Sustainable Living

A guide to provide practical information to encourage sustainable living.

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This booklet is printed using 100% recycled paper.

Foreword

This guide has been made with the help of many existing useful resources and the advice of Council's Environmental Voice Committee. Please refer to the Useful Resources section at the back of this guide.

Living sustainably can relate to many facets of your life, including:

- **Building and Renovating**
- **Energy**
- **Transport**
- **Waste**
- **Water**
- **Biodiversity**
- **Growing Produce.**

Although there is a lot to learn about living sustainably, we hope this guide assists our local community in making their homes more sustainable. Ultimately the goal is to reduce the impact on our environment and planet, as well as allow residents to save money and be more comfortable in their homes.

The Sustainable Living Guide helps Baw Baw Shire Council achieve strategic goals outlined in the *Environmental Sustainability Strategy 2018-2022* for Climate Change Adaptation and Mitigation. The guide supports Ongoing Actions and Commitments 2A & 2B.

Contents

Introduction

Why live more sustainably?

To live sustainably is to have the ability to balance economic, social and environmental wellbeing, now and into the future. There are many choices we make and behaviours we undertake that can influence how we impact our planet. Living sustainably can bring about many positives and assist us all in living well and maintaining a healthy lifestyle.

We, as a society, are currently putting immense pressures on our planet through extensive use of natural resources, the use of energy (and associated greenhouse gas emissions), high water consumption and, of course, waste going to landfill.

Currently, an average Victorian household spends more than $2,500 on energy bills every year. With emerging climate predictions informing us that we will experience more frequent extreme weather, it is evident that our homes will be at the forefront of keeping us comfortable, although this standard of living may become be difficult to achieve if the price of energy rises too much.

Being able to combat issues of energy, waste and water within the home allows people to live more sustainability and promotes positive wellbeing outcomes for humans and the planet.

Benefits of living more sustainably

By considering elements of sustainability it can assist to;

- save money,
- be more comfortable in your home,
- utilise natural ways of heating and cooling your home,
- reduce the consumption of natural resources,
- become more water efficient,
- reduce waste to landfill,
- improve biodiversity,
- transition away from coal to renewable energy,
- reduce carbon emissions,
- grow your own food,
- and encourage a healthier lifestyle.

Building and Renovating

Why build and renovate sustainably?

The choices you make when buying or renovating your home, will ultimately determine the future on-going costs and comfort of your home.

If you're planning to buy, renovate or build new, the following information will assist you in your planning and designing. It can also assist in asking the right questions of your builder.

Building or buying your home – design and orientation

Passive solar design

Passive solar design, including good orientation of the house (i.e. living rooms facing north), can be extremely beneficial with respect to the thermal performance of the home. Passive solar design utilises natural sources of heating and cooling, such as the sun and cooling breezes. Good orientation is an important aspect when building, as it reduces the need for supplementary heating and cooling and improves solar access for solar panels and solar hot water services.

The difference in the costs for an average single storey dwelling with best orientation (e.g. north-facing living spaces) and worst orientation (e.g. south-facing living spaces) in Baw Baw Shire is approximately $460 per household per annum, based on current electricity prices in 2018.

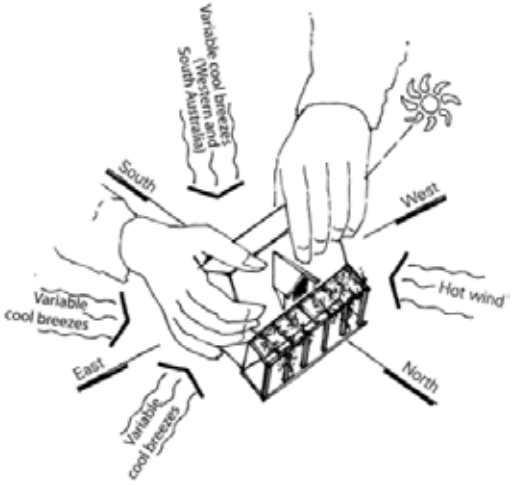


Image credit: www.yourhome.gov.au

When looking to buy or build a new home, passive solar design and good orientation detail that living areas should face north (long axis in the east-west direction) to utilise the winter sun. It is important to have correctly sized eaves on the north side (but not a veranda) and large windows where possible. This will ensure full sun in winter and limited direct sun in summer. Minimise window areas on other sides of the house (especially the west for summer heat gain and south for winter heat loss).

