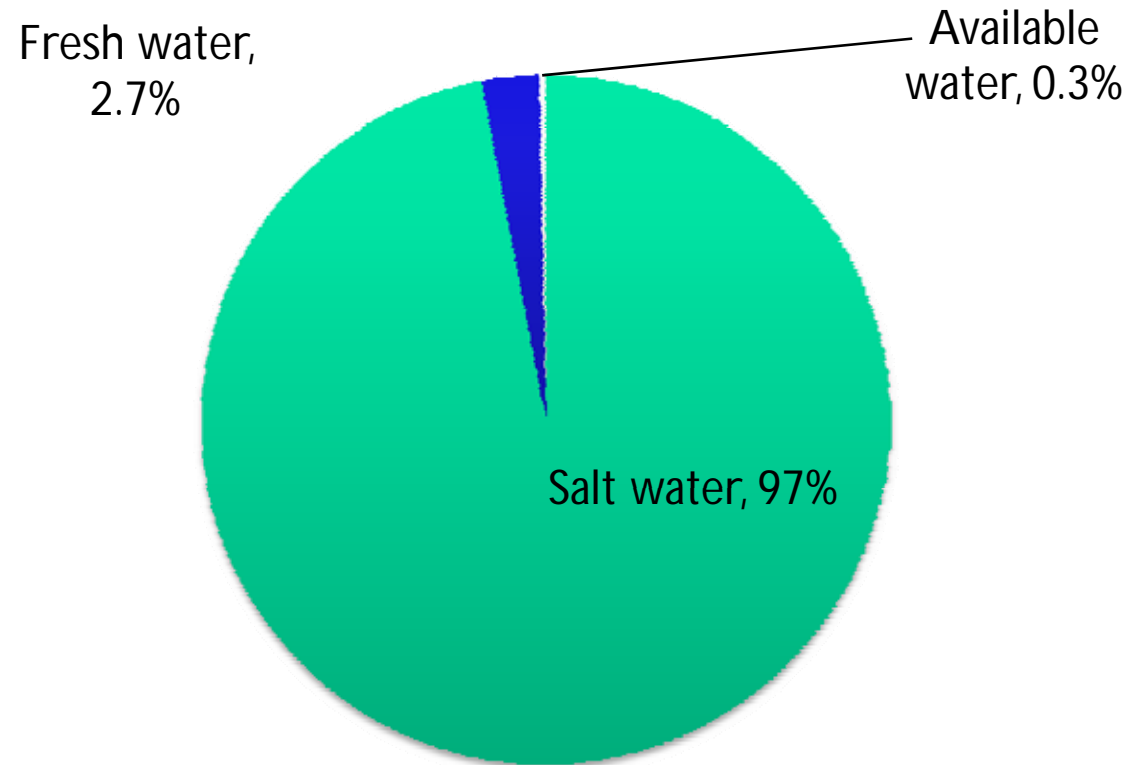
Wa

den  
%

14 %

# Water supply

- Approximately 75% of the Earth's surface is water.

