

Chapter 4

Natural Resources



***Water
Conservation***

***Waste
Management***

***Energy
Conservation***

Chapter 4

Natural Resources

Objective

To reduce the consumption of renewable and non-renewable resources through water, waste, energy and materials management.

Targets

- ✓ *To reduce the amount of waste produced per visitor night.*
- ✓ *To have 90% of all lodges recycling.*
- ✓ *To recycle > 50% of total waste.*
- ✓ *To reduce the amount (joules) of energy used per visitor night by 5% annually.*
- ✓ *To have > 5% of the total energy used in the Resort to come from renewable sources (Greenpower).*

Objective

To improve the quality of aquatic ecosystems through maintenance of environmental flows.

Targets

- ✓ *To reduce the amount of water used to < 200 litres per visitor night.*
- ✓ *To have at least 60% of lodges implementing water saving measures.*

The water used in the resorts is borrowed from the mountain streams and rivers before being returned. The snowy mountains are the birthplace of several rivers which feed into the Murray Darling system and provide a water shed for the Snowy Hydro Scheme. These systems along with the finely balanced local ecosystem rely on the fresh, reliable water in the Perisher Range Resorts. Other resources used in the resorts also have implications for environmental health. The burning of fossil fuels such as coal (a non-renewable resource) to produce electricity has dramatically increased the amount of carbon dioxide in the earth's atmosphere. This additional carbon dioxide in our atmosphere traps heat from the sun which results in an increase in average temperatures. This is known as global warming.

Water Conservation



Environmental Risk — *Decreased environmental flows from water consumption.*

EMS Requirement — *Install water saving devices.*

These devices can include:

- dual flush or low volume toilets/urinals
- water efficient shower heads
- tap aerators or other water restricting devices
- water efficient dishwashers and washing machines
- spring-loaded taps that turn off automatically.

EMS Requirement — *Educate staff and guests about saving water.*

Your lodge education program should consider issues, such as:

- turning off taps while brushing teeth and shaving
- taking shorter showers
- selecting water efficient cycles on the dishwasher and washing machine and running full loads
- not using water on outside areas
- reporting water leaks (including dripping taps and toilets) to lodge managers.
- providing signs in areas where water is used reminding staff and guests to reduce water consumption where possible. (signs are available from the NPWS Liaison Officer).

EMS Requirement — *Monitor your water consumption and conduct a water audit if you are not meeting the EMS target.*

If you have met all the EMS requirements above but your water consumption exceeds the EMS target, you will need to conduct a water audit of your lodge. This will help you to identify where further water savings can be made.

You should conduct regular inspections of plumbing and water appliances (e.g. taps, showerheads, hot water system, washers and seals) to detect any water losses. You can also identify any water losses by taking meter readings when there is little or no water use at your lodge.

FACTS

- Remember – saving water will also save you money!
- Front loading washing machines are often more water efficient than top loading units.
- A standard showerhead may use up to 25 litres of water per minute. A water-efficient showerhead might use as little as seven litres per minute.
- An old-style single-flush toilet could use up to 12 litres of water per flush. A standard dual flush toilet uses only three litres on a half-flush.
- Aerators restrict the flow of water from your tap without reducing water pressure. Fitting an aerator to your taps can reduce the amount of water you use by more than 50%.
- Dripping taps can waste 30 – 200 litres of water per day. Running taps use about 16 litres of water per minute.
- Washing up in a domestic sink uses around 15 litres of water. Larger commercial sinks may require 40 litres. Water efficient domestic dishwashers may use as little as 15 litres on economy cycles.

YOU ALSO NEED TO CONSIDER

- Provide plugs for sinks (to allow sinks to be filled rather than keeping the tap running).
- If you are a commercial lodge or hotel promote towel reuse.
- Insulate your hot water pipes or install a water-recirculating pump to avoid wasting water while waiting for hot water to flow through to the pipes.
- Instead of leaving taps running to prevent pipe work freezing, contact NPWS Perisher Office to discuss how you can insulate; relocate, heat trace or drain pipe work to prevent freezing.
- If you want to keep your existing showerheads, but still save water, you can insert a flow control disc or washer for only a few dollars.

FURTHER INFORMATION

- NPWS have 'Waterwise Resort' promotional material, such as posters, stickers and bookmarks, to assist you with encouraging your staff and guests to save water. These can be obtained from the NPWS Environmental Liaison Officer free of charge.

