

MODERN GREEN HOMES Sanctuary

INSIDE ISSUE 13 120+ green building & renovating solutions; ask our experts; green design books reviewed; life cycle assessment; 51 pages of inspirational & sustainable homes

Summer Eco Style How to Build & Renovate Green

GREEN DESIGN EXPLAINED

Eaves – stop heat
before it gets in

Natural ventilation

Thermal mass

WIN

An Edwards solar
hot water system

IN FOCUS

Create your own
raingarden

PHOTO: KIMBERLY NEWTON
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SUN DRENCHED

Summer holidays along this stretch of the NSW coast are taken in uncomplicated sustainable style – is there any better way?

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ARCHITECTURAL DESIGN CAN BE INSPIRED BY

weird and wonderful things. For Rachael Bourne and Shane Blue, the configuration of their “square doughnut” contemporary beach house (at Seal Rocks, just under four hours north of Sydney) was devised specifically for their children, to keep the goblins out. “We came here often when the kids were younger,” Rachael explains, “and they used to imagine there were goblins hiding in the bushes. So when it came to designing our own holiday home we sought to address this issue. They wanted a sense of security, to know they were safe and that nothing could come in.”

With no dramatic ocean views to consider and a reasonably busy road to shield from, Rachael and Shane drew up plans for an enclosed outdoor space. Loosely based on the idea of a Moorish courtyard house, the modest exterior borders an alfresco core that allows for an abundance of light and air by day and frames the starry sky by night.

The key to the home’s success, both as a weekender and as a holiday rental, lies in its simplicity and functionality. Not having “a heap of money” to spend on the build inspired more creative ideas and practical solutions, from minor touches to major layout.

As a way to increase the floor space and living capabilities economically, 95 square metres of the 225 square metre structure is decking. To utilise the deck area fully and create seamless indoor-outdoor living, roller shutters were installed to most of the inner walls (only the living room has sliding doors). Acting as a fourth wall, they cost less than half the glass alternative and open up one hundred percent of the area. With all beds armed with mosquito nets, leaving the shutters up to sleep under the stars is positively encouraged. “It’s like camping in luxury,” says Shane.

The outdoorsy feel is taken further by the lack of a direct water supply and town sewage system. Instead, all waste is treated on-site and all water is collected and stored in four

huge tanks for drinking, washing and potentially fire fighting purposes. The house also produces electricity via a 1.5kW grid connected solar system.

In keeping with the context of the tiny seaside hamlet, “city” materials (like glass splash-backs and polished stone) were consciously avoided. Instead, locally milled blackbutt decking and custom orb roofing were used, as well as economical, hard-wearing and corrosion resistant materials such as cement sheeting.

“You wouldn’t mistake it for a city house,” says Shane. “It’s just a simple, low maintenance house that suits the setting and encourages leisure.”

Partners in life and business, Rachael and Shane had completed other projects in Seal Rocks, dating back to the late 1990s. They finally began building on their own block eight years after they initially bought it “sight-unseen” from a classified ad. Having worked extensively in the area they were very familiar with the lay of the land and well-informed about any potential complications, be it authority regulations, soil conditions or weather issues. As a result, few mistakes were made and the house was built, on budget, for \$370,000. Having benefitted from experience, knowledge and plenty of thinking time, they admit there is little they would change if they did it over again.

“If we’d had a bit more money to lavish on it,” muses Shane, “we would have thought about putting in a slab floor, to moderate the temperature ranges, and installed a simple exhaust fan to duct the warm air from the fire and funnel it into the bedroom. We can still do that at a later date though.”

The brief was all about getting back to basics but, as Shane insists, “it still has to work well.”

“It’s not difficult to do,” he says. “It’s not rocket science, it’s about thinking through the processes. It’s about considering what you really need, and discarding the rest.”



The wall material is compressed fibre cement sheet which is durable, needs no top coat and requires little maintenance. The sheets are fixed with stainless steel screws. The dimensions of the cement sheets were instrumental to the design of the house, which was worked out dimensionally from the width of a sheet — 900mm plus a 10mm gap — reducing costs and product wastage.



Roller doors were chosen instead of glazing for many openings onto the courtyard. According to Shane, "We had a tight budget, and while a 4.2 metre wide glazed door suite is \$2500, a roller door would only be about \$1100 for the same size, with the added advantage of enabling a 100% openable area to the courtyard." The benchtop is Laminex Pillarbox, while the carcass of the kitchen cupboards is E0 MDF. Zinalume sheet was used as a splashback as it's "cheap, easy to clean, and has the unrefined feel we were after". It's also recyclable.



