Starting with me at my place

Home Sustainability Guide
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Introduction

This guide gives you practical ways to reduce your ecological footprint at home. It will help you identify steps to take to save energy, save water and reduce waste, and use your garden to produce food and create habitat for native wildlife. It will also help you save money by reducing your water and energy bills, possibly by hundreds of dollars each year.

Reducing your ecological footprint at home does not necessarily require lots of money. Often the biggest improvements are achieved by doing lots of small things. Some of these may cost nothing at all.

A good idea is to also remember that you don’t need to do everything in this guide at once, or even all of them at all. Everyone has a different lifestyle and needs. Think about what you can do that will improve your quality of life, then maybe think of introducing changes one month at a time.

This guide contains the following sections:

– Your home and the environment
– Understanding your bills
– Using the equipment
– Technical information
– Step-by-step guide to making your home and garden more sustainable
– Home action plan
– Additional resources

The guide is lent out with the following equipment:

– A compass
– A Power Usage Meter
– An infrared thermometer

(Note: This equipment is not available in some local government areas for risk and safety reasons).

Please be aware that during 2011 the Sustaining Our Towns Project is able to offer technical support should you need it.

Please call 1300 994 289 for further advice about making your home or lifestyle more sustainable.

Kind regards
Sustaining Our Towns Project Team

www.sustainingourtowns.org.au
Your home and the environment

This section provides information about energy use, water use and waste in the average New South Wales (NSW) home. It also explains the concept of the ‘ecological footprint’.

It includes the following sections:
- Energy use in your home
- Water use in your home
- Waste in your home
- The Ecological Footprint of your lifestyle

Energy use in your home

The average NSW household uses 7,300KWh of electricity/year (NSW Government, 2010a) which equates to about 8 tonnes of carbon pollution per year. This is used in the following ways:

- Heating and Cooling 50%
- Water Heating 20%
- Cooking 7%
- Lighting 7%
- Fridge/Freezer 6%
- Other (including standby) 10%

The amount and type of energy used by households has considerable implications for the environment. These include the depletion of natural resources and the generation of greenhouse gases and air pollution.
In NSW most of this energy is produced by burning coal. Some sobering facts about electricity generated by coal include:

- 65–70% of the energy released when coal is burned is lost as waste heat during the process of generating, transmitting and distributing the energy to households.
- It takes ½ kg of coal to deliver 1 kWh of power to a household, so in NSW that equates to more than 3.6 tonnes of coal/ per year to provide electricity to each household.
- On an annual basis this means over 9.7 million tonnes of coal are burned every year to provide electricity to NSW households. *(NSW Government, 2010a)*

A concerning fact is that most Australian homes are consuming more energy than ever before, largely due to an increasing number of power-hungry devices. Energy costs are also rapidly rising.

**Water use in your home**

The average household in Australia uses about 280,000 litres of water per year (ABS 2005), used in the following ways:

<table>
<thead>
<tr>
<th>Average Water usage in the Home</th>
<th>Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kitchen/Laundry/Bathroom taps/leaks 16%</strong></td>
<td>Very low daily usage</td>
</tr>
<tr>
<td><strong>Dishwasher 1%</strong></td>
<td>Considered achievable</td>
</tr>
<tr>
<td><strong>Toilet 14%</strong></td>
<td>Considered to be around the national average</td>
</tr>
<tr>
<td><strong>Washing Machine 17%</strong></td>
<td>Considered a high/very high daily usage</td>
</tr>
<tr>
<td><strong>Outdoor Lawn and Watering 23%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Outdoor Pools, Hosing and Car Washing 4%</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Shower 25%</strong></td>
<td></td>
</tr>
</tbody>
</table>
As water is a limited resource, particularly in Australia, it is important that we use it as efficiently as possible. Using large amounts of water has a direct impact on river and groundwater systems. Treated water that is piped into our homes also has ‘embodied energy’ within it. This is the electricity that is required to pipe, filter and treat it to get it to our homes, then pump it through the sewerage system and back into the environment.

It is encouraging to know that water consumption in NSW (and Australia) has fallen in recent years. This is due to both water-saving programs and water restrictions. In addition to mandatory water restrictions, many Australians have been voluntarily conserving water by adopting water saving practices such as installing dual flush toilets and water efficient shower heads. Household water use in 2004/5 was 85kl per capita. This decreased to 75kl per capita by 2008/9. (ABS, 2010c)

Waste in your home

Australians produce an average of 2 tonnes of waste per person each year (ABS, 2010a). This amounted to approximately 43.8 million tonnes of waste produced in 2006–2007, 35% of which was produced in NSW. (ABS, 2010b)

On average, waste that is produced by homes is comprised of the following:

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Waste</td>
<td>21%</td>
</tr>
<tr>
<td>Green Waste</td>
<td>27%</td>
</tr>
<tr>
<td>Mixed Waste</td>
<td>36%</td>
</tr>
<tr>
<td>Potentially Recyclable Waste</td>
<td>16%</td>
</tr>
</tbody>
</table>

An average Australian household generates 1,000kg of mixed waste each year. 210kg or 21% of this is food waste. TRIALS SHOW that up to 70% of food waste can be diverted =147kg per HOUSEHOLD per year

Sourced from DECCW in 2010 but not publicly printed.
In Australia we have a strong dependence on landfill for waste management. Landfills use up valuable space, leach harmful chemicals into the environment including ground and surface water, and generate odours and gases such as methane.

On the positive side, Australia has been successful in introducing effective and efficient domestic kerbside mixed recycling systems. However, providing these services in regional areas like ours can be expensive and challenging, so services are not always in place. Recycling rates in the commercial sectors are also still relatively low. As the illustration on the previous page shows, there is also considerable scope to increase the separation and recycling of organic material from most home waste bins.

Waste is also increasingly being seen as comprised of valuable and accessible resources that can be reused and reworked into new products, rather than being thrown into landfills when not needed anymore. This is starting to have an impact on the design of products, the way systems are designed to separate and capture materials at the end of the life of products, and the research and development of new products made out of waste material streams. In fact, changing the way we think about waste is likely to have a huge impact on the way we think about the economy as a whole.

The ecological footprint of your lifestyle

A person’s ‘ecological footprint’ measures the amount of biologically productive land and water they need to support their levels of consumption and waste production, using current technologies. Beyond issues like direct energy use, water use and waste, a person’s ecological footprint also includes decisions about how they live their day-to-day lives. Choices about how individuals choose to eat, travel and so on all affect their ecological footprint.

According to the Living Planet Report (WWF 2008) Australia’s ecological footprint was 7.8 global hectares (gha) per person. A global hectare refers to one hectare (approximately soccer field size) of biologically productive space with world-average productivity. This is 2.8 times the average global footprint (2.7 gha), and well beyond the level of what the planet can regenerate on an annual basis, which is about 2.1 global hectares per person per year.

A global comparison by the Global Footprint Network found that Australia has the fifth highest ecological footprint of all nations, which is over three times the global average (Ewing et al. 2008). Compared with other countries Australia also has:
- the highest per capita greenhouse gas emissions (Garnaut 2008)
- the second highest per capita water consumption and sixth highest primary energy supply per capita (OECD 2009)
- the third highest per capita generation of waste (ABS 2007a).

There are many online ‘Ecological Footprint Calculators’ that can help you measure the ecological footprint of your individual lifestyle or your household. There are links to online ecological footprint calculators on the Sustaining our Towns website (www.sustainingourtowns.org.au).

As a measurement tool, ecological footprint calculators help you to compare the impacts that different activities or everyday decisions might have on the environmental impact of your lifestyle. For this reason, the ‘Step-by-Step’ part of this guide also includes these sorts of considerations.
Understanding your home energy and water bills

This section will provide information about how to understand your home energy bills and determine your home energy and water consumption.

It contains the following sections:

- Understanding your home energy bill and consumption
- Understanding your home water bill and consumption.

Understanding your home energy bill and consumption

To determine how much power your home is using, you need to have a look at your home energy bill. This will give you an idea of how much scope you have to improve the energy efficiency of your home. It will also allow you to see how much you are saving after introducing efficiency measures.

The most important measurement on your bill is the number of kilowatt hours (kWh) you are using in the billing period. The challenge in doing this is that home energy bills come in many different formats. Lots of people find them very confusing and are overwhelmed by them. Because of this, many electricity retailers now have ‘How to read your bill’ guides available on their websites.

On the following page is a sample of a standard home Country Energy bill.* To use the information on the bill you need to:

1. Add up all the kWh used in that period (Note: You are likely to have separate line items for peak and off-peak power use);
2. Find or calculate the number of billing days;
3. Calculate average daily use for the period by dividing the total kWh used (1) by the number of billing days (2). On this bill this is done for you;
4. Compare your average daily usage within ‘the same time last year’ to see whether consumption is increasing or decreasing over time;
5. To get a truly accurate average daily energy consumption figure for your household, add up your usage for a full year (four billing periods), as usage generally varies across seasons, and divide by 365;
6. Also check the rates per kWh you are being charged to see how these are increasing over time and to calculate how much money appliances cost you to run (see page 15).

* Note: Country Energy’s electricity retail business was merged into Origin Energy early in 2010.
3. Average daily usage

\[ \text{Average daily usage} = \frac{\text{Total kWh}}{\text{Billing Days}} \]

\[ = \frac{(695 + 601)}{92} \]

\[ = \frac{1296}{92} \]

\[ = 14.08 \text{ units (kWh)/day} \]

4. Compare to the same time last year

5. To get a truly accurate average daily energy consumption figure for your household, add up your usage for a full year (four billing periods), as usage generally varies across seasons, and divide by 365.
Once you have done this, compare your annual average daily use with the figures below.

<table>
<thead>
<tr>
<th>Average Daily Household Usage</th>
<th>Comparison</th>
<th>Potential for Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 kWh/day</td>
<td>Very low daily usage</td>
<td>Congratulations! Your ecological footprint is very low. Maintenance of this usage would be your target.</td>
</tr>
<tr>
<td>20 kWh/day</td>
<td>Considered achievable</td>
<td>There are likely to be some things you can do in your home to further decrease your energy usage and costs.</td>
</tr>
<tr>
<td>30 kWh/day</td>
<td>Considered to be around the national average</td>
<td>There are likely to be a number of things you can do in your home to save energy and money.</td>
</tr>
<tr>
<td>&gt;40 kWh/day</td>
<td>Considered a high/very high daily usage</td>
<td>There are likely to be many things you can do in your home to save energy and money.</td>
</tr>
</tbody>
</table>

Source: Sustainability Advice Team (SAT) 2010

Understanding your home water bill and consumption

To determine how much water your home is using you need to have a look at your home water bill. This will give you an idea of how much scope you have to improve the water efficiency of your home. It will also allow you to see how much you are saving after introducing efficiency measures.

The most important measurement on your bill is the number of kilolitres (kL) you are using during the billing period. Like power bills, the challenge in doing this is that home water bills come in many different formats. If you are unable to find the number of kilolitres you are using on your bill, speak to your local water supplier. In the south eastern NSW region, most domestic drinking water is supplied through the local council.

On the page following is a sample of a home water bill from our region. To use the information on the bill you need to:

1. Find the number of kilolitres and multiply by 1,000 to calculate litres;
2. Calculate the number of days in the billing period;
3. Calculate average daily usage for the period by dividing the total number of litres used (1) by the number of days in the billing period (2);
4. Compare your average daily usage with the ‘same time last year’ to see whether your consumption is increasing or decreasing over time.
5. To get a truly accurate average daily water consumption figure for your household, add up your usage for a full year (four billing periods), as usage generally varies across seasons, and divide by 365;
6. Also check the rate per Kl you are being charged to see how this is increasing over time.
2. Billing period

3. Average daily usage = Total litres ÷ Billing Days
   = 41,000 ÷ 190
   = 215 litres/day

4. Compare your average daily usage with the ‘same time last year’ to see whether your consumption is increasing or decreasing over time.