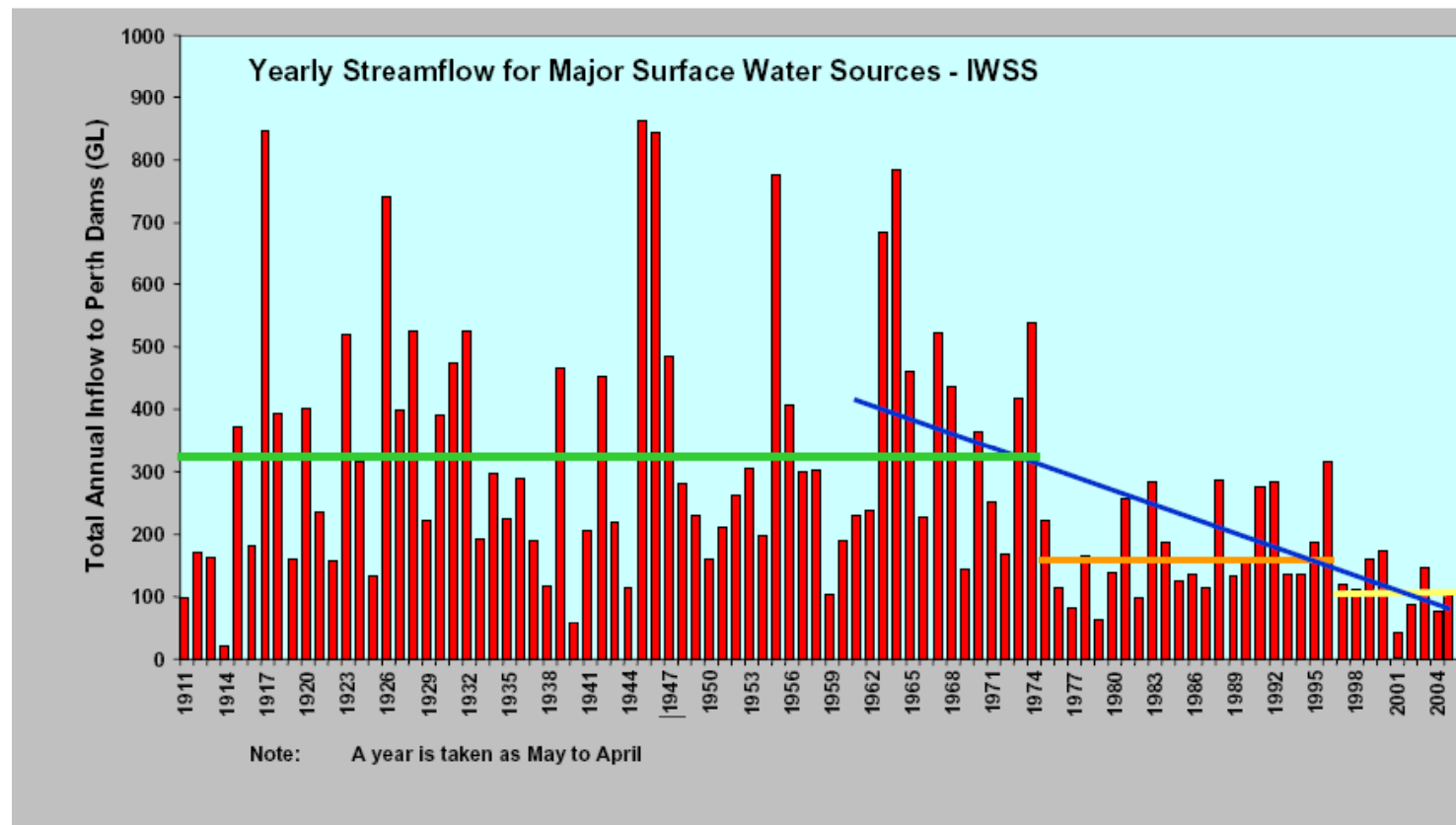




# Water availability in Perth

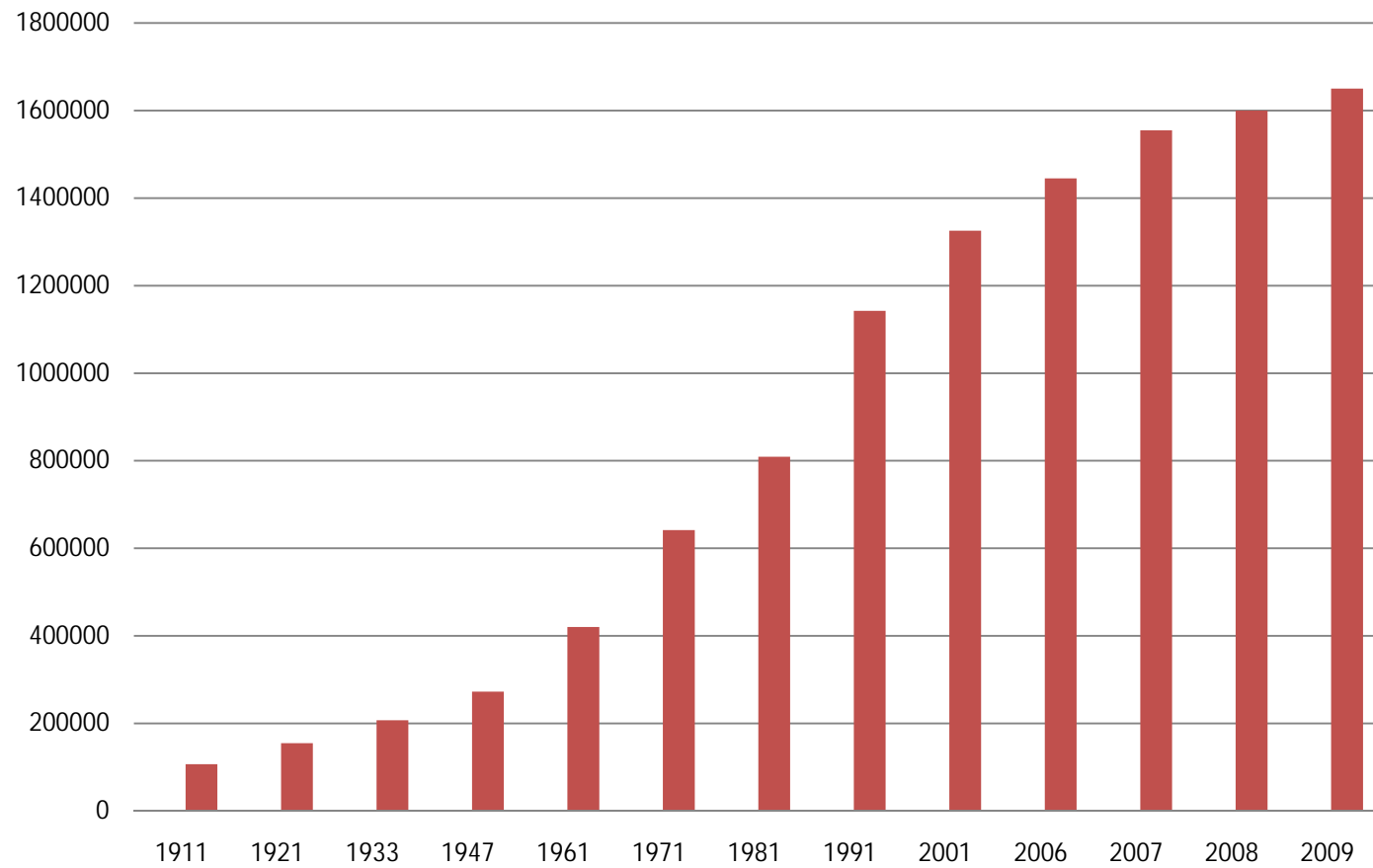


## Reduced Inflows to Dams





## Population of Perth Metropolitan area 1911-2009

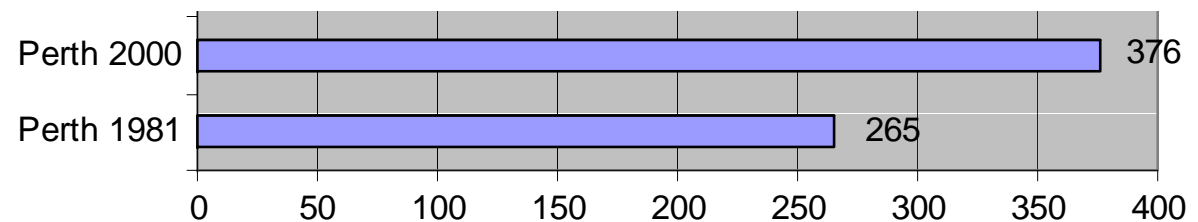


# How much do we use?



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Water Use in kL/person/year





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A collage of water-saving products and rebate information from the Government of Western Australia, crossed out with a large red X. The collage includes a sign for a \$30 rebate on Waterwise Garden Assessments, a sign for a \$200 rebate on Waterwise products, and a sign for a \$500 rebate on approved products. Below these signs is a text box with the following text: "Save water. Save money. Rebates are available on a range of Waterwise products designed to help you save water in your home and garden. These rebates apply to purchases made on or before 30 June 2009 and must be redeemed before 30 September 2009. For more information, and more Waterwise rebates, visit [www.water.wa.gov.au](http://www.water.wa.gov.au) or call 1300 133 646." The entire collage is crossed out with a large red X.

Government of Western Australia  
Department of Water

**\$30 REBATE**  
on Waterwise  
Garden  
Assessments

Up to  
**\$200 REBATE**  
on Waterwise products

Up to  
**\$500 REBATE**  
on approved products

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# How to reduce water use?

## • behaviour

Put the plug in

Cover pool

Mulch

Dirty car

Fix leaks and drips

Shorter showers

If it's yellow...

Choose waterwise plants

Full loads

Fewer showers

Use a broom

Turn the tap off

Reuse it

## • technology

Rainwater tanks

Drip  
irrigation

Dual flush  
toilets

Flow restrictors

Low flow shower  
heads

Grey water  
systems

Buckets and  
watering cans

Slide 13



# Low Flow Shower Heads



- Perfectflow Ultimate showerhead
- 5.5l per minute
- \$24.99
- [www.perfectflow.com.au](http://www.perfectflow.com.au)



# Shower Saver



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<http://www.showersaver.com.au/>

# What's Grey Water?



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# How much do we produce?



