

sanctuary

Sustainable living with style

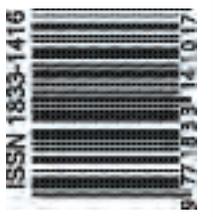
ISSUE 1 AUD\$9.95 NZ\$10.50

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SOLAR POWER FOR THE HOME

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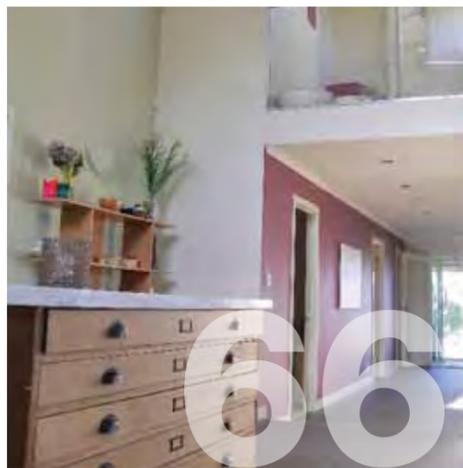
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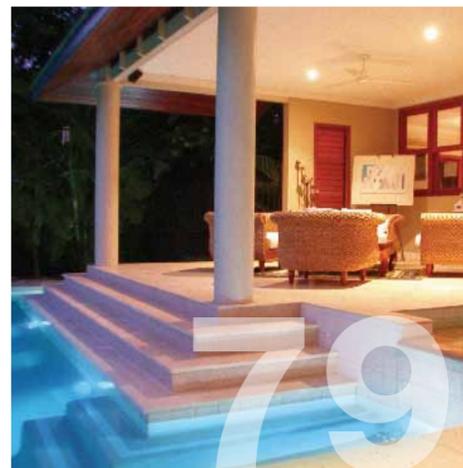
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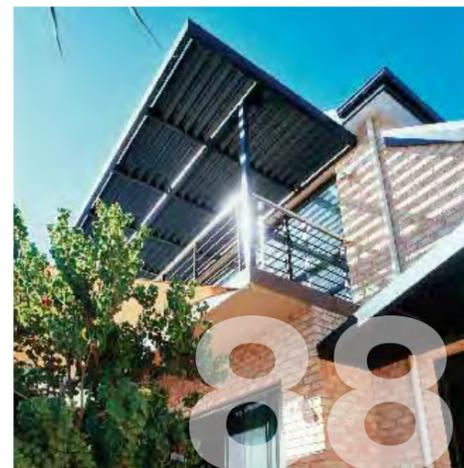
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Editorial

For most of us, our homes are more than a roof over our heads – it is the place we share with family and friends, a place of joy and comfort. Our growing concern for our environment has led us to take simple measures like putting out the recycling and saying no to plastic bags. But one area that is often overlooked is the way our homes are built and how they operate.

No longer simply the domain of people living in rural areas or 'alternative' lifestyles, sustainable homes are starting to make a big impact. Maybe it's because you no longer have to compromise on comfort or style; a sustainable home will actually increase your level of comfort and ease the strain on your hip pocket.

In *Sanctuary*, we have brought together fifteen of Australia's leading practitioners of sustainable house design. With their cutting-edge ideas, these homes are an inspiration to anyone wanting a building that lessens the impact on our environment. From the windswept Tasmanian countryside to the bustle of inner-city Sydney and the tropics of Cairns, these houses showcase the very latest and most stylish innovations.

Even if you are not considering building your own home, or commencing a major renovation, there are still a number of simple ways you can make your home more sustainable. *Sanctuary* contains a range of hints and tips to make it easy for everyone to have a comfortable, beautiful home. Simple solutions such as adding shading sails or installing energy efficient light globes can improve your home significantly.

As Dick Clarke, designer of the home showcased in *Reinventing the feel* points out, we can all make a difference for the better even when we make the smallest change to our homes. Why not use non-toxic paints when you need to give the home a new lick of paint?

I hope you enjoy the first issue of *Sanctuary* and are inspired by the beautiful homes, and I hope we have made it easier for you to create your own sustainable haven.

If you would like more hints and tips go to the ATA website www.ata.org.au or the *Your Home* website www.yourhome.gov.au for a store of information on sustainable building.

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Your Home

Your Home is a suite of consumer and technical guide materials and tools developed to encourage the design, construction or renovation of homes to be comfortable, healthy and more environmentally sustainable.

Your Home is a joint initiative of the Australian Government and the design and construction industries.

For further information go to www.yourhome.gov.au

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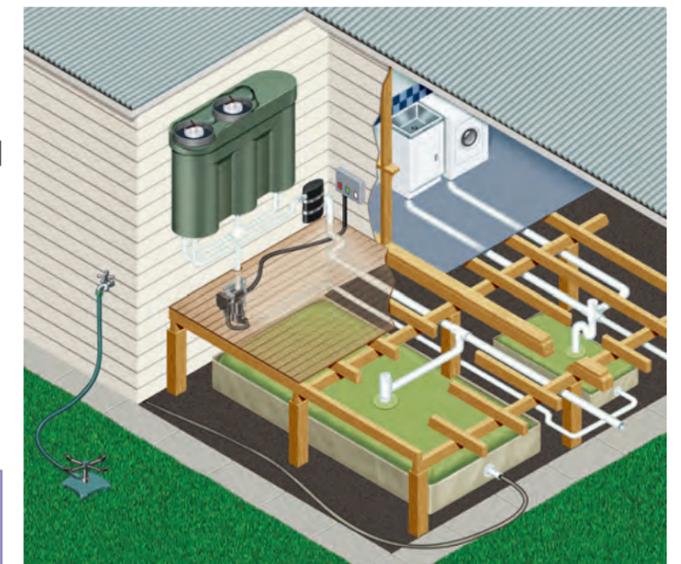
Pick the House with the Aqua Reviva