Renovating your home

Insulation

When discussing how much insulation to install into the roof, wall cavities and underfloor, understanding R-value is essential. R-value measures resistance to heat flow and this measurement can vary for different climate zones. In Baw Baw Shire's climate zone 7, the roof/ceiling minimum R-value should be 4.1 and wall cavities should be R-value 2.8. Under floor insulation where possible should be a minimum of R-value 1.0. In Victorian climates, the more insulation the better.

Sealing your home

Minimising air leakage can play a critical role in creating an efficient house, with air leakage accounting for 15 to 25 per cent of winter heat loss in buildings. Some of the biggest draughts in your home can be found in exhaust fans, open fireplaces, vented skylights, construction joints, doors and windows. It is worth getting a professional to identify air leaks and seal these up as much as possible.

Materials and Waste

There are many other issues that can affect the sustainability of your new home or renovation. Around 42 per cent of the solid waste generated in Australia is construction industry waste. Approximately 20 million tonnes of building and demolition waste was generated in Australia in 2014-15 (Blue Environment and Randell Environmental Consulting, 2017). Of this, about 7 million tonnes (35%) went to landfill while about 12.8 million tonnes (64%) was recycled. Minimising and recycling this waste can have significant social, economic and environmental benefits.

Different materials can be utilised when building homes to improve sustainability. For example, rammed earth walls are constructed by ramming a mixture of selected aggregates, including gravel, sand, silt and a small amount of clay into place between flat panels called formwork. Straw has also been used as a building material for centuries. Suitable for thatch roofing or walls made from rendered bales, it can also be mixed with earth in cob and wattle and daub walls. Using natural materials can require additional design specifications to ensure appropriate star ratings and compliance.

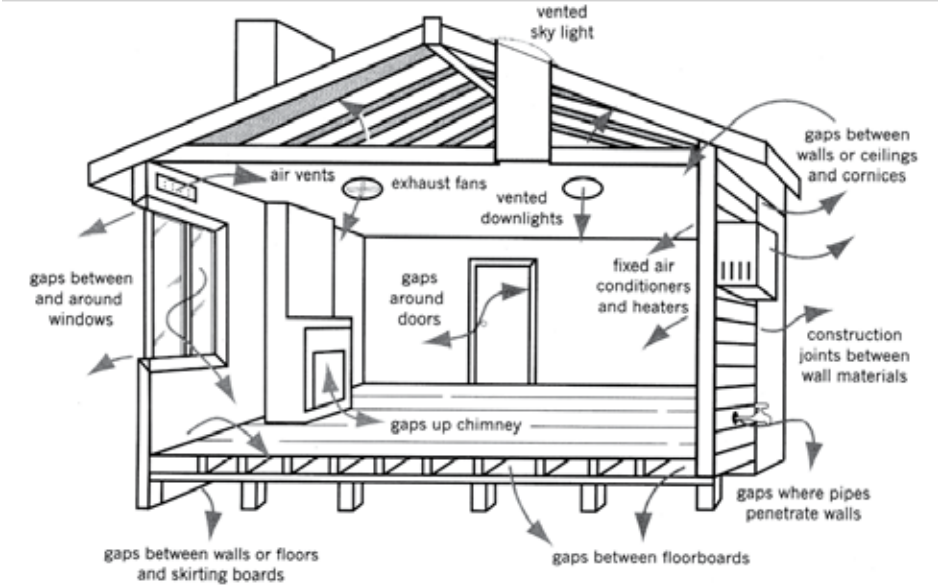


Image credit: www.yourhome.gov.au

How can you build and renovate sustainably?

Buying and building

- Consider the layout of your house on the block. Aim to face the living areas to the north (long axis east-west) to utilise passive solar design and sun orientation for solar and solar hot water systems. Use an online Sun Calculator such as suncalc.org for more information on how the sun moves around your home throughout the year.

Renovating

- Aim to retrofit your home for the local climate. Baw Baw Shire's climate zone is 7; Cool temperate and in some areas, climate zone 8; Alpine. Therefore, heating, insulation and keeping the house warm is the most important consideration for most of the year.
- Draught seal your home while remembering that mechanical ventilation for a fully sealed home is essential.
- Ensure roof and wall cavities are well insulated and floors where possible or necessary.
- Utilise blinds (external are most effective), screens or tinting on windows to keep the heat off windows in summer, focusing mostly on west facing windows.
- Invest in energy efficient appliances with high star ratings.
- Install self-sealing fans that close off when not in use to minimise heat loss into your roof cavity.
- Invest in double glazed windows (at least in the main living area that is normally heated). If purchasing aluminium window frames, request 'thermally broken' ones to prevent the frames acting as a conductor and allowing unwanted heat gain in the summer or heat loss in the winter.