The central courtyard is lit by CFL floodlights. Locally milled blackbutt is used for decking, entry, seating and privacy screening throughout the house.





The living and dining room, painted in Murobond Ripple (green) and Espresso (brown), is lined by a custom-built long day bed. The day bed is topped with seven single futons with recoverable tops so they can be easily washed, and has built-in storage cupboards. The glass doors are fitted with sliding, stacking flyscreens so they can remain open for effective cross ventilation.

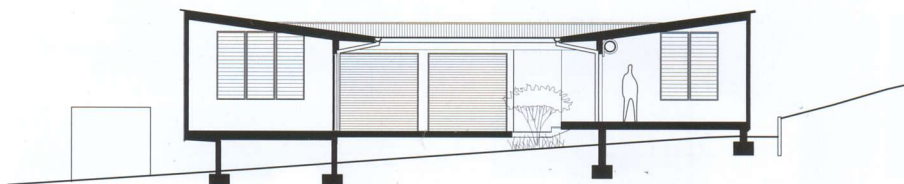
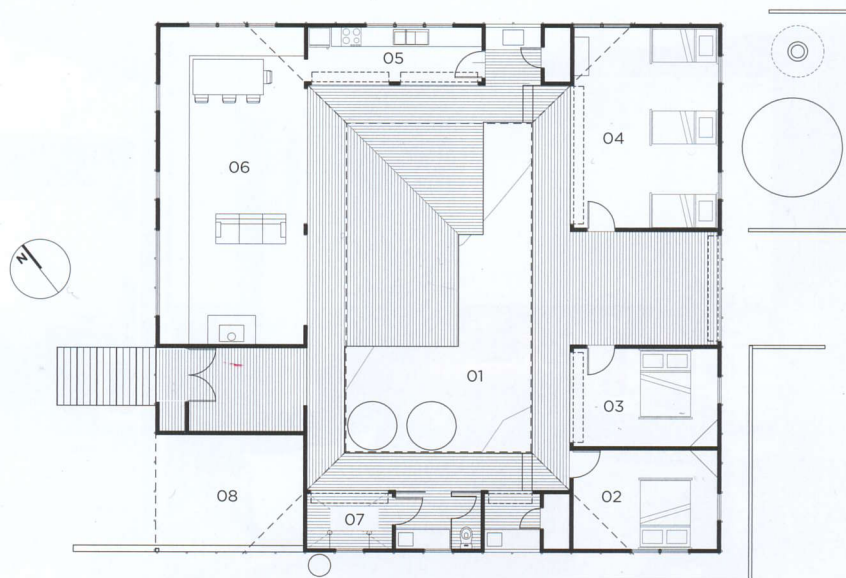


Shelves are made from cement sheet with blackbutt supports. The owners opted for zincalume sheeting behind the showers instead of tiling. The sheets just need a wipe down from time to time, and could last ten to 15 years before needing replacement. The replacement process would also be significantly easier and quicker than that for tiles.

“It’s not rocket science, it’s about thinking through the processes. It’s about considering what you really need, and discarding the rest.”

FLOOR PLAN

- 01 Central Courtyard
- 02 Bedroom 1
- 03 Bedroom 2
- 04 Bedroom 3
- 05 Kitchen
- 06 Living/Dining Room
- 07 Bathroom
- 08 Car Port



The owners bucked trends and opted for a one bathroom house. The water from the shower runs through the timber slats and into a waterproof tray, which then drains to the worm farm waste system. Twelve metres of copper piping was installed for hanging towels, instead of 12 separate towel racks. Copper piping is easily recycled, and is in high demand at recycling centres.

