

Sanctuary

MODERN GREEN HOMES

ISSUE
60

FLOOD RESILIENCE
SPECIAL

Retrofit tips for fast flood recovery; sustainable tapware;
mid-century gem restored; slow the flow in your garden

WATER WISE

Flood-resilient design in action



5.

PUBLISHED BY **renew.**
SPRING 2022 • AU/NZ \$13.95
SANCTUARY.RENEW.ORG.AU

ISSN 1833-1416



9 771833 141017



Familiar ground

LOCATION Balnarring, VIC • WORDS Rebecca Krispin • PHOTOGRAPHY Tess Kelly

This couple enjoyed camping holidays on their coastal Victorian block for decades before building their light-filled and comfortable reverse brick veneer home and making a permanent move.

Ken and Joan have a long history with Balnarring, a quiet town on the Mornington Peninsula south-east of Melbourne. In 1977 they bought two adjacent blocks, using one of them to build a home where they lived while their children were young. They later sold this house and moved away, but kept the second block for family camping trips, using a shipping container to store their gear.

Their recent move back to Balnarring was not exactly downsizing, because as Joan explains, “we’ve always lived in fairly small houses.” But their new empty nester home is certainly a continuation of their ethos of sustainable living, which they integrated as best as they could into their first home build as well as their later Melbourne renovation.

Architect Aaron Neighbour is an old family friend who went to school with their daughter, and his firm was a natural choice for this project. “I’m a surfer – I love working on coastal homes, and I have a really good understanding of coastal house typologies,” he explains. He is also passionate about sustainable design.

As Joan explains, their brief was fairly simple. They wanted an energy-efficient home with lots of light, that was easy to move around in and low maintenance. It had to be single-level for ageing in place, and as small as possible while still meeting their functional needs. “I’ve always had a bit of a thing about courtyards, and the other thing I wanted was for every room to have a decent window – preferably north-facing,” she says.

Ken, a retired civil engineer, had plenty of technical specifications for the sustainability aspects, including thermal mass, high levels of insulation, passive solar design, solar panels and energy-efficient appliances, as well as a good-sized garage and workshop.

Aaron worked with his business partner Ton Vu to develop a design response: “a modern expression of the skillion shed”, as Aaron describes it.



At a glance

- Empty nester small-scale home with flexibility for visiting family
- 7.2-Star gas-free house
- Courtyard design for passive solar performance and privacy
- Reverse brick veneer using recycled bricks



↑

For their new house, Joan and Ken wanted to integrate elements that had worked well for them in their previous homes, including reverse brick veneer construction and an open plan kitchen, living and dining area. The bricks are all recycled.

“The simple form of the building reflects inspiration from the common Australian shed that you see all around, including on the peninsula. This is our way of expressing that form in an architectural context as a home.”

The design maximises the advantages of the site, which has a wide north-facing frontage looking onto established native vegetation and a quiet street. To place the main living area to make the most of this sunny northern aspect, Aaron and Ton had to find a way to maintain privacy. Their solution was to develop a semi-public sunken northern yard, separated from the street by a raised garden bed which is dune-like in form and provides some visual screening without the need for a front fence.

The house is designed in wings around a central courtyard. The living

wing to the north includes the kitchen and dining areas; the main bedroom and ensuite are in the western wing and the southern wing houses two guest bedrooms, a bathroom and laundry. Slightly separated to the east is a large garage and workshop. The orientation and courtyard design allow almost all of the habitable rooms to have north-facing windows, and the courtyard provides a versatile outdoor space that’s sheltered from the south-westerly winds and offers both sunny and shaded areas.

“The segmented design means that the house can be zoned really easily – there’s a sliding door to the guest wing that we can shut when we’re not using that area,” says Ken. “In terms of heating and cooling, it makes it really simple and very efficient.”

According to Aaron, one of the most successful aspects of this project

is the thermal mass, particularly the well-insulated reverse brick veneer construction (using recycled bricks of course). “This creates a heat bank and a powerful thermal barrier between inside and outside, so that the temperature stays quite moderate inside, even during extreme highs and lows.”

