A vibrant lorikeet with a blue head, orange breast, and green wings is perched on a tree branch. The background is a clear blue sky with some tree branches visible. A large blue semi-circle is overlaid on the right side of the image, containing the title and subtitle.

Sustainable Living Guidelines

Queensland — July 2021

This education pack has been created to provide new purchasers within HB Land developments, with information on behaviour changes that can result in significant water savings, water saving appliances and any rebates/subsidies available from the Queensland Government.



Contents

1	Passive Solar Design	6
2	Energy	9
3	Materials	12
4	Water	13
5	Waste	14
6	Adaptability and Flexibility and Future Proofing	15
7	Storm and Fire Protection	17
8	Flora and Fauna	18
9	Dark Sky Policy	19
10	Savings	19
11	Information Resources	20





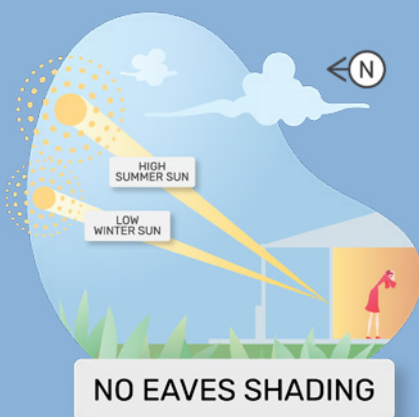
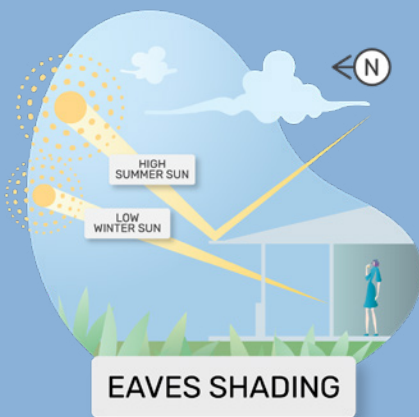
Sustainable Living Guide

At HB Land, it's our role to recognise and plan the interplay between every project element – from the desire to live in connected and vibrant communities to the demand for responsible practices that respect and enrich the surrounding environment. We have created these guidelines with our shared sustainability responsibilities in mind.

Designing, building and living in a more sustainable house has numerous long-term financial, health and comfort related benefits. Environmentally conscious homes also reduce impact on the wider environment and community. This guide provides tips and ideas on how to reduce bills and create a safer and more comfortable space inside and around your house.



01 Passive Solar Design



Solar Access and House Orientation

Aim to orientate your living rooms and kitchen towards north, to capture more natural daylight. This strategy will reduce your need to use electricity for lighting. Naturally, bedrooms are a lower priority when it comes to needing daylight.

Shading

By using sufficient shading on the northern side, preferably using eaves, you can let sunlight inside in winter, but keep the heat out in summer. Eaves let the lower winter sun inside and keep the higher tracking summer sun out. Aim to shade your eastern and western facing walls and windows where possible. Eaves are recommended for all sides of your home for shading and extra protection from wind and rain. Eaves and other shading may cost to install but can reduce your air conditioning bills each year.

Aim to shade external thermal mass (like brick) that is exposed to the hot summer sun from the east, north and west, to avoid your house absorbing heat all day, then radiating into your house at night. Alternatively use light-weight construction methods.

Plant shade trees in strategic locations around the house but avoid blocking north facing windows or solar panels with trees that will grow tall.

Windows

Use larger windows on the northern side of the house to let winter sunlight in but use optimal shading above them. Minimise windows on the east and west as these are harder to shade and will expose rooms to more heat in summer. Consider low e-performance windows on the eastern and western sides to reduce heat ingress from the sun that will reach under the eaves in the mornings and afternoons. Double-glazing would also improve comfort and reduce energy bills in these locations. Internally, preference well-fitted curtains over blinds, which do little to stop temperature transfer.

Colours

Since lighter colours tend to reflect rather than absorb heat, aim to use a lighter-coloured roof and external walls. This will reduce heat gain and hence your summer cooling bills.