5. To get a truly accurate average daily water consumption figure for your household, add up your usage for a full year (four billing periods), as usage generally varies across seasons, and divide by 365.

### Table: Water Consumption Details

<table>
<thead>
<tr>
<th>Meter No.</th>
<th>Type</th>
<th>Opening Date</th>
<th>Opening Reading</th>
<th>Closing Date</th>
<th>Closing Reading</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metric</td>
<td>15-06-2006</td>
<td>1105</td>
<td>19-02-2009</td>
<td>1146</td>
<td>41</td>
</tr>
</tbody>
</table>

Total Water Consumption: 41.00

Tariff Consumption

<table>
<thead>
<tr>
<th>Tariff Rate</th>
<th>Total Tariff Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.85</td>
<td>34.85</td>
</tr>
</tbody>
</table>

Total Water: 34.85

Net Payable: 34.85

This invoice contains GST of $0.00
Once you have done this, compare your annual average daily use with the figures below.

<table>
<thead>
<tr>
<th>Average Annual Household Usage</th>
<th>Comparison</th>
<th>Potential for Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 kL/yr</td>
<td>Very low daily usage</td>
<td>Congratulations! Your water usage is very low. Try to maintain this.</td>
</tr>
<tr>
<td>100–200 kL/yr</td>
<td>Considered achievable</td>
<td>There are likely to be some things you can do in your home to further decrease your water usage and costs.</td>
</tr>
<tr>
<td>200–300 kL/yr</td>
<td>Considered to be around the national average</td>
<td>There are likely to be a number of things you can do in your home to save energy and money.</td>
</tr>
<tr>
<td>&gt;300 kL/yr</td>
<td>Considered a high/very high daily usage</td>
<td>There are likely to be many things you can do in your home to save water and money.</td>
</tr>
</tbody>
</table>

Source: Cooma Monaro Shire Council 2010

Is your water use saving or wasting you money...?
Australia has the fifth highest ecological footprint of all nations.
Using the equipment included with this guide

This section provides technical information to help you determine the environmental performance of your home. This includes how to use the equipment lent out with the guide (Note: This equipment is not available in some local government areas for health and safety reasons). It will help you carry out tasks contained in the ‘Step-by-Step’ part of this guide.

It contains the following sections:

• How to use a compass
• How to use the Power Usage Meter
• How to determine the power usage of appliances without using a meter
• How to use a non-contact infrared (IR) thermometer
• How to check the temperature of hot water
• Determining heat loss and gain
• Measuring fridge and freezer temperature
• Measuring showerhead and tap flow rates
• Checking for draughts
• Installing a tap aerator.

NOTE THAT SOME OF THE DEVICES INCLUDED WITH THIS GUIDE ARE POTENTIALLY DANGEROUS!

You must read the instructions included with the guide prior to using them, and operate them in accordance with the instructions in order to avoid any risk of harm to yourself and others.

How to use a compass

A compass helps you to determine where north is. Hold the compass in your hand in front of you. Make sure the base plate is in a horizontal position, and that the direction arrows are pointing straight ahead. Rotate your body until the north-south arrow lines up with the magnetic needle, and the red end of the needle points towards north.
How to use the Power Usage Meter

A Power Usage Meter is included with this guide in some local government areas. The Power Usage Meter can help you determine how much power appliances in your home are using and costing you to run, particularly things like fridges, microwaves, computers and television sets. The Power Usage Meter is used by plugging the meter into an electrical socket, then plugging the appliance to be tested into the meter. Follow the instructions below for use of the meter, as well as reading the more detailed instructions included in the meter packaging.

NOTE: Refer to the detailed operating instructions concerning all aspects of operating the Power Usage Meter prior to using it. These instructions are included in the box containing the meter.

Setting up the meter

• Connect the Power Usage Meter to a power outlet.
• Connect the appliance to be tested to the meter.
• Press and hold the RESET key on the meter until ‘Rest’ appears.
• Press and hold the SET RATE button until ‘Rate’ is displayed. The kWh billing rate will flash in the display.
• Press the UP and DOWN buttons to change your kWh billing rate in dollars. For example, if your electricity supplier charges 15.6c/kWh then set the ‘Rate’ at $0.156. You will find your billing rate on your latest electricity bill.
• Press the SET key again and ‘Save’ will appear briefly in the display. This means that your billing rate has been saved by the meter.

Using the meter

• To work out how much electricity the appliance you are testing will cost you to run over time at your billing rate, press the MENU key until ‘Cost’ is displayed.
• Press the UP and DOWN buttons to cycle through the running cost periods. For example, if the display indicates $2.34 and ‘Month’, then the unit is projecting that the attached appliance will consume $2.34 worth of electricity in one month.
• To display the power measurements of the appliance, press the MENU key again.
• Press the UP and DOWN buttons to display the various measurements made by the meter including ‘Amps’, ‘Watts’, ‘VA’, ‘Hz’, ‘PF’ and ‘Volts’.
• To display the accumulated measurement totals, press the MENU key until the desired unit to be viewed is displayed. The available units include the accumulated running cost of the attached appliance, kWh rate, total kWhs consumed and the elapsed time that the Power Usage Meter has been operating.
How to determine the power usage of appliances without using a meter

If there is no Power Usage Meter included with this guide, you can calculate how much energy an appliance will use (as well as how much this is likely to cost you to run) manually. The most important factor in working out how much energy an appliance will use is wattage. You can usually find the wattage of an appliance on the nameplate on the back or base of the appliance. Wattage is the maximum power drawn by the appliance. Generally speaking, the higher the wattage of an appliance, the more energy it will use when it is operating.

Use the following equation to calculate the annual operating cost of the appliance.

\[
\frac{\text{Watts} \times \text{hours used per day} \times \text{days used per year}}{1000} = \text{Annual kilowatt-hour (kWh) consumption/year}
\]

Multiply this number by the amount your electricity supplier charges you for each kWh to calculate the annual running cost of the appliance.

For example, a 250W television on for 5 hours every day of the year will use 456.25 kWh per year. If you are being charged $0.20/kWh by your electricity supplier, it will cost you $91.25 per year to run.

How to use a non-contact infrared thermometer

A non-contact infrared (IR) thermometer is included with this guide in some local government areas. The infrared thermometer can help you determine the surface temperature of items in your home. This includes the actual running temperature of your fridge, freezer, heating and cooling, as well as where you are losing or gaining heat in your home, through walls, ceiling and windows.

We have not included instructions regarding how to use this device here, because we recommend that you read the full set of instructions in the box with the device. The device is potentially dangerous, particularly to the eyes, and should also not be pointed at food.

**NOTE:** Infrared thermometers are potentially hazardous to the health of yourself and others. NEVER point the infrared light at a person, particularly the eyes. Exercise care when using around children and always store out of reach. Refer to the detailed operating instructions for the infrared thermometer prior to using it. These instructions are included in the box containing the Power Usage Meter.
How to check the temperature of hot water

Point the IR thermometer at the running hot water tap nearest to the hot water system. Note the temperature may be a few degrees lower than the actual hot water system tank temperature; or check the thermostat on your hot water system. If you cannot see the thermostat when you open the system cupboard then it may be behind a casing. In this case you need to remove the casing with a screwdriver to access the thermostat. *(Note: Many electric heaters are connected to more than one circuit.)* Relevant Australian standards require domestic hot water to be set at 60°C, and hot water to be delivered to the house at 50°C.

**NOTE:** Hot water can be hazardous so do this with care when no children are around.

Determining heat loss and gain

Aim the IR thermometer at the ceiling and record the temperature. Repeat for both the walls and floor. For an energy efficient home you would expect the ceiling to be around 22°C, the walls 18–19°C and the floor 17°C. If your home is well insulated you should have no greater than a 5°C difference between the three readings. You can also run the IR thermometer across the ceiling and if the temperature varies you know there are inconsistencies in your insulation. Another tip is to run the IR thermometer around downlights to see the difference in temperature; it should be lower as downlights are difficult to insulate around properly.

Measuring fridge and freezer temperature

Aim the thermometer at the back of the open fridge to determine fridge temperature. Repeat for freezer.

**NOTE:** Do not point the IR thermometer at food.

Measuring showerhead and tap flow rates

To measure shower and tap flow rates, turn the cold water tap on full and let it flow into a bucket for 10 seconds. Measure the amount of water in the bucket in litres. Multiply the number of litres by 6 to calculate the flow rate in litres per minute. Empty the water onto your garden or pot plants.

Checking for draughts

Gaps and cracks can be observed by either looking for daylight around the edges of windows and doors, feeling draughts with a wet finger, or by using a lit incense stick. If there is no draught the smoke will rise. If there is a draught the smoke will move around in a circular pattern.

Installing a tap aerator

Tap aerators restrict the flow of water from your tap by mixing air with water which reduces water usage without reducing water pressure. They are low cost, come in a range of flow rates, are available from most hardware outlets, and can generally be retrofitted to existing taps with little effort. Fitting aerators to your taps can reduce the amount of water you use by more than 50%. They are installed by replacing existing aerators and washers with the new system. Make sure you buy an aerator that suits your existing tap, and read the instructions before installation.
Information about Sustainable Devices

The devices mentioned in this section of this guide are not available in some Council areas for risk and safety reasons. However, you can easily purchase your own devices to use in your home. Here is some information about the options available.

Power Usage Meters

There are a wide range of power usage meters now available in Australia with a range of prices and functions.

Simple plug-in energy meters:
Small and simple energy meters like the ones included with this kit are designed to measure the energy usage and cost of running single appliances. They are used by simply plugging the appliance into a wall socket. With our kit we provide the Power Usage meter L7663 (listed first below).

- Power Usage Meter L7663 (approx $30) – www.solarinverters.com.au
- Watts Clever Plug In Monitor (approx $40) – www.neco.com.au

Also check out the Alternative Technology Association’s online shop – www.shop.ata.org.au

Power Board Meters

Other types of meters are designed to measure and monitor the energy usage of the entire home, and are fitted onto the electric power board of the home. These need to be fitted by an electrician. Wireless meters (and meters that let you read ‘real time’ consumption in your home) are also now available.


Non-contact Infrared Thermometers

A range of non-contact infrared thermometers are available on the market. With our kit we provide the Non – contact IR thermometer with dual laser targeting QM – 7221. Listed on the following websites below are other options to consider:

- Alternative Technology Association Shop – www.shop.ata.org.au
Up to 40% of a home’s energy for cooling or heating is lost or gained through windows.
Basic technical information to help you use this guide

This section provides technical information to help you make decisions to improve the sustainability of your home. This includes information about insulation, standby power, hot water systems and greywater.

It contains the following sections:
- Insulation and R-value basics
- Window insulation basics
- Standby power basics
- GreenPower basics
- Hot water system basics
- Photovoltaic (solar) power system basics
- Greywater basics
- Environmental labelling and certifying scheme basics.
- Lighting basics

Insulation and R-value basics

There are many different types of insulation. When choosing insulation, the most important factor to consider is its ‘R-value’. The R-value is a measure of the material’s resistance to heat flow, and therefore its performance. The higher the R-value, the greater the resistance to heat transfer, the greater the insulation level provided, and the greater the potential energy savings.

