

## Sustainable housing

Protecting the environment starts at home

Fact sheet  
Sustainable  
housing



Sustainable housing is about designing and building homes that are comfortable and practical to live in, economical to maintain and cause the least possible burden on the environment.

This balanced approach takes into account the social, economic and environmental aspects of housing development, and ensures that all the key issues are considered together at the design stage.

**Socially sustainable homes** are safe, flexible and comfortable for people with varying abilities. Homes are designed for the present and future needs of residents at different life stages, and the temporary needs that might arise from illness or injury.

**Economically sustainable homes** are cost-efficient over the lifespan of the dwelling. The design balances upfront construction and fit-out costs against ongoing running and maintenance costs. The building may be constructed of low maintenance materials and feature efficient fittings and appliances.

**Environmentally sustainable homes** are resource efficient in terms of materials, waste, water and energy. They are designed for water efficiency in the house and garden, waste reduction during construction and occupancy, and energy efficiency in terms of orientation and energy consumption.

While sustainable housing addresses all three areas, this publication focuses primarily on aspects of environmental sustainability.

An environmentally sustainable home can reduce household running costs by up to 60 percent, saving over three tonnes of greenhouse gases and more than 100,000 litres of water a year. Environmentally sustainable elements include water-efficient and energy-efficient appliances, solar hot water, insulation and efficient lighting.

If financial savings are reinvested into mortgage repayments, around \$10,000 can be saved on an average 25-year home loan. Where financial institutions offer reduced interest rates for the purchase of eco-friendly homes, the savings can be even greater.

## Does a sustainable home cost much extra?

In a new home, for an initial outlay of only around \$3300, you can install:

- › a solar or gas hot water system instead of electric
- › low-flow taps and fittings
- › water tank for the garden
- › dual-flush toilet and
- › bulk ceiling and wall insulation.

Besides the financial savings, you and your family will enjoy greater living comfort and the knowledge you're helping the environment.

At the same time you are adding to the value of your home and improving its future saleability.

## Sustainable alternatives

Consider these design features, product decisions and site management practices when designing or renovating your home.

### General

- › An open plan and northerly orientation will maximise breezes and avoid the western sun.
- › Bathroom, kitchen and laundry should be located close to the hot water system.
- › Ensure living areas are positioned to capture winter sun and summer breezes.
- › Plan window size, style and location to optimise protection against summer sun and access to winter sun.



- › Minimise windows on the western side to avoid the afternoon sun.
- › Use materials with low long-term maintenance costs.
- › Install awnings and eaves to reduce heat.
- › Install insulation in roof, ceiling and walls.
- › Consider an insulated skylight to let in natural light and not heat.
- › Install compact fluorescent lighting including down-lights with efficient 12 volt task lighting.
- › Incandescent lighting can be used for shorter duration lighting in selected areas.
- › Paint the exterior of your house and roof in a light colour to help cooling.

### Kitchen

- › Install double sinks so you can rinse in a second sink and not under a running tap.
- › Install AAA-rated water-efficient taps.
- › Provide task lighting over sink, stove and work surfaces.
- › Choose the water-efficient and energy-efficient whitegoods: oven, dish washer, refrigerator and freezer. Look for the AAA rating on water products and the highest star rating on energy-efficient appliances.
- › Place your fridge in a cool spot away from the stove and direct sunlight.
- › Stove range-hoods should be vented to the outside.

### Bathroom and laundry

- › Use rain water for toilet flushing, hot water, washing and showering.
- › Greywater from laundry and bathrooms may be used for the garden irrigation system (pending legislative amendments).
- › Use AAA-rated taps and shower rose for water efficiency.
- › Install mixer taps in showers to reduce hot water loss while you adjust the temperature.
- › Six-litre/three-litre dual flush toilets will reduce water use.
- › Choose a AAA water conservation rating and high star energy rating front-loading washing machine.
- › If you must install a clothes dryer choose an energy-efficient one, but it's best to use the outdoor clothes line.

### Finishes

- › Use non-toxic paints, renders and floor finishes with either no or low VOC (volatile organic compound) emissions to give superior air quality compared to a standard house.
- › Consider using floor tiles in rooms reached by winter sun.
- › Bamboo flooring is an efficient renewable resource with low VOC emissions.
- › Ensure your carpet underlay is fully recyclable and the carpet has some natural fibre.

## Hot water systems and energy supply

- › Install a gas, solar or heat-pump hot water system for the greatest energy efficiency — and remember there are State and Federal Government rebates for the purchase of solar and heat pump water heaters (see back for details).
- › A solar photovoltaic (PV) electricity system converts sunlight into electricity. This will eliminate electricity bills for the life of the system, and you can sell any excess electricity. The Federal Government offers a generous rebate (see back for details).