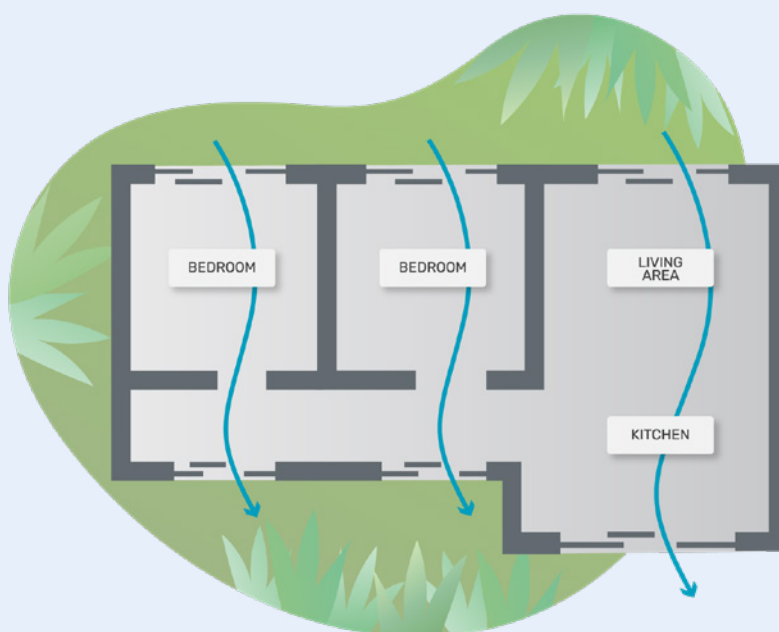
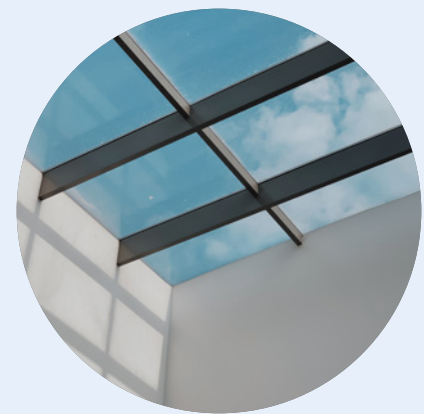
Insulation

Ensure you insulate roof spaces and walls, to significantly reduce greenhouse gas emissions and your power bills. Aim to exceed the building code requirements which specify minimum levels only, for example aim for R4.5 in the ceiling and R2.7 in walls. R stands for Resistance to temperature change, so the higher the better. Place lightweight materials or garden beds around your house where possible, to cool the area. If you really need to have concrete paths or balconies around your house, ensure any external concrete is thermally separated using insulation, to prevent unwanted heat exchange, as heat from external concrete can add to heat inside your house through the floor.

Ventilation

Aim to:

- Use smaller, well shaded windows to increase cross-ventilation to the south, east and west.
- Position your windows to encourage cross-ventilation – air slows down if it must travel around corners or cannot exit on the other side.
- Install ceiling fans in living areas and bedrooms.
- Use skylights with ventilation capabilities in bathrooms.
- Skylights can light a room during daylight hours for free and make it too sunny for mould to accumulate.
- Use active ventilation systems to ventilate roof spaces.