Bulk insulation

Bulk insulation works by reducing the amount of heat that transfers through a roof, wall or floor, in the same way as a jumper keeps you warm. Like a jumper, bulk insulation is full of holes, or air pockets; these air pockets trap heat. For this reason, it is important that bulk insulation is not compressed. Compressing the insulation reduces the volume of air and therefore reduces the ability of the material to resist heat transfer. Examples of bulk insulation include batts and loose fill insulation.

Reflective insulation

Reflective insulation works by reflecting large amounts of heat away from its polished metallic surface. Note that reflective insulation must face a sealed airspace at least 25 mm wide.

Reflective foil is often supplied in rolls, however; other examples include concertina foil batts and multi-cell reflective batts. As reflective foils have different R-values in winter and summer, make sure the winter R-value meets the requirements for your locality.
**Window insulation basics**

Up to 40% of a home’s energy for cooling or heating is lost or gained through windows, so improving their thermal performance provides excellent opportunities for energy saving. In existing homes, the cheapest way to do this is with window coverings. In new homes (or those that are being renovated) installation of energy efficient windows may cost more money upfront, but is likely to make your home more comfortable and save money on heating/cooling costs on an ongoing basis.

**Insulation value of window coverings**

**Winter heating:**

<table>
<thead>
<tr>
<th>Window covering type</th>
<th>% heat retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double glazing with heavy curtains and pelmet</td>
<td>70%</td>
</tr>
<tr>
<td>Double glazing</td>
<td>62%</td>
</tr>
<tr>
<td>Heavy curtains and pelmet</td>
<td>50%</td>
</tr>
<tr>
<td>Light curtains or blinds, and pelmet</td>
<td>35%</td>
</tr>
<tr>
<td>Heavy curtains no pelmet</td>
<td>30%</td>
</tr>
<tr>
<td>Light curtains or blinds, no pelmet</td>
<td>25%</td>
</tr>
<tr>
<td>No curtains</td>
<td>20%</td>
</tr>
</tbody>
</table>

**Summer cooling:**

<table>
<thead>
<tr>
<th>Window covering type</th>
<th>% heat excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>External metal blinds or louvres</td>
<td>85%</td>
</tr>
<tr>
<td>Effective double glazing with low heat conduction and low solar heat gain</td>
<td>80%</td>
</tr>
<tr>
<td>External awnings or shutters</td>
<td>70%</td>
</tr>
<tr>
<td>Internal blinds</td>
<td>30%</td>
</tr>
<tr>
<td>Effective double glazing, moderate solar heat gain</td>
<td>25%</td>
</tr>
<tr>
<td>Open weave drape</td>
<td>20%</td>
</tr>
<tr>
<td>Double glazing with low effectiveness</td>
<td>10%</td>
</tr>
<tr>
<td>Protected window</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: Sustainable Advice Team (SAT) 2010

**Standby power basics**

Standby power is the electricity used by appliances when they are waiting to be activated by a remote control. In standby mode, the appliance is using energy but is not performing its primary function. To use the example of a TV, it is in ‘active mode’ when it is turned on, but it is in ‘standby mode’ when it has been turned off using a remote control. You can tell it is in standby mode by a light still illuminated on the TV.

The effect of all these small bits of energy wastage is cumulative. It is estimated standby power accounts for more than 10% of Australia’s household electricity usage and costs consumers more than $950 million per year (Australian Government, 2010). To avoid using standby power, turn your appliances off at the wall.
GreenPower basics

Most electricity retailers now have GreenPower products. When you choose to buy a GreenPower product, you pay a few cents extra in addition to your electricity account each day. This is invested into the renewable energy sector, including power sources like mini-hydro, wind power and biomass which produce no net greenhouse gas emissions.

The important thing to check when considering any GreenPower product is whether it is accredited by the government’s GreenPower accreditation program. This will be branded with the GreenPower (accredited renewable energy) logo below.

To find out more about accredited renewable energy visit the GreenPower website www.greenpower.gov – This website includes links to accredited GreenPower products on offer by electricity retailers.

Hot water system basics

Water heating is the largest single user of energy and generator of greenhouse gas emissions from the average Australian home. Heating water accounts for about a quarter of the average household’s energy use. So reducing your hot water use and using renewable energy sources to heat water are great ways to reduce your environmental impact, as well as save money. There are two basic types of water heaters-storage systems and instantaneous (or continuous flow) systems. Each system can use a variety of energy sources to heat water.

NOTE: Given the range of hot water heater systems available, it is important to do your research to ensure that you end up with a system that meets the needs of your household and situation. The information below is just a summary. It is recommended that you seek further information prior to making a purchase of any hot water system.

Electric hot water systems

Electric hot water systems use electricity to heat water, which is then stored in storage tanks. This is the most energy intensive method of heating water in the home. Because of this, the Australian and state and territory governments are working together to phase out electric hot water systems, commencing 2010.

If you have an electric hot water system, ensure it is set to heat the water using off-peak electricity (off-peak heats the water overnight and stores it for use during the day). This will not save any energy, but it will save you money as off-peak power is less expensive.
Solar hot water systems
A solar water heater uses energy from the sun to heat water for your home. Solar panels on your roof (solar collectors) collect the sun’s rays and directly heat the water, which then flows to a storage tank, ready for use. There are now various types of solar collector panels on the market – flat and evacuated tube.

Solar hot water systems have the option of storing water in a tank on the roof (adjacent to the heating panels) or in a separate storage tank located in another part of the home. This second type requires a pump to move water from the panels to the water storage unit. Most solar systems are supported by a gas or electric booster which operates when there is not enough sunlight to heat the water.

Heat pump systems
Air-sourced heat pumps absorb heat from air and transfer it to heat water. They run on electricity but are roughly three times more efficient than conventional electric water heaters. So when used in the right environment (the more hot and humid the better) they save energy, save money and reduce greenhouse gas emissions.

Heat pumps work on the same principle as your refrigerator, but instead of pumping heat out of the fridge to keep it cool, they pump heat into water. Electricity is used to pump a refrigerant around the system, which picks up heat from the air and transfers it to the water.

Gas hot water systems
Gas water heaters burn either natural gas, delivered via a piped gas (reticulated) network, or bottled gas (LPG) to heat water. There are two main types of gas water heaters – storage and instantaneous. Storage systems heat the water stored in a tank; instantaneous heaters, sometimes called continuous flow, don’t have a storage tank and only heat the water when it is required.

Using gas instead of electricity to heat your water can help to reduce your greenhouse gas emissions, and may lower your water heating costs. Gas hot water heating is far more energy efficient than electric hot water heating (produces a third to a quarter less greenhouse emissions).
Photovoltaic (solar) power system basics

Photovoltaic cells, commonly known as solar cells, convert the energy from sunlight into direct current (DC) electricity, which can be used as is or converted into alternating current (AC) energy similar to the electricity available from the grid.

Where access to the grid is not available, homes are set up as ‘stand-alone’ systems. In this case, a battery bank, inverter and battery charger are also required in addition to the solar cells.

Many households in more built-up urban areas connected to the power grid are now also installing photovoltaic power. These are known as ‘grid-connect’ systems. In this case, an inverter in the home converts power from the solar modules into AC power that feeds into the grid. A meter in the home keeps track of energy generated versus energy used in the home, and debits or credits the household’s energy bill accordingly. Most states in Australia now have above-market ‘feed-in tariff’ rates for excess power generated in this way to offset the cost of installation.

Even with rebates and feed-in tariff rates, photovoltaic systems are a long term investment and you should do your research prior to investing in a system. Always use accredited installers and make sure all components of the system have a long warranty. We recommend you read the Clean Energy Council’s “Buyers Guide to Solar PV” before investing in a system. Also ensure that you invest in energy efficiency measures within your house in tandem with installing a system, to reduce the size of system required (measured in kilowatts) to meet your household’s needs. This will also greatly reduce the installation price.

Greywater basics

Greywater is the wastewater generated from your washing machine, shower, bath and basins which, when used safely, can replace drinking water for watering lawns and gardens. Water from your kitchen can also be re-used as greywater if the correct treatment process is put in place. There are a number of ways to capture, divert and reprocess greywater for use in the home and garden.

Manual bucketing: Greywater is collected using a bucket and re-used on gardens or lawns.

Greywater diversion devices: Greywater diversion devices redirect greywater for use outside the home on gardens or lawns using sub-surface irrigation with no treatment. Check with your local council about whether approval is required. A certified plumber needs to install the system.

Greywater treatment systems: Greywater treatment systems treat water for re-use inside the home (e.g. toilet flushing, washing machine) as well as outside on gardens or lawns. Council approval is required. A certified plumber needs to install the system.

The NSW Government has developed the NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises as well as fact sheets on greywater use by households. It is recommended that you read these (as well as speak to your council) before purchasing and installing any system.
Environmental labelling and certifying scheme basics

The Australian Government has developed a number of labelling schemes to help consumers select water and energy efficient goods. There are also a number of independent certification schemes that certify the environmental credentials of products.

**Water Efficiency Labelling Scheme (WELS)**

WELS is an Australian Government regulatory scheme, underpinned by product testing to Australian Standards. WELS products must carry a WELS label showing the water efficiency star rating and the water consumption or flow rate of the product.

For plumbing, WELS products are taps (with some exceptions), showers, toilets, urinals and flow controllers (optional). Some of these plumbing products will also carry a label called WaterMark.

WaterMark is a product quality certification mark provided by independent certifying authorities. It confirms that the product complies with the requirements of the Plumbing Code of Australia and the specifications listed in relevant Australian Standards.

To find out more see [www.waterrating.gov.au/index](http://www.waterrating.gov.au/index)

**Energy Rating Scheme**

The Australian Energy Rating Scheme is a government regulatory scheme, underpinned by product testing to Australian and Minimum Energy Performance Standards. Regulated products must carry an energy efficiency label showing the energy efficiency star rating and the energy consumption of the product.

It is currently mandatory for all household refrigerators, freezers, clothes washers, clothes dryers, dishwashers, air conditioners, televisions and swimming pool pumps (voluntary). Standby, boiling and chilled water dispensers, vending machines, commercial icemakers and lamps and lighting equipment are proposed for regulation in the future.

Under the scheme, a range of products also have to comply with what are known as ‘Minimum Energy Performance Standards’ (MEPS). In the home these include mains pressure electric storage water heaters, refrigerators and freezers, compact fluorescent lamps, televisions and set top boxes.

To find out more see [www.energyrating.gov.au](http://www.energyrating.gov.au)

**Other environmental labelling schemes**

There are a number of other independent labelling schemes which can help consumers make sustainable purchasing decisions. They include:

- Window Energy Rating Scheme ([www.wers.net](http://www.wers.net))
- Environmental Choice Australia ([www.geca.org.au](http://www.geca.org.au))
- Forest Stewardship Council ([www.fsc.org](http://www.fsc.org))
- Marine Stewardship Council ([www.msc.org](http://www.msc.org))
Energy efficient lighting basics

A trend towards larger homes and the installation of more light fittings per home is increasing the amount of energy used for lighting in many Australian homes. For this reason it is important to install more energy efficient lighting, particularly in areas that are high use during the evening such as kitchens, dining and living rooms. The cost of running a light is directly related to the wattage of the globe plus any associated ballast or transformer. The higher the wattage, the higher the running cost. A good idea is also to install multiple switches to control the number of lights that come on at any one time.

