

MODERN GREEN HOMES Sanctuary

INSIDE ISSUE 37 Tiny & tropical style; eco display homes; green facades; local materials; 8.6 Star apartments; SIPs solar extension; future-proofing; concrete floors guide; Passive House in Wanaka NZ + more

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WIN

A home battery storage system from Enphase

Offer open to Australian and New Zealand residents only, details p40

Running on the sun

Going off gas and installing enough solar to cover their needs was a big part of the brief for this high-performing, comfortable extension to an 1890 house in Melbourne's east.

WORDS Anna Cumming
PHOTOGRAPHY Paolo Benini

WHEN JOE AND TAMSIN BOUGHT their circa 1890 double brick house in Hawthorn, it was with a very clear idea of what they wanted to do. "We'd had a couple of false starts," explains Joe – they'd first thought about renovating the house they lived in in Abbotsford for 10 years, but decided it was too small; their next place in Brunswick didn't offer a good north orientation. "Tamsin likes gardening, and I wanted space for a garage for my classic cars. Also, we wanted to do a renovation so we were looking to buy something that needed it."

The Hawthorn house had a large, north-facing backyard and rear access, which allowed them to see past major defects like collapsing floors and a leaking roof. "It had really nice bones at the front, but was horrible at the back," says Joe, "and it was very run down – it hadn't been lived in

for at least a year." They got straight onto finding a designer to help them transform the place.

ATA members and long-time readers of *Sanctuary*, Joe and Tamsin knew that they wanted a very energy efficient house that was well connected to the outdoors. They were also determined to get off the gas grid and go all-electric. Joe's interest in SIPs (structural insulated panels) led him to Habitech, a Melbourne-based, multidisciplinary design and building company that manufactures its own SIPs.

Architect Chris Barnett is Habitech's managing director and has always been interested in sustainable design. "I was exploring the most sustainable way to deliver a house, and the bit that I couldn't find was the wall system. So I went out and designed it; we had it engineered, certified, and now we manufacture it in Melbourne."



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The built-in shelving unit divides the kitchen and living areas and provides both storage and visual interest. "It was made by a young up-and-coming cabinet-maker called Carl from Helm Furniture," says Joe. The living room light fitting is from Ikea.



A solar system was a key part of the design brief, and dictated the roof angle of the extension. Chris and his team designed the roof detailing to make it look integrated, and are pleased with the result. "Why produce a power-consuming house when you can produce a power station as part of the brief?" asks Chris.



Except the small panels of louvres, all windows and doors in the extension are double glazed. The bluestone-tiled masonry feature extends out to the deck to provide seating inside and out, "but it's thermally broken," assures Chris. "It gives the solidity of a hearth without having a fireplace."





Off the shelf

After building their own home from locally sourced materials and using a simple design, Jane and Owen have packaged up their approach for others in their close-knit Tasmanian community.

WORDS Gabi Mocatta

PHOTOGRAPHY Natalie Mendham



Glass doors open to the deck that runs the full length of the house; a carport to the west provides additional shading and protection to the entry. Cladding is cypress macrocarpa – a common tree used for windbreaks in Tasmania, but now often removed and replaced with native vegetation and reclaimed as a building material.

BUILDING A NEW HOME THAT'S environmentally sound is a challenge. There's much research to be done; products to assess, decisions to be made, standards to meet. It's tough work – possibly more so than constructing a home that isn't quite so planet friendly. But what if you could leave all the environmental research and decision making to the designer/builder? What if you could just ask for an extensively researched, environmentally sound, locally sourced, well-designed, beautiful-to-look-at home – and get all that without having to do the

legwork? Wouldn't that make building green more attractive, perhaps even to people with less environmental concern? It's just this kind of package that NEAThouse is offering in Tasmania.

“NEAT stands for New, Environmental, Affordable and Tasmanian,” explains Owen Thomson, who runs NEAThouse with his wife Jane out of Hobart. Owen and Jane, both with previous careers as professional musicians, design and build complete environmental home packages. These exceptional houses – with high energy



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 Timber is a feature of this house, with Ecoply used for kitchen joinery and a feature wall in the living space; mixed-species FSC-certified timber is used for the floors. The design requires orientation to the north for best performance, with windows positioned for solar gain in winter. Sliding doors on either side of the kitchen enable the living room to be zoned.

star energy ratings – are all about sourcing locally and sustainably. They’re also about creating a healthy, aesthetically lovely home environment, both indoors and out.

“Our approach and philosophy are very much holistic,” says Owen. “We build houses that are sustainable from an environmental viewpoint, but we also want to make having an environmental home accessible for people in an economic sense.” With their NEATbox display house they also demonstrate how good all of this can look.