Materials

- By choosing durable materials, you can minimise the need for new materials and finishes over the building's lifetime.
- Consider using materials that are made from recycled or renewable resources.
- Try to remember the three R's when building or renovating; reduce, reuse, recycle.

For more information: Your Home, Passive Design & Materials (2013).

Energy

Why consider energy consumption in your home?

Your home's total energy consumption is, in many cases, driven by the amount of energy used to stay warm in winter and cool in summer. The way we operate our homes determines how much it costs to stay comfortable, as well as how sustainable it is.

Percentage of household energy usage

- Heating and cooling 40%
- Hot water 21%
- Appliances 33%
- Lighting 6%

Source: YourHome Energy, 2013

How you use your home

Your home may be efficient structurally, although the way you run your home can make significant changes to your energy cost and consumption. The average Victorian household spends more than $2,500 on energy bills every year and this can be reduced through some simple behaviour change actions.

Heating and cooling

Heating and cooling accounts for approximately 40 per cent of the average Australian home energy use. However, there are many things that can be done to reduce the use of heating and cooling costs, while also staying comfortable.

To run your home efficiently, while staying comfortable, it is recommended that your heating thermostat in winter should be set to 18-20 degrees Celsius, while in summer the thermostat should be set to 25-27 degrees Celsius. The recommended indoor summer temperature may appear high, although when it is very warm outside (35 degrees +), keeping the indoor temperature to 25-27 degrees Celsius will still keep you comfortable, while minimising the use of the cooling system. Refrigerative air conditioners also reduce the indoor humidity significantly, so this allows you to feel more comfortable in these warmer indoor temperatures. Remember that setting the thermostat at a temperature below what you require does not make the unit cool faster. Leaving the air conditioner on while you are not home is not the most efficient use. It uses less energy to cool the house as you get home (or just before, if you have remote access).

Zoning your home can also play a vital role in reducing energy use. Closing doors of rooms that don't need to be heated or cooled can save a lot of money. Utilising shading outside your home can reduce unwanted heat gain in summer through the sun hitting the glass, while also allowing sun in the winter to enter when using deciduous trees.

Windows can also affect the heating and cooling of your home where up to 40 per cent of a home's heating energy can be lost through windows and up to 87 per cent of unwanted heat is gained through windows. Reduce the impacts of heat loss in winter through windows by installing indoor curtains (preferably full length with a pelmet) and reduce unwanted heat gain in summer with external blinds. Energy efficiency options such as double-glazed windows improve both summer and winter performance.

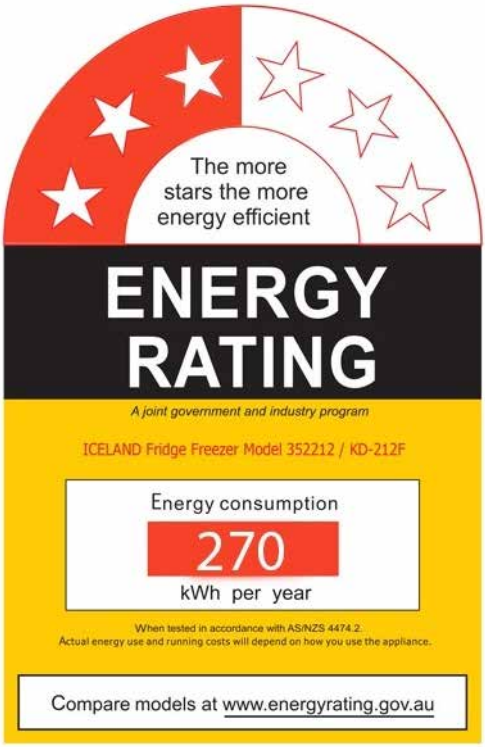
Appliances

There are many appliances in your home that could be using power without you even realising. Overall, 33 per cent of the energy you use within the home is for appliances. Some of the biggest users of energy include;

1. **Fridge and freezer - 18 per cent**
2. **Cooking - 15 per cent**
3. **TV - 19 per cent.**

Most major appliances now have an energy efficiency star rating, so use this to find the most efficient product. Selecting the most efficient appliance available when you purchase a new one is the most important thing you can do to reduce long term appliance energy consumption.