Incandescent lights

Incandescent lamps or bulbs have been the most common type of lighting for many years. They are inexpensive to buy and are available in a wide range of shapes and sizes, but their running costs are high. The Australian Government announced plans to phase-out indandescent lighting technologies where viable energy efficient alternatives exist in February 2007.

Halogen lights

Halogen lights are also a type of incandescent lamp and are typically used as downlights recessed into the ceiling. Low voltage halogen lamps (commonly known as downlights) are not low energy lamps. While they are slightly more efficient than standard incandescent lamps of the same wattage, each downlight also requires a transformer that can consume an additional 10 to 15 Watts on top of the bulb energy. Large numbers of these lamps are also required to light a room because they emit a narrow beam of light. In addition, recessing them as downlights into the ceiling compromises thermal insulation of a room, and the heat generated by the bulbs in close proximity to insulation and other materials in the roof space can present a fire risk. Halogen downlights can now be replaced with Compact Fluorescent or LED alternatives.

Fluorescent lamps

There are two main types of fluorescent lamps – tubular and compact. They are both the most energy efficient form of lighting for households. Fluorescent lamps use only about one quarter of the energy used by incandescent bulbs to provide the same light level. With careful design they can replace incandescent and halogen lights in most situations. They do require a ballast to start them though, so you should check with your lighting shop before you try to retrofit them into existing fittings.

Light Emitting Diodes (LEDs)

LED lights are currently used in countless applications including lighting displays in household appliances, mobile phone screens, and traffic signals. But many lighting companies are now developing LED bulbs for direct replacement into normal fittings in the home. Although the upfront cost of LEDs is still relatively high, their long life expectancy can still make them a competitive alternative when a life cycle approach to their use it taken. The range available through standard lighting shops is rapidly growing, and the purchase price dropping.
The average NSW household burns up about 8 tonnes of carbon pollution per year.
A Step by step guide to making your home and garden more sustainable

Following is a room-by-room guide with helpful diagrams and easy recommendations to assist you in practical ways to be more energy, water and waste efficient in your home. Whether it be in your living or dining room, kitchen, bathroom, laundry, bedroom, home office, garden or your general lifestyle, there are basic steps you can do to be more sustainable.

There are many recommendations in this guide but don’t feel like you have to review every room all in one day, or follow through every recommendation all at once. The purpose of this guide is that you can review your home in your own time. Make changes slowly and think through what will work best for you in your time, budget and lifestyle. Even little changes can make a big impact on your ecological footprint and the future of our region.

Reducing your ecological footprint at home does not require lots of money. Often the biggest improvements are achieved by doing lots of small things.
Living room and dining room

**Sustainability – it’s our future**

**Downlights**
Replace halogen downlights with LED or compact fluorescent bulbs. Use lamps to reduce lighting needs.
Switch off lights when not in use.

**Curtains**
Use curtains with a backing and where possible install pelmets.
Limit use of blinds as they generally do not insulate well.

**Thermostat**
Reduce by a few degrees and/or turn off during the night.

**Draught Snake**
Draught snakes seal gaps and help retain heat/cold in the room.
Seal windows to reduce draughts.

**Throw Rug**
Use a rug or blanket to keep warm rather than turning up the heating.

**Pink Batt**
Look to upgrading your insulation in the ceilings, then walls, then the floor.

**Northernly Aspect**
Large north facing windows allow natural sunlight to heat your house in winter.
Shade north facing windows with blinds, awnings or deciduous trees in summer.

**Television**
Do not leave your TV, DVD, Games console and stereo on standby. Turn them off at the wall.
Check the energy star rating of appliances, especially TV’s.

**Gas Heater**
Gas heaters are more energy efficient.
Limit heating by first increasing room insulation.

**Floor Rugs & Carpet**
Floor rugs and carpet increase insulation of your floors.
Choose natural fibre carpets and rugs.
## Living room and dining room

### Sustainability in your living/dining room:  

| **Aspect:**  
What aspect is the room?  
(Do the windows face north?) | **Sustainable actions:**  
- Use the compass to determine which direction your windows face.  
  *(See instructions on Page 13)*  
- Large north-facing windows allow natural sunlight to heat the room in winter.  
- Shade northern and western windows during the hot months with eaves, awnings, pergolas and deciduous trees, and use insulated window coverings to reduce heat penetration from the outside.  
- If you have large windows that face south consider investing in insulated window coverings to exclude cold during winter months. |
|---|---|
| **Windows:**  
How big are the windows and are they well sealed? | **Sustainable actions:**  
- Use an incense stick to determine whether the room has any draughts that can be sealed.  
  *(See instructions on Page 16)*  
- Heat will be lost (and cold gained) if window seals are damaged.  
- A simple low cost option to improve window insulation is to purchase and install window seals from your local hardware store.  
- A cost effective way to insulate windows is to place bubble wrap on them. |
| **Window coverings:**  
What type of window coverings do you have? | **Sustainable actions:**  
- Use the IR thermometer to help determine heat loss/gain through your windows at different times of the day and year. Repeat this for all parts of the house.  
  *(See instructions on Page 16)*  
- Refer to Page 20 for benefits of various types of window coverings.  
- Install improved window coverings or glazing based on your preferences and circumstances. |
| **Insulation:**  
Are the ceilings, walls and floors insulated? | **Sustainable actions:**  
- Use the IR thermometer to help determine heat loss and gain through your ceiling and walls at different times of the day and year.  
  *(Refer to instructions on Page 16)*  
- Insulating your home will greatly increase its energy efficiency.  
- You should increase your ceiling insulation to R5.1, walls and floors to R2.  
- Priority should be given to your ceilings, then your walls, then your floor insulation.  
- Refer to Page 19 for more detailed information about insulation and R-value ratings. |
### Floors:
**What are the floor coverings?**
- The type of flooring you have will also influence the energy efficiency of a home.
- Floors with carpet and rugs have a greater thermal capacity.

### Lighting:
**What type of lighting do you have?**
- Refer to the information on lighting on Page 25.
- Halogen downlights are low voltage but have a high wattage, thus use a lot of energy.
- If you point the IR thermometer at halogen downlights that are operating they will be very hot (compared with other lighting types); this shows that energy is being used to produce heat rather than just light.
- More efficient compact fluorescent or LED downlights are now available, and many can be retrofitted into existing halogen downlight fittings. Speak to your local lighting shop for more information and advice. Doing this replacement in your living areas (including open plan kitchens) can be cost effective as these lights are most used in a house.
- Compact fluorescent bulbs use approximately one fifth of the energy of old incandescent globes and can last up to 10 times longer.
- Turn off lights when you leave the room. The surge of energy used when turning a light on is very small compared with the energy used by leaving the light on unnecessarily.

### TV:
**Look at the type of TV you have (cathode ray, plasma, LCD/LED) and consider how many hours you use it.**
- Old cathode ray TVs are relatively energy efficient.
- If you are buying a new TV consider buying a LCD/LED screen as they are far more energy efficient than the plasma screen TVs.
- Turn your TV off when it is not in use.
- Do not leave the TV on standby mode (Refer to Page 20 for more on standby power).

### Appliances:
**Do you leave your living room appliances on standby?**
- If an appliance is on standby mode, switch it off at the power point when it is not in use or when you go away. When appliances are on standby they are using power.
| Heating and cooling:  
How do you heat and cool this space? |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• There are many heating options available and you will need to take a lot of factors into account when working out which is most suited to your needs.</td>
</tr>
<tr>
<td>• An effective and economical heating system should always include insulation in ceilings, walls and floors where possible, sealing off draughts, effective window coverings, zoning off living and sleeping areas, choosing appropriate and efficient heater(s), and using your heating package wisely and efficiently.</td>
</tr>
<tr>
<td>• If buying a new heater ensure you chose one with a high energy star rating (5–6 stars on the energy rating label) which is big enough to heat the space.</td>
</tr>
<tr>
<td>• Wear warm clothes and only use heating when needed.</td>
</tr>
<tr>
<td>• Lower the thermostat of heaters by one degree to reduce energy use by up to 10%.</td>
</tr>
<tr>
<td>• Partition your living room off from the rest of the house; close doors to rooms that do not need heating/cooling.</td>
</tr>
</tbody>
</table>
BUY ENERGY EFFICIENT APPLIANCES
Check the energy star rating. The more stars, the more you will save.
Choose the right size fridge to suit your needs.
Have a 5cm gap for ventilation around the back, sides and top.
Set the fridge temperature between 15° and 18° (for every one degree lower, energy use rises by 5%).

TOASTER
Cook toast in a toaster instead of under the grill and reduce greenhouse gas emissions by up to three quarters.

KETTLE
Use an electric kettle or gas cooker. They generate one kilogram of greenhouse gas for every 10 litres of water boiled, half as much as using an electric cook top.

SAVE WATER
Install a water aerator on your taps.
Fill the sink with water to wash dishes and don’t let the tap run.

MICROWAVE OVEN
Maximum use of the microwave saves energy compared to an electric bench top (however gas is better).

EXHAUST VENT
Clean the filter in your exhaust vent regularly.

LIDS ON POTS
Use efficient cooking methods such as putting lids on pots, simmering gently instead of boiling vigorously and using a pressure cooker.

DISHWASHERS
Check the energy and water star ratings. The more stars, the more you will save.
Connect your dishwasher to a natural gas or solar hot water system.
Use AAA water rated appliances and save water.
Use only when fully loaded.

A GAS COOK TOP
Change from electric to gas cooking and save half a tonne of greenhouse gases each year.

OVEN
Fan forced ovens generate up to 35% less greenhouse gas than conventional ovens and more items can be cooked at the same time as heat is more evenly distributed.

BUY FOOD IN BULK
Where possible buy in bulk and avoid excess packaging.
Choose items with minimal packaging.
Choose items with recyclable packaging such as paper, cardboard, tin, glass or plastics labelled 🌐

SORT YOUR RUBBISH
Use a container to collect food scraps and compost them.
Separate your rubbish from recycling at the source.
## Sustainability in your kitchen:

### Fridge 1:
Consider the size, star rating, age, general condition and location of the fridge.

### Fridge 2/freezer:
Consider all factors as outlined for Fridge 1.

### Stove/cooktop:
Is your stove/cooktop gas or electric?
Do you cook with higher temperatures than required?
What would be your usage per week?

## Sustainable actions:

- Use the Power Usage Meter for 24hrs to see how much energy your fridge is using. *(Refer to Page 14 for information about how to use the meter).*
- New fridges can cost much less to run than older ones, so if your fridge is using a lot of power it might be worth investing in a new one. Fridges are one of the main energy consumers within a home as they are switched on 24 hours per day, 365 days of the year.
- Check the energy star rating; the more stars the more energy efficient.
- Ensure fridge seals are in good condition.
- Defrost regularly according to the manufacturer’s recommendations. Even frost-free fridges need defrosting.
- Use the IR thermometer to test the temperature of your fridge and freezer. *(Refer to Page 16 for information on how to measure the temperature).* The recommended temperature for a fridge is 3–5°C. For freezers the recommended range is –15°C to –18°C.
- Do not overfill your fridge and try to limit the times you open and close the door.
- The location of the fridge is important. Fridges need gaps at the top, back and sides to shed excess heat. Wipe/vacuum exposed back coils regularly.

- A second fridge/freezer can cost over $100 per year to run.
- Do you really need it? Turn it off when not in use.

- The most environmentally friendly cooking options are microwaves or gas cookers.
- Use lids on saucepans.
- Use a pressure cooker to reduce cooking times of soups, casseroles and stews.