This compact house, set in the beach village of Dodges Ferry near Hobart, is a 104-square-metre, three-bedroom home with a study, expansive deck and carport, built in a simple ‘box’ format to passive solar principles. The home is super-insulated, giving it an 8.1 Star energy rating, and uses recycled, local and sustainably sourced materials, including insulation of

largely recycled glasswool, plantation pine framing and cypress pine cladding. The home comes with a stylish Ecoply kitchen, a spacious family bathroom, low-VOC finishes, and harvests all its own water off the wide skillion roof. White vertical boards on the interior walls give the home a beachy feel, and a modular Ecoply feature wall in the living area adds honey-coloured warmth.

As well as being so well insulated, the NEATbox is double-glazed throughout, with a thermal break frame. On a cool spring day as Jane and Owen show the house off to visitors there’s no heating on, and yet the north-oriented, sun-soaked living area feels warm. The house smells deliciously of timber as soon as the front door opens. Surprisingly, the base price tag for a little, but spacious, NEAT design is under \$173,000, with costs increasing with size.

Within city limits

Nestled in an inner-urban backyard and surrounded by recent subtropical plantings, the finely detailed, airy home of Lara Nobel and Andrew Carter belies its tiny footprint.



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This tiny house is currently located in a Brisbane backyard, and is a 'parasite' to the adjacent house, but is pre-wired for solar PV and can be independent for energy, water and waste. The deck can be dismantled and flat-packed and the main structure can be moved with a standard trailer licence.



WORDS Emma Scragg
PHOTOGRAPHY Andrew Carter

ARCHITECTURE GRADUATES ANDREW Carter and Lara Nobel have long advocated for well-designed small spaces. Along with builder Greg Thornton, with whom Lara was doing her carpentry apprenticeship, they could see the tiny-house movement filling a gap in Australia's housing stock. They attended Portland's Tiny House Conference in the United States to satisfy their curiosity and returned inspired, deciding to test out their own design ideas.

This housing model doesn't suit everybody but there are individuals and situations where a tiny house response is ideal (see box). It was important to Lara, Andrew and Greg to demonstrate that tiny dwellings can be a legitimate, aesthetically appealing and well-designed alternative to the mainstream preconception of a 'standard' home. "We didn't want it to

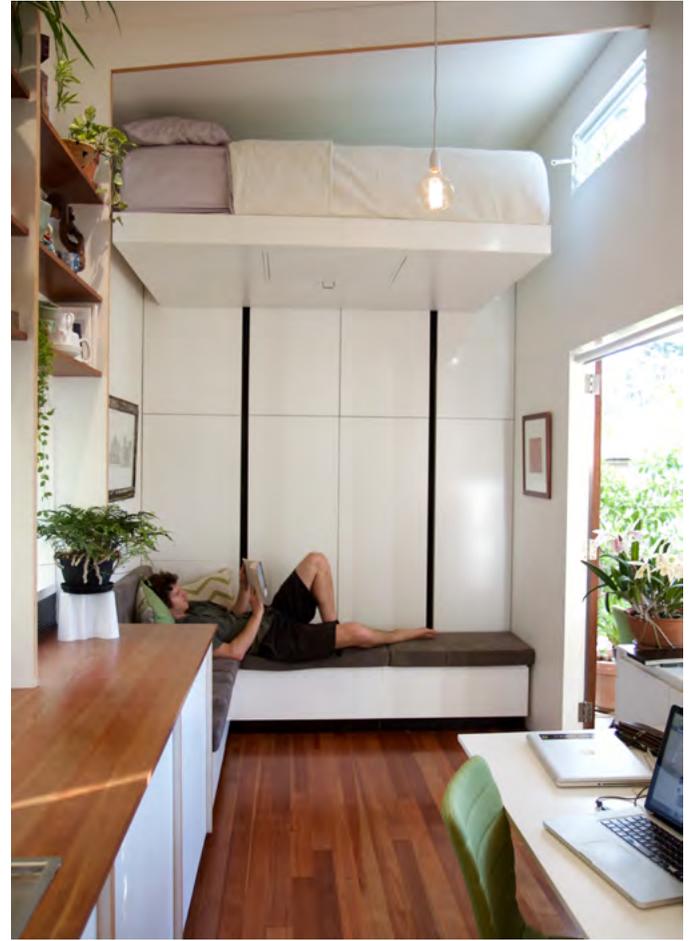
be a shipping container, a caravan or an American tiny house with a little gable roof and timber," said Lara. "We wanted it to have a bit of life and love but also be a bit modern."

Their resulting house, nestled in a Brisbane backyard since May, is immediately appealing with a surprising sense of space, aided by abundant natural light and a lofty ceiling. The main room efficiently encompasses six uses in one – living, dining, home office, kitchen, laundry and bedroom – and changing from one to the other requires minimal effort. An efficient bathroom houses a shower and toilet, and a loft above offers a nook for Andrew to enjoy his vinyl collection. The elevating bed frees up the living space by day but lowers for easy access by night. The home contains a surprising amount of

ⓘ Storage is tucked in wherever possible, including: a wardrobe behind the elevating bed; recycled hardwood benches and above-bench shelving; and custom-built modular sofa storage boxes that can be repositioned as a coffee table.