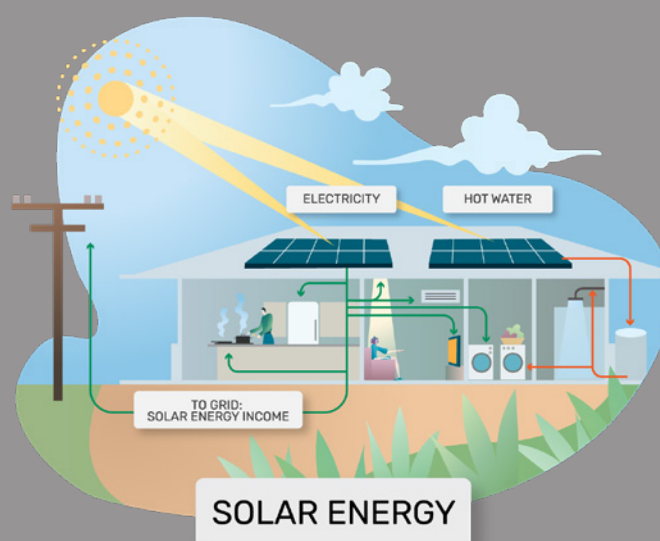



02 Energy

If you wish to go beyond the National Construction Code minimum (for example 6.0 Stars) for Thermal Performance improve your design and aim for a 'thermal performance energy rating' of 6.5 to 8 Stars using an accredited NatHERS energy assessor, to reduce your bills and increase your comfort.

Hot water heating, air conditioning and appliances, refrigeration and lighting contribute the most to household energy bills so aim to:

- Preference hot water systems with high energy ratings, such as solar hot water or heat-pumps, to save up to 25% on your energy bill. These often have impressive payback of less than 5 years. Quality models attract a Federal Government subsidy as they generate Small-scale Technology Certificates (STCs) which can reduce the cost of a new solar hot water system or hot water heap pump by up to \$2,000. Note that instantaneous gas can also be used for very small homes.



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- Only install air-conditioning systems that have a high energy efficiency rating, to save up to 20% on your power bill. PeakSmart rebates may be available from energy providers for many models when connected to the wider network to enable demand response.
 - Preference appliances such as TVs, refrigerators, dishwashers, washing machines and computer monitors with higher Star ratings.
 - Use efficient LED lights; halogen and most other lights are relatively inefficient and add heat to a room.
 - Replace any fridges that are more than 8 years old with a high 4+ star rated fridge, as they are on all day. Every extra star will reduce your running costs by around 20%.
 - Use sensor lights in corridors or externally, to avoid lights being left on unnecessarily and make access safer.
 - Install “task lighting” so that light covers the areas where you need it and does not waste energy where you don’t.
 - Use standby power eliminators or smart power boards that can be configured through an app to turn off at night or turn appliances on automatically - or via voice controls when paired with a smart home system like Google Home or Amazon Alexa.
 - Use the Government’s Energy Rating App to choose more energy-efficient appliances and save on electricity bills:
energy.gov.au/rebates/appliance-energy-rating-app



Natural Gas

You may connect your house to the reticulated underground natural gas system where available for uses such as cooktop/oven cooking, heating and hot water boosting/heating. Using gas instead of coal-fired power station electricity can reduce greenhouse gas emissions, especially if you do not have renewable (roof top solar) energy.



Renewable Energy

By installing a rooftop solar photovoltaic (PV) energy system your home can generate electricity during the day which is better for the environment and will reduce your energy bills. Consider a 3kW to 9kW solar energy system for your roof, especially as most cars in the future will be electric and could be charged using your solar electricity. Aim to install a Solar PV system on your north, east and/or west facing roofs. A north facing pitch of around 22 to 28 degrees is optimal.

Small-scale Technology Certificates (STCs) are available from the Federal Government if you install a solar array. The STC discount can be worth up to \$3,500 for a 6kW solar PV system. Installers will typically include this inside the quote they give you. For more information go to solarquotes.com.au/panels/rebate/

03 Materials

Aim to preference materials that have a lower impact such as those with independent certifications or made from natural materials.

Avoid materials that contain volatile organic compounds (VOC), such as many paints, finishes and adhesives, which can cause irritation and allergies and impact poorly on your health.



