



THE STRAWBALE HOME

For engineer Colin Goodwin and his wife, Libby Anthony, an environmental scientist, the house they built on their property in Mirboo, South Gippsland, Vic, was an eco dream come true.

Photography by Bridget Puszka and Colin Goodwin

Goodwin and Anthony bought their property seven years ago when they were looking for a setting to launch a business growing bush food. Until that time, the couple wanted to construct a part-time home that would reflect their own personal ecological commitment. The couple, both members of the Alternative Technology Association, made the extra effort to ensure the most sustainable principles were applied.

The 5.3 ha property came with 'a

partly built frame for a mud brick house', Goodwin recalls. Looking to maximise the use of resources, Goodwin and Anthony wanted to incorporate the post and beam skeleton into the design. However, this came with some challenges. 'The layout wasn't very good for passive solar principles. We had to design around it,' Goodwin says.

To attempt such a feat, they needed an architect that was sympathetic to the importance of environmental design. Bridget Puszka, principal architect of BP Architects, had been designing sustainable homes since 2000 and was quite confident

about being able to retrofit the structure into a contemporary eco home. Despite the limitations of the existing frame, Puszka was able to incorporate many fundamentals of green building design. In addition to a north facing window wall, the main living areas were situated at the northern end for optimum exposure to sunlight, while bedrooms were located at the cooler south side. Meanwhile, the building envelope utilised the most important principles of sustainable design, including thermal mass and cross ventilation while keeping the home's environmental impact to a minimum.



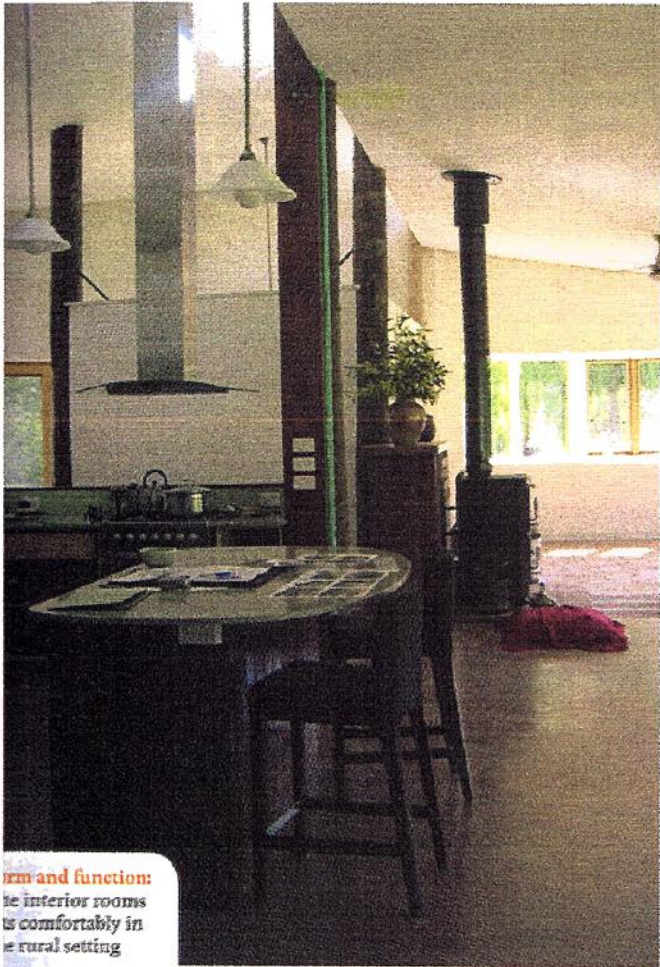
Double glazing: Glass doors and windows are all double glazed

