MODERN GREEN HOMES

Sanctuary

ISSUE 55

7.5-Star first home on a budget; insulating existing walls; bushfire survivor house; councils kicking goals on climate action; how to create a lush living fence

Exactly enough

Compact yet comfortable Tassie cabin

WIN

An Earthworker-Reclaim heat pump hot water system worth $5,000 from the Earthworker Energy Manufacturing Cooperative

Offer open to Australian residents. Details page 91

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Inside issue 55

HOUSE PROFILES

IDEAS & ADVICE

REGULARS

Prefab strawbale wall panels

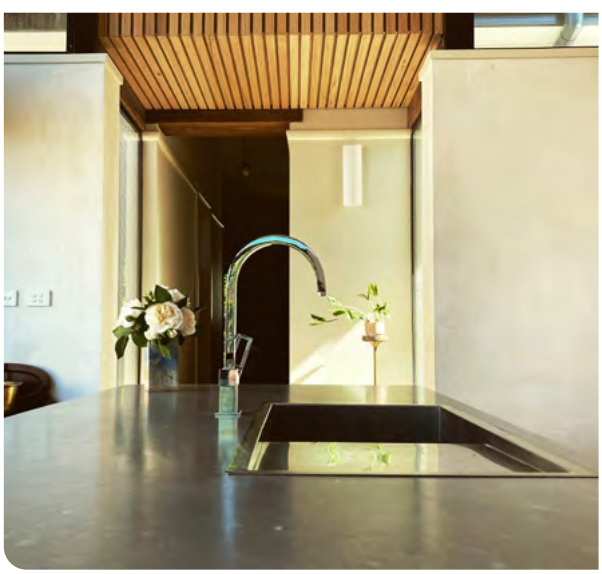
Strawbale construction has a number of benefits including natural material use and high insulation levels, however manoeuvring blocks of straw into place on a new home might not be for everyone. Sydney-based strawbale design and build specialists Viva Homes have developed a prefabricated panelised strawbale product, Viva Panel, designed to be fast and simple to install. The panels are similar to tilt-up concrete panels or structural insulated panels (SIPs) in that they are lifted into place with a crane and joined with a fix-and-lock system. The panels come in a standard size of 1,200mm x 2,400mm at a thickness of 255mm, which means they take up less floor space than standard 450mm strawbale walls, and they can be rendered or finished with cladding. Viva Panels can be shipped just about anywhere in Australia.

www.vivahomes.com.au/vivapanels

From office defit to refit

Secondhand office chairs, tables and cabinets can be a dime a dozen unfortunately, which might be one of the reasons they're often destined for landfill. Last issue we featured Green Collect, specialists at office equipment rehoming and recycling; Green Furniture Hub is also helping to break the furniture-to-landfill cycle in Sydney, Melbourne and Brisbane by managing the redistribution of office furniture to where it is needed in new office refits. When you plan to move, Green Furniture Hub will catalogue, photograph and grade every surplus item, which is then made available as a bulk lot for just $500 (free for charities). The Hub also retails individual items via their website if you're looking for just a few pieces – and many would suit homes as well as offices.

www.greenfurniturehub.com.au



Silica-free, recycled glass benchtops

With a possible ban on some artificial stone products (also called engineered stone) on the cards due to the dangers of silicosis to construction workers, it is high time to consider alternative benchtops in the kitchen. Betta Stone manufactures engineered stone-look benchtops that are free of crystalline silica, which makes it a safer option for cutting and construction processes. The product is made from 100 per cent recycled glass and a binding agent, providing a new use for around 800 glass bottles in a medium-sized kitchen project, and is recyclable where appropriate facilities exist. It's locally made and is more durable and lighter weight than marble or granite too. It's reassuring to know there are sustainable, healthier construction materials around to replace some of the riskier products on the market. Betta Stone is available in a range of colours, with pricing dependent on the scale of the project.

