

# Sanctuary

MODERN GREEN HOMES

ISSUE 48 | SUSTAINABLE  
HOUSE DAY SPECIAL

Find a green builder; hempcrete home with heart;  
playspaces; budget house from repurposed pods

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## Inside issue 48

### HOUSE PROFILES

## 16 Designer demountable

This reuse project diverted two prefab office pods from landfill to create a holiday house on a low budget.

## 22 Investing in sustainability

Built on a project home budget, this Cairns investment property gets creative with design on a sloping site.

## 30 OPEN HOUSE Outside the box

A prefab Melbourne home pushes the boundaries of Passive House design to capture views and sunlight.

## 36 Sustainable House Day

It's on again! Read more about Australia's largest open home event, and visit the website to plan your day on Sunday 15 September.

## 38 OPEN HOUSE Paying it forward

Having learned from their first home build, this Adelaide family has achieved a high-performing sustainable home that will work for them for the long term.

## 44 Shacking up

A compact and versatile home on the New South Wales mid-north coast makes the most of recycled and reclaimed materials.

## 50 OPEN HOUSE Building community

In Western Australia, a new co-housing development boasts twelve high-performance hempcrete homes, all over 8.5 Stars.

## 56 OPEN HOUSE At home with hemp

This family home makes the most of the beauty and thermal properties of hempcrete, to satisfying effect.

## 62 OPEN HOUSE Elegant infill

Careful orientation and spaces with double functions ensure this home on a subdivided Brisbane block feels larger than it is.



## IDEAS & ADVICE

**66**

### On the drawing board

Architect Matt Elkan muses about beauty and quality in the built environment, and how an appreciation of both has informed his recent work.

**73**

### Finding a green builder

To turn a great design into a high-performing sustainable house, you need the right builder. Here's where to look and what to ask.

**76**

### The gas dilemma

As the electricity grid greens, gas is losing its place as the cleaner, cheaper household fuel choice. Renew's research looks into the best fuel for lowering both your bills and your carbon emissions.

**80**

### Design Workshop

Dick Clarke of Envirotecture offers suggestions for a renovation of a 1950s home in Bellingen, NSW, to connect it better to its large garden.

**84**

### Playspaces

The importance of play is a hot topic in child development circles. We investigate the changing thinking behind playspace design.

**92**

### Are we aiming for the Stars?

New analysis looks at how we're building in Australia today, the Star ratings we're achieving, and what needs to change to deliver climate resilient homes.

## REGULARS

**10**

### Products

**14**

### Reviews

**72**

### Renew update

**91**

### Designers in profile

**94**

### Marketplace

**96**

### Ask our experts



# Designer demountable

LOCATION Walkerville, VIC • WORDS Fiona Negrin • PHOTOGRAPHY Tatjana Plitt



## At a glance

- Salvaged prefab office buildings creatively repurposed and given a new life
- Energy-efficient holiday house achieved on a low budget
- Open living space with minimal partitions allows for flexibility in use
- Multi-function furniture can be moved around and used as sofas or beds

**A canny reuse project diverted two prefab office pods from landfill to create a light-filled holiday house on a low budget.**

While many of us would seize the chance to own a country holiday house, the idea didn't sit comfortably with Donna Coutts. "It seemed wasteful," she says. "It's not the most environmentally sustainable thing to run two households." Then an unexpected opportunity gave her pause.

"Two modular commercial buildings were being decommissioned," she recounts. "They were extremely robust and designed to be used as offices all over Australia, including as far north as Townsville, where there are stringent building regulations for cyclones. So they were very strong and far too good to be scrapped." Reflecting on the low embodied energy of reused buildings, Donna concluded that it "seemed wasteful not to use them."