*continued over*
| **Oven:** | • Fan forced ovens generate up to 35% less greenhouse gas than conventional ovens as heat is more evenly distributed so cooking is more efficient.  
• Check the wattage of the oven and use the method described on Page 15 to work out how much power your oven is using.  
• Ensure seals are airtight and not warped or cracked.  
• Gas ovens are more efficient than electric ovens.  
• Use a microwave or stovetop to partially cook before using the oven. |
| --- | --- |
| **Is your oven gas or electric?**  
**Are the seals in good condition?**  
**What would be your usage per week?** | **Microwave:**  
**What would be your usage per week?**  
**Do you switch your microwave off at the wall when not in use?**  
**Use the Power Usage Meter to work out how much energy your microwave is using (Refer to Page 14 for information on how to use this device).**  
**Microwaves are more energy efficient than electric stoves/cooktops.**  
**Switch off your microwave at the wall (if you do not need to use the clock) to avoid standby power.** |
| **Microwave:**  
**What would be your usage per week?**  
**Do you switch your microwave off at the wall when not in use?** | **Dishwasher:**  
**Consider the size, star rating and age.**  
**Do you wash using the eco-cycle?**  
**Do you only run the dishwasher when you have a full load of dishes?**  
**A dishwasher can generate up to 500 kg of greenhouse gas per year. Look for at least a WELS 4 star water efficient model (water efficient dishwashers are usually energy efficient too).**  
**Use the shortest program sufficient to clean the dishes.**  
**If using a dishwasher, air dry dishes (use the eco-cycle).**  
**Only run when fully loaded.**  
**Clean the filter regularly to maintain efficiency.** |
| **Dishwasher:**  
**Consider the size, star rating and age.**  
**Do you wash using the eco-cycle?**  
**Do you only run the dishwasher when you have a full load of dishes?** | **Sink:**  
**What is the flow rate of your tap/s?**  
**Are there any leaks or dripping taps?**  
**Do you fill the sink using the plug or run the tap constantly to wash dishes?**  
**Measure the flow rate of you tap using the method outlined on Page 16.**  
**Install a water restrictor on your taps, particularly if you wash things under running water regularly. (For more information see Page 16).**  
**Fill the sink to do the dishes; do not wash dishes under the running tap.**  
**Ensure taps are not leaking and replace washers or entire taps if needed.** |
| • Gas ovens are more efficient than electric ovens.  
• Use a microwave or stovetop to partially cook before using the oven. | • A dishwasher can generate up to 500 kg of greenhouse gas per year. Look for at least a WELS 4 star water efficient model (water efficient dishwashers are usually energy efficient too).  
• Use the shortest program sufficient to clean the dishes.  
• If using a dishwasher, air dry dishes (use the eco-cycle).  
• Only run when fully loaded.  
• Clean the filter regularly to maintain efficiency. |
**Waste:**

Do you have bins in the kitchen to put plastics, glass, paper, and other recyclables into?

Do you compost your kitchen scraps?

- Check with the Waste Services Division at your local council to ensure you know what materials can be recycled in your local area (this does change so stay up to date).
- Put separate bins into your kitchen in a convenient location to allow easy separation of recyclables from general waste.
- Put signage on bins if necessary to make it easy for everyone in the household to know what should be put into the bins.
- Consider making your kitchen waste bin smaller than the recycling bin/s to encourage your family to recycle more than it wastes.
- Use a separate container to collect food scraps and then either compost, worm farm or feed to chooks.
- There is a lot of information available on composting and worm farming including books placed in your library with this guide (see Page 65 for details). Compost bins and worm farms (with instructions) can now be bought from most hardware stores.
Sustainability – it’s our future

Bathroom

VENTILATION FAN
Turn off the ventilation fan when you leave the bathroom.

HEATING LIGHTS
- Turn off heating lights when you leave the room.
- Use only half the heating lights in your heating lamp.

AAA RATED SHOWERHEAD
- Install AAA rated water efficient shower rose (head). A water efficient shower rose will also save you money on your hot water bill.
- Take shorter showers and save up to half a kilogram of greenhouse gas per minute.
- Use a timer to time your showers.

SAVE WATER
- Fit an aerator to your taps and reduce the amount of water you use by more than 50%. Aerators restrict the flow of water without reducing water pressure.
- Fix dripping taps immediately.
- Avoid mixer taps unless they are spring loaded to supply cold water.

HEATED TOWEL RAIL
Only turn this on for a very short time.

TURN OFF TAPS
Turn off the tap when brushing your teeth and save water.

TAKE A BATH
- On average a bath can use up to 100L of water – a short shower will use about 40L.
- Put a bucket in your shower to capture grey water and use on the garden or pot plants.

GREEN CLEANING
Clean your bathroom with environmentally friendly cleaning products such as vinegar, bicarbonate of soda and lemon juice.
Choose products that have a low impact eg. detergents low in phosphorous and nitrogen.

RECYCLED TOILET PAPER
Use unbleached recycled toilet paper that is packaged in recycled paper.

DUAL FLUSH TOILET
Install a AAA rated dual flush toilet and save water when you flush.
Ask your hardware store about a cistern displacement device for a low cost toilet water saving solution.
### Sustainability in your bathroom:

<table>
<thead>
<tr>
<th>Taps:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there any leaks/dripping taps?</td>
<td>• Measure the flow rate of your basin tap. <em>(See instructions on Page 16).</em></td>
</tr>
<tr>
<td>What is the flow rate of your taps?</td>
<td>• Older taps can sometimes run at up to 20 or 30 L per minute; low flow and aerating taps will only use a third of this water.</td>
</tr>
<tr>
<td></td>
<td>• Install a tap aerator on the basin tap to bring the flow rate down to under 10 L/minute (this is not necessary on the bath tap as you do not want to restrict the flow when filling the bath). <em>(See Page 16 for information about tap aerators).</em></td>
</tr>
<tr>
<td></td>
<td>• Fix all leaks or dripping taps.</td>
</tr>
<tr>
<td></td>
<td>• Brush your teeth with a cup of water rather than having the tap running.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shower:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider the number and length of showers your family has each week.</td>
<td>• Measure the flow rate of your showerhead. <em>(See instructions on Page 16).</em></td>
</tr>
<tr>
<td>Do you have a water efficient showerhead?</td>
<td>• Install a AAA-rated water efficient showerhead.</td>
</tr>
<tr>
<td></td>
<td>• Or install a flow aerator behind your existing showerhead to reduce the water flow rate to it.</td>
</tr>
<tr>
<td></td>
<td>• Take shorter showers; this will save both water and power (as you will use less hot water); a shorter shower may save up to half a kg of greenhouse gas per minute.</td>
</tr>
<tr>
<td></td>
<td>• Put a bucket in your shower to capture greywater and use water on the garden or pot plants.</td>
</tr>
<tr>
<td></td>
<td>• Cut down your time in the shower by installing a shower timer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bath:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider the usage of your bath.</td>
<td>• A bath can use over 100 L of water; a short shower can use less than 40 L.</td>
</tr>
<tr>
<td>Consider the size of your bath and how much you fill it.</td>
<td>• Reduce the number of baths you have per week if you can shower as an alternative.</td>
</tr>
<tr>
<td></td>
<td>• Reduce the amount of water you put in each bath, and reduce the amount of hot water you use to fill it in summer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you use environmentally friendly soaps, shampoos and conditioners?</td>
<td>• There are now lots of ‘greener’ personal hygiene products on the market, particularly those that are low in phosphates and sodium.</td>
</tr>
<tr>
<td></td>
<td>• Try to find a soap that does not contain palm oil or ‘palmates’: large scale palm oil production has been linked to devastation of habitat for animals, including orangutans, in the Pacific and other nations.</td>
</tr>
</tbody>
</table>

*(continued over)*
| **Draught proofing:**  
| Are your windows and doors seals draught proof?  
| Do all pipes (plumbing) have good seals? | • Use an incense stick to determine whether the room has any draughts that can be sealed. (See instructions on Page 16).  
| | • Seal all draughts to reduce winter heating requirements.  
| | • Ensure pipes are in good condition with no leaks. |

| **Heating:**  
| Consider the type of heating you use.  
| Do you use an extractor fan? | • If you have a ‘Tastic’ lighting heater (on the ceiling) consider using just two lamps not four.  
| | • If you use a heated towel rack turn it on for the minimum time.  
| | • Ensure all fans are maintained and free from dust.  
| | • Switch off heating lamps and ventilation fans when you leave the room. |

| **Toilet:**  
| Do you have a dual flush toilet?  
| Have you considered other toilet options such as composting? | • An old-style single flush toilet can use up to 12 L of water in one flush, whereas more water efficient dual flush toilets average less than 4 L. Using a water efficient dual flush toilet can reduce household water use by around 30,000 to 40,000 L per household per year.  
| | • If installing a new toilet chose a WELS 4-star or one of the following: 4.5/3 L dual flush, micro-flush, or urine-separating/composting. Look at the Sustaining our Towns website under Rebates to see if there are any incentive schemes to replace old toilets.  
| | • If replacement is not an option consider displacing water in your cistern using a bag or bottle filled with water of up to 3 L. This is a cheap and effective way to reduce water use per flush.  
| | • Another cheap way to retrofit an old style single flush toilet is to fit a ‘cistern weight’. These can be purchased at your local hardware store, are easy to install and can also save around 3 L of water per flush.  
| | • Use recycled toilet paper. |

| **Lighting:**  
| Do you leave fans, lights, heaters running when you have finished in the bathroom? | • Turn off all lights, fans, heaters, etc. when you leave the bathroom. |
Put a bucket in your shower to capture greywater and use on the garden or pot plants.
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Laundry

DRYER
An electric dryer uses more than three kilograms of greenhouse gases to dry a load of clothes. A solar clothes dryer (your clothes line) generates none.

If you have to use the dryer, remove as much water as possible from the clothes by spin drying them first.

WASHING MACHINE
Select a washing machine that uses the least energy, water and detergent, and has a high spin dry speed. Front loading machines are usually the best.

Choose a size suitable for your household and only run when fully loaded.

Wash your clothes in cold water to save energy and money.

CLEANING CARPETs AND WINDOWS
To clean your carpets, sprinkle bicarbonate of soda on the carpet before vacuuming to deodorise. It is also a great stain remover.

Clean your windows with half a cup of vinegar in a litre of warm water. Use crumpled newspaper moistened with vinegar to get a beautiful sheen.

CLOTHES HOIST
Dry clothes on a clothes line rather than using an electric dryer and save energy and money.

GREEN CLEANING
Use environmentally friendly cleaning products.

Mix warm water with pure soap or white vinegar and get a cheap, easy and general cleaner for use throughout your home.

Clean tiles, sinks and toilets with bicarbonate of soda and a damp cloth.

Clean mirrors by applying eucalyptus with a wad of newspaper to prevent mirrors fogging.