www.bettastone.com.au

REVIEWS

If you have recommendations for films, books, smartphone apps, podcasts, websites or anything else, email: sanctuary@renew.org.au

BOOKS

Pre-Fab Living

Avi Friedman

Thames & Hudson, 2021

$50

When many of us think about prefab buildings, janky portable classrooms and boxy kit homes often come to mind. This gorgeous book by Avi Friedman proves us wrong and leads us through a window into a larger world. The centrepiece is almost 200 pages detailing 40 prefab homes from around the world. There's also a comprehensive introduction that outlines the different types of prefab buildings, methods of construction, materials used and so on, and an appendix with the plans of all the homes featured.

This collection really highlights that a prefab home needn't look like a bunch of boxes tacked together – thoughtful choice of materials along with attention to integrating the building with its environment makes all the difference. The many interior shots also show that modular construction doesn't have to mean compartmentalised living, with open, light-filled living spaces and clear communication between inside and out.

Many of the home profiles note thermal performance and energy efficiency features, but *Sanctuary* readers will particularly appreciate the section dedicated to net-zero-energy homes. All four are great to look at inside and out, with an array of sustainability features including energy generation, reclaimed materials and energy efficiency.

Many of the profiles highlight the particular advantages of prefab: the expandability and flexibility that modularity enables, the economic and financial efficiency of off-site construction, and the simplicity of installing preassembled modules on a difficult site. The single Australian case study, a house built on a narrow block in Collingwood, Victoria, is a good example of the latter: off-site construction enabled more options than conventional construction was capable of on such a small site. Another great example is Casa Algarrabo in Chile, with modular construction enabling a flexible multi-generational home on a limited budget that looks spectacular and harmonises interior and exterior spaces effortlessly.

All up, this is a beautiful and inspirational collection, and highly recommended for anyone struggling to reconcile prefabricated construction with appealing modern homes and environmentally sensitive design.

Review by Dean Lombard

Arches to Zigzags: An Architectural ABC

Michael J. Crosbie and Steve and Kit Rosenthal

ORO Editions, 2021

$30

A is for arch, B is for balcony, C is for capital, D is for double door, E is for eave:

"Look under a roof
For eaves broad and plain.
Can eaves give you shelter
From the sun and the rain?"

And so this charming book goes on through the alphabet, drawing the reader in with colourful photography and short verses for each of the 26 architectural elements featured. Created by a team consisting of an architect and educator, an architectural photographer and a librarian, it's a great, accessible introduction to the world of architecture for younger readers, and may prove educational for adults too (Q is for quoin ...).

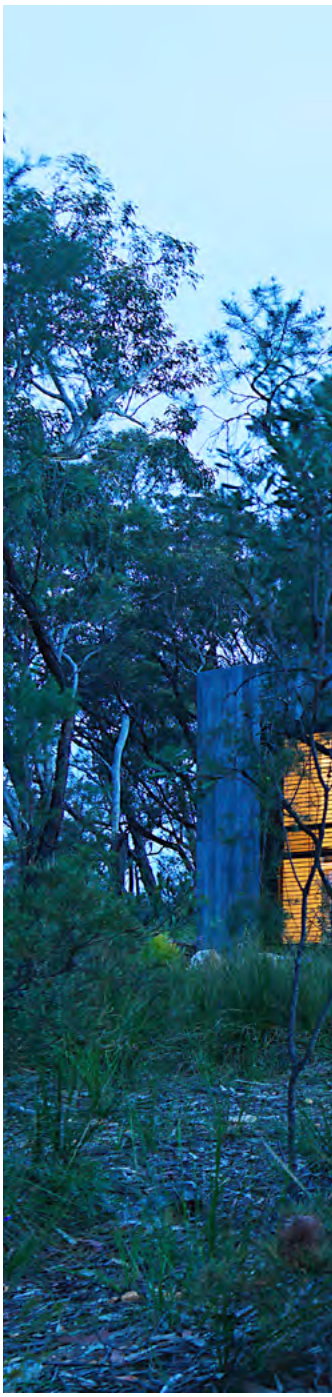
For those wanting to dig deeper, perhaps to answer curious questions from the kids, there's a section at the end of the book with more detailed definitions plus information on the location and history of each of the buildings in the photos.

