

# Case Studies

These case studies present diverse real life examples of what are currently some of the best sustainable homes in Australia. More economical to run and healthier to live in than many conventional homes, they each demonstrate effective responses to many of the principles of good design detailed in the Your Home fact sheets.

The case studies include new and existing homes ranging from units and apartments to freestanding houses and they are arranged in four categories: New Homes, Medium Density, High Density, and Renovations. Each type is then organised according to the eight climate zones identified by the Building Code of Australia. [See: 4.2 Design for Climate]

## NEW HOMES

These examples of new homes are in locations that range from remote islands to the outback, and from the suburbs to the inner-city. Whether the projects are single storey homesteads or multi-storey townhouses, the same basic principles of good design apply. The diversity of these case studies demonstrates that there are no 'cookie-cutter' solutions to sustainability and that commitment to sustainability and comfort can be a powerful stimulant to creative design.

## MEDIUM DENSITY

These two case studies include quite different dwelling types that show how even in constrained urban environments it is possible to achieve creative, effective design solutions.

## HIGH DENSITY

This case study shows that even the most compact inner-city apartments can deliver high levels of sustainable performance.

## RENOVATIONS

Some of the renovations shown here are thorough reworkings of an existing dwelling whereas others are more modest. Together, they demonstrate that almost any existing home can be upgraded to deliver a more sustainable, efficient and comfortable lifestyle.

## CASE STUDY CONTENT

The content of each case study follows the same general arrangement – a description of the site and climate is accompanied by information about the design background or brief, then the planning, orientation and passive strategies are described along with an indication of how materials have been used in accordance with good design principles. Different case studies stress different aspects of the design principles.

A map identifies the location of each case study and its climate zone.

Each case study has a text box containing a list of topics where that particular project has performed well. These include:

- > Passive design.
- > Lifestyle modification.
- > Rainwater harvesting.
- > Waste reduction.
- > Wastewater recycling.
- > Greenhouse gas reductions.
- > Recycled/renewable material use.
- > Reducing transport impacts.
- > Embodied energy reduction.
- > Renewable energy production.
- > Food production.
- > Indoor air quality.
- > Reducing water use.

At the end of each case study a text box identifies the key experts involved in creating the project.

## THERMAL COMFORT (AccuRate)

In order to provide a consistent way of comparing the performance of diverse building designs in various climate zones, all the case studies have been rated using AccuRate which is designed to assess aspects of thermal comfort which are a consequence of the building's design. [See: 1.5 Rating Tools]

Some of the case study projects have relatively low ratings on the AccuRate scale but are reported to perform very well as climate-responsive, passive homes, with high levels of occupant satisfaction. Thermal comfort is only one performance indicator and a lower rating in these case studies does not necessarily mean the house is not environmentally sustainable overall. It reflects the growing complexity and sophistication of sustainable home design and energy rating systems. Ratings for passive design or what some architects and designers refer to as 'free running' performance is still an evolving art, and new tools like AccuRate are providing better quality feedback on particular aspects of thermal comfort.

AccuRate has two modes of operation:

- > Regulatory mode that uses the settings needed by building regulatory agencies.
- > Full rating mode that takes account of additional design features.

For example, in regulatory mode, building envelope features that are removable, such as curtains, are assumed to be of a minimum standard. In full rating mode the fittings that are actually installed, such as heavy curtains with pelmets would be considered. The case study listings include a mixture of both.

The task of providing representative case studies for each climate zone and building type is on-going – the case studies included here will be added to as resources permit.

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### AccuRate Ratings for case studies:

Energy Partners