The custom-built motorised lifting bed is on a steel frame and operates by remote control.



A fold-away table/workstation is integrated in the cabinetry and is key to allowing the main room to be used variously as a kitchen, dining room, living space or home office, depending on need. The house uses a fan and cross breezes for cooling; for heating: "Easy in a tiny house, bake something and it's hot," says Lara. High ceilings allow for a loft that can be used as an additional sleeping space or for storage; the owners use it for their record player and vinyl collection.

storage; more than they ever had in their 10 years of sharehouse living. Open shelves of recycled hardwood, full-depth kitchen cabinets, built-in seating, the loft and a full width, ceiling-height wardrobe swallow up Lara and Andrew's possessions with room to spare.

Lara and Andrew love the 10-square-metre deck which nearly doubles the living space, and enables them to entertain friends and easily host dinner parties of up to eight using the home's two burner

cooktop and Andrew's camp stove. "It's totally doable," says Lara. "And we have bigger gatherings in the local parks. That's a nice outcome."

Currently, the house is a 'parasite' off the host house, connected by a garden hose and extension cord. However, it is built to be stand-alone with bottled gas, grey water filtration and a composting toilet. Setting up at a new site involves reassembling the flat-pack deck, rolling out the greywater hose, fitting the composting chamber and

setting up a small soakage trench – all in a matter of hours. In the near future, they will add photovoltaic panels and a rainwater tank.

Part of their brief was that the house could travel with a normal trailer license, which meant fitting it within an envelope of 2.5 by 7.5 metres and 4.3 metres total height. Above the custom-built trailer, the house has a conventional lightweight timber frame, wrapped entirely in plywood and sheet cladding to provide stiffness,

Strata artistry

With abundant natural light and ventilation, this new 8.6 Star apartment building is an exemplar of urban densification done well.

WORDS Anna Cumming

PHOTOGRAPHY Peter Clarke and Luke Middleton

ON THE EDGE OF THE BUSY

Heidelberg shops in middle-suburban Melbourne, 11 kilometres from the city centre, EME Design's Artisan Apartments could be mistaken for just another medium-sized urban densification project. But look again and you'll find a very carefully considered, indeed, award-winning, development that prioritises direct sunlight and natural ventilation to every apartment; generous and private courtyards and balconies; terrific thermal performance; and energy efficiency. The average energy star rating of these apartments is an impressive 8.6, and none are rated below 8 Stars.

The intent was to attract people who might not normally consider living in an apartment. "We need density, but we need a mix of styles," says designer Luke Middleton. "Not everyone wants to live in a big impersonal tower." The 13 apartments in the four-storey complex range from two to four bedrooms and are arranged in two 'pods', with an open stairwell between

them to facilitate airflow. A large garden courtyard carved out of the complex's north-east side, plus careful consideration of wall angles, allows northern sun into the windows and balconies of the rear pod; new trees will grow up and blur the boundary with the established garden of the neighbouring historic church. At the front too, the facade is set at an angle on the 950-square-metre block so that it faces due north, and vegetation here will connect the building to the extensive parkland across the road.

Inside, the apartments feel more like houses than typical apartments, thanks to roofed balconies that Luke made "big enough to really live on, with a table and chairs and a barbecue"; compact but light-filled rooms; and windows that are carefully placed both to frame sky and parkland views, and to achieve the best sun angles for winter solar access. Optimising the building's orientation on the block means that the apartments' living spaces are rarely



Artisan Apartments features high thermal mass reverse concrete block construction with rendered foam insulation and suspended slabs to ensure excellent thermal performance. The sculpted design is based on passive solar principles, and the skewed plan ensures all 13 apartments have north-facing living areas and natural cross-flow ventilation.