This would be a worthy addition to the bookshelf for anyone interested in the built environment or with a budding designer in the family.

Review by Anna Cumming

Laying the groundwork

LOCATION Megalong Valley, NSW • **WORDS** Rebecca Gross • **PHOTOGRAPHY** Nick Bowers



At a glance

- Small-scale, off-grid house built to high bushfire attack level ratings
- 8.2-Star energy-efficient home
- Faces both north for solar gain and south for views
- Multi-purpose screens for shading, security and fire protection

Architect Simon Anderson experimented with creative and technical ideas for his own off-grid, bushfire-resistant home in the Blue Mountains, developing a successful prototype for client projects.

When an architect designs their own home, it provides an opportunity for experimentation that may not exist when working with clients. It's a chance to develop and test design ideas that they can use in the future. For Anderson Architecture's Simon Anderson and his partner Kim Bell, eight acres of native bushland on Gundungurra country in the Blue Mountains was the perfect site for researching and developing their store of ideas for a small, off-grid, bushfire-resistant weekend home.

Simon, and the nature of the site, set the conditions for the house design: it needed to be self-sufficient for energy, water and sewage treatment; able to withstand fire and snow; as economical as possible to build; carbon neutral to operate; and utilise passive solar and environmentally sustainable design methods. Those requirements all came together in a 94-square-metre house that is BAL-FZ and BAL-40 compliant (to pre-2018 standards in force when the design received planning approval) and rated at 8.2 Stars for energy efficiency.

The house is built along a ridgeline, with the steep terrain to the south resulting in a BAL-FZ rating to the southern facade, while the other three sides are BAL-40. The elongated layout, comprising two volumes with a central entrance, optimises solar penetration in winter and cross ventilation in summer.

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The roof over the living area rises to the south to make the most of escarpment views and provide an optimum slope for the 6.7-kilowatt off-grid solar PV system, while the bedroom wing features large north-facing windows for winter solar gain. The low-carbon magnesium oxide boards used for the cladding have 60 per cent recycled content and are BAL-FZ rated.

Exactly enough

LOCATION Golden Valley, TAS • **WORDS** Chris Crerar • **PHOTOGRAPHY** Natalie Mendham

At a glance

- 96-square-metre, off-grid home
- Designed with 'enoughness' in mind
- Simple, passive solar design with minimal impact on the local environment
- No gas

A small-footprint, one-bedroom retreat designed for passive solar winter comfort proves perfect for this couple's lifestyle in northern Tassie.

When was the last time you had a conversation about a home being 'just enough', or suiting someone's needs rather than their wants? As a nation still building some of the world's largest homes (236 square metres on average) and carrying the second highest rates of housing debt (just behind Switzerland), it would seem that we're not having these conversations nearly enough.

But there are certainly homeowners and designers out there doing things differently. 'Enoughness' was a large part of the focus for former Brisbanites Bronwyn and Brad Platz when they decided to build on their four hectares of bucolic countryside nestled under Quamby Bluff in northern Tasmania.

Holidays spent hiking and cycle-touring in the island state had generated a desire to live closer to nature and a dream of relocating there; when Brad found their property online, the dream became reality. After a year of living in the existing cottage on the block and having a go at self-designing a new home, Bronwyn and Brad approached Jane Hilliard at Hobart-based architecture practice Designful. "We knew we wanted an energy-efficient home but were having trouble with the passive solar elements," says Bronwyn. "In the end, we were really happy to have a professional design. We were surprised by many of the elements the architects included."