PEST CONTROL
Borax is a naturally occurring mineral salt. Use to clean, deodorise, bleach and disinfect. Borax is also a great pest control for bugs such as ants and cockroaches.
## Laundry

<table>
<thead>
<tr>
<th>Sustainability in your Laundry:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Washing machine:</strong></td>
<td>• Both energy efficiency and water efficiency are important considerations when purchasing a washing machine, so look for high water AND high energy efficiency ratings on labels.</td>
</tr>
<tr>
<td>What type of washing machine do you have and what is the star rating of the machine?</td>
<td>• Front loaders are generally more water and energy efficient than top loaders, particularly if the short and cold water cycles are used.</td>
</tr>
<tr>
<td>How do you use your washing machine?</td>
<td>• Top loaders are often hot water system connected (many front loaders aren’t) which will save electricity and money when using warm/hot cycles if the house has an energy-efficient hot water system.</td>
</tr>
<tr>
<td>(continued over)</td>
<td>• Try to use cold water cycles as much as possible; they can reduce greenhouse gas emissions from laundry washing by up to 80%.</td>
</tr>
<tr>
<td>(continued over)</td>
<td>• Only wash when you have a full load OR ensure you switch your washing machine load adjustment dial to the size of the load. Reducing the total number of loads you do not only saves water and energy, but also reduces the amount of detergent entering the sewerage system.</td>
</tr>
<tr>
<td>(continued over)</td>
<td>• Make sure you clean your washing machine lint filter regularly.</td>
</tr>
</tbody>
</table>
### Products and chemicals:

**Do you use environmentally friendly products such as low phosphate washing powders?**

**Do you use natural cleaners such as vinegar, bicarbonate soda and borax?**

- Don’t use more washing detergent than recommended on the box; more detergent does not make your clothes cleaner!
- Use phosphate-free and low toxin detergents; this is especially important if you are diverting greywater into the garden as phosphates and nitrates have an impact on soil quality as well as waterway health.
- There are many ‘green’ cleaning products available at affordable prices in most grocery shopping outlets.
- Consider using natural cleansers such as vinegar, bicarbonate of soda, lemon juice, salt, borax, washing soda and essential oils like lavender, tea tree and eucalyptus. There are more and more people choosing to use these more traditional cleaning methods, with information about making up products suitable for various uses in books and online. (Refer to the fact sheet on our website www.sustainingourtowns.org.au and/or the DVD ‘Lush House’ which is part of this guide and can be borrowed from your library).
- If you have old chemicals in your home (including things like paint) do not throw these into general waste because if put into landfill dangerous compounds can leach out to contaminate ground and water. Find out from your council when the next ‘Hazardous Waste Collection’ service (co-ordinated by SERRROC) will be run in your area and make the effort to take them to a central collection point on that day for appropriate disposal.

### Clothes drying:

**Consider how often you use the dryer and at what temperature/cycle you use it on?**

- An electric clothes dryer uses more than 3 kg of greenhouse gases to dry a load of clothes. Your clothes line generates none.
- If you need to use the dryer make sure you spin dry clothes first to reduce water retained in the clothing. New dryers have energy ratings; the higher the star rating the more energy efficient. Also consider using only your dryer to complete the drying of wet clothes in winter and wet or damp weather.
- Purchase a clothes horse for natural indoor drying.
An electric clothes dryer uses more than 3kg of greenhouse gases to dry a load of clothes.

Your clothes line generates none.
Bedrooms

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CEILING FAN
Circulates air and is far more energy efficient than an air conditioner.

LIGHTS
Switch off lights when not in the room.

THERMOSTAT
Consider turning your thermostat down or off overnight.

PINK BATTs
Increasing your ceiling insulation to R5.1 and your wall and floor insulation to R2 will greatly increase the efficiency of your home.

INSTALL A SKYLIGHT
High efficiency skylights allow light into internal rooms and corridors.

WINDOWS
Have large windows facing north to allow the sun in to naturally warm the room.
Shade windows during the hot months with eaves, awnings or pergolas.
Avoid windows and long unshaded walls on the east and west aspects.

CURTAINS
Cut heat flow through windows by shading them from hot sun and installing close-fitting blinds or curtains.

POT POURI
Use pot pouri for a nice smell and avoid using spray cans.

POLAR FLEECE
Wear a jumper instead of turning up the heat.

HOT WATER BOTTLE
Use a hot water bottle in your bed rather than an electric blanket.
If using an electric blanket, only use it to heat the bed then switch off.

DOONA
Use a thicker doona or blankets in winter to reduce the need for heating.

ELECTRICAL APPLIANCES
Do not leave your TV or any appliances on standby. Turn them off at the wall.

HEATING
Limit heating by increasing insulation.
## Bedrooms

<table>
<thead>
<tr>
<th>Sustainability in your bedroom:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
</table>
| **Insulation:** Consider the type of insulation/coverings you have in the room. | • The type of floor covering can increase or decrease the heat retention of the room.  
• Window coverings improve heat retention ability of the room; invest in insulated bedroom window coverings to reduce night time heating and cooling requirements.  
• Large north-facing windows allow natural sunlight to heat the room. Shade windows during the hot months with eaves, awnings, pergolas or deciduous trees. |
| **Heating and cooling:** How do you stay warm/cool in this room? | • Use a hot water bottle rather than an electric blanket.  
• If you do use an electric blanket, put it on only 10 minutes before getting into bed and switch it off before going to sleep.  
• Put another blanket or doona on your bed and reduce the need for heating.  
• If there is a heating/cooling appliances in the room consider turning it down or off overnight.  
• Install ceiling fans or use a mobile fan during summer rather than air conditioning.  
• Close curtains early in the day in summer to prevent heat from the sun coming into the room.  
• If the room faces north open curtains during the day during winter to allow the sun to naturally heat the room, then close them in the early evening to trap the heat in the room. |
| **Lighting:** What sort of lighting do you have in the room? Do you turn the lights off when you leave the room? | • Install energy efficient lighting (compact fluorescent or LEDs).  
• People often leave lights on when they leave the bedroom; ensure you turn all lights off when you leave the room. |
| **Appliances:** What appliances do you have in the room? | • Use the Power Usage Meter to work out how much power any appliances in the bedroom are using (Refer to use of the device on Page 14).  
• Reconsider having appliances like TVs and computers in every room of the house. If you do have them in bedrooms, make sure they are switched off at the wall when not in use. |
Home office

**DESK LAMP**
Fit lower wattage globes or compact fluorescents in bright lights, especially in down lights and spotlights. This will save up to 50% of greenhouse gases.

Turn off unnecessary lights, including fluorescent lamps.

**CEILING FAN**
Install ceiling fans. Fans improve comfort while generating less than one kilogram of greenhouse gas every 10 hours.

**PRINTERS**
Refill your ink cartridges instead of using new ones.

**COMPUTERS**
Use a laptop instead of a desktop computer as they use far less power.

Switch off your computers and other devices like screens, printers and modems at the wall when not in use.

**RECYCLE PAPER**
Use 100% recycled paper when printing and print double sided.
Buy recycled content office and stationery products.

**PAPER BIN**
Keep a recycle bin handy for reuse and recycled paper.
## Home office

<table>
<thead>
<tr>
<th>Sustainability in your home office:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heating and cooling:</strong>&lt;br&gt;How do you heat/cool your office?</td>
<td>• Offices usually have computers which generate heat.&lt;br&gt;• If you need to, install ceiling fans rather than air conditioning, and improve the insulation of the room. Fans improve comfort while generating less than 1 kg of greenhouse gas every 10 hours.&lt;br&gt;• Open windows rather than turn on cooling systems to allow air flow.</td>
</tr>
<tr>
<td><strong>Computer and office equipment:</strong>&lt;br&gt;What type of computer do you have and how do you use it?&lt;br&gt;What other equipment do you have and how often do you use it?&lt;br&gt;Do you think before you print?</td>
<td>• It is a common myth that turning off your computer is harmful. Your computer will not be damaged by turning it off. Ensure you also turn off the monitor as this also uses power and needs to be turned off separately from the operating system.&lt;br&gt;• A computer left on 24 hrs 7 days/wk uses nearly 1,000 kW of electricity/year – that equates to more than 1 tonne of carbon emissions and around $125 per year. A computer turned off at the end of the day and over the weekend uses less than 250 kW of electricity per year and costs around $30 per year.&lt;br&gt;• Laptop computers use up to 90% less energy to run, so are more environmentally friendly and cheaper to run, so consider buying one for home use.&lt;br&gt;• Other office equipment like modems, routers, printers and phone chargers also use power. Ensure they are all switched off at the wall when not in use.&lt;br&gt;• Try and limit the amount you print. If you are buying a new printer consider whether it has a double-sided printing option, then set your ‘default’ printing settings to use this option.&lt;br&gt;• Find out whether your post office, council or stationery shop has the ‘mobile muster’ service to collect old and disused mobile phones. Mobile phones contain many valuable metals which can be extracted and reused.&lt;br&gt;• Don’t just throw your old computer into your waste bin. Think about donating it to a local charity, or find out whether your council offers an infrequent collection service for this type of waste. SERRROC is assisting councils across the region to offer these sorts of services from time to time. Collected computers are crushed and the component parts extracted to remanufacture into new products.</td>
</tr>
</tbody>
</table>

(continued over)
### Stationery:
**Do you use ‘green’ stationery options?**
**Do you refill your ink cartridges?**

- Keep a pile of print paper for reuse into notepads.
- Put a recycle bin into your office for paper and ensure you put it into the recycling service or compost or worm farm it if it contains sensitive information.
- Use post-consumer recycled content paper, envelopes and notepads. ‘Post-consumer’ paper is made from recycled paper rather than just forestry debris.
- Refill your ink cartridges instead of using new ones. There are many small local businesses that can organise this service for you now.
- Keep up to date with other ‘green’ options for office equipment; your local supplier will be able to advise you on the various products as they come onto the market.

### Lighting:
**What sort of lighting do you use in this room?**

- Consider buying an LED office lamp. These use very little energy and offer a bright, concentrated light suited to desk work.
- Make sure other lights in the room are low wattage too; replace any halogen downlights (which are very inefficient) with compact fluorescents or LED bulbs. Speak to your local lighting shop about the options available for retrofitting halogen downlights.
- Turn the lights off when you leave the room.
- See the information on Page 25 for more information about lighting.
Laptop computers use up to 90% less energy than desktop computers.
Garden

Sustainability – it’s our future

**TREES AND PLANTS**
Plant local native species. They are drought tolerant, grow quickly and provide both habitat and food for native fauna.

**WIND GENERATOR**
Think of installing a small home wind generator if you live in an open and windy location. They are a low cost and low maintenance renewable energy option.

**FRUIT & VEGETABLES**
Grow your own fruit and vegetables. It is fun, cost effective and fresh and healthy.

**HOT WATER SYSTEM**
When it is time to replace your hot water system look into solar, gas or heat pump options rather than electric.

**PHOTOVOLTAIC SOLAR CELLS**
Think of investing in photovoltaic solar panels to generate your own electricity from the sun once you have made your home as energy efficient as possible.

**RAINWATER TANK**
Look into installing a rainwater tank for use in your home and garden. Ensure you check on Council plumbing and other requirements.

**CHICKENS**
Look into getting chickens. They are great for organic pest control, will love your kitchen scraps and provide you with eggs and organic fertiliser in return.

**COMPOST BIN**
Make sure your kitchen and garden scraps are composted. Read up on what can and can’t go into compost bins/piles.

**POOL THERMOSTAT & PUMP TIMER**
Keep temperatures below 27°C, and keep pump filters clean.

**MULCH**
Mulch reduces the need for watering and eventually breaks down and provides organic matter in your soil.

**IRRIGATION**
Where possible install dripper irrigation for your garden beds as this is a very efficient way to water.

**GREY WATER SYSTEM**
Make sure you get a qualified plumber to install the appropriate system for your needs.

**SOLAR GARDEN LIGHTS**
Consider installing sensor lights and/or solar garden lights.

**SPA / POOL**
Ensure you use a Spa/Pool cover. It will help keep them clean and will reduce water evaporation.

**WORM FARM**
Worm farms are compact and a good way to recycle kitchen scraps. They will give you organic castings to work into your soil. They also make a liquid fertiliser that can be used to feed plants. Make sure you know what to feed your worms!