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I wanted to have a great garden and I wanted to recycle my greywater to use in the house but I was concerned about safety and doing the right thing for the environment. The answer was an Aqua Reviva. • Mr DS (Torrens)

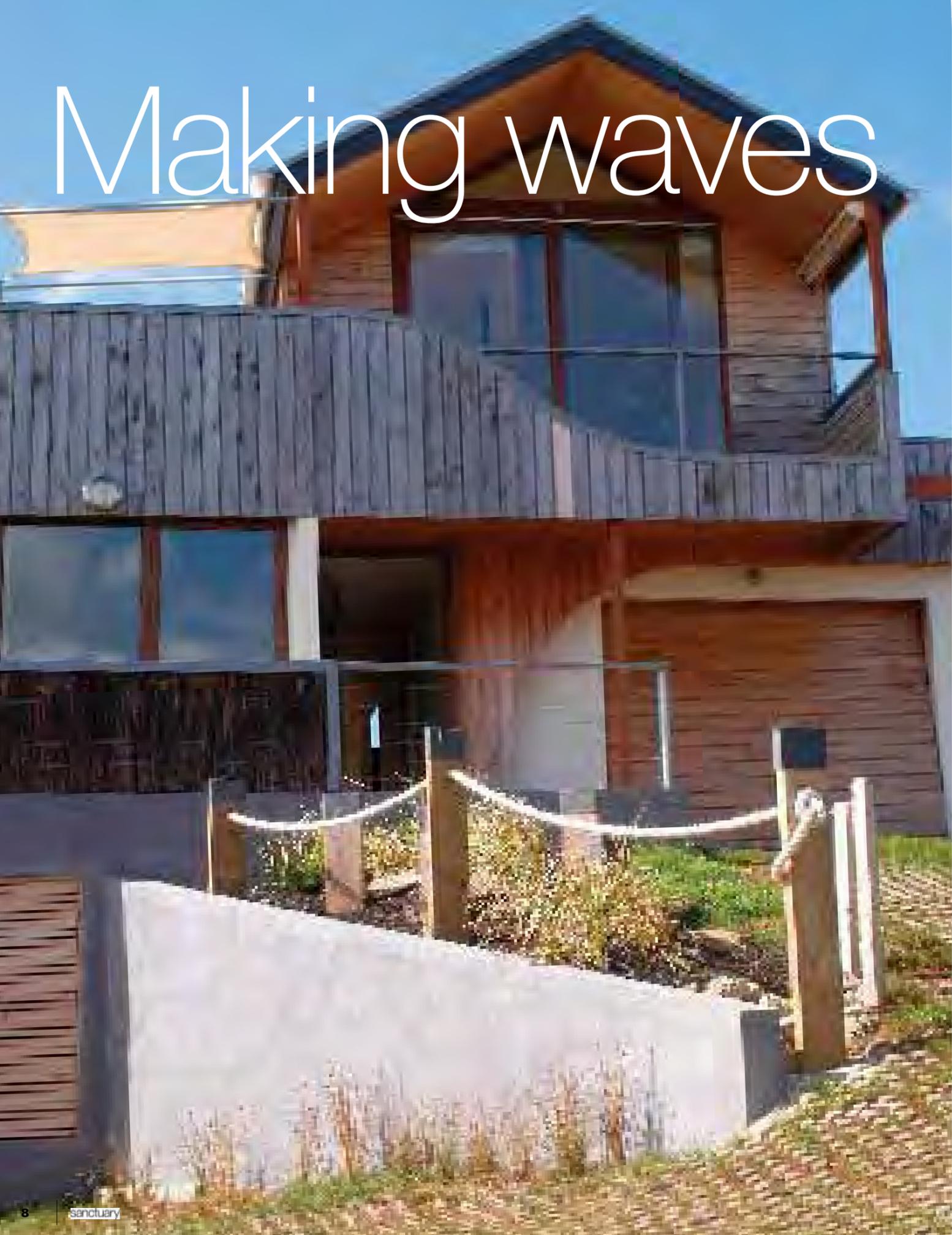


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Making waves



Even the garage has been designed to blend in with the landscape. Every angle has been considered in this entrancing beachside home.

The clean, white walls and harmonious timber finishes provide a complimentary foredrop to the mesmerising views.



“We wanted the house to have a ‘sense of place’. We wanted it to reflect the movement of waves and the shape of sand dunes,” says Bradford of his parent’s house on the beachfront at Port Fairy in Victoria. “It was very important that the design was sympathetic to the landscape.”

David, Judith and Bradford Phillips’ home is in the kind of location that makes most of us sigh and go dreamy-eyed. On the edge of the small town of Port Fairy, about 25 minutes west of Warnambool on the Great Ocean Road, the house has breathtaking views of the ocean, the historic Griffith Island

lighthouse, the Moyne River tributary, the reef lying out yonder and beautiful Eastern Beach with its characteristic Norfolk pines.

It would have been possible to build any kind of house in this magnificent spot and still enjoy the views. But Bradford, who was the driving force behind the sustainability features of the house, believes that **“our dwellings reflect our social conscience”**. For him, it was far more fulfilling to build a site-responsive, minimum-impact house that blends with its surroundings.

Bradford’s interest in energy efficiency and

sustainable design comes from a belief that we have become disengaged from the natural environment. He was also aware of the long-term financial advantages of energy efficiency on both a personal and community level.