For more information, visit www.energyrating.gov.au



Everyday activities

The activities you undertake daily can add up. Ensuring you are operating your home efficiently, will assist you in reducing costs. A simple change is to ensure appliances are not left on standby and light fixtures have LED fittings where possible. For further tips on home energy saving, visit: *https://www.energymadeeasy.gov.au/*

These are the best things you can do if you are renting and are unable to make structural changes to your home.

How can you improve your energy consumption?

Heating and cooling

- Only heat or cool rooms that are occupied.
- Keep air conditioner temperature to 25-27 degrees Celsius in summer.
- Keep heating temperature to 18-20 degrees Celsius in winter. Reducing your thermostat's temperature by 1 degree Celsius in winter and increasing it by 1 degree celsius in summer can save up to 10 per cent on heating and cooling costs.
- Install and utilise indoor curtains and outdoor blinds.
- Seal any gaps or draughts.
- Service all heaters and coolers according to the manufacturer's instructions. Pay special attention to air filters.
- Use trees and shrubs to block sun in summer but allow the sun to shine through winter.

Appliances

- Buy efficient appliances. Look for the energy star rating to see how much the appliance will cost to run.
- Install energy efficient lighting such as LED's.
- Reduce hot water service heat loss by installing a valve cosy (note that only approved insulation jackets can be used on temperature and pressure relief valves to ensure that they do not impede their safe operation – ask your plumber) and ensure that your hot water pipes are insulated (which is called lagging).
- Install solar panels where feasible and seek professional advice to determine if battery storage or heat exchangers are an appropriate solution for you.

Everyday activities

- Dress appropriately for the weather. Putting on a jumper or using a blanket is better than turning the heater up.
- Use a fan instead of the air conditioner or open windows to cool your home, especially overnight in summer before a hot day.
- Ensure you are getting a good deal from your energy retailer. You can also purchase green power to offset the emissions from your electricity use. Utilising the Victorian Energy Compare website is a reliable and effective way to compare energy retailers - *https://compare.energy.vic.gov.au/welcome*
- Wash with full loads to reduce the number of loads per week.
- Reduce the use of hot water by installing a low flow shower head. Showers typically account for over 60 per cent of average household hot water use.
- Avoid placing hot food in the fridge – the fridge needs to work harder to remove excess heat – allow hot food to cool for an hour or two before refrigerating it.
- Switch gas appliances to electric when they need replacing.

For more information: Your Home, Energy & Hot Water Service (2013).

Solar

Why explore solar for your home?

Solar energy is a renewable energy source which can combat rising energy costs. Installing solar PV (photovoltaic cells) and a solar inverter can also benefit by minimising consumption of non-renewable resources and reducing your greenhouse gas emissions. Solar energy has proven to be popular in Australia with the Clean Energy Council estimating that 1.8 million solar PV systems have been installed across Australia since 2017.

Benefits of solar

- Saves money
- Reduces greenhouse gas emissions
- Uses free power from the sun first

Knowing what solar power system is right for you

When exploring your options for installing solar, it is essential to know how much power you will need to generate to off-set as much energy use as possible. Your electricity bill is the best place to start. To help you understand your electricity bill, please see the Australian Governments, 'How to read your electricity bill' for further information. The most important aspect is to understand how much electricity you use in kW hours. This will allow you to determine what sized solar power system you will need.

Some other factors are also relevant when calculating how much solar you will need to off-set your electricity use including; installation location (from a structural perspective), panel orientation and component quality. A 6kW solar power system should usually generate around 24 kW/hours of electricity a day. On average this is more generation than the average Australian home needs.

After determining how much electricity you use and deciding on a solar power system size, the next step is to find an accredited solar installer through the Clean Energy Council: https://www.cleanenergycouncil.org.au/. A reputable installer can advise what size and model solar power system they recommend from the information on your electricity bill, as well as how many panels you can fit on your roof.

Solar power system inverters

Solar inverters are required to convert the direct current (DC) energy output from your solar panels into 240V alternating current (AC) for household consumption. There are a variety of inverters you can obtain with your solar power system. It is worth remembering that If you get an inverter installed that is smaller than 5kW, you cannot add further panels in the future unless you update the inverter. For example, if you are installing 4kW of solar, it is advised to go for a 5kW inverter.

Solar power system roof space

While technology is always improving, panel size and quantity needs to be considered in relation to your consumption needs and available surface for installation.

Is solar for me?

It is always good to plan how long you aim to be in a house for before putting up solar panels as it is quite an investment. This is to ensure the money you invest into the solar is paid back to you through savings on your bills. To calculate the payback period on your solar investment, you can calculate how much the solar will save you on your power bills, then times it by a certain number of years.