**ORGANIC FERTILISER**
Use organic fertilisers when possible, they are better for both you and the environment as they do not have a residual effect.
### Sustainability in your garden:

**Rainwater:**
Do you have rainwater tank/s for watering the garden and/or use in the home?

### Sustainable actions:

- Watering the garden is a significant user of water in the home, so even if you only use rainwater for doing this you are likely to save thousands of litres every year.
- The purchase of a rainwater tank is a higher cost than many other water reduction options, so ensure you look at all factors before making a purchase. There are many things to consider, including:
  - whether you are planning to use the water only in the garden or in your home too
  - what size tank will meet your needs
  - location of the tank to maximise roof catchment
  - what the tank is made of
  - what shape of tank would suit your situation
  - whether you need consent from council
  - whether the tank will gravity feed or need a pump
  - whether there are any rebates available to assist with the cost of the tank and installation.
- Find yourself a reliable supplier or tradesperson who will be able to provide you with sound advice to ensure you make the right decision. There is also a lot of good information to help consumers make decisions about water tanks on many government department websites.

(continued over)
**Greywater:**
Do you recycle or reuse greywater?

- Greywater systems allow you to reuse water from places like your bathroom and laundry on your garden or back within your home.
- Refer to the information on Page 23 for a bit more information about greywater systems.
- You should read the NSW Government’s Greywater Guidelines before making any greywater system decisions.
- You should check with your local council before purchasing and installing a greywater system.
- You should ensure a qualified plumber installs the system.
- If you are using a greywater system, you should use low phosphorus, low sodium, boron and chloride detergents, as these will be kinder to your plants.
- Monitor plant response to greywater use. Clean system regularly.
- Do not reuse greywater on fruit, vegetables and plants that will be eaten raw (particularly if it is bucketed or diverted from your bathroom or laundry directly onto your garden without treatment).

**Swimming pool/spa:**
Do you have a swimming pool or spa?

- Pool or spa pumps use, on average, 10 kWh/day; if heated, usage is higher. This adds up to a significant cost if the pump is left on for extended periods of time over the year.
- Keep the temperature of the pool or spa below 27°C.
- Use a pool or spa cover as it will reduce evaporation and help keep the water dust/debris free which will mean the filter will be more effective.
- Use cartridge filters as sand filters require backwashing.
- Use a timer for the filter pump and clean filters regularly.
- If you install a rain water tank consider diverting water to the pool via a garden hose when it rains.

**Garden lighting:**
What type of garden lighting do you use?

- Consider installing sensor lights for outdoors; consider installing timers on outdoor lighting if sensor lights are not an option.
- Consider purchasing solar lights.
- Reduce wattage of outdoor lights.
| **Irrigation:**  
What type of garden irrigation do you use? | • Consider doing things like improving soil quality and mulching before irrigating.  
• Try to keep irrigation to only small parts of your garden that really need it (vegetables or a few ornamentals); try to make the bulk of your garden as water-hardy as possible so that no irrigation is required.  
• Sub-surface irrigation is generally a lot more efficient than surface irrigation as no water is lost to evaporation during watering.  
• Irrigation systems that feed water directly to the roots of plants (rather than saturating the soil in general) will also be a lot more water-efficient.  
• Check that an existing system has no leaks or cracks in the pipes.  
• Ensure you water early in the morning or in the evening, and that you have checked to see whether there are any council watering restrictions in place and that you are adhering to these.  
• Try to reduce your watering over time; plants will toughen up if not watered as much. |
| **Garden beds:**  
Do you mulch your garden beds? If so, with what type of mulch and to what depth?  
Does your soil have earth worms and organic matter in it? | • Mulching your garden beds will reduce the need for watering. Mulch will also breakdown and add to soil health and structure and you should use the appropriate mulch type for the plants in the garden bed.  
• Use mulches like pea straw or sugarcane on beds where you need to increase nutrient levels and improve soil structure (e.g. vegetable beds).  
• Use organic fertilisers.  
• Join a local garden group; there is often a wealth of knowledge in members. |
| **Plant types:**  
Do your garden beds have natives suitable to the local area? | • Native species require less water, provide colour and provide both habitat and food for native fauna.  
• Plant drought tolerant species and group plants with similar water and soil type needs.  
• Find out which plants are known as ‘weeds’ in your area. These are plants that generally ‘escape’ from gardens and invade bush, grassland and farms. Most councils have information about local weed species, and alternatives to replace them.  
• Avoid planting species that can become ‘weeds’ around your local area, and remove any known ‘weeds’ from your garden to prevent further spread.  
• Join your local Landcare group to learn more about native plants, species from your local area. |
### Growing food:
**Do you grow your own herbs and vegetables?**
- Growing your own vegetables can be rewarding and can save you money. You will know the history of the food you produce. You will know it is chemical free if you do not use pesticides.
- Food produced in your own garden is fresh, tasty and usually higher in nutrients if picked and eaten directly afterwards.
- The only way to learn about how to grow vegetables is to start. Start with simple things like salad greens and herbs.
- There are a number of ways to build beds to improve productivity and make growing easy (e.g. no-dig gardens, raised beds). There are many books available to help you understand the options and get you started *(see the booklist on Page 65).*
- There are also many community gardens around our region, with more being established all the time. They have a focus on developing community food growing skills. Consider joining one.

### Recycling organic material:
**Do you recycle organic kitchen and garden waste?**
**Do you have chickens?**
**Do you compost or worm farm?**
- Start making compost from your organic garden waste.
- Consider setting up a worm farm, particularly for kitchen scraps.
- Chickens are also a great way to use kitchen scraps. They have relatively low care needs. Check with your council about chickens in suburban locations before buying any.
- Composting bins and worm farms can be bought from most hardware stores, but you can also make your own at home. Old polystyrene boxes (used by suppliers to deliver vegetables) with holes punched in the bottom make good worm farms because they are also insulated.
- There are books in your library on how to compost and worm farm effectively *(see the booklist on Page 65),* and a lot of information is online *(see the links on Sustaining Our Towns website).*
- It is advised that you do read more about how to worm farm or compost effectively, before doing it, to avoid any issues (which can often quite simply be avoided). For example, worms do not like citrus or high protein substances.

### Shading:
**Do you have deciduous trees on the north side of the house for shading?**
- Plant deciduous trees on the north and west side of the house to provide shade in summer.
- Place awnings or build a pergola on the north and west side of the house to offer shade.

### Lawn area:
**How much lawn area do you have?**
- Reduce lawn area and replace with native garden beds, herbs or vegetable beds.
- If you do want a lawn, try to use a hardy and drought-tolerant variety.
- Do not mow your lawn too short as longer grass encourages deeper root growth.
An average Australian household generates 1,000kg of mixed waste each year. Reduce your waste by starting a compost – good for the earth and good for your garden.
Sustainability – it’s our future
**Lifestyle**

<table>
<thead>
<tr>
<th>Sustainability in your lifestyle:</th>
<th>Sustainable actions:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eating:</strong></td>
<td>• Organic food is not produced with chemical fertilisers or pesticides and is becoming more freely available in most food outlets. Organic food may be more expensive, so consider just buying certain organic products to help support this as an emerging market if it’s too expensive for you.</td>
</tr>
<tr>
<td>Do you purchase any organic food?</td>
<td>• Buying locally produced food (in particular locally grown fresh food) is more environmentally friendly as it does not require transportation to the area, and also supports the local economy.</td>
</tr>
<tr>
<td>Do you buy locally produced food?</td>
<td>• There are an increasing number of farmers markets in the region, as well as suppliers stocking and selling locally produced food, much of it also produced organically.</td>
</tr>
<tr>
<td>Do you grow any of your own food?</td>
<td>• Grow your own herbs and vegetables.</td>
</tr>
<tr>
<td>How many times a week do you eat meat?</td>
<td>• Consider reducing the amount of meat you eat in your diet during the week. Try to source local grass-fed meat if possible.</td>
</tr>
<tr>
<td>How much food do you waste?</td>
<td>• Australians throw 2–3 million tonnes of food waste into landfill each year. The easiest way to reduce food waste is to decide on a plan for the week then shop for these ‘meals’ rather than just ‘food.’</td>
</tr>
</tbody>
</table>

**Shopping:**

| Do you minimise packaging when you make purchases? For example, do not put loose vegetables/fruit into small plastic bags; buy in bulk. | • Make sure you take your reusable shopping bags with you when going shopping by leaving them at the front door or in the boot of the car if you usually drive. |
| Do you buy bottled water? | • Buy basic items in bulk if possible; this will reduce environmental impacts of food related to transportation and packaging. |
| Do you look for environmental certification labels on items? | • Bottled water is expensive for both you and the environment. Purchase a water filter from your local hardware store rather than purchasing bottled water. |
| Do you endeavour to buy local produce? | • Look for and purchase certified environmental products if you can afford them, particularly forestry and seafood products (see Page 24 for more information on environmental labelling schemes). |