The couple loved Designful's sustainably holistic approach based around "humble and honest" designs aimed at matching expectations and budgets and delivering great liveability. And the appreciation was mutual. "Brad and Bronwyn were great clients because they were on the same page as us from the start," says Jane, who made the trip across the island several times for site visits. "They came to us with clear values, which made it easy for us all to arrive at the same expectations and idea of what was enough."

With the cottage and a shed (converted into a studio) already on site, providing guest beds for ten, Bronwyn and Brad knew from the outset that their new home would only have one bedroom. "We wanted a home that would be simple but significant, and compact enough to be vacuumed from one power point," says Bronwyn.

Image: Chris Crerar

Talking shop

LOCATION Parkside, SA • **WORDS** Kellie Flanagan • **PHOTOGRAPHY** Julian Rutt

At a glance

- Dilapidated dwelling retained and renovated to achieve 7.4-Star energy-efficient home
- Past renovations to 1880s shop stripped back to reveal beautiful bones, and heritage features restored
- Poky rear extension lifted and reconfigured for better solar access and useable space
- Insulated 'skin' wrapped around extension for much-improved thermal performance

With determination and creative intervention, this heritage Adelaide shopfront and its poorly conceived 1970s extension were salvaged, restored and transformed into a light-filled, comfortable modern home.

Julian and Jenny Morison bought their 1880s heritage shopfront property in Adelaide's leafy inner suburbs with an eye to moving closer to the city, to a house that would be easier to maintain than their former home and garden in the Adelaide Hills. "We knew our priorities and lifestyle choices would change as our children left home," Jenny says.

'Not for the faint-hearted' was what the real estate ad warned, and it wasn't wrong. The old shop with its 1970s two-storey extension was dark, cold and had salt damp problems. "I recall our building inspector saying, 'What do you want me to tell you? It's obvious you need to do something about the floors, walls and ceilings, and goodness knows what they are concealing'," says Jenny. Still, the new owners saw that the property had great potential.

With a brief to restore the dilapidated shop and reimagine and integrate the double brick rear extension, retaining original features and materials where possible and improving energy efficiency and functionality, architect Julian Rutt knew he had a challenge ahead when the owners engaged him. "'Wow, there's going to be a lot to do here' was my first thought. But I could see that there were a lot of possibilities. Often the more challenging projects are the ones that yield the most interesting and creative outcomes, and that's what happened with this one."

He found that while the structures were well-built and had no cracking, they were ageing and damaged. Sunken floorboards and salt damp-affected plaster would need to be rectified in the front building, and both buildings sorely needed reconfiguring to make the dwelling more functional. The extension had an awkward layout with very low ceilings, and although it had a proper stairwell, the upper level wasn't much more than an attic. Natural light, solar access and thermal comfort were very poor.

A key guiding principle for the design was to retain and adapt the existing structure rather than knock it down and rebuild. "There's a lot of embodied energy

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The facade of the shop was restored to its original design, based on an old photo unearthed by the homeowners.

in the structure and the bricks," says Julian. When they were removed, bricks, Baltic pine floorboards and doors were retained for reuse where possible.

Some of the features of past renovations – such as the odd level differences and steps – were stripped back, as well as the plasterwork masking some of the original late-nineteenth-century brick and stonework. The restoration work on the building's facade was one of the more striking examples of this. "The whole front of the shop had been changed at some point," says Julian. "The owners found a photograph of what it used to look like and decided they wanted to restore it, with big brick arches and a central door." Windows that had been turned into doors in past renovations were also restored.

The orientation of the property also provided a challenge, having greatest exposure to the east and west, so the extension has been reconfigured on both levels to maximise the limited northern aspect to the rear. On the ground level, a larger lounge and dining space has been created by knocking out walls. The entire upper level was lifted and its ceiling height increased, creating more useable space both upstairs and down. Extensive glazing overlooking the backyard allows winter sun in and provides a stronger visual link to the outdoors. The upstairs level now houses a main bedroom retreat for the couple, with a large adjoining deck and shading to protect against the summer sun. An ensuite bathroom has its own small deck.