04 Water

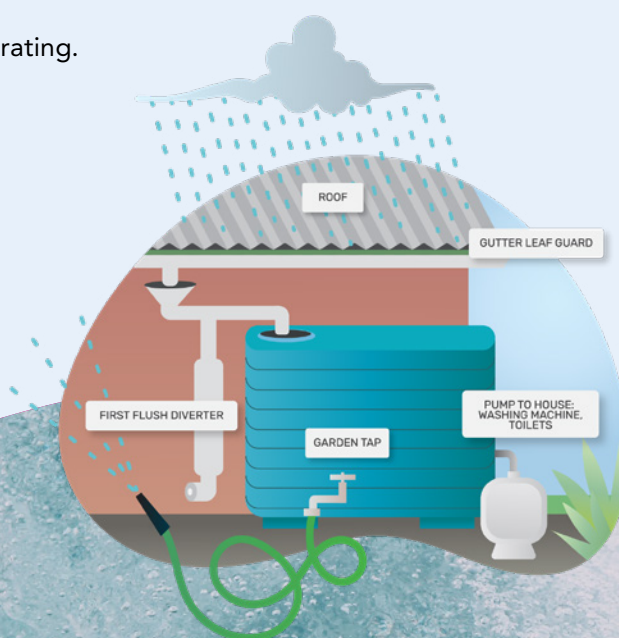
You may install a rainwater tank and harvest free rain from your rooftops. Rainwater storage involves an extra capital cost for the tank, plumbing and labour however, it will reduce your ongoing water bills and can provide you with an extra source of water in times of water scarcity which are likely to increase in frequency as global temperatures increase. Rainwater can be connected to your toilets, washing machine, or used for watering your garden. Consider 5,000 to 30,000 litres of capacity based on your expected needs. To estimate a suitable tank size, consider using this online estimation tool: tankulator.ata.org.au

To be water-efficient aim to:

- Use water efficient showerheads with a minimum 3 Star Water Efficiency Labelling Scheme (WELS) rating.
- Install water efficient toilets (4+ Star WELS).
- Purchase appliances such as dishwashers and washing machines with a 4+ Star WELS rating.

To avoid losing water to evaporation aim to:

- Use plenty of mulch on gardens and avoid watering between 10am and 5pm.
- Install underground irrigation systems.
- Cover any pools with a pool cover.



05 Waste

Builders can recycle at least 80% of all construction waste, so ask your builder how they are going to do that.

In total, Australians generate approximately 44 million tonnes of waste per annum (inside and outside the home) which equates to approximately 2 tonnes per person per annum.

To reduce this, simply:

- Place most food scraps into a compost bin so the nutrients can be turned into free compost to grow your garden.
- Save newspaper and cardboard and place them under garden mulch when you add more mulch. Most paper after all, is just refined wood. Alternatively place clean paper in the Council recycling bins.
- Use reusable shopping bags and leave unnecessary packaging with the retailer.

Undertaking these actions will help the community achieve the national target of 80% on average resource recovery.



06 Adaptability and Flexibility and Future Proofing

To ensure your home can accommodate your changing housing needs as you get older, or for guests, look to include features recommended by Livable Housing Australia:

- A safe continuous and step free path of travel from the street entrance and/or parking area to a dwelling entrance that is level.
- At least one, level (step-free) entrance into the dwelling.
- Internal doors and corridors that facilitate comfortable and unimpeded movement between spaces.
- A toilet on the ground (or entry) level that provides easy access.
- A bathroom that contains a hobless (step-free) shower recess.
- A continuous handrail on one side of any stairway where there is a rise of more than one metre.
- Reinforce walls around the toilet, shower and bath to support the safe installation of grab-rails during construction or at a later date.
- Use floor surfaces that are slip resistant, to guard against common injuries, such as a slip resistant bathroom.
- Add extra dedicated electrical cable or conduit to each side of your garage to the switchboard to enable cheaper installation of future electric car chargers.





Adding features like these at the initial construction stage can enable owners to avoid the more expensive costs of retrofitting them at a later stage. A good test, for example, is can someone move in a wheelchair or on crutches, around the house to a bedroom, bathroom and kitchen with ease?

Consider using smart home automation technologies to reduce your energy use and improve your lifestyle such as:

- Energy and water metering and management systems; these monitor your energy and water use and log it over time. Automatic comparisons with pre-set profiles can let you know when you or an appliance are using too much and help you to control it.
- Internet air conditioning and power control systems so you can turn off unwanted equipment when the home is unoccupied.