Is is also a good idea to keep an eye out for any State or Federal Government rebates to make the installation cheaper.

How can you get the best solar system for your home?

Knowing what solar power system is right for you

- Know how much electricity you use within your home by reading your bill.
- Ensure you are getting the right size system for your home.
- Explore what size inverter you will get; do you think you will add more solar in the future?
- Seek accredited installers through the Clean Energy Council website at www.solaraccreditation.com.au
- Get at least three quotes.
- Ensure that you select good quality panels with a long warranty.

Solar panel inverters and roof space

- Ask the solar installer to view your electricity bill and get their advice on solar system size.
- Ask the installer how much solar can fit on your roof.
- Ask the installer if you have good sun orientation.

For more information: Your Home, Photovoltaic systems & Solar Quote

Month	Average peak sunlight hours
January	6.9
February	6.4
March	5.2
April	3.8
May	2.8
June	2.4
July	2.7
August	3.3
September	4.3
October	5.3
November	6.1
December	6.6
Average	4.6

West Gippsland Arts Centre, Warragul

Transport

Why explore your transport options?

There are many benefits to exploring alternative sustainable transport opportunities. It can reduce the cost of fuel, reduce carbon emissions, reduce traffic congestion and encourage healthier lifestyles through walking and cycling more.

Carbon emissions

The National Transport Commission estimates that if Australian consumers purchased vehicles with best-in-class emissions, average carbon dioxide (CO2) emissions for new light vehicles would be 58 per cent lower.

Public transport or car pooling

Public transport is another great alternative to make your transport habits more sustainable. The Australian Government, in the Our Cities, Our Future (2011) report identified that road transport as the main source of transport emissions by accounting for 86.3 per cent of 2008 transport related emissions. By utilising existing infrastructure including, rail, bus lines and walking and bike trails, to get to your destination, you take cars off the road, which reduces carbon emissions and traffic congestion. Carpooling is also another viable alternative to driving by yourself. If you have friends or family travelling to the same place, why not try a ride share service.

Vehicles

According to energy.gov.au, light vehicles including cars, 4x4s, SUVs and small commercial vehicles up to 3.5 tonnes, account for approximately 10 per cent of Australia's greenhouse gas emissions. Using personal transportation is attractive due to convenience, necessity, preference or lack of public transport. Car travel has a very significant environmental cost, and can impact negatively on our health and wellbeing through reduced physical activity and increased carbon emissions.

If driving is required within your life, 'green' cars are a more sustainable alternative, which can also save on costs. A 'green' vehicle is defined as one with emissions intensity that does not exceed 120 grams of CO2 emissions per km (g/km). Green cars include, hybrids, electric vehicles, and some conventional vehicles. For more information on green cars visit *www.arena.gov.au/renewable-energy/electric-vehicles/*

Electric vehicles are also an environmentally friendly transport option, although charging infrastructure is still limited in Baw Baw Shire and their performance and range still limit their practical use in some rural areas.

For more information on green vehicles, visit *www.greenvehicleguide.gov.au*

Healthier lifestyle

Walking or riding are great alternatives with lower emissions, reduced cost and health benefits. To ride a bike the same distance uses less than one-fiftieth of the energy required to drive.

E-bikes and even mobility scooters are also effective alternatives.

How can you reduce your transportation impacts?

Public transport and car pooling

- Use public transport including, buses and trains.
- Use ridesharing services
- Offset your car and other travel carbon emissions.
- Signup to offset your emissions through accredited organisations such as GreenFleet.
- Car pool with colleagues, friends or family.

Vehicles

- Reduce the use of your car.
- Buy a fuel-efficient conventional car.
- Buy a 'green' hybrid car or electric vehicle.
- Use a scooter or motorcycle.
- Use an e-bike.
- When driving your car there are ways to reduce fuel consumption and emissions:
  - There's no need to warm up a modern vehicle and have it idling before you set off.
  - Change gears sooner rather than later to keep engine revs down. If driving an automatic, ease back on the accelerator when the vehicle gathers momentum, and the gears will change up more quickly and smoothly.
  - Empty the cabin or boot of any heavy items not required.
  - Remove roof racks when not in use.
  - At higher speeds, using the air conditioner is more efficient than having the windows down.
  - When re-fueling your vehicle, stop at the first click to not overfill the fuel tank.
  - In newer cars, allow the auto start function while stopped, i.e. in traffic or at traffic lights.

Healthier lifestyle

- Get more exercise through walking or riding to your destination.