Clever shelving & storage

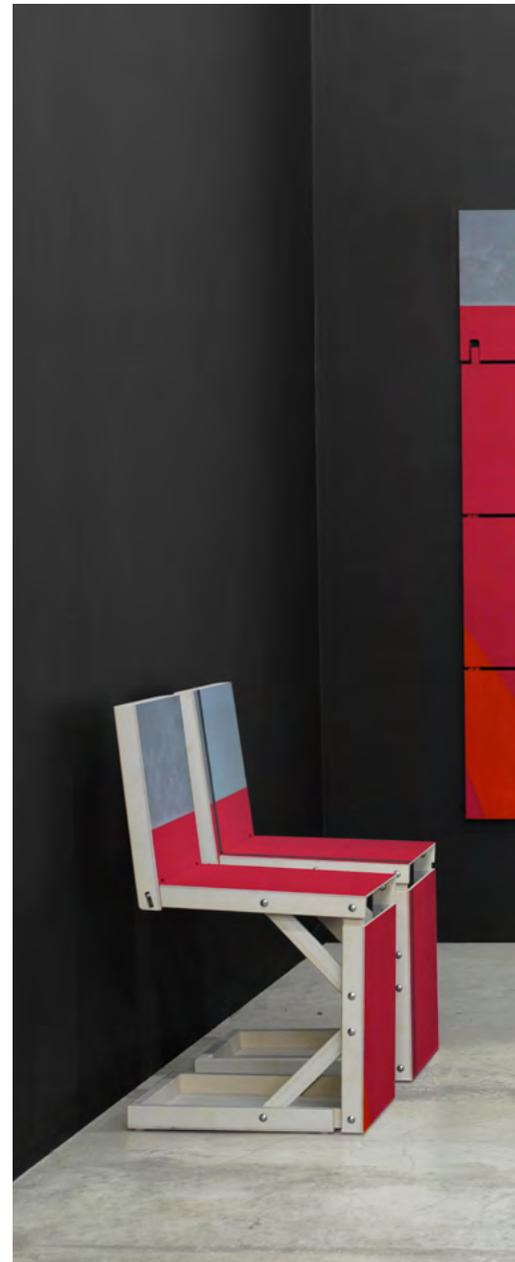
Shelving that adapts to changing needs, furniture that serves more than one purpose, cupboards and nooks that make the most of underutilised spaces: clever storage can help declutter our homes and free up space for the business of living.

ALTHOUGH IT'S HARD TO GO PAST 'NOT BUYING THINGS IN the first place' as the most sustainable way to live in our resource-stressed world, the reality of modern life is that most of us have a lot of stuff. The philosophy of extreme decluttering strikes a chord with some, but if that's not for you then integrating some clever storage into your home can work wonders – and there are some great ideas out there.

Clever storage can be sustainable in various ways. It makes use of underutilised space, potentially reducing the size of home you require. It allows you to keep stuff that's only occasionally used (ski and camping gear, party equipment, Christmas decorations) in long-term storage, eliminating the need to buy new or resort to disposable versions. It can be flexible – fulfilling more than one purpose – or ensure longevity by being adaptable to changing needs over time, such as well-designed kids' furniture. And of course, it can be built with sustainably sourced, recycled or repurposed materials.

Here we bring you some inspiration that may help you incorporate into your home some of the benefits of clever storage solutions.

→





What to do with occasionally-needed but awkward items like spare chairs? New York-based design studio Dror's Pick Chairs eliminate the problem by folding flat to be displayed as artwork.
Image: www.studiodror.com



HANGING PICTURE CHAIRS

DESIGNER: Dror

ARTWORK: Dov Talpaz

MATERIALS: Metal frame with painted birch plywood



Green facades

Growing vines on walls is an age-old way to protect buildings from heat. With dozens of species to choose from, including many natives, green facades can be a resilient and inexpensive way to create thermally comfortable and visually stunning homes.

WORDS AND PHOTOGRAPHY Mara Ripani



Climbing plants climb in three main ways: self-clinging climbers use adhesive suckers to attach directly to a surface, like this *Ficus pumila* (Creeping fig); while other climbers use tendrils (think grapevines) or are twining (like passionfruit) and generally need structures for support.

GREEN FACADES ARE A

contemporary take on something we have been doing for centuries: growing plants on walls. Climbing plants can shield your home, studio, or garage from direct sunlight, and are an effective way to reduce the internal temperature of a house in summer. In addition to shading, leaf transpiration can create a cool microclimate against the wall surface and plant foliage can ensnare airborne particulates to improve air quality.

With all of these benefits it's no wonder so many of us are inspired to get digging.

HOW THEY DIFFER FROM GREEN WALLS

Green walls are increasingly being installed on commercial and apartment buildings to introduce much-needed greenery to sites where there is limited access to soil. Green walls, especially the highly decorative ones, require regular maintenance and commonly use a broad range of plants, each supported by a small pocket of stable

growing media (e.g. potting mix). They are irrigated and generally highly dependent on this irrigation for survival – small quantities of growing media can be insufficient to buffer the roots from heat, for example.

Green facades are inexpensive, easier to maintain and far less dependent on irrigation. The roots of climbing vines used for green facades are commonly planted directly into the garden soil with access to rainwater. And one to two plants can sufficiently cover a house facade or wall.

GETTING STARTED

If you are considering establishing a green facade, then the very best place to start is by planting your west-facing wall: the late afternoon sun with its perpendicular angle makes overhead shading of walls ineffective. Any wall exposed to direct sunlight will benefit from the shading and microclimate a climbing plant can provide.

It is always important to improve existing garden soils in urban areas as they