The family owned the property for 50 years before they decided to subdivide the site. It created two beach frontage blocks, and a third one that faces the street. Part of the land was required for a shared driveway and was designated common property. A further 139 square metres, adjoining a road reserve, was donated to the local council. This





“We built this home to show people they don’t have to forgo comfort to achieve sustainability.”

Recycled timbers and polished concrete give the floors extra style.



Touching lightly

Sleek, suave and sustainable: the Design Studio says it all.

Queensland designer Brett McKenzie strives to integrate architectural form with a philosophy of ‘touching the earth more lightly’. This approach is markedly evident in his ‘Design Studio’ display home, above the seventeenth hole of the golf course at Brookwater, a residential community integrated into a Greg Norman-designed course in outer Brisbane.

The site had great views and a peaceful bush setting, but the dramatic 14-metre gradient, and the

site aspect, presented Brett with a few difficulties.

“The key challenge of the site is that the longest element is to the western side,” he says. “We ended up using a masonry blade wall to take the brunt of the western-side elements, protecting the house and providing a very solid connection to the earth.”

The house was designed as two pavilions, one set below the other on the hillside, and joined by a short staircase and corridor. Excavation of the site was minimal, done only to create access to the

block from the street, and for the foundations. The fill from excavation was then used to level out the area between the two pavilions.

The bedrooms occupy the double-storey upper pavilion, while the main entertaining areas are in the lower pavilion. The stairwell to the master bedroom acts as a thermal flue, with a mechanical ceiling vent that can be opened in summer to release hot air, and closed in winter to allow heated air to circulate back through the house.

“We’ve turned that negative space into a hard-working positive space that takes cool ventilation through the home,” says Brett.

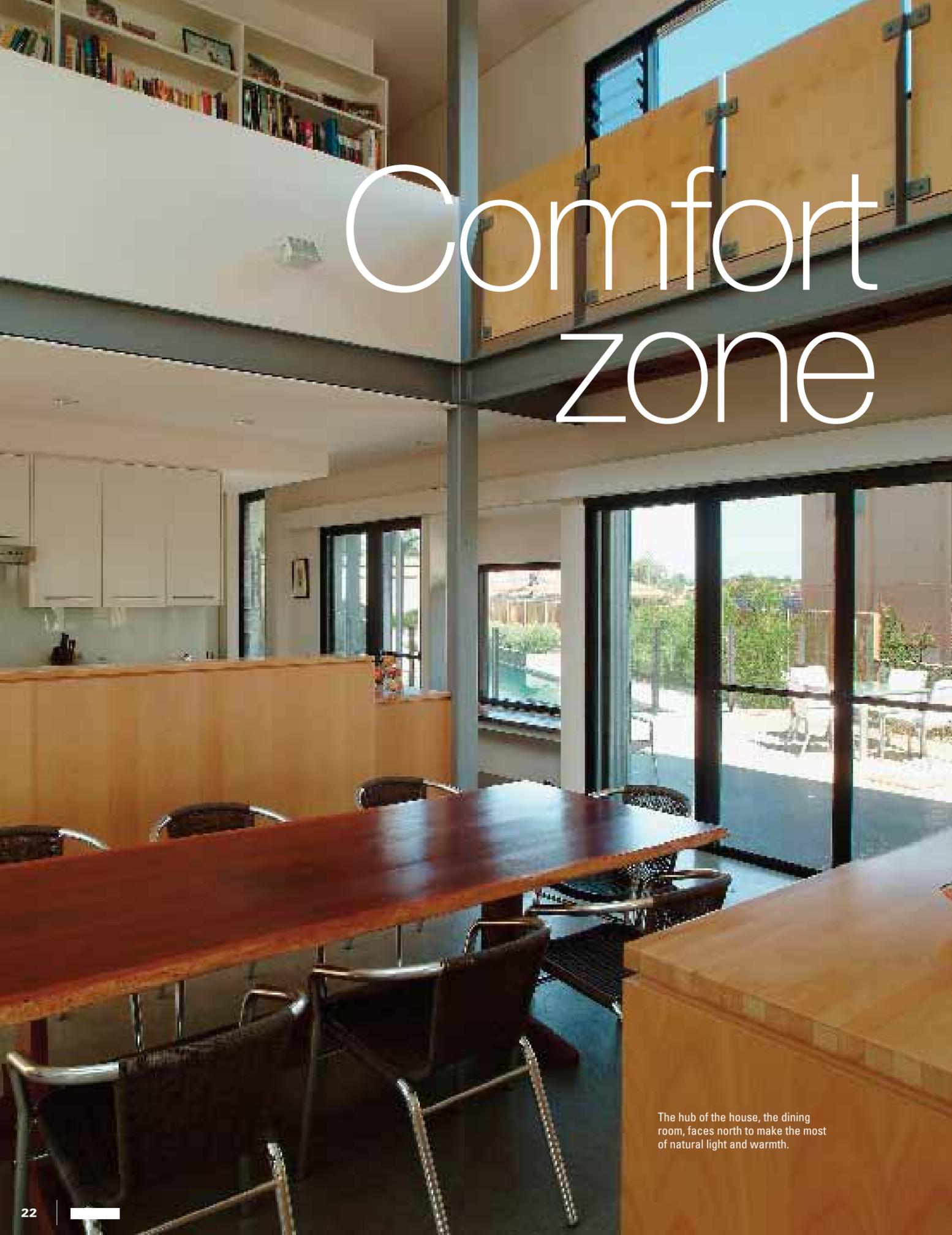
Concrete polished floors and the masonry blade wall provide thermal mass. However, the rest of the house is made with lightweight materials to suit the sub-tropical climate of southern Queensland.

