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Sanctuary

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ISSUE 19 • AUD\$11.95 • NZ\$10.95
SANCTUARYMAGAZINE.ORG.AU

ISSN 1833-1416



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Old greets new

An extension to a Melbourne brick terrace is highly sympathetic to the environment and the building's heritage but adds a whole new dimension to this family home.

WORDS Sarah Robertson
PHOTOGRAPHY Nic Granleese

⊕ Rainwater captured in the slimline 2000 litre steel tank is plumbed to the toilet, laundry and garden. The tank and low water usage sees Michael and Verity save about 100 litres of mains water per day. They used the ATA's Tankulator application to help chose the right tank for their needs; read the story in Sanctuary 18, p82 or visit tankulator.ata.org.au



Form and function



Balance, harmony, sustainability and self-sufficiency are the principles behind the design of this rammed earth and timber New South Wales coastal home.

WORDS Sasha Shtargot
PHOTOGRAPHY Simon Whitbread

YOU WOULDN'T THINK A HOUSE IN IDYLLIC CHARLOTTE BAY ON THE

New South Wales mid-north coast needed much more to make it balanced and harmonious. Architect Ian Sercombe thought otherwise.

Ian, his wife Kate and their seven-year-old daughter Sage moved into their new three-bedroom rammed earth and timber home last year after 18 months of construction. Located in a tranquil hamlet between Newcastle and Port Macquarie and constructed with the help of a small group of tradespeople, the 256 square metre house and home office on a 2.5 hectare block is cleverly designed to make passive use of the plentiful mid-north coast sunshine and prevailing north-east breezes. The house faces north and is long and narrow, ensuring all the main rooms are well ventilated in summer. Eaves prevent direct summer sun entering the house; external shutters provide shade to windows on the east and west sides; and removable shade sails on a pergola control sunlight to the northern deck, stopping heat bouncing from the deck into the home.

Good ventilation is crucial on humid, hot days. The living area and two of the bedrooms have windows on the north and south sides and there are smaller louvre windows along the hallway. When windows and doors are opened, breeze paths carry cool air through the house. Thermal mass is provided by the 400 millimetre thick rammed earth walls and the concrete slab, their performance aided by insulation in the roof and walls. An added feature is the trombe wall in the study, a sun-facing wall separated from the outdoors by glass and an air space which absorbs heat and releases it gradually towards the interior at night. "The house is always cool in summer," Ian says. "We have a ceiling fan, but it's only been used once." A wood-fired heater with an oven and plate on top for cooking is used for about three months of the year when needed. →

Green design for density

For many, apartments are seen as a step in the home ownership process. But when designed appropriately, living in them can be a life choice that ticks all the boxes.

WORDS Sarah Robertson

AS OUR CITIES FILL WITH MORE PEOPLE and as our city boundaries grow, designers, planners and more and more homeowners are realising that a house on a quarter-acre block can be unsustainable financially, geographically and environmentally. Despite this, for many Australians, apartment living is still a stage on the road towards the Australian dream of home ownership, not the final destination.

Apartments and other forms of multi-residential and medium-high density homes have often received a bad rap, perceived as lacking many of the positive attributes of a house – including a mix of generously sized public and private spaces, good views and aspects, and inbuilt diverse and flexible spaces. However, while they may still be the exception rather than the norm, some new multi-residential designs are seeking to show that apartment and other medium-density homes can offer the attributes of a house, with significant benefits for the environment.

Architect Stuart Harrison believes that

architects have a responsibility to demonstrate that denser housing is “rich with design opportunities, and more sustainable than bigger housing”.

“People don’t tend to think of apartments as homely for the reason that they lack certain things,” he explains.

Space is obviously one issue, but it’s not as simple as just wanting more of it – it’s about how it’s designed. “Even though lots of houses are too big, lots of apartments are too small,” he says. This is particularly evident in many apartments’ provision of outdoor space. “There’s no sense that you could live outside as you could in a courtyard or garden in a house. I think that precludes a lot of modes of living.”

A sense of place and community are other factors often seen to be lacking in medium-density living but important to building a home. “Sense of place is incredibly important,” says Stuart. “I think that comes through design ... about specificity, about working with a particular place, acknowledging that not

everything’s the same.”