For more information: Australian Government, Department of the Environment and Energy, Transport, 2019 & Our Cities, Our Future (2011) report.


HOTEL
DUNCAN'S
GREAT FOR BEER WINE AND SPIRITS
YARRAGON COMMERCIAL HOTEL
the YARRAGON commercial hotel
HOTEL
Bendigo Bank
atm
Herald Sun
Sunday

Waste

Why reduce your waste?

The materials needed to manufacture items used in our everyday lives are sourced from natural or finite resources. The mining, transportation and processing of these resources into consumer items can occur in a range of countries and often requires large amounts of energy and water. By re-thinking what we consume and finding ways to re-use the items we have, we can help to reduce the impact these processes have on our natural environment.

Avoid waste

Each year Victorian households throw away 250,000 tonnes of food – enough to fill Melbourne's Eureka Tower. This is equivalent to around $2,136 thrown away each year and 65 per cent of household food waste that could have been eaten. Not only is avoidable food waste an issue within our homes, approximately 50 per cent by weight of an average Baw Baw Shire household rubbish bin is made up of food waste as well. Food that goes to landfill is a wasted resource and once in landfill, the decaying food creates methane, which is a strong greenhouse gas.

Reduce food waste going to landfill by being more organised in your kitchen with menu planning and by setting up a household compost bin and/or worm farm to compost unusable food waste. Council offers a compost and worm farm rebate, subject to annual review.

Recycling and resource recovery

Reducing consumption and re-using items is the preferred way to reduce waste going to landfill. If you find yourself with an item that can't be re-used, household recycling is also another great way to reduce waste from entering landfill and encourage a circular economy. Recycling is important as each year kerbside recycling in Victoria prevents 386,000 tonnes of greenhouse gases being emitted and saves over 11,000 megalitres of water. Resource recovery is where materials are extracted from items at the end of their life cycle for recycling into other products. All electronic waste (e-waste) in Victoria is now banned from entering landfill and must go through a resource recovery process to recover precious and semi-precious materials along with other recyclable components. E-waste is any item with a cord, battery or plug and can be taken to your local transfer station.

Council's website, along with Sustainability Victoria's Recycling website can assist you with what you can and can't recycle in your household recycling bin. According to the Australian Bureau of Statistics, the average Australian creates just over 2,000kgs of waste each year. Each household is estimated to spend $1,266 on goods that are never used (Cool Australia, 2019).

How can you reduce your waste?

Avoid waste

- Menu plan and write a shopping list to avoid purchasing unnecessary items.
- Make new meals from left overs.
- Get creative to use up ingredients.
- Try to cook the right amount for your needs to reduce food wastage.
- Avoid overcrowding in the fridge to keep food fresher for longer.
- Store food correctly to maintain freshness and maximise shelf life.
- A best-before date doesn't necessarily mean a food is unusable, it simply means that after then, the food may not be at its prime.
- Buy less packaged foods to reduce unnecessary waste going to landfill.
- Utilise reusable containers for food storage and other goods.
- Take reusable bags and containers when shopping.
- Reduce the use of single use plastic bags – your bananas already have natural packaging and don't need the extra bag.
- Start a compost bin or worm farm.
- Give appropriate food scraps to chickens.
- Teach younger generation how to be more waste wise.

Recycling and resource recovery

- Recycle your soft plastics at supermarket stores.
- Utilise your home kerbside bins to recycle food packaging or take it to the transfer station. This ensures it is processed appropriately to keep it out of the environment.
- Choose products where the packaging can be recycled – avoid foil lined plastics.
- Recycle your e-waste at local transfer stations.
- Buy quality clothing and furniture.
- Shop and buy items from second hand outlets.
- Ensure you are recycling well to reduce contamination and prevent recyclables going to landfill.

For more information: Sustainability Victoria.

Water

Why do we need to become more water efficient?

Water is a valuable and essential finite resource for humans and the environment. Considering your water use is an essential aspect of achieving sustainability. Although Australia is the driest populated continent on earth, Australians use around 100,000 litres of freshwater per person each year.

