

Sanctuary

MODERN GREEN HOMES

ISSUE
47

SUSTAINABLE
MATERIALS SPECIAL

Next level glamping; upswitch your lighting;
upcycled glasshouses; do you need MVHR?

WIN

A TCK Solar
sponsored Tesla
Powerwall 2
valued up to
\$15,000

Offer open to Australian
and New Zealand residents.
Details page 41

Cladding

How to get it right

PUBLISHED BY **renew.**
WINTER 2019 • AU/NZ \$12.95
SANCTUARY.RENEW.ORG.AU

ISSN 1833-1416



9 771833 141000



Inside issue 47

HOUSE PROFILES

We visit houses across Australia where sustainable materials were at the heart of the design brief.

16 Tune up

A U-shaped house on a tight Gold Coast block optimises privacy and creates secluded spaces to sit, depending on the sun and season.

24 Urban lifecycle

Sustainably sourced materials meet passive solar design in the custom renovation and extension of a period Melbourne cottage.

30 Raw materials

Raw and prefinished materials are used with great effect for a contemporary farmhouse near Margaret River.

36 An uplifting prospect

An exceptional block of land called for a special kind of home, and that's what architect Brian Steendyk delivered at Bellbird Retreat in rural Queensland.

42 Elevated thinking

A compact family home is a striking anomaly in Perth's beachside Coogee, where the trend is towards ever-larger houses on shrinking lot sizes.

48 Testing ground

Experimenting with hempcrete for a flexible studio has helped owner-builders finetune their design for a future family home.

54 Glorifying tents

Sustainable architects are drawing inspiration from age-old tent designs – including Moroccan Berber and classic pitched scout tents – and the results are spectacular.



IDEAS & ADVICE

60 Materials frontier

Dick Clarke uncovers new composites that reduce carbon, interrupt waste streams and reassemble themselves.

64 From waste to product

How inventor Veena Sahajwalla is designing waste out of the economy.

66 Cladding: getting it right

What you should be considering when choosing the cladding for your sustainable home or renovation.

72 Light saviours

Three lighting experts provide rescue remedies for poor lighting design.

75 Airtight design meets MVHR

Jenny Edwards explains when mechanical ventilation with heat recovery is really needed.

78 Buyer (still) beware

We have a new building code, so why are consumers still being short-changed?

82 Design workshop

Paul Worroll of Reddog Architects suggests an alternative pavilion renovation idea for a 1950s brick home.

86 Upcycled glasshouses

Inside five home conservatories built using reclaimed materials, including single glazing.

REGULARS

10 Products

14 Reviews

53 Renew update

93 Designers in profile

94 Marketplace

96 Ask our experts

Tune up

LOCATION Gold Coast, QLD • WORDS Rebecca Gross • PHOTOGRAPHY Andy Macpherson



At a glance

- Rebuilt to raise it above the 1-in-100 year flood level
- Rooms arranged around a central courtyard to maximise privacy, solar gain and cross ventilation
- Large proportion of materials reclaimed from original house; new materials chosen to be low-maintenance
- Extensive insulation reduces heating/cooling requirements.

A U-shaped house on a tight suburban block optimises privacy and passive solar design and creates secluded spaces to sit, depending on the sun and season.

Gold Coast residents Kim and Steve Woolley wanted a U-shaped house in order to have private spaces that wouldn't be overlooked by future three-storey neighbours. The couple engaged Rob Norman of Symbiosphere having seen a similar house profiled in a magazine. Symbiosphere's approach to architecture focuses on achieving better environmental outcomes, and a U-shaped house not only provides privacy, but brings natural light, ventilation and views into every room.

"A long, thin, north-facing rectangular house is optimum for passive design in subtropical climates. But a U-shaped house provides a more compact, alternative model when space is limited," says Rob.

Diesel's House (named for the Woolleys' dog) replaces a 1960s fibro beach house, which was removed due to asbestos and sitting below the 1-in-100-year flood overlay. Located on a busy main road, it has the benefit of a north-facing backyard.

The house is symmetrical from the

street with two deep, covered porches, screened by recycled bearers and joists reclaimed from the old house. One porch is the front entrance, with steps that negotiate the elevation of the house and provide a place to sit and take off shoes. The other porch offers a south-facing seat: "The best place to sit in summer," says Steve. It looks across a courtyard through the carport (a simple flyover roof on four posts) to a bamboo hedge providing a natural screen to the street.

Rooms are arranged into a U-shaped plan around a central courtyard and a roofed deck runs along the north of the courtyard. All rooms have doors opening to the courtyard: the dining room sits to the south, the living, kitchen and laundry to the west, and two bedrooms and a bathroom to the east. The master suite is a mezzanine above the dining room, and a skinny double-height void between the bedroom and glazing allows for greater light, ventilation and sense of space. It also offers one of Kim and Steve's favourite outlooks – of the courtyard, verandah, swimming pool and tree canopy, with the verandah roof strategically blocking the neighbour's house.