One of the major drawbacks of the extension was the lack of thermal comfort. To help solve this, a highly insulated 'skin' now envelops the roof and both sides. "This means that the house's inhabitants experience less extreme fluctuations in temperature during the day and over seasons," the architect explains. Admission of natural light into the older part of the house is also much improved, including the addition of skylights to illuminate one section built right on the boundary.

The comfort levels of the renovated house are a vast improvement on the cold, dark and damp of its earlier incarnation,

overshadowing Kate and Rick's residence. There is lots of glass facing north and west, all with operable shading. Large windows built into the angled roof have external venetian blinds, and bifold doors with a folding awning open to the rear courtyard. The awning extends the living space, which is important in a house with a small footprint.

As well as passive solar design, the house features double-glazed windows, high levels of insulation, and thermal mass in the double brick walls and concrete slab. It is all-electric, with a small solar PV system, a heat pump for hot water and hydronic heating, and an induction cooktop.

One of the cottage's unique features is that it has two street frontages. The couple find that the rear street is much quieter, with very community-minded neighbours. Ben's design includes a big sliding gate at the back of the property, which allows the living room and courtyard to open up and connect with the street.

Maddie Johnson has been renting the house with three flatmates since the renovation was completed late last year. She says that they don't feel crowded in the cleverly designed three-bedroom home, though at 120 square metres it's not large. "We love living here, we're so lucky. It's so light-filled and always bright and airy," she says. They rarely use the heating or air conditioner and have been amazed by the thermal efficiency of the house. Their first quarterly electricity bill was $200, with four people living and working from home.

For Kate and Rick, the Wongi project was a chance to connect an important part of their family history to the street and community they have lived in for so many years. "I have this real sense that as a society we're very poor at integrating our history, and this was an opportunity to do that in a really concrete way," says Kate.

Ben loves the outcome. "It does create a really nice, interesting juxtaposition between the old and the new. We're really proud of that result," he says.

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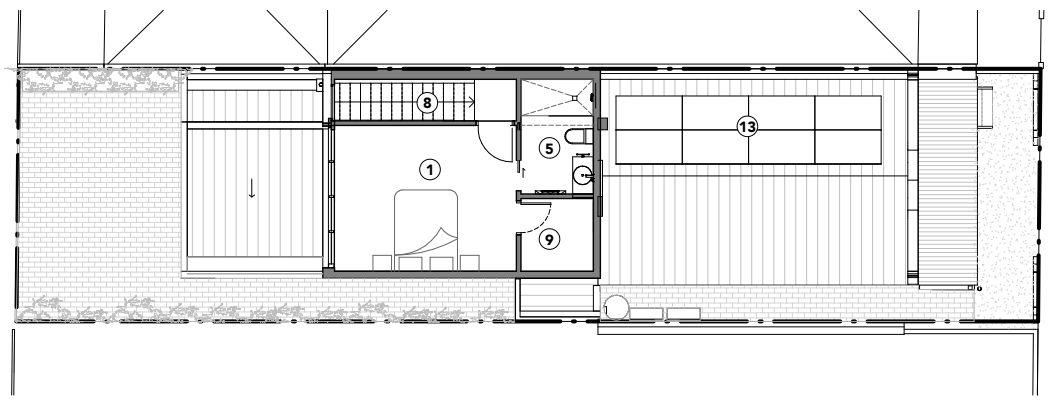
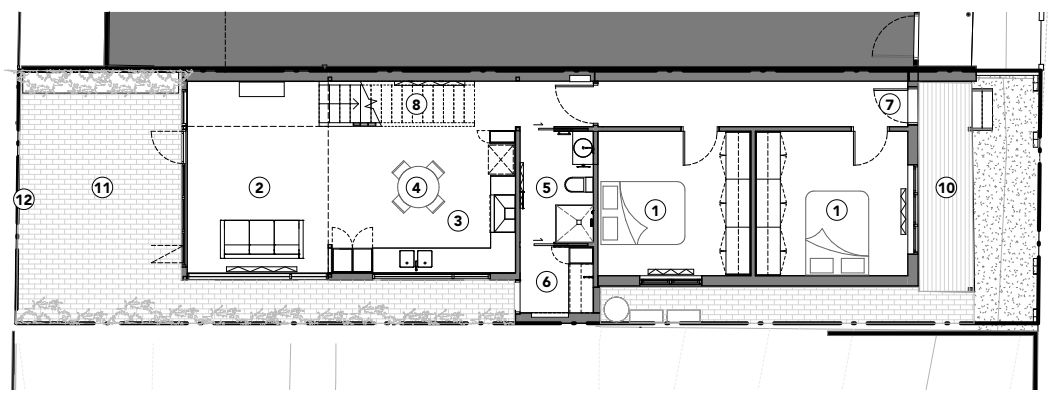
High windows to the north bring in sunlight and warmth, and are equipped with mechanised external blinds for shading in summer.