## Garden and outdoor areas

- › Position trees to maximise shade on your property.
- › Local native plants in well-mulched gardens will minimise the need for external watering.
- › An automatic underground irrigation system will also minimise water use.
- › Where practical, create porous surfaces outside the house to allow stormwater to soak into the soil.
- › Use recycled timber for outside decking.
- › Install an external clothes line.
- › Compost bins and worm farms encourage recycling of all food wastes.
- › Use pervious materials such as rocks and pebbles for driveways and paths to slow water run-off into gutters and stormwater drains.

## Rainwater tanks

- › Install a rainwater tank to supply water for purposes such as toilet flushing, hot water, washing and garden irrigation.

## During construction

- › Ask your builder to use renewable resources and materials with low VOCs (volatile organic compounds).
- › Work around established trees rather than cut them down.
- › A site management plan will help control stormwater and waste, minimise soil loss, ensure materials are handled efficiently and that the site is clean and safe.
- › Recycle construction waste where possible.
- › Direct stormwater to a stormwater drain, not to the sewerage system.

**Table 1: Sustainable house compared to traditional house**

Traditional house (Item)	Sustainable house (Item)	Capital cost difference	Operational savings (annual)	Greenhouse savings (annual)	Water savings (annual)
Electric hot water	Solar or gas hot water	\$530	\$172	2.5 tonnes	–
Standard shower rose	AAA-rated shower rose	\$30	\$45	0.28 tonnes	40,000 litres
Standard taps	Flow restrictors fitted to taps (6)	\$15	\$35	–	30,000 litres
Mains for garden irrigation	Water tank for garden irrigation	\$1500	\$40	–	31,000 litres
Standard lighting	Efficient lighting	\$60	\$28	0.2 tonnes	–
Single flush toilet	Dual flush toilet	\$0	\$6	–	7500 litres
Bulk insulation in roof/ceiling	Additional bulk insulation in roof/ceiling (and walls of new houses)	\$1100	\$70	0.36 tonnes	–
<b>Total</b>		<b>\$3235</b>	<b>\$396</b>	<b>3.34 tonnes</b>	<b>108,500 litres</b>

**Table 2: Average mortgage analysis of traditional vs. sustainable house**

Mortgage component	Standard house	Sustainable house <sup>a</sup>	Sustainable house <sup>b</sup>
Capital cost (loan amount)	\$350,000	\$353,235	\$353,235
Interest rate (%)	7%	7%	6.5%
Loan term (months)	300	290	291
Monthly repayment	\$2474	\$2530	\$2418
Total repayment	\$740,196	\$732,863	\$701,304
Total interest	\$392,118	\$379,628	\$348,069
Total mortgage (25 years)	\$740,196	\$732,863	\$701,304
Savings outside mortgage	Nil	Nil	Nil
<b>Total cost (25 years)</b>	<b>\$740,196</b>	<b>\$732,863</b>	<b>\$701,304</b>

<sup>a</sup> saving associated with a sustainable house reinvested back into paying mortgage.

<sup>b</sup> saving associated with a sustainable house reinvested back into paying mortgage, and mortgage financed under a green home loan.



# Helping you to choose sustainable options



## Green home loans

Bendigo Bank's Green Home Loan offers a 0.5 percent reduction on the normal home loan mortgage interest rate if energy-efficient and water-efficient measures are incorporated into the home.

Members and Education Credit Union offers special rate loans for green home improvements and offers discounted car loans for fuel-efficient cars.

## Rebates

The following rebates are available when you install renewable energy systems:

- › up to \$750 for domestic solar hot water
- › up to \$7500 for domestic grid-connected photovoltaic power systems
- › up to 50 percent of renewable energy system cost for households in off-grid areas

Conditions apply. For information contact the Energy Advisory Service on 1300 369 388.

## Energy Advisory Service

The Energy Advisory Service operated by the Environmental Protection Agency provides impartial, free advice on energy efficiency and renewable energy.

The service provides information and advice on:

- › Building your home design principles, insulation and ventilation, building materials, window protection and shading
- › Improving your existing home lighting, heating, cooling, appliances, hot water.

The Energy Advisory Service is available from 8am to 6pm Monday to Friday, phone 1300 369 388 (local call cost).

## Your Home Technical Manual

This guide offers solutions to suit your budget, lifestyle and climate and promotes good design as the basis for future-friendly houses.

Visit [www.greenhouse.gov.au/yourhome/](http://www.greenhouse.gov.au/yourhome/)

For further information about socially and economically sustainable housing contact the Department of Housing or refer to [www.smarthousing.qld.gov.au](http://www.smarthousing.qld.gov.au)

## For more information

- › visit [www.epa.qld.gov.au/sustainable\\_industries](http://www.epa.qld.gov.au/sustainable_industries)
- › email [sustainable.industries@epa.qld.gov.au](mailto:sustainable.industries@epa.qld.gov.au)
- › call 1300 369 388 or (07) 3225 1999