Neither are all apartment dwellers the same. Stuart notes the presumption by many developers of a mythical tenant: a certain type of person who lives in multi-residential housing. “In fact the living patterns are actually far more diverse,” he says.

Despite these issues, there is great potential for apartments and other medium density living spaces to offer the flexible and diverse offerings of a house. If apartments and other forms of medium density housing are well designed, he says, they can provide spaces for neighbourly interaction as houses do; they can provide private outdoor living spaces that are a decent size; and they can provide a diversity of design types to accommodate varied lifestyles.

Projects by two of Melbourne’s sustainable design firms are examples of what Stuart calls a “design-led” improvement of multi-residential housing. While only two projects among many, they illustrate the diverse ways the density question can be approached.





From the street, the Victoria Street Apartments look like one large home. Designer Luke Middleton from Eme Design based the roof's form on those of other houses in the area; it is also designed to let winter sun in, protect the homes from harsh summer sun and provide residents with entry protection.

Victoria St apartments

PHOTOGRAPHY Scott Haskins

On first seeing the Victoria Street Apartments in Melbourne's eastern suburbs, you could be mistaken for thinking you are looking at one large home. But behind the façade on the 2000 square metre block sit nine modern and sustainably designed apartments. As designer Luke Middleton of Eme Design explains, the apartments are one approach to designing more intelligently for density, providing place-specific, spacious yet smaller footprint homes for "empty nesters".

Approaching the density problem, Luke's solution was not to maximise the number of apartments on the site, but to achieve

functional, energy- and water-efficient homes that fit somewhere between a townhouse and an apartment in the property spectrum. Located on a block in Melbourne's eastern suburb of Elsternwick, Luke says the apartments, at about 220 square metres each, roughly double the area's average density.

Luke explains his influences and approach to the block's design: "If you start to try and design even a courtyard house, it's not very functional because you get these bad spaces. So I said, let's forget about boundaries, which is what nature does, and look at the bigger urban picture." As he sketches the layout of the apartment

building, he explains that the design can be duplicated across a series of large urban blocks, without compromising each apartment's visual and space amenity or access to natural light and ventilating breezes.

All nine homes are oriented towards the north to maximise passive solar design. Carefully placed full-height, clerestory and louvred glazing brings natural light into the living areas and provides cross ventilation to reduce reliance on active cooling. Each apartment also has a generously-sized and north-oriented balcony, large enough for an outdoor setting, barbecue, ample room for plants and space to →

Home among the trees

A holistic and sensitive environmental design approach defines this new Victorian seaside home on a site steeped in ecological history.

WORDS Fiona Negrin

PHOTOGRAPHY Guy Le Page

BARWON HEADS IS A PICTURE-PERFECT SEASIDE

community 100 kilometres south of Melbourne. Chris and her husband Neville live in a typical tree-lined street, with one exception: the vacant block next door wasn't a dumping ground for abandoned cars and beer cans. Instead it was the unlikely home to a towering thicket of stately Moonah trees (*melaleuca lanceolata*), most of which were as old as Cook's arrival at Botany Bay.

"We'd lived next door since 1983," says Neville, who is soon to retire. "This land was vacant, never built on. We used to help maintain it. Six years ago we faced the prospect of a significant development on the site, so we went into defensive mode and bought it."

Chris, a retired schoolteacher, remembers it as an emotional time. "This block has always been special to us. We look on to it from our place. I remember sitting there feeding my babies and looking over the trees. For someone to come in here and chop all the trees down..." Her voice trails off.

Chris and Neville hired architects Third Ecology to design a sustainable house for them to live in during retirement, with one caveat: don't compromise the site. To that end, only one mature tree, assessed by a specialist as not viable, and two smaller trees

were cleared to make room for the house. Such careful placement of the dwelling ensured that two-thirds of the 900 square metre block has remained bush.