FIRST FLOOR PLAN



GROUND FLOOR PLAN



LEGEND

① Bedroom
② Living
③ Kitchen
④ Dining
⑤ Bathroom
⑥ Laundry
⑦ Entry
⑧ Stairs
⑨ Walk-in robe
⑩ Porch
⑪ Courtyard
⑫ Gate to back street
⑬ Solar panels

HOUSE SPECIFICATIONS

RENEWABLE ENERGY
- 2.64kW system (8 x 330W Q Cells panels with Enphase micro inverters) from Solar Gain

WATER SAVING
- Small raingarden takes all rainwater from roofs as required by City of Yarra

PASSIVE DESIGN, HEATING & COOLING
- Rear section roof rakes up to the north to accommodate clerestory windows above the party wall on the northern boundary, for solar gain and natural light
- Adjustable external blinds to northern windows for summer shading
- Many rooms have openable windows on two sides to create cross ventilation
- Double brick walls and concrete slab for thermal mass

ACTIVE HEATING, COOLING & HOT WATER
- Galletti MCI 16kW heat pump provides domestic hot water and hydronic heating in panels; supplied by Mercury Heating & Cooling
- Daikin Zena reverse-cycle air conditioners: 6kW in living area and 3.5kW in upstairs bedroom
- Airfusion ceiling fans in all bedrooms and living space

BUILDING MATERIALS
- Double brick construction using recycled bricks to party wall on boundary; brick veneer using recycled bricks to rebuilt front section; timber frame construction to new section
- Colorbond roof
- Fielder's Boulevard Colorbond steel cladding to new section
- Concrete slab floor topped with reclaimed spotted gum flooring from Urban Salvage
- Insulation: Bradford Gold High Performance glasswool batts (R5) to ceiling; Air-Cell Retroshield (R0.14) to roof; Autex Greenstuf batts (R2.5) to walls plus Foilboard Ultra 20 over battens; 30mm extruded polystyrene (XPS) insulation (R10) between slab and timber flooring
- Stainless steel kitchen benchtop

WINDOWS & GLAZING
- Double-glazed windows with low-e coating used throughout
- Louvre windows with low-e coating used selectively where maximum cross ventilation required
- Victorian ash frames to front rooms
- Rylock AA series aluminium frames to extension
- Steel frames to double-glazed rear bifold door
- Mechanised external blinds and awning by Shade Factor

LIGHTING
- LEDlux Infinity Mini fixed LED downlights and LEDlux City II adjustable LED downlights throughout
- Sõrmus pendant lights from Satelight in bedroom
- Rise & Shine pendant from Volker Haug in living space
- Nevada 1 Light spotlights and Marcel pendants from Beacon

PAINTS, FINISHES & FLOOR COVERINGS
- Floorboards finished with Bona Traffic waterborne polyurethane

OTHER ESD FEATURES
- All-electric house
- Premier Hydropavers permeable paving to courtyard