There was a strong emphasis on using recycled materials, materials with low embodied energy, and timber from renewable sources. “There’s a certain

stigma about reused and secondhand materials; that they have no value. Actually, a lot of recycled materials have a much higher value because of the character that comes with age,” Brett says. “For example, we’ve used recycled timber planks for the external decks to give them a chunky boardwalk effect.”

Hot and humid summers mean that good solar protection and passive cooling are essential in Queensland. The interior was shaded by adjusting

Comfort zone



The hub of the house, the dining room, faces north to make the most of natural light and warmth.

With its cut and polished urban allure, this zone-arranged home is designed for simply living.

There is a common misconception among prospective home owners and renovators that environmentally sustainable design, and cutting-edge, residential architecture don't make very compatible partners.

But with this west Sydney house, architect Tone Wheeler has proven that a sustainable house doesn't need to be clunky and utilitarian. Employing clean, minimal lines and robust materials to complement sound environmental principles, Tone has created a house that is both sharp and relaxed.

While its neighbours almost exclusively are solid brick, Tone finished the house in fibro sheeting, making it "a little bit more industrial, a little bit more contemporary."

"Most of this existing subdivision is brick and tile. They are houses that are following a tradition from the 1890s," explains Tone. This house is different. Internally, small touches like expressed steelwork add to this gritty, urban feel.

The home owners wanted a low-maintenance house that would cater for the needs of their large family and many visiting family and friends.

The house is made up of two separate pavilions with the living, dining and kitchen in the northern pavilion and the bedrooms and rumpus room in the pavilion running parallel to the edge of the site, facing north-east. **It is reminiscent of the great Aussie holiday home with its separated living and sleeping dormitory.** "By splitting into those different zones you can actually run the house [more sustainably]," says Tone. The notion of 'lifestyle' is at the very crux of his design philosophy: "The key for me in designing a sustainable home is to think about it as a lifestyle; not to think about the house, but about how people can live in that house."

The hub of the home is the dining room, oriented directly north with double-height doors and glazing,



The upstairs windows create a stack effect that draws out the hot air on summer nights.



Period piece

From historical to spacious and functional, a single storey 1880s home moves onwards and upwards.



The polished concrete is so warm and beautiful, plans for a timber-covered floor were dropped.

with guests. They insisted on solar hot water and collecting rainwater for reuse, but it was only after talking with the architect that they became aware of some of the simpler issues like orientation, passive solar gain and thermal mass. The house is easy to keep clean with just water and a mop, and light and warm enough to be comfortable all year round.

This house represents a way forward for all those who want both a groovy city pad, and a green-friendly residence. ↩

Designer: Tone Wheeler

Builder: Inten Constructions

Location: Sydney, NSW

Key Features: Fixed eaves for shading
Laminated and tinted windows
30,000 litres rainwater tank
Solar hot water
Stack cooling system

Come and see the future of urban living

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The Sharland Oasis display home proves there are many opportunities to save natural resources and money on your household bills simply by using best-practice design and sustainable construction materials in the creation of your home.

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An inspirational oasis

A cutting-edge display home sets a stylish example for the water and energy conscious.



Plants range in their water efficiency depending on their location in the garden.



So simple but effective, internal blinds help keep the house cool.

“Water-efficient plants including drought-tolerant varieties in the front garden and low-maintenance native shrubs and trees in the backyard, can be watered with rainwater or recycled household water”

As the largest regional urban water authority in Victoria, Barwon Water knows a thing or two about the effects of water shortages on both city and small town communities. After all, the 250,000 water users on its books include residents of ever-expanding Geelong and dune-dwellers enjoying the surfing life in the small towns that hug the rugged Great Ocean Road.

But rather than merely preaching water conservation and sustainability, Barwon Water decided to lead by example, and design a display home that incorporates all the water and energy saving ideas it could muster under the one roof.

The authority enlisted the services of Mark Sanders, an architect with local firm Third Ecology, and briefed him to create an ecologically sustainable display home that would inspire and educate home makers, giving them a raft of practical ideas to take away and employ in their own homes.

Located in Geelong, ‘Sharland Oasis’, as the house is known, is part of a water-sensitive urban subdivision developed by Barwon Water as part of its commitment to the Water Resources Development Plan (WRDP), an initiative that aims to reduce water consumption by 15 per cent over the next two decades.

In designing the double-storey house, Third Ecology has combined passive solar design principles with a sleek, contemporary aesthetic. Externally, it boasts a sophisticated yet honest palette of materials and textures that includes dark brickwork, timber details and lightweight cement sheet cladding. **Inside, the mood is restful and welcoming with elegant timber joinery, neutral colours, polished concrete flooring and generous floor-to-ceiling views of the landscaped garden.**

The Sharland’s first lesson is to show how rooms can be arranged to maximise northern light while still offering protection from the late afternoon sun,

which can be particularly harsh in summer. The architect has designed the garage, laundry, powder room, bathroom and kitchen as a linear west-facing zone that essentially protects the sleeping and living zones from the brunt of the afternoon sun.

The dining, living and outdoor deck areas have been skewed to face north and east, to benefit from the morning sun, while the bedrooms are oriented to the more subdued south-eastern light. Generous glazing in the main living areas ensures these rooms are flooded with the warm, low sun during winter, and external blinds and deep eaves are in place to protect the same areas

from the hot, high sun in summer.