USEFUL WEBSITES

- www.savewater.com.au – Water restrictions, water efficient products and water saving tips.
- www.waterrating.gov.au – Water efficient labelling and standards (WELS) scheme.
- www.sydneywater.com.au – Obtain your FREE Do-It-Yourself Water Saving Kit.
- www.greenplumbers.com.au – Tips on recycling grey water.
- www.sawater.com.au – SA Water home water audit (simple user-friendly home water audit checklist that may help you conduct your water audit).

Waste Management



Environmental Risk — *Resource depletion from ineffective waste management.*

EMS Requirement — *Provide appropriate facilities in your lodge for recycling.*

Recycle the following products (at a minimum):

- *Paper and cardboard*
- *PET Bottles (e.g. soft drink)*
- *HDPE Bottles (e.g. milk)*
- *Aluminium and steel cans*
- *Glass bottles and jars*
- *Used cooking oil*

All of the products listed above can be recycled using the waste management system in the Perisher Range Resorts. There are 4 hopper bins provided in groups strategically located throughout the resort carparks.

The Blue Bin — Paper & Cardboard

The Yellow Bin — Bottles, Cans & Plastics

The Green Bin — Kitchen waste & other non-recyclables

The Grey bin — Cooking oil

EMS Requirement — *Monitor your waste produced and recycled.*

Use the table in the lodge notes (at the back of this chapter) to keep a record of the amount of waste your lodge generates and how much material is recycled. There is also a sample template (Garbage Tally Sheet) that can be placed above your bins to get lodge members to record how many bags they take out to the hopper bins. You can produce a tally sheet of your own that suits the circumstances of your lodge. The latter may be a useful way for those lodges who don't use the oversnow rubbish removal service to keep track of how much waste the lodge is producing.

You will be required to report on the amount of garbage your lodge produces. The following are the various sizes for the different types of bags used by lodges.

- 'Hans Oversnow' garbage bags (transparent purple & yellow): 69 Litres
- Standard garbage bag (most leading brands): 56 Litres
- Flip top (tidy) kitchen bin tidy bags: 27 Litres
- Plastic shopping bag: 9 Litres
- Standard 6x4 car trailer (one layer approx. 12 standard bags) : 672 Litres
- Standard 6x4 car trailer (stacked & tied down 20 bags): 1120 Litres

For consistency when reporting, can you convert all bags and loads of recyclables to litres. For example if you had 10 shopping bags, 41 Hans Oversnow bags and 1 trailer load of recyclables this would equal: $(10 \times 9) + (41 \times 69) + 672 = 3591$ Litres.

Note that amount of putresible waste and recyclables are added together to get total waste.

EMS Requirement — *Educate staff and guests about reducing, reusing and recycling waste.*

Your lodge education program should consider issues, such as:

- purchasing of products that have minimal packaging or buy in bulk
- transport groceries in reusable bags, boxes or eskys – don't use plastic bags or foam boxes they are not recyclable and can become an environmental hazard
- sharing magazines or the daily newspapers
- reusing or recycling waste paper generated by your lodge office (if applicable)
- using old construction materials or off-cuts for firewood (as long as they are not painted or treated)
- recycling as much as you can
- using water out of the tap to drink instead of bottled water.

FACT

- Perisher Range Resorts water is very safe to drink. It is drawn from the clear mountain streams above the resort areas. It easily meets the Australian Drinking water standards, treated by the ultra violet method to kill any bugs and is continually monitored and tested.
- Buying in bulk can often be cheaper.
- Every tonne of recycled paper saves 13 trees, 2.5 barrels of oil, 4,100kWh of electricity, 4m³ of landfill space and 31,370 litres of water.
- Recycled aluminium requires 95% less energy to remanufacture compared to mining and processing bauxite ore to make new aluminium – so recycle your aluminium cans.

- Recycling a case of beer bottles saves 7.5kg of CO² or the equivalent of 17 full wheelie bins.
- According to 'Clean up Australia' our country uses 300,000 barrels of oil a year to make the PET bottles for bottled water and only 35% of those bottles are recycled.

YOU ALSO NEED TO CONSIDER

There are some other simple steps you can take to reduce, reuse and recycle:

- Purchase foodstuffs in bulk rather than single serves
- Provide reusable items (e.g. cutlery or crockery in the kitchen) instead of disposable items
- Develop a maintenance program to service or repair equipment so that it lasts longer
- Provide dispensers for shampoo or soap in the bathrooms
- Investigate options other than paper towels in bathrooms
- Recycle used chemical containers where possible. Remember to check whether your bulk containers can be returned to your suppliers for reuse
- Recycle old computer equipment by donating it to local charities
- Donate old mobile phones to Scope (formerly the Spastic Society of Victoria) or other cerebral palsy associations around Australia that recycle or refurbish for export to developing countries www.mobilephonerecycling.com.au
- Leave old printer cartridges at your local participating Australia Post or Harvey Norman outlet.

