

Living Green Designer Homes

Living Green Designer Homes has developed a stylish affordable housing solution – and significantly reduced and offset carbon emissions – in creating this award-winning home.

Small, sustainable – and stylish





Scyon™ Axon™ cladding, PrimeLine® Newport weatherboard and Scyon™ Stria™ cladding feature in this home by Living Green Designer Homes.

Builder Craig Riddle says he's no hippie. He's a pragmatist. And when he set out to create a home that would be affordable, he also realised the importance of sustainable design. Riddle – an accredited HIA Greensmart builder and member of the Green Building Council of Australia – didn't just install solar power and water tanks, he created what he believes to be Australia's first ever carbon neutral home.

Attaining that badge of honour has been a long process involving consultation with manufacturers of building materials, emissions specialists – and some good old common sense. The initial driver behind Riddle's quest to create an affordable and energy-efficient housing solution

was the scarcity of land. "I originally wanted to pursue this direction because I wanted the ability to build more houses on the current stock of land," says Riddle. "That was about three years ago. Land values were so high and they didn't look like they were coming down. I knew I had to achieve a cheaper construction price to be able to produce more homes in the market."

Small is the new big

With the price of land increasing, Riddle wanted to create comfortable, functional homes on smaller lots. He believes that smaller houses, which incorporate passive solar design principles, are the answer. "The hardest thing to achieve is efficiency in a smaller area," says Riddle. "And that's what we've been trying to become the best at. It's easy to make a house bigger – that's a no-brainer. But in a small space, you need to make areas multipurpose."

Riddle says this may involve designing a kitchen so that it opens to the living and dining areas in an "all-in-one" space. "We recognise that when you're having a party, everyone congregates in the kitchen anyway," he says. "We also have more deck space because it's easier to maintain. It's designed to have multiple functions. The ability to go outside is very important and we like to create two decks on opposite sides of the house so that you can capture sun in the morning and afternoon."

Riddle believes his approach is key to the future of the home construction industry. "I am extremely passionate about it and I'm convinced that, whether we like it or not, it's the way of the future," he says.

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Sustainable construction

Smaller houses mean fewer materials are used. However, Riddle has taken this a step further. Instead of being content with the idea that he is using fewer materials – and theoretically contributing to a smaller proportion of waste – he has measured this process at every stage of manufacture, transport and construction.

"We wanted to have minimal impact on the environment so we searched for products that had low embodied energy," says Riddle. Embodied energy is the energy consumed by all of the processes associated with its production, including mining, processing, installation, demolition and disposal. He says the most critical step in the process was creating partnerships with suppliers of building materials.

"We also wanted products where, at the end of the cycle, it would be easy to put them back into the ground," he says, referring to the capability of the materials to be recycled, thus minimising landfill. "We worked with suppliers constantly to reduce waste on the site and also designed our homes with that goal in mind.

"In particular, we found James Hardie® products were easy to use and provided us with comprehensive information about the manufacturing process and the embodied energy in the product," he says. "At the end of the day, it's just a really good product."

Fewer trades, lower costs, faster turnaround

Easy-to-use materials that can serve multiple functions are vital in creating these homes. "We could use one material but it would have three or four benefits," he says, pointing to

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Living Green Design



Using a combination of smart design and innovative building materials from James Hardie, Craig Riddle from Living Green Designer Homes has created what he believes to be Australia's first carbon neutral home.

Scyon™ Axon™ cladding as an example of such a product. "We were looking for materials which you could pick up off the back of the truck and fix them. We wanted to get to a situation where it was 'assemble only' on site."

Apart from creating efficiencies in time, this meant fewer trades were required on site, also reducing costs. "We were also eliminating waste, time and energy," says Riddle. "We have definitely halved the construction time."

In some cases, the construction time has shrunk even further, with one home being "locked up" 10 days after the concrete pads were laid.