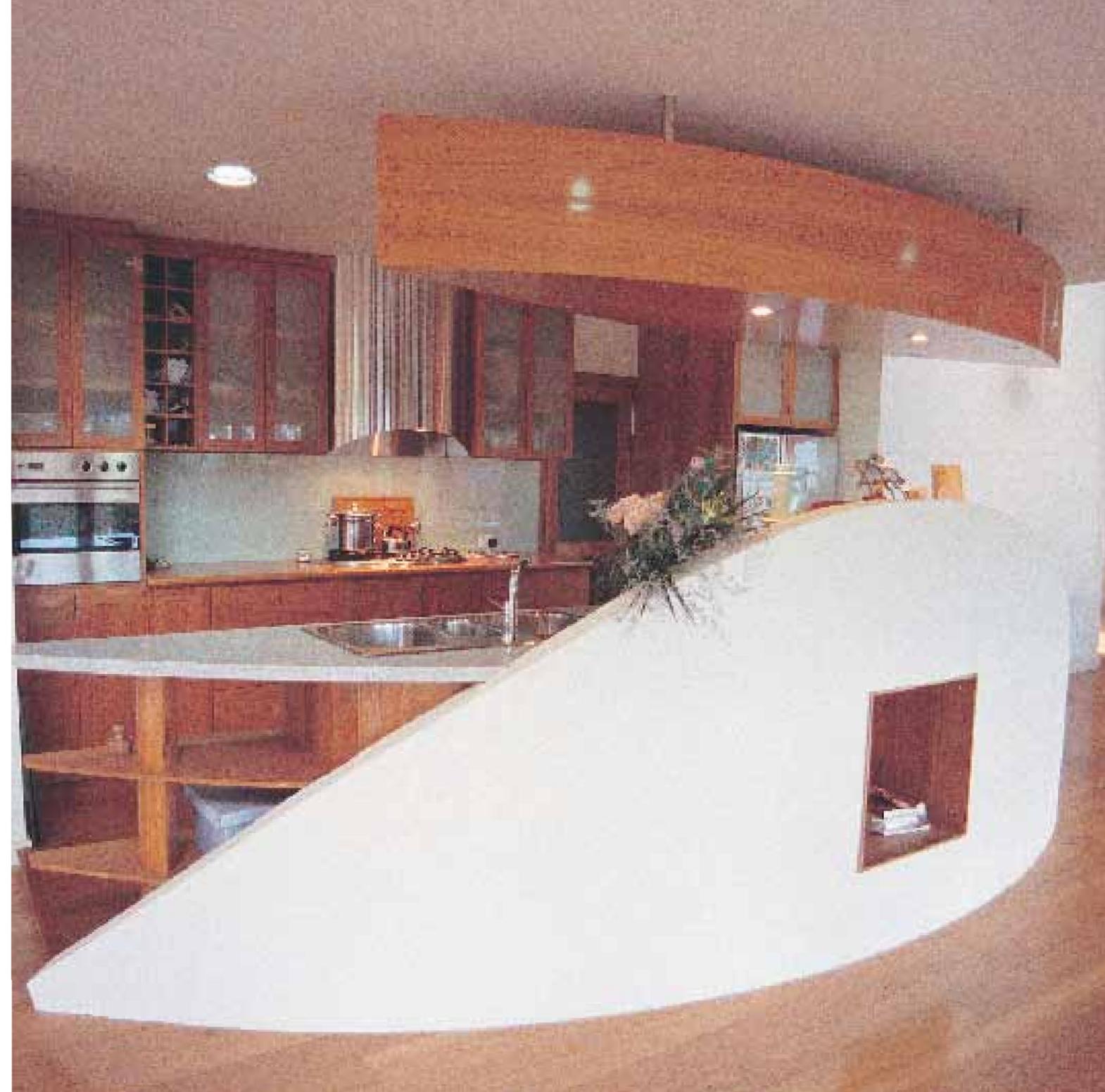
Windows have been strategically placed to promote cooling cross ventilation, too, particularly in the open-plan living, kitchen and dining area. It is expected that the **inside temperature will rarely sneak above 26 degrees Celsius during summer, nor will it get much cooler than a comfortable 18 degrees in winter.**

Third Ecology opted for a concrete slab floor at ground level to create a passive thermal mass that would help stabilise internal temperatures all year around. By day, the slab will absorb the warming rays of the low winter sun and radiate this stored

heat back through the house when the sun goes down. The slab is made of 20 per cent recycled concrete aggregate, and even its steel reinforcing boasts 100 per cent recycled content. The cement contains recycled ‘flyash’ and ‘slag’, which are by-products of the cement production process.

All materials in the house were carefully chosen. The interior paint is non-toxic and water-based, and contains no dangerous organic compounds or solvents, and the kitchen and ensuite benchtops are made from reconstituted stone, cut and polished using recycled water. All the timber in the house is either plantation,

“In designing the double-storey house, Third Ecology has combined passive solar design principles with a sleek, contemporary aesthetic”



Of the earth
This house is the perfect antidote for anyone who is sick of the straight, the square and the conventional.

The house has two 4500 litre underground concrete water tanks to supply the toilet, washing machine, dishwasher and outside taps. In times of severe drought, mains backup will automatically kick in so the household doesn't go without. The kitchen, bathrooms, laundry and garden are fitted with AAA-rated taps and showers and the toilets are AAAA-rated dual flush units. The primary source of water is on-site water tanks.

The Sharland Oasis's lush garden has been filled with water-efficient plants including drought-tolerant varieties in the front garden and low-maintenance native shrubs and trees in the backyard, which can be watered with rainwater or recycled household water.