The small town of Walkerville, with a bucolic mix of farmland and small residential blocks, sits overlooking Bass Strait in south-east Victoria. Donna

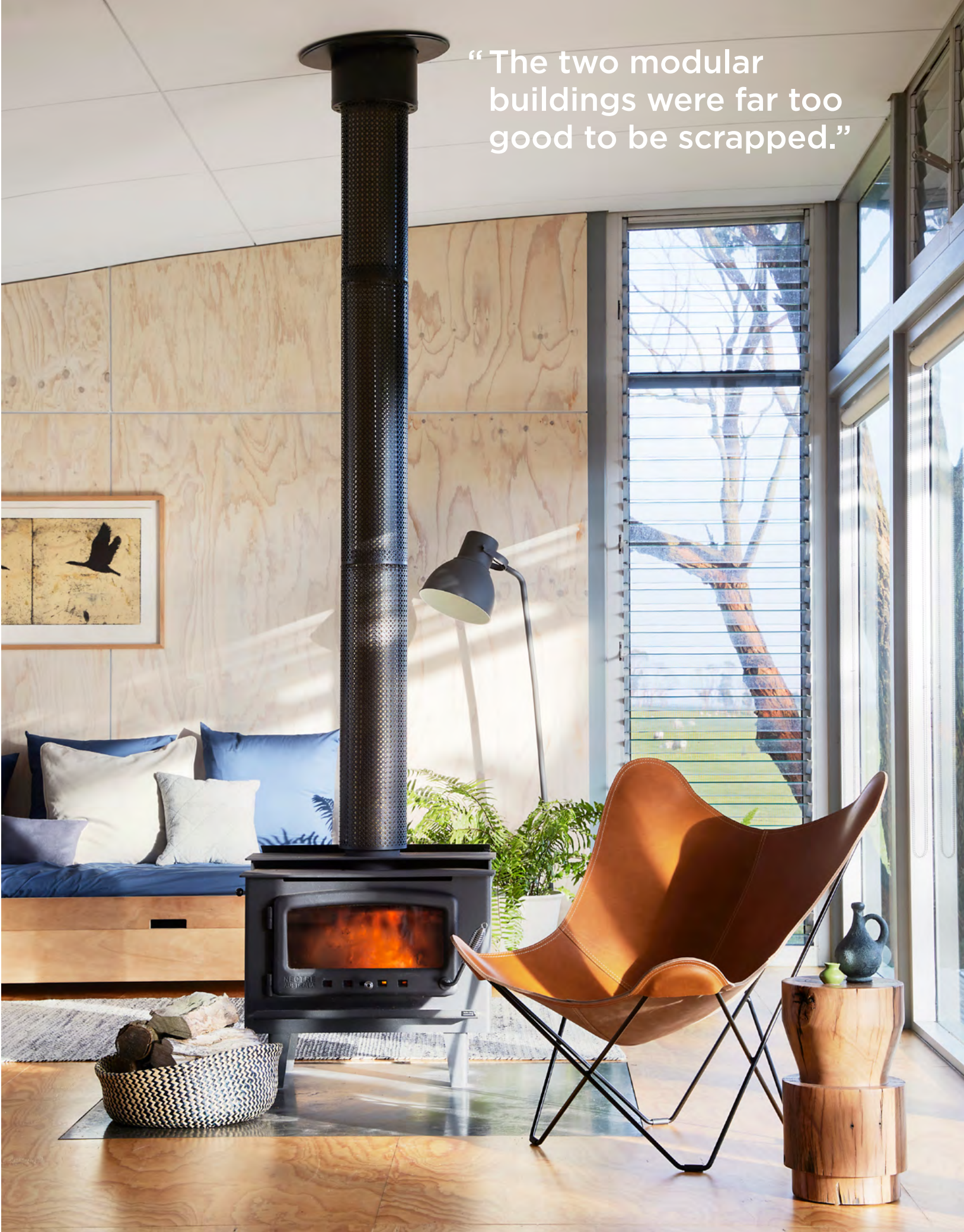
owned a 720m<sup>2</sup> vacant block in the town and, after buying the two office pods, she commissioned NRN Architects in Melbourne to transform them into a holiday house on the site.