Percentage of household water usage

- Shower 34%
- Toilet 26%
- Laundry 23%
- Other 17%

Your Home, Water 2013

Reduce water consumption

There are many actions that can be undertaken to reduce the water consumption within your home to ultimately make it more water efficient. Firstly, it is vital to be aware of and follow the Permanent Water Saving Rules. Other helpful information includes that you can save up to three litres of water each flush by using the half flush option on your toilet, installing reduced flow taps and by taking four minute showers. Approximately 34 per cent of the average household water use is from the shower. By simply installing an aerator to your taps it can reduce water flow by up to 50 per cent. Avoiding leaving the tap running when brushing your teeth or shaving can also save considerable amounts of water. A continuously running toilet can waste up to 96,000 litres of water per year, yet toilet leaks often go unnoticed as the water trickles down the back of the bowl (Smart Approved WaterMark, 2019). If you would like to determine whether you have a leaking toilet, follow these steps;

1. **Remove the lid of your toilet cistern.**
2. **Place a few drops of food dye into the cistern.**
3. **Do not flush your toilet for 10-15 minutes.**
4. **If the dye has seeped down into the bowl when you return, then you know you have a leak.**

Wastewater

Utilising wastewater can save money and help reduce water going to waste. Wastewater can be any water used by the washing machine, dishwasher, laundry or shower.

Greywater refers to water that is captured from non-toilet plumbing fixtures such as showers, basins and taps. When utilising wastewater, it is important to know how wastewater systems work and ensure you are using wastewater effectively and safety. For further information on waste water, please visit Your Home, Wastewater (2013) or the Department of Environment, Land Water and Planning for information about the use of alternative water sources including waste water: *https://www.water.vic.gov.au/liveable/using-alternative-water-sources*

How can you become more water efficient?

Reduce water consumption

- Use a dual-flush toilet.
- Install a rainwater tank and ensure guttering is well maintained and free of leaves to maximise rainwater collection.
- Install a water efficient shower head.
- Install aerators and low flow valves to your taps and showers to reduce water flow.
- Minimise water use by reducing showers to four minutes.
- Only use the washing machine when full and on eco mode.
- Only use the dishwasher when full and on eco mode.
- Buy water saving appliances such as dishwashers and washing machines. Some household appliances and fittings carry a water star rating label, so ensure you look and compare how water efficient appliances are when looking to purchase.
- Fix leaking taps inside and outside the house.
- Ensure you don't have a toilet leak.

Wastewater

- Use environmentally friendly cleaning products.
- Use grey water to water your garden.
- Install a rainwater tank and plumb to your washing machine.
- Install a grey water collection system to flush your toilet.
- Explore other wastewater systems.

For more information: Your Home, Water

Garden Design

What is sustainable garden design?

Sustainable garden design aims to incorporate designs that mimic the natural environment. They are designed through landscaping and plantings to encourage native birds, wildlife, bugs and bees.

Design

Having a more sustainable garden will assist our native and indigenous biodiversity by creating habitats, food sources and places to live. Biodiversity is important as it includes all forms of life on earth; the micro-organisms, plant and animal species, the genes they contain and the communities they belong to. With urban development, it is essential we try to retain as much biodiversity as possible.

Choosing plants

When choosing plants for a more sustainable garden, it is worthwhile knowing what plants are exotic and what are native and indigenous to the area. Exotic plants come from countries other than Australia, while native plants are defined as being native to Australia. Indigenous plants are those from our region of West Gippsland and ideal for a sustainable garden, as they support local native birds and animals. Council has an Indigenous plants of Baw Baw booklet, as well as Indigenous Wildlife of Baw Baw booklet for the community use. Please visit a Civic Centre or Council's website to obtain a copy.

How can you achieve sustainable garden design?

Design

- Design your garden to enhance the natural landscape through native and indigenous plants, capturing storm water for irrigation, permaculture, restoring creek beds, vegetation windbreaks, shading, canopy cover and many more.
- Identify and help protect threatened communities and species.
- Design habitats for small and large creatures.
- Prevent rare species from becoming threatened through protection from feral animals.
- Repair and enhance ecological processes.

Choosing plants

- Encourage flora and fauna by retaining vegetation.
- Plant native and indigenous plants and shrubs.
- Plant flowering plants to encourage bees, birds and other beneficial insects for pollination.
- Plan for climate change by using water-wise plants where possible and mulching garden beds.
- Avoid plants that are environmental weeds, including Agapanthus, Blue periwinkle and English Ivy.
- Control noxious weeds.

For more information: Your Home, Landscaping and Garden Design

Growing Produce

Why is growing produce important?

Growing your own food can reduce transport emissions, save money, water, reduce packaging and food wastage, while also providing fresher, more nutritious foods.

Types of vegetable gardens

Depending on where you live, vegetable gardens do not necessarily need a lot of space. There is the requirement of fertile soil, with good drainage, reasonable sunlight and regular watering. There are many different types of garden beds that you can utilise within your back yard, including vegetable gardens in the ground, raised garden beds, and wicking beds.