The building process itself was a sustainable affair. Nearly 70 per cent of all building waste was recycled rather than sent to landfill sites. And the local waterways were also protected by using haybales to prevent fine silt and mud from washing into the stormwater system.

Barwon Water is justly proud of the Sharland Oasis. The stylish, comfortable home sets a fine example and is sure to inspire and educate many visitors in the future. Hopefully other local authorities and housing developers will follow Barwon Water's lead by undertaking regional and urban developments that show a sustainable way forward for all of us. ◀

For more information:

Barwon Water
www.barwonwater.vic.gov.au/sharlandoasis

- Designer:** Third Ecology Architects
- Builder:** Daran Constructions
- Location:** Geelong, Victoria
- Key Features:** Solar hot water
1.8kW grid-connected photovoltaic power system
12,500 litre rainwater tanks
3200 litre Rain Reviva grey-water system
Double-glazed windows and doors
Water efficient appliances, and fixtures
Plantation, sustainably sourced or recycled timbers

High density living with an eco edge.



reused for paving and other decorative feature elements. Plantation pine was used for the joists, and many of the interior features were made from recycled timbers, such as the spiral staircases featuring steel, recycled jarrah and other Australian hardwoods.

Christie Walk will be enviably self-sufficient when it comes to energy use. When all of the photovoltaic panels are installed, the development will export energy to the electricity grid. The site collects stormwater from roofs and balconies which is used for irrigation and toilet flushing. A chlorine-free sewage treatment system will treat all grey- and black-water onsite, and a small community garden demonstrates that even the tiniest urban site can produce food and flowers.

The village feel is important to Effie, as is the proximity to Adelaide's wonderful produce market and local shops. She particularly likes the pedestrian-friendly layout (Christie Walk is vehicle free, although the council provides some parking). The bay windows mean living areas are light and roomy, and the kitchens are compact but easy to use, with mosaic designs over many benchtops. And the view is spectacular: the Adelaide Hills rise to the east and the shoreline stretches out to the west, giving residents a wonderful sense of the landscape and their place within it.

The dwellings are good value for money, with a planned life of 100 years, compared to about 50 years for conventional houses. The shells have been designed to sustain repeated renovation of interior spaces. Energy savings are significant: bills for a three-storey strawbale cottage are 50 to 90 per cent lower than average, depending on the season.

Joan, a resident of one of the townhouses, says, "We have to be able to live sustainably in cities.

A lot of people say 'Oh, you can go off to the bush and live on the land, where you can grow your own food and not impact on the environment,' but more and more people are living in cities worldwide." Christie Walk, with its focus on non-toxic materials, self-sufficiency and passive heating and cooling, is a living model of how good design can produce inner-city spaces that are healthier for both people and the environment. ←

For more information:

Urban Ecology Australia
www.urbanecology.org.au

- Designer:** Paul Downton
- Builder:** EcoCity Developments – stages 1 & 2
 Tagara Builders – stage 3
- Location:** Adelaide, SA
- Key Features:** 40,000 litre rainwater tanks
 Solar hot water
 5,000 litre grey-water system
 Double-glazed windows
 Non-toxic construction materials and finishes
 11.1kW grid-connected photovoltaic power system (in development)
 Roof garden and community garden

Breathing easy



The light fantastic

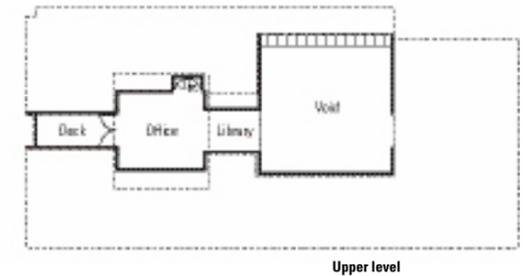
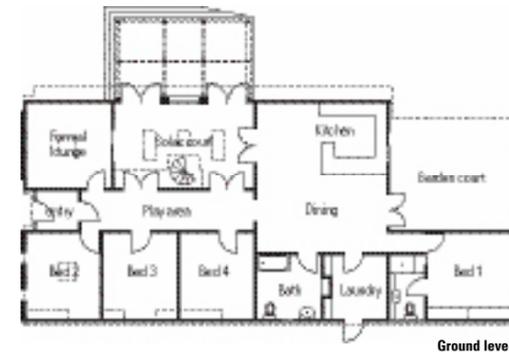
This radiant home proves you don't have to be rich to enrich your environment.

In an age when McMansions dominate the landscape of new suburban housing estates, it's a welcome relief to discover the home designed for Jan and Cath Brandjes in an estate in Sunbury, near Melbourne. This house is proof that comfortable, attractive, sustainable houses are affordable for everyone, even first-home buyers.

Designed by architect Bridget Puszka from BP Architects, the house has been designed to make

the most of the expansive views of the surrounding hills. It is distinguished from its neighbours by its unique roof profile, a reference to the nearby historic buildings of Victoria University.

It's not a large house, only 230 square metres on a block measuring 556, but the space has been efficiently planned so that there is ample room for two adults, three children, a library and an office. Features like the double-height cathedral ceiling in



← High windows upstairs in the library and office induce a stack effect which helps exhaust hot air.



the kitchen and dining room, and the glass walls of the solar court, give the house a spacious and open feel.

The front of the house faces west, so the windows overlooking the street have been carefully sized to avoid overheating in the afternoon. The indoor and outdoor living areas are on the northern side of the house for optimal solar access. "Having come from the Yukon in Canada where it is often cold and dark, it was very important for us to have lots of natural light," says Jan.