Donna had unusual ideas about the design of her holiday house: she wasn't interested in having multiple bedrooms or a distinct living area, or even much storage. She wanted to make maximum use of the prefab buildings and, where additional materials were needed, they were to be "as sustainable as possible and made to last for many generations." The space had to accommodate her large family and guests, and adapt to use over time. Because her budget was tight, expenditure had to be smart. Finally, the site had to meet BAL 29 construction standards.

→

The larger of the two salvaged prefabricated pods was oriented with its extensive glazing facing north for passive solar performance, and functions as a flexible living, dining and sleeping space. Cleverly designed furniture can be configured as sofas or beds.

“The two modular buildings were far too good to be scrapped.”





# Shacking up

LOCATION Charlotte Bay, NSW • WORDS Rebecca Gross • PHOTOGRAPHY Claudia Gabriel-Lim



## At a glance

- Small footprint shack for simple coastal living, designed to suit a range of occupants
- Extensive use of reclaimed and recycled materials, including salvaged park signage and even old skis
- Facilities for outdoor living including breezeway, post-beach shower and carport that doubles as covered games area
- Rainwater collection plumbed to the whole house

**A compact, versatile and functional home on the New South Wales mid-north coast makes the most of recycled and reclaimed materials to create a cabin-like feel.**

The Shack, designed by architect Ian Sercombe, is a compact home purposefully designed to suit a range of people and their varied needs. Ian's partner Kate McLean wanted to build a small investment property that could comfortably accommodate a couple, a single, an elderly person, or a small family – over time that might be Ian and Kate themselves or extended family members, or short- or long-term tenants. They purchased a 2.5-acre block of land in Charlotte Bay on the New South Wales coast between Newcastle and Port Macquarie, and built a super functional and versatile home using local, found and upcycled materials.

Ian designed the house with a wedge-shaped plan influenced by the slope of the site. The rear southern facade sits on the contour of the land to avoid the need for excavation, and the front northern facade extends from the carport at grade, to the living area, bedroom and deck at the eastern end of the house which sits

2.5 metres above ground. Surrounded by bushland, the elevation creates the sense of being in a treehouse and provides space for the rainwater tanks to be located under the house.