DESIGNER
Ben Callery Architects

BUILDER
Clancy Constructions

PROJECT TYPE
Renovation

LOCATION
Fitzroy North, VIC

COST
$1.1 million

SIZE
House 120m^2
Land 148m^2

ENERGY RATING
6 Stars

ENERGY RATER
Floyd Energy

INSIGHTS
"In this project, we reconsider how to engage with the community. While the original house presents to its streetscape with the grandeur of an elevated vantage, high parapet and small private windows, the addition engages with its rear streetscape more openly: at grade, with a retractable sliding fence, full-width bifold glass doors and a folding arm awning that draws the living spaces out to the street."

Ben Callery, architect

FROM CAVITY TO COSY:
Retrofitting wall insulation

WORDS Richard Keech

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The most common approach to retrofitting insulation into walls is blowing a loose-fill insulation product into the wall cavity, either via holes in the external cladding or internal lining or, where feasible, down from the top of the wall. Here, an installer carefully lifts roof sheeting to pump Insulbloc recycled polystyrene insulation into a wall cavity. Image: 4 Seasons Home Insulation

Retrofitting insulation to existing walls can be a tricky proposition, but the thermal benefits are well worth it. Energy efficiency expert Richard Keech explains how to do it.

Everyone knows that insulation is a good thing to have. Most Australian homes now have at least some insulation in the ceiling, but if your home is more than around 25 years old, it's likely that the walls will be uninsulated. So just how big a problem is this? And how do we fix it?

Before diving into how to retrofit wall insulation, it's worth taking a step back to consider the importance of insulating the different parts of the home. According to *Your Home*, for an uninsulated house, the percentage of winter heat loss that can be expected through the ceiling is 25 to 35 per cent, through walls 15 to 25 per cent, through windows and floors 10 to 20 per cent each, and via air leakage 15 to 25 per cent.

The easiest, cheapest and, happily, the most effective places to start improving your home's thermal performance are ceiling insulation and gap sealing. However, that's not the end of the story. What you do next – walls, floors or windows – is going to depend on your particular building and budget. In fact, wall insulation may be more significant than the numbers quoted above would suggest – particularly in older buildings that already have some insulation in the ceiling or

ON THE DRAWING BOARD:

Going down the rabbit hole of eco material specification

WORDS & PHOTOGRAPHY Hayley Witt

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Having delved into the ethics and sustainability of leather, we prefer to choose from the wide range of upholstery, soft furnishing and drapery fabrics available with responsible certification such as Oeko-Tex or Global Organic Textile Standard (GOTS).

Interior designer and self-described 'plantscaper' Hayley Witt is the director of Brisbane-based Wattlebird Eco, and specialises in creating interiors with people, place and nature at their core. She gives us her take on responsible product specification and describes the lengths to which her team will go to make environmentally sound choices for their projects.

Anyone embarking on a renovation project, as well as any design professional creating spaces, buildings or products, has a responsibility to consider their environmental impact and make an effort to minimise it. Even better, make it a positive contribution. Wattlebird Eco was established to offer something different to most interior design practices. While our focus is always to work collaboratively with clients to meet their brief and budget, we are also dedicated to designing and specifying responsibly for the sake of our clients' health and wellbeing and to minimise the social and environmental impacts of what we do. So while our work is artistic and at times, yes, even 'fluffy', it's also heavy with research. We are passionate about knowing what

OUTDOORS

Living fences

Using plants to define your boundaries

WORDS & PHOTOGRAPHY Mara Ripani

Fences are often necessary for privacy, security and the safety of pets and children. As Mara Ripani explains, there are myriad ways to create them with plants, adding extra greenery to our built environment.

With populations increasing and cities and towns growing, we need to take every opportunity to introduce green into our built environment: 'rewilding' our surroundings, even in small ways. A living fence is a simple and effective way to start. There are many approaches to creating a living fence: what they all have in common is a thriving explosion of plants!

WHAT IS A LIVING FENCE?