Eaves shade the northern windows in summer, and the indoor sunroom has three double-glazed argon gas filled skylights that can be opened, and

are protected by reflective solar film. A solar pergola has angled overhead slats to cut out the strongest sun and maximise the space for outdoor dining. All the external windows and doors have been double-glazed. "Double-glazing is not the most affordable part of your home, but I think it's worth the money. You can sit close to the glass in winter and not feel cold, and good glazing reduces your energy costs," says Jan.

To control the cost of double-glazing, Bridget assessed the placement and function of all windows to see if they required double-glazing. "All windows require insulation or covering to stop heat transmission, and heavy drapes and pelmets is

another way to insulate windows," says Bridget.

Living in energy-efficient houses is not a new experience for Jan and Cath who have a strong commitment to sustainability principles. A builder himself, Jan acknowledges, "The three most important things to get right are passive solar design, good insulation, and sealing the building envelope".

"Putting in adequate insulation is relatively cheap, and one person can 'seal' your house in half a day at a cost of about \$300," says Jan. By sealing, Jan means blocking up all the cracks, gaps and holes in the building that admit draughts and let heat escape. This process can take a tradesperson



Best in show

This cutting edge house has generated interest in sustainability for thousands through its eco-ambience.

“Smart, functional design is achievable and can be applied to any project regardless of scale or budget”



The great 20th century French architect, Le Corbusier, called the home “a machine for living”. As we become more attuned to thinking about how we can reduce our impact on the planet, from more energy efficient cars to star ratings on electrical appliances and eliminating the ubiquitous plastic bag from the weekly shopping, it is a strange oversight that the family home has not been afforded the same kind of scrutiny.

The Subiaco Sustainable Demonstration Home, in the inner-Perth suburb of Subiaco, aims to go part of the way to rectifying this situation. Designed by Griff Morris and Ken Wibberley of Solar Dwellings in association with Dr Elizabeth Karol, the house was built to teach the local community the principles of

sustainable design and construction. Home owners, renovators, community groups and even school children can wander through and learn about passive solar design, energy and water efficiency, and other concepts that can reduce the cost of the home to both the owner and the environment. The project was a collaborative effort between the City of Subiaco, state government departments, universities and business sponsors.

City of Subiaco CEO, Chester Burton, says the initiative has been well received by all. “Messages written in the guest book reveal a substantial level of enthusiasm for the project and genuine interest in smart design.”

According to Chester, the City of Subiaco already

had a reputation for being a leader in sustainable living and this was a next, logical step. The Subiaco Sustainable Demonstration Home was the first sustainable display home built specifically for public education in Western Australia.

The house was built **on the site of an old cement factory in central Subiaco, with new and recycled materials, for around \$300,000**. It has proved a far wider success than initially envisioned. “Since opening, more than 16,000 people have visited the home including a number of international guests,” says Chester. The house has also won a number of national and state housing industry awards.

Building designer Griff Morris explains that the house is intended to look just like any other house.

Well blow me down

The upstairs study provides a quiet and light space to work.



Channelling the prevailing winds, this house is inspired by its surrounding environment.

This house designed by Morris-Nunn and Associates is environmentally sustainable design with a twist. Situated in a long valley 10 minutes south of Launceston, Tasmania, it rises out of the landscape as a sensuous curve. This part of Tassie can be particularly windy and the house is a representation of the prevailing nor-westerlies; it bends and twists along a lengthy axis as if it were channelling the breeze. According to Robert Morris-Nunn, the aim was to create "an appropriate poetic expression of the landscape and the forces of nature".

Imagine the footprint of this house as a dragonfly, if you will. The formal entrance is on the southern side of the home, located at the nexus of the abdomen and the left wing of the metaphorical insect. **The fluidity of the form should not be mistaken for architectural fancy. It serves a stated purpose.** The axis is a stretched 'S' shape that allows the house to nuzzle into the landscape and provides protection from the wind. The solid rear wall along the southern perimeter acts as thermal mass, storing warmth when it is available and releasing it slowly back into the home. ↓

- Designer:** Gareth Cole
- Builder:** Jim Hamilton
- Location:** Sydney, NSW
- Key Features:** High use of thermal mass
Recycling of old house materials
Laminated glass windows
Heat pump hot water system
Fixed and motorised sail for shading

water unit outside and heat the camellias, but we put it in the laundry and minimised the need for a dryer in the house," explains Gareth.

The efficiency of this house really is something to behold. There is no need for airconditioners and the home owners sometimes have quarterly power bills of as little as \$35.

But it's not just the meagre accounts and the increased value of the house that are pleasing. "We've designed a house that has the peace, tranquility, light, space and natural, non-airconditioned comfort the owners required,"

Gareth says. It is also a house that shows what is possible in this realm of design. These concepts are not out of reach of the average homeowner looking to make a difference to their bankbooks, and the environment. ←

“the aim was to create an appropriate poetic expression of the landscape and the forces of nature”



Just inside the front door of the home is the ‘abdomen’; the room Robert calls the “inner sanctum”. It sits to the south of the main living area in a half-circled silo lit by a double-glazed, north-facing Velux skylight in the timber lined skillion roof above. The room has a slow combustion stove at its heart, which acts as a radiant heat source.