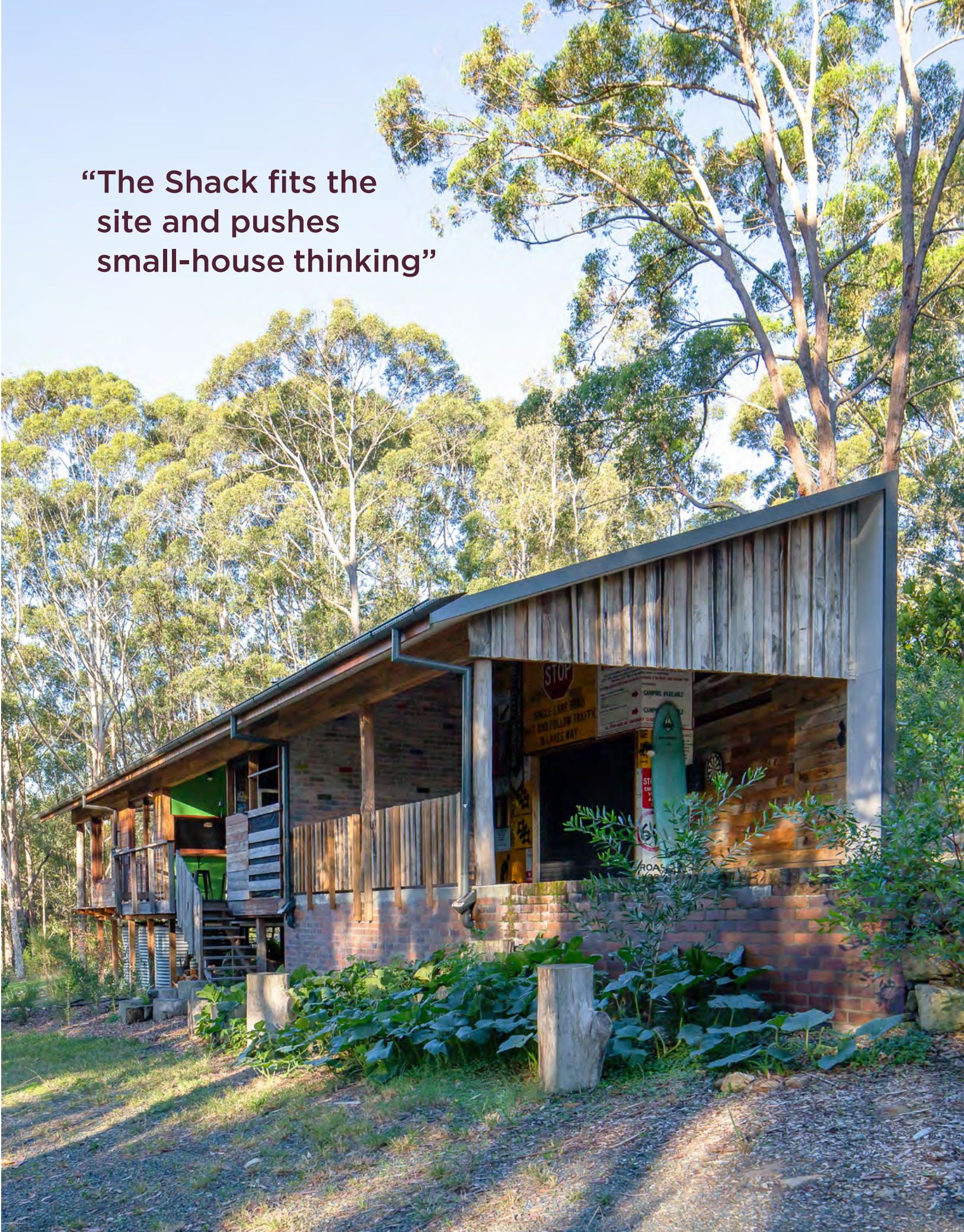
The interior rooms of the house comprise 60 square metres of the building, with the remaining 110 square metres given over to the carport, storage, post-beach facilities and decking. Everything is on one level for easy access by car and foot, and a breezeway in the centre of the house facilitates cross ventilation.

“When it rains, it pours,” says Ian of the NSW mid-north coast, so the covered carport doubles as a games room, with a brick wall and high ceiling allowing for cricket, tennis, darts and netball. The bricks are locally produced, and glazed bricks add a pop of colour. The colour continues in the old signs, given away by the local National Park office, that clad the adjacent storage room. Beyond the brick

→ Ian and Kate's modest shack was designed to be flexible in its use to suit a range of potential residents. A load of salvaged timber Ian sourced from a local mill was used for cladding.



**“The Shack fits the  
site and pushes  
small-house thinking”**





# At home with hemp

LOCATION Chewton, VIC • WORDS Sasha Shtargot • PHOTOGRAPHY Leon Schoots & Shayne Hill



## At a glance

- Striking hempcrete home with recycled timber and rusting steel cladding
- Unrendered internal hempcrete feature wall reflects the homeowners' creativity
- All-electric, energy efficient home with little need for active heating or cooling

Image: Shayne Hill

Opening for  
**Sustainable House Day**  
Sunday 15 September 2019

For more information visit [sustainablehouseday.com](http://sustainablehouseday.com) and search for 'Chewton Hemp House'

**This family home in central Victoria makes the most of the beauty and thermal properties of hempcrete, to satisfying effect.**

When Brenna Jensen and Dominic Crinson's house build was underway, prominently positioned on the main road through the hamlet of Chewton near Castlemaine in central Victoria, passing motorists would often stop and wander over, keen to know more about what they were doing.