Choosing a foundation was their first consideration. The footings needed to allow for the trees' substantial root systems, because "as soon as you play around with the roots you affect their long-term health," says Ryan Thompson of Third Ecology. Intuitively, timber stumps seemed the best way to let the roots flourish underneath, but an engineering expert advised against it because it would create an arid zone under the house and deprive the roots of moisture. Instead, he recommended a concrete slab. This sits on sand foundations, with its edge beams shallow enough to let the tree roots grow comfortably below it. "In the 18 months since we excavated, there's been no sign of any trees having been adversely affected," says Neville.

Ryan recalls the other big challenge of the design: the sheer density of foliage enclosing the house was compromising the sun's ability to penetrate the northern living area. To get around this "we went up to the second level, to get up amongst the canopy and get access to the northern light," he says. Indeed, at just over 100 square metres, the house's footprint is modest – another consequence of extending upwards rather than outwards. →



Ancient, slow-growing
Moonah trees arch over
the boardwalk leading to
the home's entry.

Reclaimed, rebuilt

The subtle eco features of this
Adelaide renovation save energy
in more ways than one.

WORDS Robin Barton
PHOTOGRAPHY Sarah Long

IT WAS WITH A TWINGE OF GUILT THAT JANE COX AND PARTNER DAVID WRIGHT DECIDED to knock down the back of their bluestone cottage and its antiquated extension. They'd lived for nine years in the 19th century property in a local heritage zone a walkable distance east of Adelaide's city centre. But the disorganised, south-facing rear of their house, on its sloping block and with its dark kitchen, didn't grant them easy access to the garden and didn't suit their desire to reduce their energy consumption.

A lack of experience in project management and construction led the couple to call in architect Kirsty Hewitt of KHAB Architects, to design and manage building their new extension, including a new kitchen, dining and living area, a laundry and a bathroom. "We really liked the principles behind her work and were very open to her ideas," says Jane. What's more, Kirsty thought she had the sustainable solution to Jane and David's guilty pangs over the imminent demolition: recycling materials from the demolished part of the house. A bluestone wall was salvaged and rebuilt into a garden retaining wall visible from the living area, and in the dining space rescued Baltic pine flooring was employed as a feature wall.

"If the owner is keen to recycle materials, we like to pursue it," explains Kirsty. "We work out what can be salvaged from the demolition and design in the materials where feasible; we always request that the demolition takes place with care. We also specify recycled materials from salvage yards and we're getting better at knowing what timbers, and in what sizes, are readily available." Jane agrees: "It seemed like the right thing to do." →





Kirsty's design for the extension focused on connecting indoor and outdoor living spaces. Three 5200 litre galvanised water tanks covered by creepers (featured centre left) sit on the western edge of the property.

Passive state of mind

When New York State architect Dennis Wedlick set out to build the most energy efficient home he could, passive house design principles were key.

WORDS Anna Cumming
PHOTOGRAPHY Peter Aaron

THE CLIMATE OF THE BEAUTIFUL HUDSON VALLEY IN UPSTATE NEW YORK, USA, can hardly be described as mild. With average daily temperatures hovering around minus five degrees Celsius in winter, and snowfall expected as much as six months of the year, building a home in the area that does not require an active heating system would seem an unlikely goal. Yet that is exactly what local architect Dennis Wedlick set out to do when he embarked on the Hudson Passive Project: design a high-performance home that was also beautiful and quick to build. The result was the state's first certified passive house.

With the support of the New York State Energy Research Development Authority, Wedlick designed his compact prototype house with the rigorous energy efficiency specifications of the Passive House Standard (PHS) firmly in mind. Developed as 'passivhaus' in Germany in the 1980s, the standard requires very low space heating and cooling demand and high air-tightness. In essence, a passive house is a very well insulated, airtight building that is able to maintain a comfortable internal temperature using primarily the sun and natural ventilation. [Ed note: For more on the Passive House Standard, see the article in *Sanctuary* 17.]

Remarkably, the home achieves a very low energy consumption without relying on solar panels, wind turbines, geothermal or other on-site energy systems. Wedlick explains that his firm saw the project as "a chance to prove that significant energy conservation could be achieved through architecture alone". →

 A series of five gracefully curved timber buttresses supports the structural insulated panel walls and roof of the house. The frame was raised in a single day, reminiscent of the area's traditional communal "barn-raising" events.



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