The courtyard is the natural focus. Timber decking wraps around sunken and suspended gardens designed and developed by Bryson Wernick of Wernicks Landscape. A fish pond sits below the deck



Urban lifecycle

LOCATION Fairfield, Victoria • WORDS Anna Cumming • PHOTOGRAPHY Emma Cross photographer

Sustainably sourced materials meet passive solar design in this custom renovation and extension of a period Melbourne cottage.

When Ella and Dave were planning the renovation and extension of their small, badly performing 1920s weatherboard cottage in Melbourne's inner north, they knew what they wanted in terms of function and feel. "We wanted a bit more space, flexibility, light, and a much better connection with the back garden," says Ella. "It was also important that the house was sustainable, energy efficient, easier to heat and cool."

They were less clear on the specific materials for their rejuvenated home, however, and instead chose to rely on the expertise of their designer, Shae Parker McCashen of Green Sheep Collective. "We chose Shae after seeing another of her projects," says Dave. "We knew sustainable design and specifying sustainable materials was the way she worked, so we were able just to trust her suggestions."

Considering materials from a whole-of-life embodied energy perspective,

including manufacture, transport required, expected lifespan, and post-use responsible disposal, is important to Shae, and an alignment of these values is part of how she selects builders to work with. "The first step is always, how little can we demolish?" she says. "For this project, it was just the lean-to bathroom and laundry, and the guts of the old kitchen. The builder Tim Martin recycled everything he could from the demolition, offering things for free on online marketplaces and so on." Tim also used Transcycle to dispose of general construction waste – this service recycles 95 per cent of materials.

Shae then went about designing the renovation with minimal intrusion into Ella and Dave's prized back garden, while protecting a mature magnolia tree. A new bathroom, toilet, and flexible room – currently a study, but it could be an extra bedroom – were tucked between the house and the southern boundary. The slightly enlarged kitchen now opens straight onto a large deck, accessible also from a new north-facing 'sunken' living and dining area with a soaring angled ceiling, that gives the family the extra space they were looking for.



At a glance

- Materials chosen based on full lifecycle assessment
- Engaged builder 'deconstructed' rather than demolished parts of the original house
- Period house revamped to extend its life and functionality and achieve 5.3 Star energy rating
- Pet-friendly design with dedicated cat run.



House and garden wrap around each other, offering great visual and physical connection between spaces.



Glorifying tents

Sustainable architects are drawing inspiration from age-old tent designs – including Moroccan Berber and classic pitched scout tents – and the results are spectacular.

WORDS Fiona Negrin



THIN SKIN

Getting building cladding right

WORDS Anna Cumming



↑ “Practical and low maintenance” were key elements of the brief for this Austin Maynard-designed family home in Melbourne. The walls are clad in a combination of spotted gum shiplap timber with Intergrain natural oil finish and slate tiles in a variety of patterns. Slate is more commonly used for roofs as it is extremely durable and requires no ongoing upkeep. Combined, the two materials create an eye-catching aesthetic for the home; this and weatherproofing are the main roles played by cladding. Image: Peter Bennetts

Cladding has become a controversial topic recently, but every building still needs a skin. What should you be considering when choosing the cladding material for your sustainable home or renovation?

Just like humans, every building needs a skin. And just like our skin, a building's cladding is an interface with the outside world: it protects what's inside and contributes to aesthetics.

While some wall construction systems can act as both structure and skin, such as core (or cavity) insulated brickwork



↑

Corrugated steel is something of an iconic Australian cladding material, seen everywhere from hundred-year-old farm buildings to contemporary extensions like this one by Zen Architects. Available in a range of profiles, it balances its high embodied energy with excellent durability, very low maintenance and high recyclability. As it's a vapour barrier, it must be installed with a breathable cavity to avoid condensation problems. Image: Emma Cross photographer

←

'Natural edge' weatherboards clad this house, by Zen Architects, set in bushland at Jan Juc, Victoria. The boards are radially sawn from the log, minimising wastage, and will weather naturally to grey. Image: Sharyn Cairns

LIGHT SAVIOURS:

Ways to upswitch your lighting



↑

Achieve Design and Mint Lighting collaborated to bring transformative lighting to this new home. “People spend a lot of time understanding quality carpet, stone, paint, craftsmanship et cetera,” observes Adele Locke, director of Mint. “But the assumption is that a light is a light. While that might have been true 10 years ago in the residential market, it’s a very long way from the truth now.”

With so many lighting products to choose from, why are most homes – even sustainable ones – still so poorly lit? We ask three lighting luminaries for their advice on how to avoid the ‘she’ll be right’ status quo.

Lighting is given a surprising lack of attention in new home and renovation projects. Even at *Sanctuary*, where naturally lit energy-efficient houses feature on every page, we can struggle to glean project information beyond “LEDs used throughout”.