What was the building material that was being busily mixed, tamped and used to create the walls of the house? Was it rammed earth? "Once or twice we had people who came past and recognised that it was hemp," Brenna says, "and they were so delighted."

The signature feature of the Chewton Hemp House, as the couple have called their project, was a work of love for them and their three small sons, friends and other volunteers who built the hempcrete walls over nine months in 2018. The project was a collaboration between the owners and fledgling local design-build business House Workshop, with local cabinetmaker and artist Mark Anstey

designing and building the kids' bedroom and kitchen cabinetry.

Facing sweeping bushland at the rear, Brenna and Dominic's house has a strong presence and sits comfortably in its environment thanks to the unrendered hempcrete walls and weathering steel cladding that echoes the colour of the red ironbark trees that are prominent on the site.

Inside, a short corridor leads to the children's room, which has a plywood mezzanine where the couple's sons sleep. Cupboards for toys are cleverly built into the stairs on either side of the room. There's a tiled bathroom for the children and a laundry on this side of the house.

Walking in the other direction you are greeted by a stunning hempcrete wall enhanced by wavy coloured oxide patterns from the layering process of its creation and the inclusion of earth and other materials in the mixture. The wall acts as a divider, hiding a quiet office space for Dominic away from the hustle of the living room and kitchen. A playful opening in the wall accommodates a feature leadlight window; in another opening around the corner, facing the expansive open plan living and kitchen area, a rack of textile yarn can be swivelled around to reveal a screen for entertainment. A fireplace is set





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In the centre of the beautiful hempcrete feature wall, a display of yarn spools pivots to allow the screen behind it to be viewed from either the living room or the study, tucked on the other side of the wall.

Image: Leon Schoots

→

The parquet floor in the kitchen was made using salvaged timber offcuts. Deciduous vines will eventually cover the pergola outside for summer shade.

Image: Leon Schoots





## ON THE DRAWING BOARD:

Of lovable, well-made things

WORDS Matt Elkan



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The new extension at the Navigator's House overlooking Sydney's North Harbour replaces a dark, cold 1980s lean-to addition. Light-filled and connected to the landscape, it benefits from the existing brick and sandstone walls that were integrated into the new design, and we hope it sits alongside the original house as an equal. Image: Clinton Weaver

Inaugurating our new series *On the drawing board*, architect Matt Elkan muses about beauty and quality in the built environment, how they contribute to longevity, and how an appreciation of both has informed his recent work.



After nearly fifteen years of running a small architectural practice focusing largely on low impact environmentally sustainable houses, I had a 'penny drop' moment last year that has had me reconsidering the value of beauty and quality in the built environment.

For most architects, beautiful things are a bit of an addiction. We love to surround ourselves with them. We like to think we can help to create them. But deep down I've always had a nagging suspicion that maybe beauty is just a whimsical thing of no real lasting value. Certainly it has been hard to link beauty and sustainability in my mind. You could have one or the other, or perhaps sometimes both. But I had never come to any firm conclusions about how intrinsically linked they are. Until recently.

In the past nine years our practice has designed five rear additions to old houses in Sydney. Each project involved an original house of somewhere around 100 years old, with a rear extension added in the 1970s or 1980s, and in all five cases we were engaged to remove the recent addition and design a new one of (hopefully) much higher quality and beauty in its place. The moment of realisation – that only dawned after tackling a number of these similar problems – was that at no point in the design process of any of these projects did anyone consider demolishing the old part of the house and keeping the late twentieth century part.

None of the clients were particularly sentimental about built heritage, and there was no overt philosophical discussion about conservation of old buildings. But it was so obvious that the old parts of the houses were things of quality and the additions were defective at a number of levels, that the idea of keeping the

newer parts of the houses at the expense of the old would have been considered a bit crazy.

And this was the point that got me thinking. Beauty and quality are of value because we preserve the things we love. Forget heritage laws which mandate conservation. Think instead about the conservation we do because we want to, because it's logical.