Number of bedrooms	Domestic Greywater Volumes (litres per day)			Total greywater flow
	kitchen	laundry	bathroom	
2 or less	72	126	153	<b>351</b>
3	96	168	204	<b>468</b>
4	120	210	255	<b>585</b>
5 or more	144	252	306	<b>702</b>

# Types of Greywater Systems

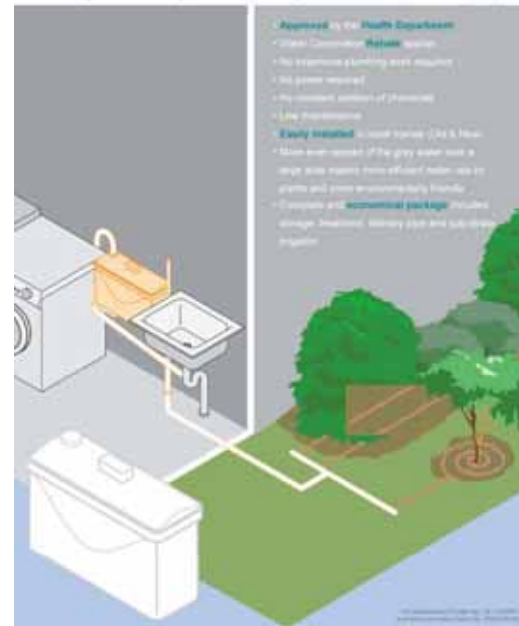


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**G-FLOW**

The Laundry Water Reuse System that can save your home up to **100,000** litres per year!



