

Third edition

Introduction

If you are building, buying or renovating, this Technical Manual has been developed to show you how to design and build a more comfortable home that has less impact on the environment. The home will also be more economical to run and healthier to live in.

The "Your Home" guide and website shows what is possible, and provides information to help you get started by asking the right questions.

The Technical Fact Sheets contain specific information and practical solutions to suit your budget, climate and lifestyle.



The ideas and principles outlined in Your Home can be applied to any home. Suggestions cover new or existing homes and include villas, units and freestanding houses anywhere in Australia.

Always remember that whatever you do – no matter how small – it will contribute to your own health, comfort and lifestyle. It will also contribute to the health and wellbeing of the environment that sustains us now and will sustain future generations.

Numbers make the difference. Every contribution counts. Be proud of your contribution and tell others about it. From little things – big things grow.

The most important action you can take now is to make a commitment to do all that you can within your budget. Little things, when done by enough people create enormous change.

WHY USE GOOD DESIGN?

The home front

A great majority of Australians live in homes that work against the climate, rather than with it.

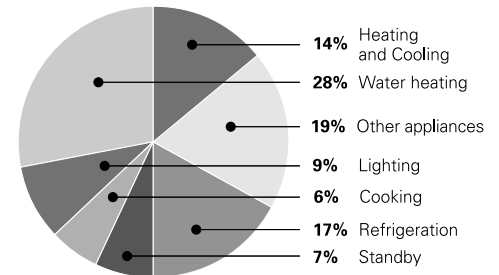
These houses are energy inefficient, too cold or too hot and comparatively expensive to run. Similarly, most homes use far more water than necessary, and are made of materials that can damage your health and the environment.

Building a home using good design principles can save energy, water and money, while creating a more enjoyable and comfortable home.

The cost of implementing good design ranges from a net saving through to a significant up-front investment that will be repaid throughout the life of the home but increase its value in the future.

The big picture

Australian households on average produce more than 15 tonnes of greenhouse gas per home each year. Our 7 million households produce over 105 million tonnes annually, which contributes over 20 percent of Australia's total greenhouse gas emissions.



Greenhouse gases from home energy use (based on AGO 1999)

Greenhouse gases are produced from activities such as heating, cooling, cooking, lighting, driving the car, running appliances and rubbish disposal.

Additional emissions are created in the building and furnishing of our homes. The 'embodied energy' or energy used to create materials generates greenhouse gases.

These emissions are contributing toward global climate change. Global climate change manifests as an increasing frequency of extreme weather events (storms, drought) leading to higher living costs, including insurance premiums.

Other impacts of ill considered building design are the loss of community, reduced natural habitat, increased water pollution and continuing soil erosion.

Good design can help you contribute to a healthier, safer and more environmentally conscious society, while saving you money.

HOW TO USE THE FACT SHEETS

The fact sheets in this technical manual describe practical ways in which you can implement principles of Good design, whether you are a tenant, home owner, home buyer, builder, designer or developer. All are important and all will make a difference.

Use the checklists on the “Your Home” website as a guide to make a list of things you most want to achieve. Then find out more about them and how to implement them in the Fact Sheets. The list will inform your decisions and help maintain focus during the inevitable tradeoff process that occurs during every home design or acquisition.

The Fact Sheets are arranged into seven broad categories, each addressing specific aspects of home selection, design, construction and demolition.

- 1) **Passive Design** deals with design or modification of a home to make it more comfortable and reduce energy consumption in all climates by taking advantage of natural heating and cooling methods.
- 2) **Water Use** shows how to reduce the water you use inside and outside your home through improved water use efficiency, by using rainwater and wastewater and by designing your garden to need less water.
- 3) **Materials Use** explains the environmental and health impacts of the materials used to build and furnish a home. Choosing “environmentally preferred materials” can reduce harmful health effects, minimise waste, reduce embodied energy consumption and eliminate other off site impacts.
- 4) **Energy Use** will show you how to reduce power consumption in your home and how to take advantage of renewable electricity systems.

- 5) **Site Issues** highlights how to minimise your home’s impact on your building site and the impact of your site on the broader environment, as well as how to deal with noise problems.
- 6) **Other Impacts** covers ways to deal with a range of issues such as streetscape, transport and health and safety.
- 7) **Case Studies** will show you real life examples of homes where Good design principles have been applied.