When viewed from the perspective of sustainability, preserving buildings longer means building less often, which in turn means less waste and less energy and material consumption. A lot of energy and resources go into the manufacture and transport of materials used to construct a home, yet eventually most of these materials end up in landfill: according to *Your Home*, around 42% of the solid waste generated in Australia is building waste. Research by CSIRO has found that the average house contains about 1,000GJ of energy embodied in the materials used in its construction. This number will obviously vary greatly according to the size and type of house, but amounts to a significant proportion of the total energy used in the house during its life.

As an indication, the average NSW household uses approximately 5550kWh (or approx 20GJ) of energy per year. So, the embodied energy in construction is equivalent to 50 years of normal operational energy use. To put it another way, if a house lasts less than 50 years, there was probably more energy used to build it than it used in its life. Using materials with less embodied energy and choosing materials that can be recycled or reused will obviously improve this equation. However, this must surely also push us toward long-term thinking in what we build and



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The owners of the Navigator's House fell in love with its location and the beautifully built brick and sandstone cottage, which is well over 100 years old. Our job was to design an extension of similar quality.

Image: Clinton Weaver



## GREEN BUILDERS:

How to choose the right person to construct your home

**WORDS** Jenny Edwards, Light House Architecture & Science



Image: Ethan Dowley

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Good builders are good communicators who enjoy helping their clients achieve a great result; they should be happy to answer your questions.

**To turn a great design into a high-performing sustainable house, you need the right builder. Jenny Edwards explains where to look and what to ask.**

So you want to build the sustainable, energy-efficient home of your dreams or renovate your place to make it more liveable and better performing. Perhaps you've already got a design you love. What next? How do you find a builder who will understand your values and deliver the kind of home that you want?

### CHOOSE A DESIGNER FIRST

No builder, on their own, is the complete solution to getting a great home. Their job is to turn a house design into reality, although a great builder does a lot more than interpret and action the plans and specs. They pay attention to detail, infer where detail is lacking and may solve myriad problems that the designer didn't cover. A huge part of their expertise is project managing: understanding and scheduling what needs to happen when and how it should be done. But the point still stands. A builder's expertise is building, so if you want a great, sustainable, energy-efficient house, the first person you should seek is not a builder, but a designer.

Be aware that there are big differences in qualifications between architects, building designers and draftspeople. All three of these professions will produce building plans, but they vary enormously in their contribution to the design.



## THE HOUSEHOLD GAS DILEMMA:

What's really the best fuel for lowering both your bills and your carbon emissions?

**WORDS** Dean Lombard and Damien Moyse, Renew Energy Policy team

**As Australia's electricity grid greens, gas is losing its position as the cleaner and cheaper fuel choice for households. In fact, by installing gas appliances, many people are locking themselves into higher bills and emissions compared to choosing an all-electric home, as Renew's ongoing research shows.**

Choosing gas or electricity for your home's key energy uses of heating and hot water, along with cooking, is an important and complex decision with significant implications for both your hip pocket and your household's emissions footprint.

For the first half of the 20th century, there was no choice – only electricity was available, though wood or kerosene were also options. In the latter part of the century, gas became an increasingly popular choice as gas networks were built and offered a cheaper option. The 21st century has seen the development of higher efficiency electric appliances for heating, hot water and cooking, along with the ability for a household to power them from its own solar electricity. So what is the picture now? When building a new home, should homeowners and designers avoid specifying gas appliances altogether? What about existing homes when gas appliances need replacing?

The Energy Policy team at Renew has been exploring this question of household fuel choice over the past five years, both from an economic standpoint and from the perspective of household carbon emissions. In this article we explain our latest findings and offer some advice on when gas appliances should not be specified and where the decision is less clear.