# A homemade greywater system





# Rainwater Collection



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# Storage



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Above ground

Below ground

Bladders and water walls

# Delivery

Gravity, Header tanks and pumps



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# Storage

# How big to go

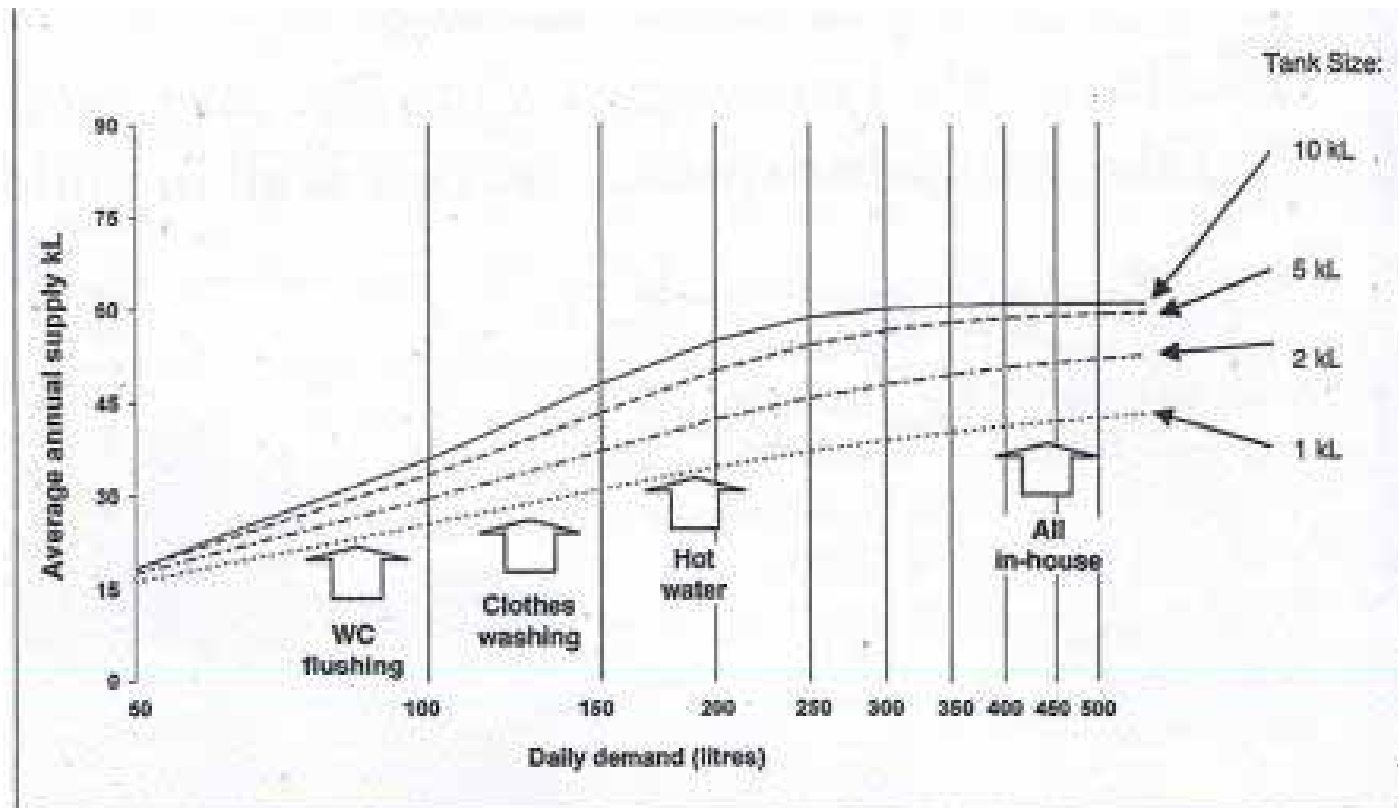


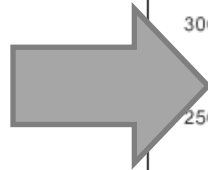
Figure 1. As the graph shows, an increase in tank size does not equate to an equivalent increase in tank yield.



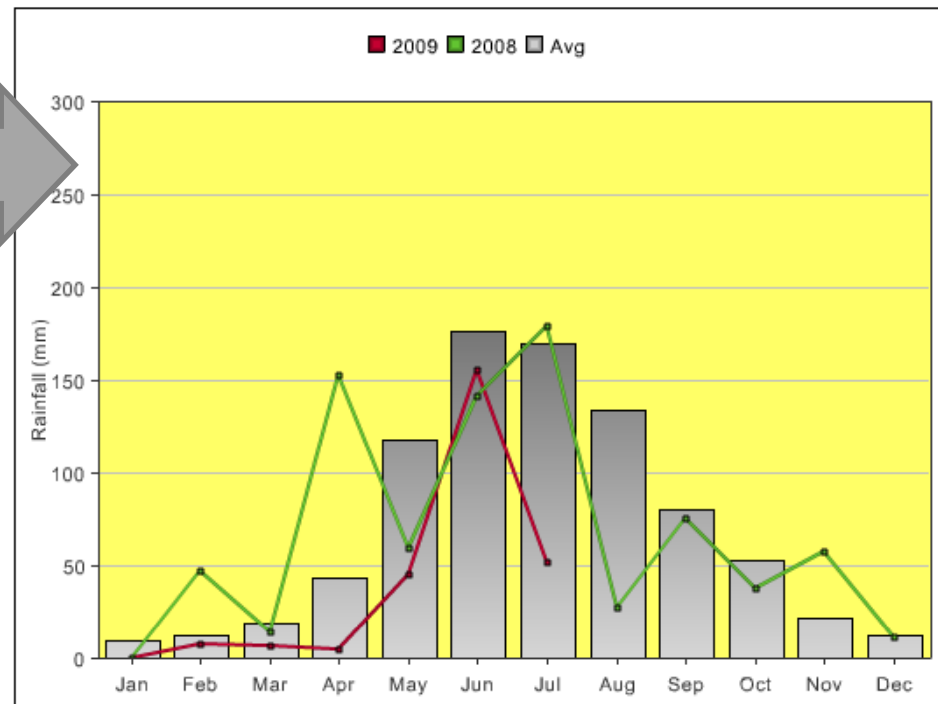
# What are you going to use it for?



- Garden? *but*
- Toilet?
- Washing machine?
- Drinking?
- Everything?