To create minimal footprint on the environment, Riddle says it's also important to work with the natural ground level. "We don't use bulldozers and cut-and-fill, so there are

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savings because you don't need retaining walls."

In addition, cost savings have been achieved by reducing the need for engineers. "When you do slab, brick and tile, you need to call in an engineer each time even if the slab is the same as the last one," says Riddle.

"I knew if I could create a system with a standard lightweight assembly process, that would save not only on the engineers but it would also result in a lighter footprint on the environment. By keeping everything lightweight, we have gone a long way in reducing the embodied energy to create the home."

To ensure his approach is measured correctly, Riddle worked with carbon reduction specialists, Climate Friendly. "We had to weigh and measure every material used in the home and calculate and monitor all the transport involved," he says. "Working in conjunction with Climate Friendly, that took us about four months."

According to Climate Friendly, government studies estimate the average embodied energy of a newly constructed dwelling at approximately 0.5 tonnes of carbon dioxide per square metre. Riddle says carbon emissions for his homes are approximately 0.14 tonnes per square metre.



This home, featuring Scyon™ Axon™ cladding, PrimeLine® Newport weatherboard and Scyon™ Stria™ cladding, has garnered interest from a wide cross-section of consumers ranging from those looking for affordable housing to builders of luxury homes.

"Lightweight materials are an essential part of this process," says Riddle. "Not only because they are lighter to transport (which means less energy is consumed at this stage) but also because they have a low embodied energy."

To achieve carbon-neutral status, Riddle has offset the balance of the carbon emissions with carbon credits. He says the cost of buying the credits has not been passed on to the consumer. "We are paying for them and we are able to do that because we've lowered the construction costs."

Stylish and adaptable

While the initial display home, completed in September 2007, is in Kurri Kurri in New South Wales, Riddle says that he has received interest from a wide cross-section of home buyers. "I have nine under construction, 11 in at council and we're designing another 35."

The majority are being built in the Central Coast and Lower Hunter, but he is also building homes in Armidale and Coffs Harbour. "It amazes me that the same little house

has attracted an unbelievable cross-section of buyers. We have an estimator working on two beachfront homes – and they are \$1.5 million deals. Everyone wants the energy efficiencies this home has to offer."

Apart from energy efficiencies, Riddle says another attraction is there are lower maintenance costs. "We've worked with a paint company who has been able to give us a 12 to 15-year guarantee on their paints," he says.

"The homes are smaller and therefore easier and quicker to clean. We've had an overwhelming response from consumers, not only about the lower running costs, but also because it's low maintenance – it frees up their time. They're telling me: 'It's a trendy place to live and we can go out more and enjoy ourselves'."

Riddle has also evolved his building company to reflect his new approach to home design. Operating as Craig Riddle Construction since 1983, he changed the name to Living Green Designer Homes in 2008. "I think our new name represents what we've been able to achieve." ■



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What products were used?

Scyon™ Axon™ cladding

What is it? A vertically grooved cladding panel that looks sharp and smooth, delivering durability as well as aesthetic appeal. Pre-primed and easy to install, Scyon™ Axon™ cladding is a pristine look that lasts.

Where do you use it? In residential applications wherever a modern design is required, including external walls in composite construction, upper-storey and ground-level extensions and internal feature walls.

PrimeLine® Newport weatherboard

What is it? A smooth surface with a distinctive recessed edge that provides the look of a classic 5-inch weatherboard.

Where do you use it? As external cladding on traditional or contemporary homes. Also ideal for ground or upper-storey extensions and to add areas external areas of interest.

Scyon™ Stria™ cladding

What is it? A wide cladding board with a 15mm horizontal joint that has the classic appeal of decorative render. Pre-primed and easy to install, Scyon™ Stria™ cladding is the fast way to achieve a timeless look that lasts.

Where do you use it? In residential applications wherever a classic yet contemporary design is required, including external walls in composite construction, upper-storey and ground-level extensions, and internal feature walls.