FURTHER INFORMATION

- NPWS have 'Bin Your Butts' and 'When in the Snow Bins are the Go' promotional material, such as stickers, posters and the 'Bin Your Butts' canisters, to assist you with encouraging your staff and guests to manage waste appropriately. There is also an A4 poster promoting recycling. These can be obtained from the NPWS Environmental Liaison Officer free of charge.

USEFUL WEBSITES

- www.greenpc.com.au – Refurbishes computer hardware and sells it to disadvantaged people at a low cost.
- www.recyclingnearyou.com.au – A Planet Ark initiative that allows you to search for various recycling opportunities in your area.

Energy Conservation



Environmental Risk — *Increased CO² emissions and loss of non renewable resources from energy consumption.*

EMS Requirement — *Implement energy saving practices.*

- Install energy efficient compact fluorescent light bulbs.
- Purchase only energy efficient appliances.
- Use energy from renewable sources (i.e. Subscribe to GreenPower).
- Use gas rather than electricity or oil.
- Use a timer system on lights.
- Use heavy, lined drapes at windows and install draught seals and weather stripping around doors and windows.
- Insulate your ceiling, walls and floors, install double glazed windows.
- Use an off-peak system or instant gas hot water system with temperature control pads and reduce the hot water heater thermostat to 60 degrees celsius.
- Consider installing solar hot water heaters.
- Ensure good air circulation around the coils at the back of the refrigerator.

EMS Requirement — *Educate staff and guests about saving energy.*

Your lodge education program should consider issues, such as:

- reducing room thermostat settings (18–20°C in winter)
- using heavier bedclothes rather than turning up the heat
- using cold water settings on washing machines
- switching off lights and appliances at the wall, when not in use or when lodge is vacant
- cleaning light covers
- cooking in the microwave where possible

EMS Requirement — *Monitor your energy consumption and conduct an energy audit if you are not meeting the EMS energy target.*

If you have met all the EMS requirements above but your energy consumption is still higher than the EMS target, you will need to conduct an energy audit of your lodge. This will help you to identify where further energy savings can be made. You can conduct an audit yourself by following the steps below. Remember that if you can't measure it, you can't manage it!

- Step 1** Identify the types of energy being used in your lodge.
- Step 2** Identify the quantity of each energy type being used.
- Step 3** Identify how much the energy is costing you.
- Step 4** Identify how you can improve the use of energy (quantity) or change the energy source (type).
- Step 5** Set targets and take action!

The SA Sustainable Energy website has a simple, user-friendly home energy audit checklist that may help you conduct your energy audit.
www.sustainable.energy.sa.gov.au

FACTS

- A small global temperature increase resulting from increased CO² emissions may cause increases in extreme weather conditions. This may ultimately affect food production, global weather systems, ocean currents, glacial melt and cause changes to ecosystems. This is known as climate change.
- Remember – saving energy will also save you money.
- CSIRO estimated that traditional coal-fired electricity created nearly one-third of Australia's greenhouse gas emissions in 2003.
- Fluorescent lamps cut greenhouse gas emissions and running costs by 75% while producing as much light. They come as circular or linear tubes, or as a plug-in compact fluorescent lamp. A compact fluorescent light globe will save around 1/3 tonne of CO² over its lifetime.
- Just a few outdoor lights left on every evening can double greenhouse gas emissions and lighting costs. Switch them off if they're not needed or install movement sensors or timers.
- By switching off your hot water system when your lodge is vacant you will save 1.4 kilograms of greenhouse gases per day.
- As much as 35% of heat loss from a house is through an uninsulated ceiling. Uninsulated walls account for a further 15 to 25% and uninsulated floors lose between 10 and 20% of heat.
- An extra 1°C difference in temperature between indoors and outdoors can add around 10% to heating costs and greenhouse gas emissions.
- You should not require air conditioning for cooling in the Perisher Range Resorts. In the warmer months, comfort can be achieved by simple shading and ventilation.
- Gas and microwave cooking generates 30 to 50% less greenhouse gas than traditional electric cooking.
- For maximum efficiency when cooking with electricity, use pots and pans with flat bases that match the size of the element.
- Washing your clothes in cold water can reduce greenhouse gas emissions by over 80%.
- Properly inflated tyres can save up to 10% on fuel costs.
- Fridges guzzle electricity. Older fridges are less efficient and use 3.5 times more electricity than newer fridges with 4-5 star energy ratings. Replacing your old fridges will save you money in the long run.
- Approximately 10% of all electricity consumption is lost to phantom power – that is the power used by appliances when not in use but have been left in 'standby mode. So turn off your appliance at the power point when you have finished using it.