BUILDING A NEW HOME

The fact sheets will help inform your decisions about where you want to live, how you should orient your home and other important design features. The decisions you make at this stage will determine everything else about your home.

Look at the issues covered by all the fact sheets and think about which are important to you. Make a list of priorities to take to a designer for discussion.

Your choice of designer is important. Make sure their views are compatible with your own.

Once you have agreed on an initial house design, use the fact sheets to take an imaginary walk through your home. Think about being in the kitchen and apply the fact sheets to water use and energy use. Can further improvements be made to the plans? Going through this process for all facets of your design will help you create a comfortable, economic and environmentally sustainable home.

BUYING AN EXISTING HOME

Look at the property and how the home sits on the block.

- > Do the main living areas of the house face north?
- > Is your potential purchase close to the facilities you want and need such as shops and schools, or will it force you to drive more and therefore cost you more over time?
- > Does it look like it would be passively heated and/or cooled?
- > Does it have potential for improvement?

Use the fact sheets to assess whether there is scope for enhancements using good design.

PLANNING A RENOVATION

Prioritise the things you want to achieve with the renovation, such as more space, a better kitchen, more sunlight, reduced energy and water consumption.

Read the fact sheets to find out about what materials might be suitable, what type of glass would be best in your windows, what sort of lighting you will require and how you might reduce your energy bills with better design.

Think creatively. Do you need to extend or could you achieve what you want just by modifying what you already have? A simple deletion (such as opening up a wall) rather than an addition can often provide the solution you’re looking for.

HOME IMPROVEMENTS

These fact sheets contain plenty of information that will help you improve an existing home. Use the factsheets to find ways to reduce water and energy consumption.

- > Would a different garden use less water?
- > How can the energy bills be reduced?
- > Can you fit solar panels or replace inefficient appliances with better ones?
- > Is the home well insulated?
- > Can passive cooling or heating be improved?

This process will give you many great ideas about making your home more comfortable, cheaper to run and better for the environment.



PRIORITISING YOUR CHOICES

The "Your Home" project is about improving quality of life for the occupants of a home and reducing its overall environmental impact.

Cost is usually the main consideration when choosing what to include and what to leave out. The fact sheets contain building advice to suit particular budgets and lifestyles.

Creating the perfect sustainable home is beyond many budgets but there are effective options that are free or actually save money. Some low cost actions will rapidly repay a small initial extra investment.

"Your Home" does not prioritise one action or strategy over another. Each is important and can increase comfort or reduce the environmental impact of a home.

The Federal Government (through the Department of the Environment and Heritage) has commissioned researchers and industry experts to develop a national Building Environmental Rating Scheme. When in place, the scheme will evaluate and measure the effectiveness of various actions in reducing the environmental impact of Australian buildings. It will help to prioritise actions in terms of cost effectiveness and urgency of need relating to local environmental priorities.

In the meantime, the following important considerations are helpful when faced with the many decisions that must be made when designing, buying, building or renovating a home.

Energy efficient, sustainable homes are rapidly increasing in value due to their greater comfort levels and lower running costs. Your home will be in existence for at least 50 years. Its re-sale value will be increasingly linked to the features described in this guide.

Reducing energy consumption is an urgent priority. Global warming and its effects on climate change are already becoming apparent. These will inevitably lead to rising prices for energy from non-renewable sources. [See: [Passive Design](#); [Energy Use](#)]

Water is in critically short supply in Australia. Rising demand for household water supply is competing with the needs of agriculture and both are reducing the environmental flow required to keep our rivers and waterways healthy. [See: [Water Use](#)]

Water quality is deteriorating rapidly as a result of over-use and poor waste water treatment practices. [See: [Water Use](#); [site issues](#)]

Australian soils are fragile. Soil loss and degradation from inappropriate vegetation clearing and excavation is accelerating. [See: [Materials Use](#); [Site Issues](#); [Case Studies](#)]

Air quality is essential for health. Outdoor air quality is declining rapidly in most cities. Indoor air quality is dependent on outdoor air but has the added burden of toxins and gases emitted from the materials and furnishings in our homes. [See: [Materials Use](#); [Other Impacts](#)]