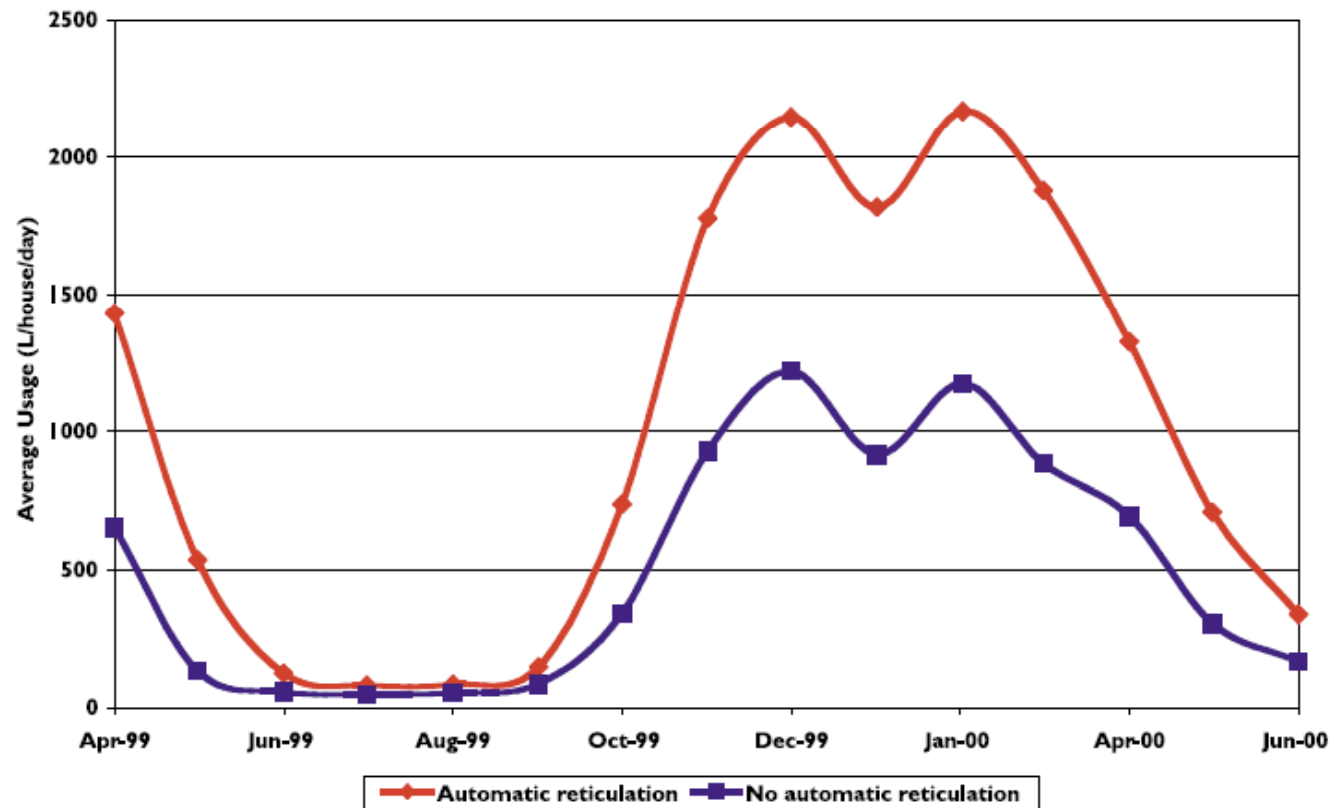


Rainfall in Perth for each month in 2009 and 2008





# Effect of Automatic Reticulation



# Contemporary Spray and Sprinkler irrigation systems



- extremely wasteful (water, energy, labour, chemicals)
- not very environmentally-friendly, and increase risk of plant fungal diseases
- inflexible and not very suited to complex gardens layouts
- subject to drift in windy weather



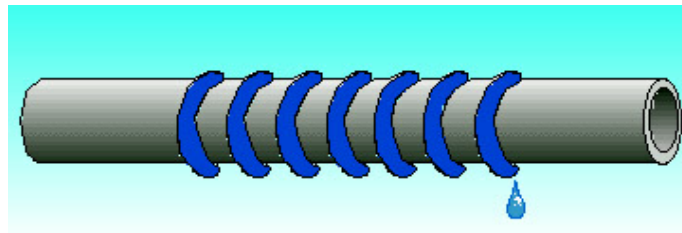
# Waterwise Irrigation



# Why use Drip Irrigation?

## Why do we need to change?

- Increasing cost of water and power
- Depletion of our water resources
- Pollution of our water bodies
- Pressing demand for more efficient systems
- Need safer ways of re-using our greywater
- Vandalism, Public Liability



Drip irrigation can be pressure-compensated, self-flushing, anti-siphoning and have a shut-off mechanism.