Thermal comfort is also facilitated by the insulated concrete slab, well-sealed building envelope and passive solar design elements. These include careful consideration of orientation, double glazing, eaves, and the angling of the skillion roof. One standout feature is the use of carefully designed separate shading to the upper and lower windows on the front facade, using eaves and a narrow verandah roof, to provide all glazing with summer shade and maximum winter sun.



↓
Motorised clerestory windows in the living area can be opened to purge hot air which collects in the high angle of the ceiling, and they also flood the house with natural light.

Cross ventilation is maximised with careful placement of windows and doors on both the external and courtyard walls. The motorised clerestory windows in the living area can be opened to purge hot air which collects in the high angle of the ceiling, and they also flood the house with natural light: all in all, “they help create a healthy ventilated space,” says Aaron.

Ken is particularly proud of the many technical aspects which make the house both very energy efficient (with a 7.2-Star energy rating) and low maintenance. These include toilet cisterns that are gravity-fed from the rainwater tanks, the heat pump hot water system, all-electric energy-efficient appliances (apart from a wood heater), and 6.8 kilowatts of solar panels on the north-facing skillion roof of the southern wing.





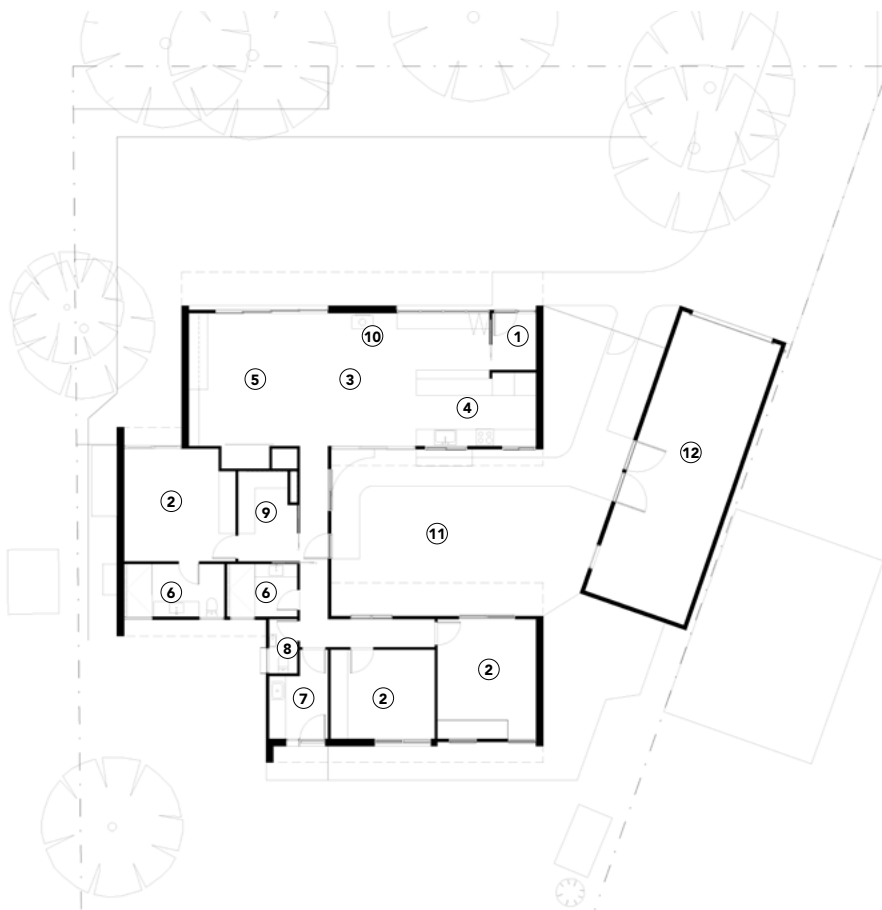
Joan and Ken have established a wonderful native garden over the years, with many plants indigenous to the area. Their old shipping container is still housed at the southern end of the site, bringing back happy family memories when the couple are pottering in their nearby vegetable garden.

Aaron's favourite feature of this home is the reverse brick veneer aesthetic. "I love the warm texture of the internal brickwork. The building has a very simple form and structure, and the texture and pattern of the brickwork gives it a whole other sense of detail. The rhythm of the bricks really accentuates the roof angle."