### THE ECONOMICS

Our initial study into the economics of gas versus electricity for households in 2014 found that:

- It is not cost-effective to connect a new home or an existing all-electric home to mains gas when efficient electric appliances are an option.
- It is significantly more cost-effective to replace gas heaters with multiple reverse-cycle air conditioners for space heating.
- In warmer climate regions (including SA, QLD and some parts of NSW) switching all gas appliances to efficient electric and disconnecting gas offers better economic returns than in cooler climates.
- Heat pump hot water systems are more cost-effective than gas



Image: Marnie Hawson

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For new builds with solar PV, such as The Bungalow in Cape Paterson, Victoria, our research shows it's always more economical to avoid connecting gas and go all-electric. In most areas it is the best choice for lower emissions too. This home will be open on Sustainable House Day 2019.

systems where the relative price of gas compared with electricity is higher and/or where the climate is warmer. Mains gas hot water systems remain more cost-effective in most other locations.

Last year we refined and updated the research, and for the first time took into account the use of on-site solar PV. The new study modelled five typical household types – a small household, two medium ones with different daily fuel usage patterns, and two large ones (an existing 3 Star home and a new 6 Star home) – in 16 different locations around the country. This allowed us to understand the impact of different climate conditions, household size and behaviour, dwelling energy needs and local gas and electricity tariffs on the overall picture of energy costs.

For the most part, the 2018 study reinforced our earlier findings, particularly in relation to new homes and the value of



# Playspaces

## Child's play gets serious

WORDS Chris Crerar

**The importance of play is a hot topic in child development circles. We investigate the changing thinking behind playspace design and how playfulness can be incorporated into all kinds of spaces, both public and private.**

Have you ever thought about how important opportunities for play are in your neighbourhood? The community in Eltham in Melbourne's bushy north-eastern suburbs was forced to think deeply about the subject in December 2017 when the much loved 25-year-old Eltham North Adventure Playground was burnt to the ground.

Innovative when it was first built, some wanted the playground to be rebuilt exactly as it was, but others saw

an opportunity for some re-evaluation. For Nillumbik Council Mayor Karen Egan, the fire highlighted community spirit and encouraged locals to think deeply about what they valued. "Our community was devastated when we lost the original playground, but despite this, everyone came together to rebuild this much loved park," she says. After a collaborative redesign process, the playground was rebuilt closer to the bush and Diamond Creek, allowing for more exploration in nature, and it was made more inclusive and accessible to all in the community.

### THE IMPORTANCE OF PLAY

As the Eltham community's experience shows, the way we think about play has evolved in the past couple of decades. Concern about growing urbanisation, the spread of digital technology and increasingly sedentary lifestyles has generated much research into the importance of play and types of play, and it has emerged as fundamental to the development of healthy children along their path to adulthood.

Australian playspace designer and commentator Fiona Robbé believes that 'deep' unstructured play is crucial to our cognitive development. "Play is a means of learning to live, an interactive exploration

of the possibilities of this world and our place in it. Instinctive, voluntary, spontaneous play is vital to develop the potential of all children," she says.

### GETTING BACK TO NATURE

Among all the different ways we can play, it is nature-based play that has exploded in popularity across Australia over the past few years, in our neighbourhood playgrounds, our schools and even at home. Often incorporating constructed water courses, uneven rock and timber surfaces, insect and bird attracting plantings, and loose materials such as sand, pebbles and mud, these emerging innovative spaces facilitate an engagement with the natural world that researchers in the child development space say is crucial to the healthy growth of children's minds and bodies. As Richard Louv, prominent American writer and thinker on play and creator of the term 'nature-deficit disorder', says: "Time in nature is not leisure time; it's an essential investment in our children's health – and also, by the way, in our own."

Moreover, the provision of natural spaces that facilitate open-ended and unstructured play has been shown to encourage healthy risk-taking, collaboration and problem solving,

←  
At the award-winning playspace at Bangalow Weir Parklands in NSW, 'play equipment' is minimal. Instead, the design focused on encouraging exploration and discovery of the natural spaces. Image: Natalie McComas









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