Why are so many people hands-off when it comes to lighting their homes?

We consult three lighting experts, each from a different background, to gain their insights and advice on how to achieve more sustainable lighting design.



↑↗→

"Lighting can say a lot about your personality, adding unique character or a bold statement to any space," says Michael Hanley. "Consider the overall style of the decor and architecture, or the possibility of repurposing objects that you already treasure to incorporate them as a lighting feature. This could be anything from family heirlooms to your favourite existing display pieces." All of these Upswitch lamps run from a mains-to-12V power supply for safety.

Michael Hanley – aka Mister Upswitch – is a craftsman who brings forgotten objects back to life by transforming them into lamps and lighting. "Good lighting design will add visual finesse and minimise energy consumption," says Michael. We ask him to discuss quality and the ways feature lighting is used to personalise a home.

Answer: The initial importance that lighting holds for residents is its ability to allow everyday tasks to be carried out with ease and efficiency. Each room or space of a home has its associated tasks that will require varying amounts and types of lighting.

While LEDs can be extremely versatile and energy efficient, they can lead people to feel content leaving every light in the house turned on, which is generally not how people will respond when lighting is well-designed.

The main issue with many off-the-shelf lamps is the use of low-grade parts and materials. These days, there seems to



be a general acceptance that in two to three years of regular use, something will break or stop working altogether – and the manufacturer won't fix or replace it.

In contrast, the use of upcycled or reclaimed materials reflects a sentiment that people don't want everything to be shiny, new and throwaway. As more people become aware of the impacts that mass manufacturing is having on our environment, value is placed on handmade items and the use of reclaimed materials. A good example of this is our microscope lamps, made using a genuine brass microscope that might be from the early 1900s. Using all solid brass parts and high-end electrical components, the aim is to bring the same level of detail and quality as when the microscopes were originally made.

5

FURTHER RESOURCES

Sanctuary 33: 'Home lighting design' by Megan Norgate.

Upcycled glasshouses

Are we in a new golden age of conservatories?

WORDS & PHOTOGRAPHY Chris Crerar

Secondhand glazing is being given a new life as greenhouses – but far from being plant-only spaces, we visit five conservatories which double as cosy extra rooms for relaxation.

When Elaine Bayes and Damien Cook purchased their home near Fryerstown in Victoria's central goldfields region several years ago, it was unloved, had been on the market for years and was strewn with junk and old building materials.

Standing out amongst all the materials however, were 10 very large wooden-framed windows – some with smashed glass – stacked all around the deck. Rather than sending them to landfill or to the

recyclers, these windows became the genesis of a plan that continues to enrich the couple's lives daily.

"I really like Thai food and I'd always wanted to grow the ingredients of Thai curries, like lemongrass, curry leaves, chillies, ginger and galangal," says Damien. "I looked at the windows and thought, we could just stick these together and make a glasshouse."

While the construction of their greenhouse wasn't quite as straightforward as simply 'sticking' the windows together, involving plenty of trial and error and tweaking to improve its functioning, Elaine and Damien have now realised their dream to grow their own curry ingredients and more. Growing alongside the tropical herbs and spices are towering sub-tropical fruits, including babaco (a cool-climate pawpaw), tamarillo and banana, which says volumes about the value of a greenhouse, especially when factoring in central Victoria's biting winters and that their property straddles a gully.

It was this same thinking that led the Romans to construct wheeled cucumber growing beds – allowing the plants to be grown in full sun during the day and wheeled inside for frost protection at night. By the sixteenth century, wealthy northern European landowners were constructing conservatories or 'orangeries', allowing the cultivation and preservation of frost-tender citrus fruits, brought from the Mediterranean by traders.

The key to their function is within the word itself. Derived from the Latin word *conservator* (keeper, preserver, defender), the word conservatory was first used in the English language in the 1660s to describe a construction functioning as a greenhouse. But it was also during the 1600s that their use extended beyond purely functional. The growing of exotic plants and fruit became a status symbol and the wealthy began entertaining in their conservatories to show off their collections.

Advances in glass production and

← Garden designer Susan McKinnon enjoys tea in her conservatory built from recycled 1950s steel-frames windows.



“Built primarily to propagate plants, we find ourselves increasingly drawn to the conservatory to read, or enjoy a tea or wine and simply relax.”



WIN

Subscribe to *Sanctuary*
and you could win a
**Tesla Powerwall 2 and
Gateway 2** valued up to
\$15,000 from TCK Solar



Subscribe or re-subscribe to *Sanctuary* magazine by 25 October 2019 and go in the draw to win a TCK Solar sponsored Tesla Powerwall 2 & Gateway 2 valued up to \$15,000, including standard installation. Open to Australian and NZ residents. Terms and conditions apply.

renew.org.au/prize



TCK Solar believes in
do it once, do it right.
www.tcksolar.com.au

Sanctuary MODERN GREEN HOMES

renew.