# Benefits and Limitations of Dripper Irrigation



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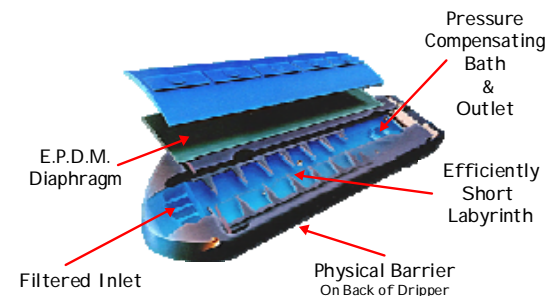
## 💧 BENEFITS

- 💧 Efficient water use (uniform, good recovery)
- 💧 Low application rate (reduced risk of runoff)
- 💧 Ideal for odd shapes & narrow strips
- 💧 Improved disease control
- 💧 Effluent (eg greywater) reuse
- 💧 Reduces weed growth
- 💧 Allow for 24 hour operation possible
- 💧 Reduces exposure to vandalism
- 💧 Reduced injury risk
- 💧 More energy-efficient

## 💧 LIMITATIONS

- 💧 Requires capillary action of water to work
- 💧 More technical maintenance required
- 💧 May need replacing after 3-5 years if drippers blocked
- 💧 Does not tolerate short cuts
- 💧 Establishment of lawn may require temporary overhead watering

Techline Dripper



# Domestic lawns

## Roll on turf in sandy soils







# KISSS

For...

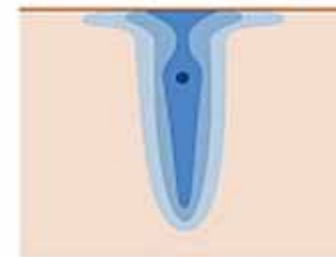
- Ovals
- Parks



KISSS Sub-surface Irrigation Wetting Pattern



Sub-surface KISSS irrigation



Sub-surface drip irrigation

Wetted area after 30min  
Wetted area after 60min  
Maximum wetted area

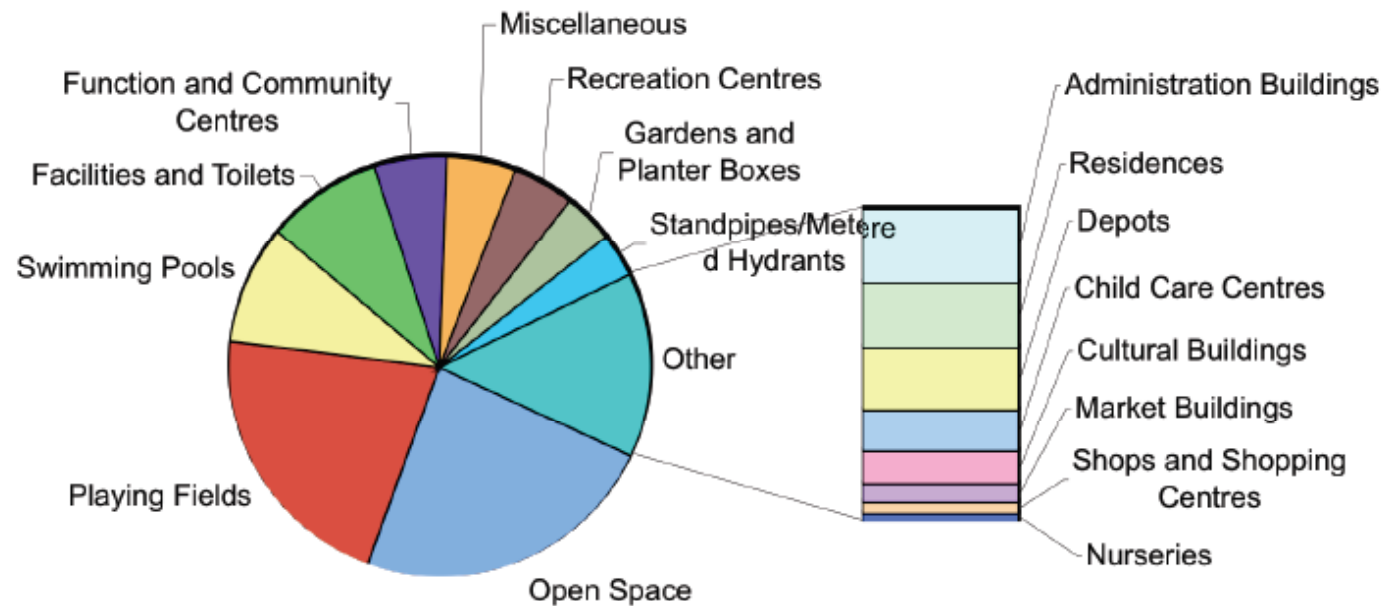
Unlike Sub-surface Drip, KISSS has:

- > No run off
- > Less evaporation
- > No deep drainage
- > Reduced water tunneling





# Where do councils use water?



**Figure 5:** Average breakdown of council water consumption by facility type.

These are Australian figures. WA figures are less clear because of unmetered groundwater use.

