

MODERN GREEN HOMES

ISSUE 44

Sanctuary

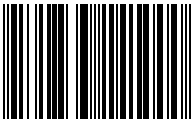
STEP INSIDE

AUSTRALIA'S MOST SUSTAINABLE HOMES



ISSUE 44 • SPRING 2018
AU/NZ\$12.95
SANCTUARYMAGAZINE.ORG.AU

ISSN 1833-1416



9 771833 141000

Sustainable House Day 2018 preview
 Climate-ready designs
 Cradle-to-cradle construction

WIN

a \$5000 Biofilta sustainable garden package

Offer open to Australian residents. Details page 97.



At home in the country

An architect's own home in Albany, WA, makes the most of its wild and windy site, using Passive House techniques to keep the weather out.

WORDS Rachael Bernstone
PHOTOGRAPHY Lee Griffith Photography



Designed as two pavilions connected by a glazed corridor, Julie's house provides zoned, flexible living spaces that reduce the need for heating. The walls are constructed from SIPs, designed to standard sizes to minimise on site cutting and waste; cladding is FSC-certified local jarrah.



A covered deck between the two parts of the house is sheltered from the prevailing southern elements and allows comfortable outdoor living. The roof pitch has been designed to optimise a future solar PV system.

TUCKED IN A VALLEY SURROUNDED

by sand dunes, this modern country house has views across to Albany's famous wind farm with its 12 turbines that supply 80 per cent of the town's energy needs. It's a visual reminder that this is a cool and breezy place, even in the middle of summer.

Even though the house is five kilometres from the coast, the family that lives here can hear the waves of the Southern Ocean pounding against the shore when they stand outside or open the windows. But inside, it is quiet and warm, thanks to the Passive House principles that guided architect and owner Julie de Jong in its design.

She wanted to mitigate the local conditions and provide a buffer against the southern elements, so the house is arranged on an east-west axis with the living spaces facing north, in two pavilions joined by a glazed walkway.

"One of the lovely things about being in the country is having lots of open space around the house," Julie says. "The glass corridor means that when I walk from my bedroom to the kitchen in the morning I can see what the weather is like, and have an immediate connection with nature, while also having that lovely snug feeling of being warm inside."

The family moved south from Perth five years ago when Julie was pregnant with their second child. "When we bought this land, it was still a big paddock," she recalls. At first, they rented an old house in the town centre that was freezing cold in winter, and not much better in summer. Living there helped Julie to work out what they needed, as she began work on the design.

"It's a cold climate even in summer, when any higher temperatures are not sustained for long," she says. "And there is not as much double-brick construction here





The house is built on a concrete slab, fully insulated from the ground below and around the edges to maximise its thermal mass potential.



The only active heat is provided by the slow combustion fireplace in the eastern living area; wood for fuel comes from the site and a family farm. A heat transfer system ducts warm air to the rest of the house, but Julie says the passive thermal performance of the house means they don't use the fireplace as much as they expected.



as in Perth – it’s more lightweight timber-framed buildings – so there are plenty of carpenters among the local builders.”

Working within the constraints of the environment and the availability of local trades, Julie experimented in ways she hadn’t been able to on clients’ projects. “In Perth, I’d always looked at alternative construction methods but clients wouldn’t go for them,” she says. “So I built our house out of SIPs [structural insulated panels] and timber framing, with timber cladding on the outside.

“As a child, I lived in the southern forest region and I wanted a timber aesthetic because of the appeal of living with natural materials, and because it suits this climate well if you incorporate high levels of insulation,” she adds. The exterior walls comprise 145mm-thick insulated panels with an R-value of 3.5, a 35 millimetre air gap, and an outer layer of jarrah cladding. “It’s a pretty chunky timber wall,” Julie says.

Thermal modelling suggested that indoor temperatures would be sufficient to leave out the planned in-slab heating system, which saved \$30,000 and has turned out to be a good decision. “It rarely gets cold and we don’t use the only heater – the log fire in the main living room – as much as we thought we would, because it gets too hot,” Julie says.

To distribute that heat throughout the house, Julie installed a heat transfer system after the first winter. It collects hot air from the raked ceiling in the main living space and pumps it into the living room and children’s playroom in the bedroom wing. Dividing the house into two areas helps to reduce heating costs and provides useful separation when guests visit.