Conservation of biodiversity is essential to maintain the ecological systems that sustain us now and into the future. These systems produce the food we eat and purify the air and water we need to survive. [See: [Materials Use](#); [Site Issues](#)]

Waste is an unnecessary consumer of precious resources and poisons our environment when disposed of. It can easily be avoided or minimised. [See: [Materials Use Introduction](#); [Site Issues](#)]

SUSTAINABLE DEVELOPMENT

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

(WCED,1987. Brundtland Report)

The principles explained in "Your Home" can improve comfort, lifestyle and health but are also good for your budget and the environment. This is truly sustainable development. It is often called a triple bottom line. The recommendations in "Your Home" have a triple bottom line.

Ecology is the study of the inter connectedness and interdependence of all living things, including the systems that support them.

Ecologically Sustainable Development (ESD) is development (including home building) that does not interfere with these delicate interconnections. ESD protects and conserves the ecological balance whilst maintaining our cultural and economic development.

SUSTAINABILITY & THE BUILDING INDUSTRY

The Building Industry as a whole is directly and indirectly responsible for significant:

- > Consumption of the earth's resources (especially energy).
- > Generation of polluting toxins and waste.
- > Creation of conditions leading to loss of soils and biodiversity.
- > Interference with life support systems (eg. the water cycle, soil systems and air quality).

The Building Industry is working to identify and implement avenues of reform for the short, medium and long term that will reduce its environmental impact.

If economic and social development is to continue without destroying the environment that sustains us, each and every community must play its part in finding new pathways to sustainable futures. The building industry is such a community. Each member group has a role to play.

Consumers

Consumers create demand for housing and have significant influence over market changes and the finished product provided by designers, builders and developers.

Owners are usually the building operators. Many of the adverse environmental impacts of housing arise during operation. This is particularly true of energy consumption and waste.

A clear understanding of how to operate a home and adopt the lifestyle options recommended in the guide will significantly reduce the operational impacts of your home whilst improving comfort, health and finances.

Consumers have a major role in making housing more sustainable. Awareness of ESD principles and expressing these preferences to marketers, designers and builders will create great change.

Builders

Australian builders and trades people have demonstrated time and again their ability to adapt to new trends, regulations and technology. Building more sustainable houses is but one more challenge to which many builders have already risen.

Building is a very cost competitive industry. A "level playing field" is essential to support the builder's role in creating more sustainable housing. Make sure your quotations itemise such things as insulation levels, shading details, window performance and durability of materials and appliances. They are essential elements of a home just like the roof and walls and should not be treated as "optional extras".

Designers

Designers of buildings bear much responsibility for the sustainable performance of the whole industry. They are the first link in the construction chain. The majority of important decisions affecting lifetime performance of buildings are made during the design stages.

Designers have a leadership role in implementing sustainable reform. "Your Home" provides guidance and technical support for this role but in the end, it is the designers who must use these tools to create practical, affordable and sustainable solutions.

Manufacturers

Manufacturers, like builders, provide products to meet regulatory standards or demand driven by needs.

Many manufacturers are discovering that they gain a distinct market advantage over their competitors by developing and marketing more sustainable products. The same is true for designers, builders and developers.

Governments and regulators

All levels of Government are working hard to implement sustainable reform. In our democratic society, elected representatives require clear mandates and support from the community to achieve this effectively.

By raising awareness and providing solutions, the "Your Home" Technical Manual will help to create the platform for such mandates and encourage community support for reform agendas.

Marketing agents and developers

Marketing agents and developers respond to market needs. Their success depends on their ability to gauge the needs and wants of consumers and meet them with cost competitive products.

Their role includes predicting future trends and planning well in advance to supply the right product at the right time. Recent experience with Newington Olympic Village (Mirvac Lend Lease) and many other similar ventures across Australia have shown that the market is more than ready to embrace sustainable housing and that developers and marketers can supply it.

Developers and marketers also have a strong leadership role in implementing sustainable reform in the industry. "Your Home" Technical Manual will support this role by raising consumer awareness and demand and providing guidelines and technical information on how to implement it for designers and builders.

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