# What's this?



2 million plastic bottles.  
The number used in US every 5 mins.  
And in Australia every 47 mins





# Bottled Water – some facts

## Price

- 1 litre tap water around 0.07cents
- 1 litre bottled water around 250 cents (and up!)

Australians spent \$385 million on 250 million litres of bottled water in 2006 and consumption growing at 10% per year

Source:ABWI



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# Bottled Water – some facts

1 litre bottled water

= about 200 ml oil to make, bottle and transport

+ more to refrigerate

+ 2-3 litres water used in bottling process

250 million litres bottled water per year in Australia

= 314 000 barrels of oil

+ 500 million litres of water not even drunk

Or 60000 tonnes GHGs ~ 13000 cars





# Plastic bottles

- Only 35% of PET bottles in Australia are recycled
- Some of the rest take around 1000 yrs to degrade in landfill
- 38% of total volume of litter in Australia is PET bottles

There are an estimated 13,000 pieces of plastic on every square kilometre of the ocean surface. More than one million seabirds and 100,000 marine mammals die as a result every year.



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# Bundanoon (NSW) on tap



Local businesses have promoted the plan. (ABC News)



# Manly's Water fountains

## the manly council water fountain project

### the research

Do Something recently commissioned a research study into water bubblers. This national survey of 1,000 Australians highlighted a number of key issues.

- 9/10 Australians didn't know where water fountains located
- 85% concerned about quality of water in water fountains
- 2/3 said would drink less bottled water with better fountains

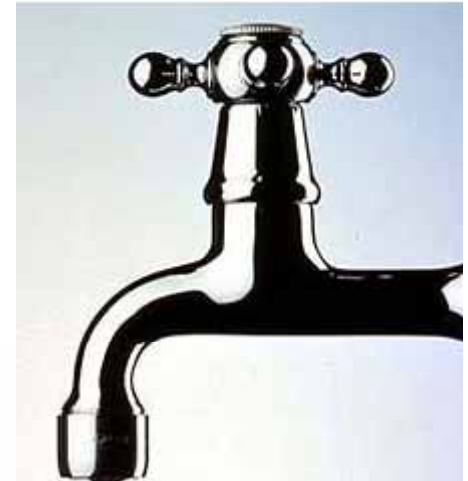
the old bubblers. This is one of the reasons why Manly Council uses water fountains instead of the old-style water bubblers. Secondly, the public likes the idea of free filtered water - the filter eliminates concerns about the fountain's water quality.

Want more information?  
[info@bottledwateralliance.com](mailto:info@bottledwateralliance.com)  
[bottledwateralliance.com.au](http://bottledwateralliance.com.au)



<http://www.bottledwateralliance.com.au/en/Blog/Manly%20Council%20E-Book.aspx>

# Tips



- Drink tap water
- Buy inline filter or filter jug
- Buy reusable bottle
- Remember to take your bottle
- Use sodastream for fizzy water
- Ask for tap/filtered water at restaurants
- Public water fountains












# What more can you do?

## What more can CoC do?



- Measure and monitor
- Reduce
- Reuse and substitute

# Goals...

      	My overall goal and steps to achieve this are: goal: _____ step 1: _____ <input type="checkbox"/> step 2: _____ <input type="checkbox"/> step 3: _____ <input type="checkbox"/> Why I want to achieve my goal: _____ _____ I will achieve my goal by: _____ "Whatever you can do or dream you can, begin it. boldness has genius, power and magic in it. begin it now." Topic: _____ goethe	My overall goal and steps to achieve this are: goal: _____ step 1: _____ step 2: _____ step 3: _____ Why I want to achieve my goal: _____ _____ I will achieve my goal by: _____ "they always say time things, but you actually change them yourself." Topic: _____
<b>Smart Journey</b> Throughout the some of the goals ive as a result of at- se. More goal set- ailable if you need	My overall goal and steps to achieve this are: goal: _____ step 1: _____ <input type="checkbox"/> step 2: _____ <input type="checkbox"/> step 3: _____ <input type="checkbox"/> Why I want to achieve my goal: _____ _____ I will achieve my goal by: _____ "Whatever you can do or dream you can, begin it. boldness has genius, power and magic in it. begin it now." Topic: _____ goethe	My overall goal and steps to achieve this are: goal: _____ step 1: _____ step 2: _____ step 3: _____ Why I want to achieve my goal: _____ _____ I will achieve my goal by: _____ "be the change we wish the world" Topic: _____
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# Next week...

## Simple Living and Beyond Living Smart