Julie admits there are some downsides of being an architect and designing your own home, including the desire to have the best of everything on a tight budget. She made some big-ticket purchases but justified those because the family intends to

live in the house for many years.

“Ultimately we were happy to invest in a quality build and high-quality finishes,” she says. “For example, it would have been cheaper to use an off-the-shelf cladding product than the solid jarrah outside, and we integrated a lot of natural timber inside, which was an additional cost over the prefinished SIPs, but I think the timber finishes contribute to a sense of general wellbeing.”

The process of building her own home and bouncing ideas off her husband Lee – who played the role of client – helped Julie to explain all of her choices in layperson’s terms, giving her useful insights for future projects with clients.

“My husband was reading a lot of *Sanctuary* magazines at the start, to learn about the terminology and concepts: that it’s not just about aesthetics and floor area,” she says. “When I was using the environmental modelling tools to get the sun angles and eave overhangs just right, I



Cabinetry in the kitchen and elsewhere in the house is made from E0 substrate. The kitchen benchtop is Paperock, a compressed paper and resin product.



All plumbing fixtures are rated 5-star WELS to minimise water use; a 110,000 litre rainwater tank with a UV water treatment system is plumbed to the entire house.



The double-glazed entry walkway between the two parts of the house allows for an immediate connection with the surrounding environment and is one of Julie’s favourite features.

brought him along with me.”

Julie also explained to Lee why she selected Tasmanian oak for the interiors – it was the cheapest plantation timber available – and why it was worthwhile to install under-slab and slab-edge insulation.

“In the first year we moved in, it took about 12 months for the temperature of the slab to neutralise and to store warmth and regulate with the ground temperature, as it cured and settled in on the site, but now it means the indoor temperature is very stable,” she says.

It wasn’t all plain sailing. The build itself was like an episode of Grand Designs at times, Julie recalls – but the final result

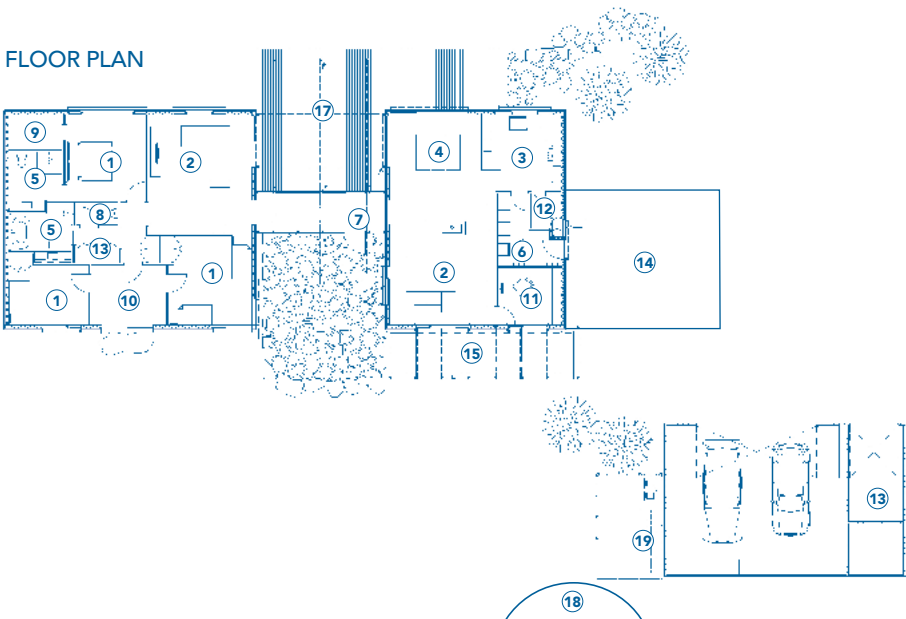
was worth the effort, and the project provided her with a great introduction to life and work in Albany.

“It offered me a chance to establish relationships with local builders and tradespeople, and as a new director at H+H, it was my chance to say: ‘This is how I like to do things,’” she says.

“The thing I love most about our house – apart from the fact that it’s so lovely and warm – is the way that we can look out and not see any of our neighbours, just the views and my horses in the paddock. And we get kangaroos on our front lawn, and that never gets tired!”