Fences are commonly used for creating privacy (both visual privacy and by preventing access), for keeping pets and children contained and safe, and simply for marking property boundaries. With a bit of planning, all of these requirements can be fulfilled with a living fence: one that is made using plants on their own or by combining plants with an appropriate structure.

Depending on its main purpose, the space available and your aesthetic preference, a living fence can take the form of closely planted clumping grasses, a hedge created from shrubs, a line of small trees or espaliered fruit trees, or a cascade of tendrils and flowers from a climbing vine – to name just a few possibilities.

WHY CHOOSE A LIVING FENCE?

No matter how small your property, if there is room for a fence then there is probably room for a living fence. Well-kept living fences are extremely beautiful. Evergreen plants provide a verdant wall to look at all year round. Climbing plants with flowers provide colour, interest and architectural shapes to admire. A living fence is an extension of your garden, allowing you to layer greenery to create depth and texture. And if you already have a standard fence, you can breathe life into it with a climbing plant.

Cooling microclimates

While living fences add a great deal of beauty, they can also help green our cities and create cool microclimates. Built-up urban areas are prone to the urban heat island effect: dense concentrations of pavement, buildings and other thermal mass surfaces absorb daytime heat, releasing it again at night. As a result, ambient temperatures can increase by one to three degrees Celsius. Greening infrastructure projects large and small, including living fences, can help counter this effect through the plants' natural transpiration.

HOW TO CHOOSE PLANTS FOR A LIVING FENCE

When deciding on the style and plant selection for your living fence, consider its purpose, maintenance requirements, and how it will fit into your existing garden. Whether you opt for native or non-native species, always ensure you avoid those

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A profusion of flowering shrubs growing through and up an old wire fence softens the built structure that marks the front boundary of this suburban Melbourne garden.

DESIGN WORKSHOP:
Tackling a true fixer-upper

Want us to Design Workshop your house?

To apply, email sanctuary@renew.org.au
with your plans and a brief outline of your project.

PROJECT TYPE
Renovation

LOCATION
Woodend, VIC

DESIGNER
Paul Youngs,
Woodend Building Design

BUDGET
$300,000

SIZE
Existing house 200m²
Proposed house 200m²
Land 1,200m²

THE BRIEF

- Restore and modernise the derelict original house, retaining period features and character
- Add modern, passive solar designed living space to the rear
- Highly sustainable, all-electric house with a high Star rating and possibly Passive House certification
- Warm and cosy for the area's cold winters

Ralf and Cathy Thesing have taken on the ambitious project of restoring a derelict weatherboard cottage in Woodend, Victoria, and transforming it into an exemplar of modern energy-efficient home design. Certified Passive House designer Simone Schenkel stepped in to help.

Seasoned renovators and dedicated sustainability advocates, Cathy and Ralf have lived in Woodend since 2006. A couple of years ago, they seized the opportunity to buy a true 'renovator's dream', an early-1900s weatherboard cottage on an appealing deep block just a short stroll from the town's main street.

"We both love old buildings and a chance to fix and restore," says Ralf. "We bought this house and land with the vision to rescue and restore the house to its original appearance, with modern sustainable living improvements. Any other purchaser would probably have knocked it down, split the block in half and built narrow townhouses, but we want to preserve the old house for its contribution to the Woodend country town character. And we want to prove that it is possible to keep an old house and make it sustainable and very energy efficient as well."

The house was derelict and unliveable and had had several bad and often unfinished renovation attempts over the years, including a series of lean-tos at the back. Ralf and Cathy removed the additions, stripped it all back to the bare bones, and had it rewired, restumped and the walls straightened. Now they are at the point of designing and getting approval for the new rear extension.

"We want the finished house to be beautiful, comfortable, functional and sustainable. We want to retain the original look at the front, with the addition of a garage, and reinstate the original verandah," explains Ralf. They plan to keep roughly the same footprint, replacing the substandard extensions at the back with a new, passive solar designed open