To the left of the front door is the main living area. **It features extensive floor-to-ceiling glazing, which makes the rural scenery a part of the internal scheme of the house.** The glazing also serves as the primary method of solar gain, catching the sunlight and drawing it into the room

to collect on the paved concrete slab flooring and the southern wall. It keeps the internal temperature even and comfortable throughout the year. This system is complemented by low-mass insulated timber-framed walls, clad with timber board, and extensive glazing on the northern walls. Robert points out that typically, the higher the mass a material has, the more energy is expended in its production. However, these materials are still necessary for good passive solar heating, and “the combination high and low mass materials minimises embodied energy while maximising passive solar performance.” That these theories can

be synthesised so seamlessly into such a fluid and free-flowing form is a tribute to the architect. For pictorial purposes, this room could be considered the head of the dragonfly.

The left, or western, wing of the home feeds off a corridor and accommodates three bedrooms and two bathrooms. The corridor runs the length of the concave wall, finishing at the children’s domain at the western-most point of the house (and making sure the grown-ups don’t have it all their own way). The kids have their own doorway access to the outdoor area and wonderful views as well. This outdoor area can also be accessed from the main

living room and is cleverly protected from the winds by the curve in the house and a raised mound of earth to the west.

The second wing is at the eastern end of the home, containing the kitchen, laundry, garage and a separate study. The garage acts as an informal entry for deliveries and the like, also performing as an airlock against drafts and heat loss. The study backs out of the house to the east and has its own private view. The morning sun in this part of the world is mild, so shading of the glass in the study was not considered necessary by the architect.

A solar hot water system is discreetly mounted

on the north-facing roof of the second living area and water-saving tapware and fittings are used throughout the house.

Robert explains that summer cross-ventilation is not as important in Tassie as it is in hotter climates. Ventilation here is achieved through opening louvres at the ends of the glass facade and opening glass doors. Other rooms have traditional awning sash windows with chain winders.

With Tasmania’s short daylight hours and colder weather, excessive solar gain is less of a concern, but even still, a bladed roof fans out and salutes the sun, keeping the glass shaded in summer



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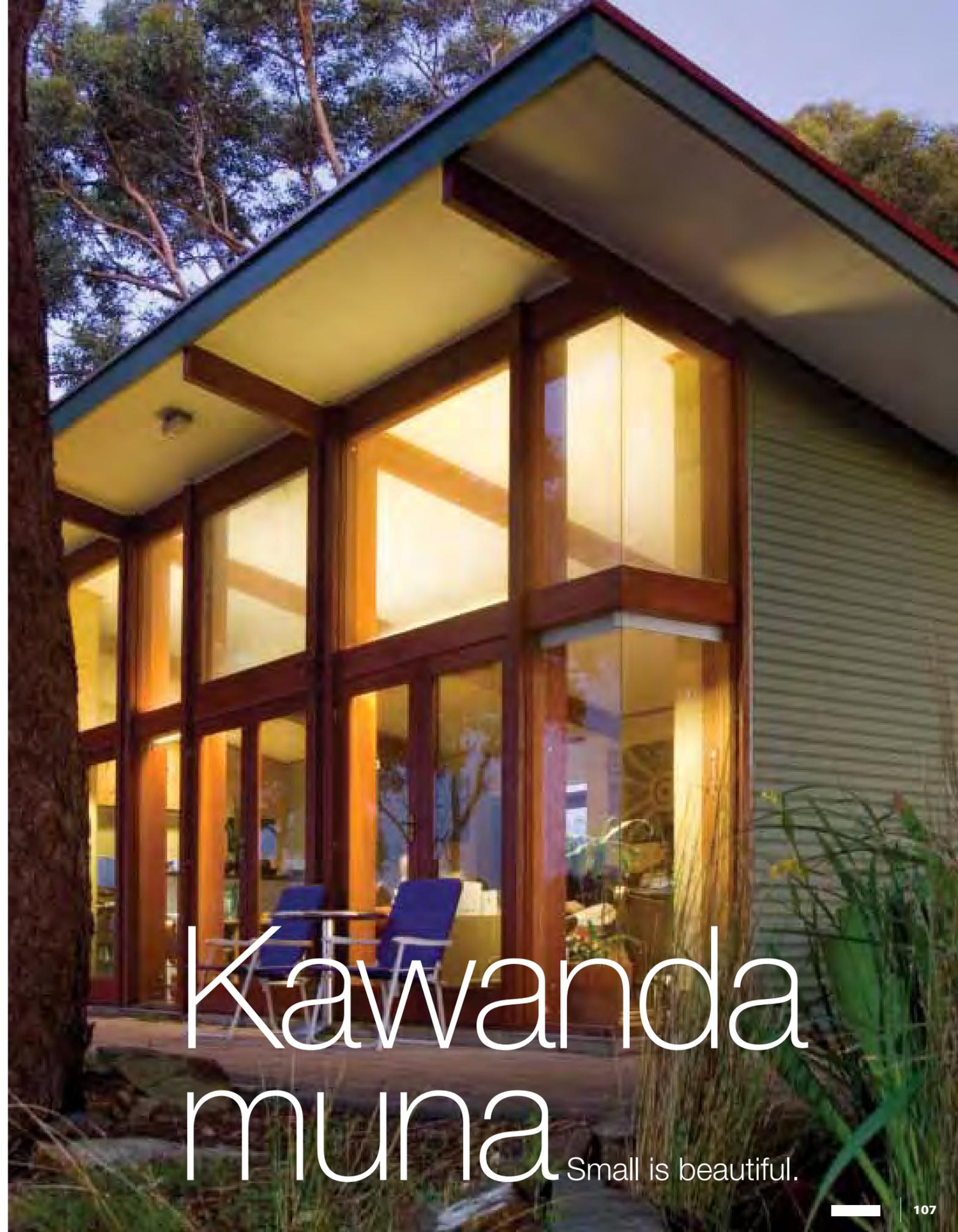


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