Ken and Joan are also extremely happy with the result, especially now that they have lived through both summer and winter in the house. "The thermal mass inside the building certainly has a noticeable effect in terms of how comfortable the temperature is. And it's also incredibly quiet, and so bright and light, which is fantastic," says Ken. "It's a cosy house and we really love the big living room with the high ceiling," adds Joan. "And we love having dinners in the courtyard during summer." 📍

↑
The materials used externally reflect the coastal environment. Corrugated steel protects against harsher weather conditions on the eastern, western and southern facades, and the softer texture of timber was used for the north and some of the more sheltered courtyard walls.

FLOOR PLAN



LEGEND

- ① Entry
- ② Bedroom
- ③ Living
- ④ Kitchen
- ⑤ Dining
- ⑥ Bathroom
- ⑦ Laundry
- ⑧ Toilet
- ⑨ Walk-in robe
- ⑩ Wood heater
- ⑪ Courtyard
- ⑫ Garage/workshop

HOUSE SPECIFICATIONS

HOT WATER

- Sanden Eco Plus 315L heat pump hot water system

RENEWABLE ENERGY

- 6.8kW solar PV system (21 x 325W Sunpower panels and Fronius Primo 6.0-1 inverter) with capacity for future battery connection

WATER SAVING

- 2,000L rainwater tank provides gravity water supply to the toilets
- 5,000L overflow tank provides pumped water supply for garden irrigation

PASSIVE DESIGN, HEATING & COOLING

- Courtyard design ensures northern sun access to most rooms
- Thermal mass for internal temperature regulation: insulated reverse brick veneer construction to most external walls and insulated concrete slab floor
- Solar control: north-facing eaves designed to block summer sun while allowing winter sun to penetrate
- Windows and doors were carefully placed to maximise cross ventilation; raked ceilings and motorised clerestory windows allow for purging of hot air in summer
- Internal doors between wings enable a three-zoned heating and cooling system, ensuring only the rooms being used are air-conditioned

ACTIVE HEATING & COOLING

- Actron Air ESP Platinum Que Series zoned ducted reverse-cycle air conditioning system
- Morso Modern 6612 wood heater

BUILDING MATERIALS

- Reverse brick veneer construction and external paving using recycled clinker bricks from Eco Group
- Cladding: Lysaght corrugated steel and spotted gum shiplap boards
- Roof: Lysaght Klip-Lok 700 Hi-strength
- Waffle pod concrete slab floor
- Steel framing to the cantilevered verandah beams

- Insulation: Bradford Gold 215mm batts (R4.1) plus Air-Cell Insulbreak 55 (R0.15) to ceilings and roof, Bradford Gold Hi-Performance 90mm batts to walls (R2.5), Kingspan Kooltherm K3 under slab (R2.6)

WINDOWS & GLAZING

- Double-glazed, aluminium-framed windows and doors supplied by Rylock Windows and Doors

LIGHTING

- LED lights from Cult Design, Mondoluce and Finnish Design Shop

PAINTS, FINISHES & FLOOR COVERINGS

- Wattyl ID Advanced ultra-low-VOC interior paint (less than 1g/L)
- Organoil natural oil to hardwood cladding

OTHER ESD FEATURES

- Gas-free house with induction cooking
- The sheltered central courtyard functions as a winter garden, protected from the prevailing cold south-westerly winds
- Timber and corrugated steel cladding offcuts used to create a built-in bookshelf, fences, gates and firewood storage
- Food-producing gardens



DESIGNER

Atlas Architects

BUILDER

Rob Gibson

PROJECT TYPE

New build

LOCATION

Balnarring, VIC
(Boonwurrung Country)

COST

\$660,000

SIZE

House 155m²
Land 870m²

ENERGY RATING

7.2 Stars

ENERGY ASSESSOR

Energy Lab

BUSHFIRE ATTACK

LEVEL

BAL-Low

INSIGHTS

“The lockdowns of 2020 and 2021 were a major constraint, making sourcing materials and accessing tradespeople difficult. But we were lucky that work was able to continue as no-one was living on site during the build, and we also managed to sneak in as Aaron and Ton’s last project before Covid inflation hit.”

Ken and Joan,
homeowners