



ARCHICENTRE AUSTRALIA TECHNICAL INFORMATION SHEET - DESIGN

GUIDE TO SUSTAINABLE HOMES

“Global warming”, “climate-change”, and “sustainability” are terms we hear regularly these days, but what do they all mean for home-owners, home-buyers or those seeking to design a new home?

The questions and answers aren’t always clear – they can be complex, demanding measured conversations with design and building assessment experts – such as Archicentre Australia Architects.

Unfortunately, in a “volume builder” dominated world, Australia is building more than ever and building bigger homes – and these collectively consume vast amounts of energy and water – both in construction and in their ongoing function as homes. Generally, we all agree that we should do something about this!

For existing homeowners, consideration of sustainable design can begin by critically addressing their building stock. Even buildings constructed in the 1990’s can present without some of the features considered commonplace in current times. Nevertheless, it is important to understand the embedded energy that any existing building presents before coming down too hard on it – demolition is rarely justified on matters of sustainability alone – particularly as “active” systems such as roof top solar and battery storage are readily available.

Archicentre Australia architects have been assessing and designing great homes since 1981...now it’s time for us to help make them as energy-efficient and water-wise as we can – so talk to us about making your home more sustainable!

NEW HOMES

New homes are required by law to include sustainable features – some “off the shelf” products do this better than others. Regulations vary from State to State but one thing is common throughout Australia...you can’t build a house without demonstrating that it will (theoretically) meet the minimum State energy-efficiency requirements incorporated into the National Construction Code (NCC – Volume 2).

Well-designed energy-efficient new homes require clever siting, design, well prepared specifications and meticulous construction – then providing lived comfort and on-going cost-effectiveness. It’s not always easy to achieve and requires the consideration of several sometimes conflicting variables including available funds:

- orientation
- construction materials
- zoning
- glazing
- ventilation
- insulation
- shading
- heating and cooling

In an ideal world, allotments will all have views to the north. This is not always the case – requiring dexterity of architectural design techniques to address siting and competing variables. The simple principle of “living areas to the north and service areas to the south” can be a challenge to achieve in practice.

Where home designs are pre-determined – e.g. “volume builder based” – a “6-star” home on one site may be “4-star” on another – and upgrading the window specifications is unlikely to be the most cost-effective solution. Similarly, a “water-wise” home is more easily created during the design process than by adding tanks or grey water re-use systems later.

Sustainability is more affordable if designed into a building at the outset...into its form, layout, construction and landscaping. We have been designing sustainable homes for years – not because we have to; because we want to...and because clients want the best homes they can afford into the future....so talk to us about your new home.

ESTABLISHED HOMES

In all likelihood most established homes have never been conceived or built with much regard for energy efficiency or water conservation.

That said, many of our earliest homes did come complete with verandahs and water tanks - features that have since been abandoned by centralised reticulated systems as homes have become bigger, more energy-hungry and more water-thirsty.

Our challenge now is to improve the performance of existing homes...to reduce their demand for energy and water and at the same time maintain our quality of life.

Many Australian home-owners want to make their homes more sustainable – e.g. almost 80% of our architects’ clients were keen to install a solar-boosted hot water service, nearly 75% were interested in energy efficient lighting and over 90% wanted a water tank. The uptake of roof-top solar as a power source is ever increasing and battery storage technology improves by the month.

Many people are concerned enough about the environment to spend money on energy or water-saving home improvements, but what should you do? Where do you start? How much will it cost?

SOME SIMPLE SUGGESTIONS... INFORM, IMPLEMENT AND IMPROVE!

1. **Inform** yourself...find out where and how energy and water is wasted in your home. The federal government website, www.yourhome.gov.au is a great place to find information.
2. **Implement** change...as much as you can:
 - fix leaky taps, showers and toilet cisterns
 - turn lights off when you leave the room
 - don't leave computers or appliances on standby
 - re-set the thermostats on your heating and cooling (18° in winter and 24° in summer)
 - install low-energy light globes and lighting
 - fit weather-seals to your windows and doors
 - install external blinds to shade from summer sun
 - put in a ceiling fan
 - change to low-flow shower heads
 - plant a drought-tolerant garden

3. **Improve** things...as soon as you can:

- insulate the ceiling (ceiling void)
- put in a water tank
- buy high star-rated appliances
- upgrade your hot water service
- install solar panels and battery storage
- fit a grey-water diversion system
- replace your single flush toilet cisterns to dual flush
- upgrade your windows
- upgrade your heating system
- build a pergola or verandah

Finally, if you're planning to renovate make sure it's properly designed!

Archicentre Australia architects understand the importance of orientation, zoning, construction and ventilation - they can design you a home that will be comfortable to live in, inexpensive to run and cost-effective to build.

Talk to us about your renovation.



COST GUIDE

Archicentre Australia has prepared the following guide to help people understand and budget for sustainable home improvements. The Guide can be used as a short term 'shopping list', for example, or to plan longer term improvements. Perhaps both!

The cost advice is based on the installed cost of a variety of common household upgrades and range from improvements to a typical 2-bedroom unit up to a more substantial improvements to a 4-bedroom family home.

In any case, our advice is simple – do whatever you can do now and then do more later.

Talk to us about your home improvement.

Water Saving Improvements

1. Rainwater tank	\$2,000 - \$10,000
2. Downpipe diverters	\$300 - \$700
3. Grey water diversion system	\$2,000 - \$10,000
4. AAA – rated shower head(s)	\$200 - \$1,200
5. Dual flush toilet cistern(s)	\$600 - \$1,100
6. Flow reducer on meter	\$300 - \$400
7. Low-flow tap(s)	\$600 - \$1,100
8. Fix leaking fixtures	\$300 - \$400
9. Water efficient appliances	\$1,000 - \$2,000
10. Drip watering system	\$1,500 - \$4,000

Energy Saving Improvements

1. Door and window seals	\$200 - \$1,800
2. Ceiling insulation	\$1,200 - \$2,500
3. External blinds (per blind)	\$800 - \$4,000
4. Ceiling fan	\$500 - \$1,500
5. Energy efficient appliance	\$800 - \$2,500
6. Solar-boosted hot water	\$4,000 - \$6,000
7. Install damped exhaust fan	\$300 - \$600
8. Replace lighting (whole house)	\$1,500 - \$8,000

Active systems such as roof top solar are having an impact on the viability of refrigerated air conditioning systems as opposed to evaporative cooling. The latter can be a simple solution in parts of Australia where climates are hot and dry – as the effects of moisture retention in the home can be mitigated by the natural environment drying out your home. As roof top solar and battery systems become more efficient, reverse cycle air conditioning is an achievable option – so long as it is managed – and this can offer a healthier outcome where more temperate environments prevail.

Finally, remember that...

- plumbing and electrical work must be done by licensed contractors
- rebates are available on many sustainable home improvements – check with your supply authority.

Small changes can make a big difference, so start making your home more sustainable today...every little bit helps!

Talk to us about making your home more sustainable.