These technologies can be combined with home security, TV, music and other services so that the cost of hardware, wiring and set-up can be reduced.



07 Storm and Fire Protection

To protect your home look to:

- Minimise the area of impervious surfaces such as paved areas and concrete driveways. These can also add unwanted heat to the area and house.
- Ask your builder to keep any quality topsoil on your site and reuse it in your garden.
- Reduce erosion potential and weeds on site during building works, by minimising the time that land is left in an exposed, unstable condition. Also employ quality sediment traps and divert 'clean' stormwater around the disturbed site. This will also stop you losing quality topsoil from your site.
- If your house is on a slope and has retaining walls, make sure that they drain correctly; consider installing weepholes so that water can escape.
- Ensure there is adequate drainage and slope on the site to keep the water away from the house.
- Avoid planting large tree species whose limbs might fall onto your house in future years or add leaves to your roof and gutters.
- Avoid using flammable materials such as softwood timbers externally.
- Carefully consider the applicable local and Australian Standard for residential bushfire standards.
- Maintain separation between your house and larger shrubs and trees.

08

Flora and Fauna

Beyond growing plants for food production, aim to install mainly endemic native plant species as they will adapt to local climate conditions and survive summer and winter conditions better than introduced species. Local species will also require less or no watering and provide native birds and animals with the food they need to survive.

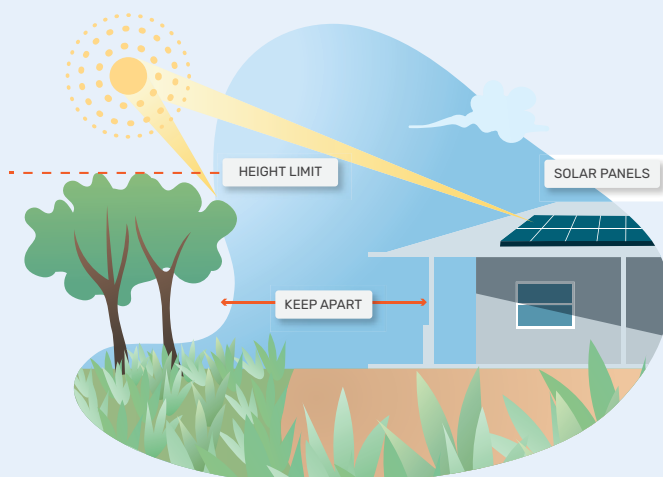
Avoid planting tree species near your home that will grow tall and shade your rooftop solar energy panels or drop leaves onto your roofs and gutters. Select tree species that will not grow too tall in front of your solar panels and northern windows.

Do not plant invasive species on the Queensland Government list of prohibited or restricted invasive plants lists.

Minimise the use of pesticides, herbicides and fertilisers as these can impact your health or end up downstream impacting wildlife and water quality.

Front Landscape

Aim to landscape at least 75% of your front yard with native vegetation or grass as this will keep your house cooler in summer.



09

Dark Sky Policy

Aim to avoid the use of upward lighting and lighting that produces excessive glare and light spill outside the home. The benefits of this include:

- a. Reduces power consumption and hence reduces energy bills; light in the corner of a room or outside your home is generally unused and a waste of energy.
- b. Reduces the impact of external light on nocturnal animals that are unintentionally attracted to the light, need darkness to find prey or use moon light for navigation.
- c. Reduces spiderwebs around your home and hence maintenance and your time.
- d. Enables us to see the stars at night and supports scientists studying the universe.

Where security lighting etc is required, put them on motion sensors with timers and use warm white colours (not a blue/white high temperature colour).

10

Savings

Implementing some of the recommended features in this document can save a home over \$20,000 and 50,000 litres of water every year.

11 Information Resources

For more information you can refer to:

- The Queensland Department of Resources guide *Energy Efficiency: How to save money on your electricity bill*
- Water efficient products
waterrating.gov.au/choose
- The Australian Government Your Home Guide
yourhome.gov.au
- Livable Housing Australia
livablehousingaustralia.org.au