YOU ALSO NEED TO CONSIDER

- Purchasing an energy meter (EFERGY) a wireless wonder available from Bunnings that shows you exactly how much electricity is used by lights and appliances.
- Solar powering the laundry by hanging the clothes to dry. Using an electric clothes dryer once a week produces 150 kilograms of greenhouse gas a year. If you can't give up the tumble dryer, investigate buying a natural gas-powered clothes dryer which will reduce greenhouse emissions by about a third.
- If replacing old fridges or electrical appliances make sure they are appropriately disposed of. They should not be disposed of in the Perisher Range Waste Management System. They need to be transported off the mountain. Many waste management facilities now recycle old household appliances.

FURTHER INFORMATION

- NPWS have 'Keep Winter Cool' and 'Waterwise' promotional material, such as stickers, bookmarks, information flyers and posters, to assist you with encouraging your staff and guests to reduce the consumption of resources. These can be obtained from the NPWS Environmental Liaison Officer free of charge.

USEFUL WEBSITES

- www.greenhouse.gov.au – 'Global Warming Cool It' booklet providing a home guide to reducing energy costs and greenhouse gases.
- www.energyrating.gov.au – Australia's leading guide to choosing an energy efficient appliance.
- www.countryenergy.com.au – Offering a range of GreenPower products under the banner of countrygreen®.
- www.keepwintercool.com.au – 10 simple ways to fight global warming.
- www.sustainable.energy.sa.gov.au – Home energy self-audit.

Lodge Notes



Use the table below to record when you have conducted a **water audit** and your results.

[illegible]

Garbage Tally Sheet



For all club members and guests: Please place a stroke in the appropriate box with the attached marker if you take any bags of garbage to the hopper bins.

| Month | Week | GARBAGE (bags) Putresible waste | RECYCLED (bags) |
|-------|------|------------------------------------|-----------------|
| MAY | | | |
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| JUN | | | |
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| SEP | | | |
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| OCT | | | |
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Use the table below to record the amount of **waste** your lodge has produced. This should include recycled waste.

| Reporting Period (1st March – 30th April) | 2009 / 2010 Winter 2009 | 2010 / 2011 Winter 2010 | 2011 / 2012 Winter 2011 | 2012 / 2013 Winter 2012 |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| Number of Visitor Nights | | | | |
| Total Waste produced (litres) | | | | |
| Waste recycled (litres) | | | | |

Number of bags x bag volume (Litres) = Total waste produced (Litres)

Use the following bag volumes:

- 'Hans Oversnow' garbage bags (transparent purple & yellow): 69 Litres
- Standard Garbage bag (most leading brands): 56 Litres
- Flip top (tidy) kitchen bin tidy bags: 27 Litres
- Plastic shopping bag: 9 Litres
- Standard 6x4 car trailer (one layer approx. 12 standard bags) : 672 Litres
- Standard 6x4 car trailer (stacked & tied down 20 bags): 1120 Litres.

Use the table below to record your **energy consumption**.

| Reporting Period (1st Mar – 28th Feb) | 2009 / 2010 Winter 2009 | 2010 / 2011 Winter 2010 | 2011 / 2012 Winter 2011 | 2012 / 2013 Winter 2012 |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| Grid Electricity (KW) | | | | |
| % GreenPower (KW) | | | | |
| Heating Oil (litres) | | | | |
| LPG (litres) | | | | |
| Unleaded Petrol (litres) | | | | |
| Diesel (litres) | | | | |
| Kerosene (litres) | | | | |
| 2-stroke (litres) | | | | |
| 4-stroke (litres) | | | | |
| Photovoltaic | | | | |
| Solar panels | | | | |
| Other | | | | |
| Other | | | | |

All grid electricity produced in NSW is from the combustion of black coal. GreenPower comes from solar, hydro, gas and wind generated renewable sources that produce minimal CO² emissions in their production.



PRREMS

[illegible]



Appendices – Natural Resources

- Please Recycle (Flyer)
- Bin Your Butts (Flyer)
- Keep Winter Cool (Flyer)