(continued over)
| **Clothing:** | • Consider buying second hand clothing from ‘op’ shops; you will also be supporting a charity.  
• Organise a ‘clothes swap’ with friends to update your wardrobe rather than buy new ones.  
• Try to choose products produced ethically, e.g. no sweatshops/animal testing.  
• Buy clothes that do not need dry cleaning as most solvents are toxic. |
| --- | --- |
| Do you buy second hand clothing?  
Do you purchase natural fabrics such as organic cotton or wool? | • Consider buying second hand clothing from ‘op’ shops; you will also be supporting a charity.  
• Organise a ‘clothes swap’ with friends to update your wardrobe rather than buy new ones.  
• Try to choose products produced ethically, e.g. no sweatshops/animal testing.  
• Buy clothes that do not need dry cleaning as most solvents are toxic. |
| **Babies:** | • Disposable nappies are very convenient, yet add large volumes of waste to landfills. There are now biodegradable, unbleached and chemical free options available; ask your local supplier to stock them.  
• There are now baby nappies which have a reusable ‘outer’ which is washed, and a disposable ‘inner’. Check the internet and speak to your local supplier to see whether they can stock them.  
• Reusable nappies also have an impact on the environment as laundering uses large amounts of water, electricity and detergent. If you use reusable nappies try to look for products made of organic cotton or hemp, use the shortest wash cycle possible to ensure they are clean, and use low phosphate washing powder.  
• If you do not breast feed, try to use bottles, nipples and containers made of tempered glass or safer plastics such as polyethylene or polypropylene.  
• You can also purchase organic infant formula, food and treats for your baby.  
• Use disposable eco-friendly baby wipes which do not contain chlorine or synthetic ingredients. |
| Do you try to reduce your baby’s exposure to chemicals?  
Do you use disposable nappies? | • Disposable nappies are very convenient, yet add large volumes of waste to landfills. There are now biodegradable, unbleached and chemical free options available; ask your local supplier to stock them.  
• There are now baby nappies which have a reusable ‘outer’ which is washed, and a disposable ‘inner’. Check the internet and speak to your local supplier to see whether they can stock them.  
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• If you do not breast feed, try to use bottles, nipples and containers made of tempered glass or safer plastics such as polyethylene or polypropylene.  
• You can also purchase organic infant formula, food and treats for your baby.  
• Use disposable eco-friendly baby wipes which do not contain chlorine or synthetic ingredients. |
| **Travel:** | • We live in a remote region that generally has few public transport options, but there are ways to reduce car travel.  
• If you live and work in the same town, walk or ride your bike to work.  
• If you commute into work regularly, speak to others in your office to find out if you can carpool, or use the website www.carpool.com.au which includes locations around our region.  
• Have your vehicle serviced regularly.  
• Sometimes we have to fly as there is no alternative. Most airlines provide a carbon offset option. A small added cost to your ticket can compensate for your flight related carbon emissions.  
• Think about train travel if you live on the train line.  
• Check the eco-credentials of accommodation before booking; if nothing else this will help them to realise that consumers are looking for responsible accommodation options, and prompt them to improve their own energy use, water use and waste efficiency. |
| How many kilometres do you drive every week?  
Do you try to reduce car use by walking locally or carpooling?  
How often do you fly? | • We live in a remote region that generally has few public transport options, but there are ways to reduce car travel.  
• If you live and work in the same town, walk or ride your bike to work.  
• If you commute into work regularly, speak to others in your office to find out if you can carpool, or use the website www.carpool.com.au which includes locations around our region.  
• Have your vehicle serviced regularly.  
• Sometimes we have to fly as there is no alternative. Most airlines provide a carbon offset option. A small added cost to your ticket can compensate for your flight related carbon emissions.  
• Think about train travel if you live on the train line.  
• Check the eco-credentials of accommodation before booking; if nothing else this will help them to realise that consumers are looking for responsible accommodation options, and prompt them to improve their own energy use, water use and waste efficiency. |
| Do you use GreenPower? | • Consider purchasing GreenPower from your supplier; the money you pay for GreenPower will be invested into renewables like hydro, wind and solar.  
| | • See the information on Page 21 to find out more about GreenPower. |
| Hot water heating:  
What type of water heating system do you have? | • Heating water is the largest single user of energy in the home. So changing from an electric system to a more energy-efficient option is usually a very good investment.  
| | • The Australian, state and territory governments have agreed to start phasing out electric and energy inefficient hot water systems from 2010.  
| | • There are now a range of alternatives to electric systems available. Do your research to find a technology and system that meets your needs and circumstances.  
| | • Check to see what rebates might be available from Australian and state governments for retrofitting electric systems with more energy efficient alternatives.  
| | • If going away switch off your hot water system.  
| | • See the information on Page 22 to find out more about water heating options. |
| Solar (photovoltaic) power:  
Have you installed a photovoltaic system? | • Photovoltaic systems harness energy from the sun and turn into AC power that can be used in the home or fed back into the grid.  
| | • These systems are usually expensive with payback periods of many years (even when rebates and feed-in tariffs are considered).  
| | • Make sure that you make your home more energy efficient using the tips in this guide before (or in tandem with) installing solar power, as many of these may be more cost-effective measures. This will also reduce the size of the system you need to install (and the cost).  
| | • See the information on Page 23 to find out more about photovoltaic power systems. |
Choices about how individuals choose to eat and travel... all affect their ecological footprint.
Developing your home action plan

This section helps you develop a simple ‘Action Plan’ to improve the sustainability of your home and lifestyle.

It contains the following sections:

• Developing your home action plan
• Home action plan example (for your family to use)
• Top low cost actions to improve your home’s sustainability
• Top higher cost actions to improve your home’s sustainability.

Developing your home action plan

Once you have checked the performance of your home using this guide, you should decide what you will do to improve your home and garden sustainability. Ideally this should be done with your family to ensure that everyone in the family agrees to do what is decided.

Once the family has had a discussion and agreed to make some changes around the home, develop this into a simple ‘Action Plan’ that everyone can stick to.

An example of a completed Action Plan is provided on the page following. Copies of blank Action Plans can be found with this kit which you are free to take and use.

Remember to also make a note of your annual daily energy and water use before you make any changes. See the section on ‘Understanding your home energy and water use’ to find out how to do this. Once you have made some changes around the house, have a look at your new bills to see whether your consumption is dropping.
# Our Home Action Plan (EXAMPLE)

A blank Action Plan is provided for you to use in the back of this guide

**AUGUST 2011**

<table>
<thead>
<tr>
<th>Room:</th>
<th>Our household will:</th>
<th>Notes:</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Living room</td>
<td>Upgrade ceiling insulation. Turn off the TV/DVD at the wall.</td>
<td>Tradesman coming w/ re insulation in roof and walls. Danny still not turning TV off at the wall!</td>
<td></td>
</tr>
<tr>
<td>Toilet</td>
<td>Put cistern displacers into existing loos.</td>
<td>Got options from hardware store.</td>
<td>Nov 2011</td>
</tr>
<tr>
<td>Laundry</td>
<td>Replace washer with front loader. Starting buying low phosphate powder.</td>
<td>Got quotes for options; decision by July when tax rebate comes through.</td>
<td>Sept 2011</td>
</tr>
<tr>
<td>Bedroom</td>
<td>Take extra TV out of kids’ bedrooms.</td>
<td></td>
<td>Sept 2011</td>
</tr>
<tr>
<td>Garden</td>
<td>Buy and setup worm farm for kitchen scraps. Set up a vegie patch.</td>
<td>Remember to check at the hardware store. Reading books about vegie growing to help decide where to put the patch and how to go about it.</td>
<td>Nov 2011</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Start going to farmers’ market to buy local food. Investigate non-electric hot water heating options.</td>
<td>Done a bit of research. Solar hot water looking like the best option. Wait until 2012 so we can save money!</td>
<td></td>
</tr>
</tbody>
</table>
Top low cost actions to improve your home energy efficiency

These are the Sustaining our Towns project’s top low cost tips for improving the energy efficiency of your home. If you do nothing else, carrying out these things will help to save you money on your home energy bill.

1. Switch off appliances at the wall to save on standby power when not in use. This is a very simple way to save up to 10% of your home energy costs.

2. Replace incandescent and halogen lights with compact fluorescent and/or LED bulbs (ideally using existing fittings), especially in the living room and kitchen where lights are on a lot of the time. And switch off all lights when not in use.

3. Make sure general home improvements and decorating also help to insulate your house. Inside, this includes window coverings and rugs. Outside, this includes planting deciduous trees on the north and west side of the house, and putting up awnings to keep sun out of rooms in summer. In summer each unshaded square metre of glass will let in almost as much heat as a one bar radiator/heater.

4. Invest in some good small fans and use these rather than air conditioning, except on extremely hot days. Fans use around 1–2 cents/hr which is much more energy efficient than air conditioners. Note that fans cool people not air so be sure to turn them off when you leave the room.

5. If you do use an air conditioner to heat or cool air, adjusting the temperature by just a few degrees upwards or downwards will greatly reduce your energy use. If the air conditioning unit is on the north side of the house, shade the unit itself making sure the airflow around it isn’t obstructed. Close off rooms you are not using to reduce the area to be heated or cooled.

6. Install water saving shower heads and tap aerators. This will save water and also energy (as you will use less hot water).

7. Draught-proof your home. In winter, your heating costs can increase by up to 25% because of draughts. There are many low cost draught proofing products now available from hardware stores.

8. Maintain and clean all household appliances such as exhaust fans, fridges, heaters/coollers and pool filters to ensure they are working as efficiently as possible.

9. Reduce your hot water temperature if it is set higher than 60°C. Wrap hot water pipes with insulated pipe tubing (lagging), available from plumbing suppliers and hardware stores, to reduce heat loss through them.

10. Think twice before buying more electrical equipment for your home. Do you really need that second or third fridge? Should you really put an extra television in the bedroom? Even though many electrical appliances are very cheap these days, the price of power is rapidly rising. The more electrical appliances you have in your home the higher your energy costs are likely to be.
Top higher cost actions to improve your home energy efficiency

These are the Sustaining our Towns project’s top higher cost tips for improving the energy efficiency of your home. Most of these things will prove a good investment and greatly improve the energy efficiency of your home.

1. Replace halogen downlights with far more efficient compact fluorescent or LED fittings or bulbs. The installation costs are likely to repay themselves, particularly in well-used rooms like living rooms and kitchens.

2. Top up roof insulation or install roof insulation to R5.1 or greater in line with the new Australian Building Code. Ceiling insulation saves up to 45% of heating/cooling energy requirements and will also make your home far more comfortable to live in.

3. If you are renovating, bulk up the insulation in your walls and under your floors if possible.

4. Replace your hot water system with a solar, gas or heat pump system. Hot water heating is the greatest single user of power in the home.

5. Invest in the most energy efficient fridge you can afford, which also is the minimum size to meet the requirements of your household. After hot water heating, the fridge is the appliance that uses the most energy in the home.

6. When buying home appliances, invest in the most energy and water efficient models you can, which also meet other household needs. This includes purchasing a LCD/LED screen television rather than cheaper plasma screens, as they are far more energy efficient. If you take running costs into account, investing in energy efficient models is often cheaper in the long run.

7. Look at ways to improve the insulation of your windows. This could include installing double glazed windows, retrofitting existing windows with secondary glazing (adds a second sheet of glass or plastic to a window frame) and buying quality window coverings (curtains with pelmets) which provide good insulation value.

8. Install permanent and good quality shutters, pergolas or awnings outside north-facing windows to reduce heat gain from the sun in summer.

9. Install a renewable power system to harness energy from the wind or sun.
Additional resources

List of additional resources for you to borrow from this library

Sustaining our Towns has purchased a number of books and DVDs and placed them in libraries across the project region. We have also subscribed to a number of environmental magazines for 2011. These provide further information about many of the topics covered in this guide.

Books
The CSIRO Home Energy Saving Handbook, CSIRO
Making your House Sustainable: A Guide to Retrofitting, Wrigley, D.
A Slice of Organic Life, Goldsmith, S.
Australian Green Home and Garden, Stewart, R.
Creating your Eco-Friendly Garden, Horsfall, M.
Fabulous Food from Every Small Garden, Horsfall, M.
The Permaculture Home Garden, Woodrow, L.
Composting, Marshall, T.

DVDs
Gardening Australia – Permaculture
Costa’s Garden Odyssey 1 & 2
Eco House Challenge
Lush House

Magazines
Sanctuary
Green Magazine
Renew

Children’s Resources
Dirt Girl World – Bugs (DVD)
Dirt Girl World – Get Dirty (DVD)
Blueback, Winton, T. (Book)
Make it!, Bull, J. (Book)
Look After Your Planet, Child, L. (Book)

The Sustaining Our Towns website
Sustaining Our Towns website can be found at www.sustainingourtowns.org.au

On our website we have further information on current environmental rebates and a whole range of sustainable living topics.

The website also contains information about other services the project is offering until March 2012, including free home sustainability reviews and sustainable living workshops and training. If you are unable to utilise the internet or cannot access our website to download and print resources, contact our project’s Homes Officer on sot.homes@gmail.com for assistance (until March, 2012).
References


Sustainability Advice Team (SAT) 2010, Manuka, ACT www.energystrategies.com.au

## Our Home Action Plan

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<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laundry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedroom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifestyle</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**SUSTAINABILITY – it’s starting with me at my place – OUR HOME ACTION PLAN**
Sustainability – it’s starting with me at my place.
The Sustaining our Towns project is co-ordinated by SERRROC in partnership with Clean Energy for Eternity and the Southern Rivers Catchment Management Authority.

Participating Councils:
Bega Valley Shire Council
Eurobodalla Shire Council
Queanbeyan City Council
Bombala Shire Council
Goulburn-Mulwaree Council
Snowy River Shire Council
Boorowa Shire Council
Harden Shire Council
Upper Lachlan Shire Council
Cooma-Monaro Shire Council
Palerang Council
Yass Valley Council
Young Shire Council

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