The Strawbale Home Sustainable Features

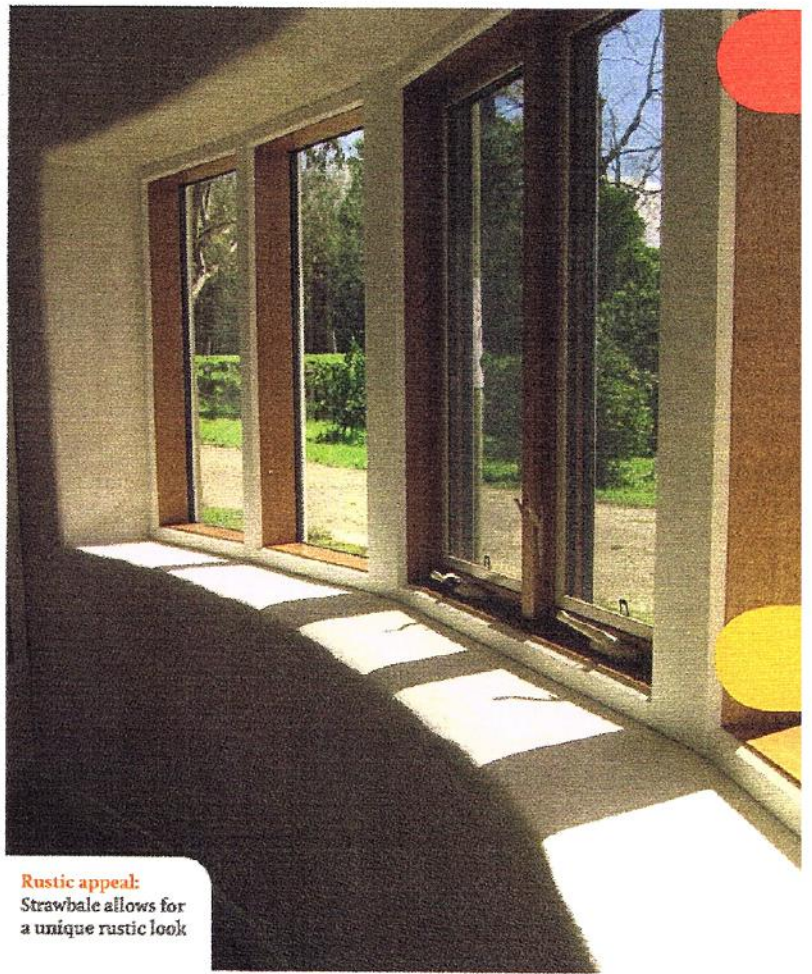
- Concrete slab on ground, finished in a red brown colour to increase absorption of direct sunlight hitting the slab.
- Plantation pine from sustainable timber plantation used for kitchen cabinetry.
- Wheaten strawbales used for walls
- Recycled timber from on site blackwood trees used in bathroom cabinetry.

Sustainable Products

- Solar Tech solar hot water system
- Uni-Solar photovoltaics
- A & A worm farm toilet waste system
- Tyvek breathable building membrane
- Polyfoil Eco Batts (Recycled PET Wool Batts)



Form and function:
The interior rooms
are comfortable in
the rural setting



Rustic appeal:
Strawbale allows for
a unique rustic look



Solar cells:
Generate all the
energy needed for
the part-time home

Passive Solar Design

In addition to the orientation of the rooms, thermal mass was incorporated throughout the home. A concrete slab was placed on the ground and was finished in a red brown colour. The darker tint facilitates the absorption of direct sunlight hitting the slab to warm the interior space. An insulated metal roof further optimised the heat sink capacity of the concrete slab. Meanwhile, cross ventilation keeps the house cooler in the summer with windows oriented to optimise southerly breezes. Deep 500 mm eaves on the northern façade with additional shading on the eastern and western sides provide summer shading during the warmer months.

Environmental considerations were also employed during construction, with waste reduction being a prime concern. Roof metal scraps were recycled while many of the remaining pine cutoffs were used for firewood. At the end, only one skip of building construction waste was taken to the tip, evidence of the considerable care that was taken to reduce the environmental footprint of the project.

Using Strawbale

One of the most prominent sustainable features of the home is the use of strawbale walls. 'We really wanted to use strawbale, but it was quite a novelty in

the area,' says Goodwin. Finding a builder and importing contractors familiar with the material took some work.

In addition to having extremely high insulating properties (a R4.5 value compared with R1.5 for more standard insulating materials), there are many advantages to strawbale. Loose straw was used to fill the gaps of the building envelope, including the spaces between windows and the timber frame while strawbale itself made up the infill walls. This would ensure maximum insulation. Using strawbale for the walls meant that there was much less waste on site as any leftover strawbale was ultimately used as mulch.

The rustic look of the walls fitted the landscape and allowed for a physical flexibility which enhanced the design. 'The feature walls at the front of the house were designed to be curved which is easy to do if you are building with strawbale,' says Puszka. Aesthetically, the building reflects the rural setting of the site. The walls were rendered with lime and sand in a natural finish to give it an earthy feel within its modern and contemporary design.

Sustainable Living

Goodwin and Anthony are proud of the environmentally friendly elements of their home but have also taken every step to further reduce their impact. The house design means artificial cooling or heating

are seldom needed. In fact, the pair has installed 'data loggers' that monitor the temperature both inside and outside the house. Their records show that the interior remains 10 degrees warmer in winter, and 10 degrees cooler in summer than the outside temperature without any artificial heating or cooling (see below). 'The smaller swings in temperature indoors, over the course of a day, provides a balance between comfort and climate,' says Puszka. Ceiling fans and a wood heater are all that is needed to keep the space comfortable year round.

Meanwhile, the house incorporates a number of different sustainable additions that lend themselves to the current energy positive state. Enough photovoltaic cells were installed on the roof to generate all of the electricity the couple used in the part-time home. Rain and storm water are stored in two water tanks that are fed from the runoff from the roof. When it came to fixtures, a worm farm toilet was chosen along with water efficient taps. Compact fluorescent lights and five-star energy efficient appliances are all environmental assets of this great green home. Goodwin and Anthony are exceptionally dedicated to this eco style of living: 'They collect all their own rainwater from the house roof, burn their own firewood from their farm land and grow a portion of their own food,' says Puszka.

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