FLOOR PLAN



LEGEND

- ① Bedroom
- ② Living
- ③ Kitchen
- ④ Dining
- ⑤ Bathroom
- ⑥ Laundry
- ⑦ Entry
- ⑧ Toilet
- ⑨ WIR
- ⑩ Playroom
- ⑪ Study
- ⑫ Pantry
- ⑬ Store
- ⑭ Carport
- ⑮ Covered walkway
- ⑯ Courtyard
- ⑰ Deck
- ⑱ Water storage
- ⑲ Clothes line

Racecourse Rd Residence

—Specifications

Credits

DESIGNER

Julie de Jong,
H+H Architects

BUILDER

Dave Holland

PROJECT TYPE

New build

PROJECT LOCATION

Albany, WA

COST

\$650,000

SIZE

House 206 m²
Land 1.8 hectares

BUILDING STAR RATING

7.2 Stars

ENERGY RATING

Sid Thoo

Sustainable Features

HOT WATER

- 315L Sanden heat pump
- 16L electric storage unit for the kitchen/laundry only, set on a timer so it doesn't run all the time. This second unit was necessary due to the length of the house.

RENEWABLE ENERGY

- Designed to allow for future solar panel installation.

WATER SAVING

- 110,000L rainwater tank plumbed to the entire house
- Puretec high flow whole house UV water treatment system
- In-ground bore water used for reticulation
- All sewage is dealt with on site through a septic system and the leach drains from this have been positioned to provide water to the main house paddock
- 5-star WELS-rated plumbing fixtures throughout.

PASSIVE DESIGN / HEATING & COOLING

- Sited to maximise solar access on the northern side of the building, with no windows on the west side, to control solar gain
- Internally, the exposed concrete slab acts as a heat sink; the slab has under-slab and slab-edge insulation to maximise solar heat gain storage
- Blinds and curtains with built-in pelmets throughout
- Undercover deck on north side of building to provide all-weather outdoor living. Shady courtyard provided on south side for summer use
- Narrow floor plan of the

- building allows for excellent cross ventilation, with windows positioned to maximise breezes from south and south-west
- Designed to allow the house to be easily zoned, as required.

ACTIVE HEATING & COOLING

- Stovax Riva Studio 2 slow combustion free-standing fireplace, with in-built heat transfer system that ducts excess hot air to rest of house. Wood sourced from the site and a family farm
- Energy-efficient DC ceiling fans throughout living spaces and bedrooms.

BUILDING MATERIALS

- Highly insulated (R3.2) SIPs (structural insulated panels) for walls supplied by SIPs Industries Perth, designed using standard pre-fabricated panel sizes to minimise on-site cutting
- Concrete slab; entire slab edge and under-slab insulated with rigid Kingspan Kooltherm boards
- Colorbond Trimdek steel roofing on locally fabricated engineered truss roof using plantation pine
- Cladding: FSC-certified local jarrah from Nannup
- Insulation: Tontine polyester batts with over 80 per cent recycled content: ceiling R4.0 batts combined with R1.5 Anticon; R2.5 batts to internal walls
- Galvanised steel feature beams and pergola structures
- HardieDeck CFC (compressed fibre cement) decking designed to suit low ground clearance and minimise bushfire risk.

WINDOWS & GLAZING

- Bradnams Signature Range, argon-filled double-glazed units from Glass Supplies, Albany
- Double glazed fixed Velux skylights to both bathrooms.

PAINTS, FINISHES & FLOOR COVERINGS

- Taubmans low-VOC paints throughout
- Cutek CD50 oil finish with black stain to exterior wall cladding. The stain provides additional UV protection as the natural timber weathers
- 'Salt and pepper grind' to concrete floors throughout, finished with Livos oil
- FSC-certified solid Tasmanian oak architraves and feature walls to interior, finished with Cabots water-based clear sealer
- Paperock benchtops and cabinetry sealed with Osmo Oil
- Porcelain tiles to wet areas
- E0 substrate to all cabinetry.

LIGHTING

- LED throughout.

OTHER ESD FEATURES

- 1200 native trees and shrubs planted to provide wildlife and bird habitats, funded by a grant from the Torbay Catchment group
- House designed on a grid system to maximise use of prefabricated SIPs and match with standard material sizes, reducing onsite cutting and waste
- Extra efforts during construction to achieve air-tight seals between wall panels, window openings etc to reduce heat loss.