Seal Rocks Residence

Designer

Bourne Blue Architecture

—

Website

www.bourneblue.com.au

—

Builder

Sugar Creek Building
(Bruce Brown)

—

Project type

New building

—

Project location

Seal Rocks, NSW

—

Cost

\$370,000

—

Size

house 130 sqm; deck 95 sqm;
land 800 sqm

SUSTAINABLE FEATURES

Hot water

Quantum Compact 340L heat pump. Heat pumps are a good choice where solar access is limited. They work better when the temperature differential is smaller, so warmer climates make them more efficient; so does mounting them in the sun!

www.quantumenergy.com.au

Renewable energy

Nuenergy 1.5kW grid connected solar system

www.nuenergy.com.au

Water saving

- Three 9000L Maitland Sheet Metal tanks for domestic use, with an additional 15000L for fire fighting
- Pacific Tapware Ecotap range including the WELS 6 star Parade Twin Mixers (\$180) which use 3.8L of water per minute. This range was sourced from savewater! (www.savewater.com.au) which lists a range of water saving products, including tapware www.pacifictaps.com.au
- Doulton Superblock Twin under sink water filter system from Advanced Water Filtration for \$664, including installation www.advancedwaterfiltration.com.au

Passive heating & cooling

Walls insulated with R1.5 batts and anti-glare Air-Cell Glareshield (Ro.14) www.air-cell.com.au

Active heating & cooling

- Bedroom wall fans from Beacon Lighting www.beaconlighting.com.au
- Nectre MKII heater with a 15mm compressed cement sheet hearth www.nectre.com

Windows & glazing

- GJames 050 series aluminium frames (www.gjames.com.au) fitted with Breezeway Altair louvres (www.breezeway.com.au)
- GJames 245 series sliding stacking glass doors, with stacking flyscreens. The doors have been finished with a thicker-than-standard 25 micron clear anodised finish for longevity

Building materials

- Lysaght Custom Orb roofing www.lysaght.com
- Walls lined with 9mm compressed cement sheet cladding and aluminium channels

Paints, finishes & floor coverings

Internal and external no to low VOC paints by Murobond www.murobond.com.au



Seal Rocks Residence

SUSTAINABLE PRODUCTS

HOT WATER DIVERTERS

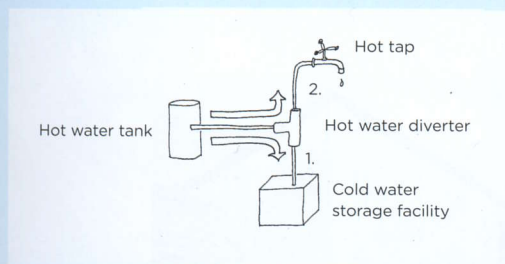
A US-based Chili Pepper water diverter has been used under the kitchen sink in this house.

Hot water diverters divert cold water sitting in the hot water line back into the cold line, hot water holding tank or a nominated outlet such as a water tank or water feature. They can save thousands of litres of water per year.

There are a number of water diverters on the market. Some systems are connected to electric pumps which remain on continuously. These tend to be used in commercial applications such as hotels and are energy hungry. Others are on demand – the pump turns on and off as needed or after activation by the user. The most common system in Australia is based on purely mechanical technology, meaning they require no electricity for operation and instead use thermal switching valves. How do they work? In a nutshell, when the hot water tap is turned on the closed valve pushes the cooled water out through the outlet pipe to the nominated storage facility; as the hot water comes through the pipe the valve simultaneously closes the cold outlet and opens the hot outlet allowing the hot water to flow through the line to the tap. Systems on the Australian market include:

- Redwater Diverter www.redwater.net.au
- Enviro Save Water System www.enviro.net.au
- Ecoverta www.advecotech.com.au

These systems cost between \$170 and \$300, excluding installation. When you're choosing a system, speak to the manufacturer about warranties and maintenance.



1. Cold water sitting in the pipe flows into storage facility
2. Once hot water arrives, the diverter sends it through to the hot tap

WORM FARM WASTE SYSTEM

A&A Worm Farm Waste Systems treat sewage, all kitchen compost and greywater without the use of chemicals. Septic systems can also be retrofitted with this system. The A&A system cost around \$12,000 for this house, fully installed. The architects have installed a number of these systems on different projects and have been very happy with how they perform. "While there is more up-front cost than a septic system, for example, the system is a better result for the environment: it treats all kitchen waste and it is great 'karma' having all sewer and kitchen organic waste treated on-site! Also, the common system in Seal Rocks is pump-out septs, which means a truck comes every fortnight in peak times to pump it out (with cost and environmental implications). By using the worm farm, this is completely avoided, and it may work out cheaper in the long run."

For more discussion of the merits of the A&A system over septic or other blackwater treatment systems, see the ATA's forum at: www.ata.org.au/forums/topic/sewage-treatment-technology-vs-worms and www.ata.org.au/forums/topic/wastewater-treatment-black-and-grey-and-greasetraps www.wormfarm.com.au