If you are unable to establish your home vegetable garden, an opportunity to still grow your own produce is by joining a local community garden.

Supporting your vegetable garden

By utilising mulch or compost on your garden, it can act as a blanket and reduce water evaporation by up to 70 per cent. It also prevents weeds and helps regulate soil temperature.

Water your garden for longer but do it less often. This will encourage deeper roots which helps plants become more resistance to extreme weather.

How can I grow my own produce?

Types of vegetable gardens

- Grow your own vegetables and herbs in your garden.
- Plant fruit trees.
- Purchase food and vegetables when they are in season.
- Buy local produce and support local farmers.
- Buy organic produce, where available.
- Share the produce you grow with family, friends and your local community.
- Use compost to enrich soil, improve its structure and increase its water holding capacity.
- Join a local community garden.

Supporting your vegetable garden

- Lay mulch or bark to keep your gardens moist and reduce weed growth.
- Use grey water to water your garden.
- Water your garden for longer but do it less often. This will encourage deeper roots which helps plants become more drought tolerant.
- Visit https://www.sustainability.vic.gov.au/You-and-your-home/Live-sustainably/Grow-your-own-food to get some helpful tips in growing your own food.

For more information: Your Home, Landscaping and Garden Design; growing produce

Useful resources

To find out more information on sustainable living, please visit;

Biodiversity

Revegetation; Indigenous Plants of Baw Baw Shire and weed control.

http://www.bawbawshire.vic.gov.au/Resident-Information/Rubbish-and-Environment/Environment/Revegetation

Climate change adaptation for building designers

This paper examines potential climate change effects on buildings, highlights the potential for capacity building through education, and presents examples of adaptive strategies for building design.

https://acumen.architecture.com.au/environment/

Climate change in Australia, Victoria and Gippsland

Find out more about climate change science and the impacts of climate change across Australia (Australian Government/CSIRO).

www.climatechangeinaustralia.gov.au

www.climatechange.vic.gov.au/__data/assets/pdf_file/0021/60744/Gippsland.pdf

Cool Australia

Resources for Australian Educators

https://www.coolaustralia.org

Emissions

Australian Government

https://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/tracking-emissions

Parliament of Australia, 2010

https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Browse_by_Topic/ClimateChangeold/whyClimate/human/howMuch/howMuch

Energy

Energy basics for householders - Department of the Environment and Energy

https://www.energy.gov.au/households/energy-basics-householders

How to read your electricity bill

https://www.energymadeeasy.gov.au/help/electricity-bill

Solar power systems

Clean Energy Council Guide to installing solar PV for households

https://www.solaraccreditation.com.au/consumers/purchasing-your-solar-pv-system/solar-pv-guide-for-households.html

Solarquotes - Solar Systems; What kind do you need

https://www.solarquotes.com.au/systems/

Accreditors

www.solaraccreditation.com.au.

Sustainable Living Guide

https://www.sustainablelivingguide.com.au/

Sustainability Victoria, You and Your Home

http://www.sustainability.vic.gov.au/You-and-Your-Home

Sustainability Victoria, Love Food Hate Waste

https://www.sustainability.vic.gov.au/campaigns/love-food-hate-waste

Transport

Australian Government, Department of the Environment and Energy, Transport

https://www.energy.gov.au/households/transport

Australian Government, Our Cities, Our Future, 2011

https://www.infrastructure.gov.au/infrastructure/pab/files/Our_Cities_National_Urban_Policy_Paper_2011.pdf

National Transport Commission, 2017

https://www.ntc.gov.au/Media/Reports/(F4FA79EA-9A15-11F3-67D8-582BF9D39780).pdf

Waste

Sustainability Victoria – why and how to recycle.

https://www.sustainability.vic.gov.au/You-and-your-home/Waste-and-recycling/Recycling/Why-recycle

Water

DELWP, Using water wisely

https://www.water.vic.gov.au/liveable/using-water-wisely

Water

Smart Approved WaterMark

https://www.smartwatermark.org/smartwateradvice/saving-water-home/toilets/

Your Home – Passive design, Materials, Energy, Water and Housing

Australian Government guide to environmentally sustainable homes. This publication is by the Australian Government, in partnership with the building and design industry and aims to provide expert and independent advice.

www.yourhome.gov.au

Background

Information and data

Information and data for this booklet has been predominately sourced from a range of Federal and State Government websites. This is to ensure the advice given in this booklet is from credited sources.

Disclaimer

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