

MODERN GREEN HOMES

# Sanctuary

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BACKYARD  
BUILDS SPECIAL

## BACKYARD BONUS

Garden rooms,  
studios & home offices

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### PLUS

Flood-resilient extension  
8.3-Star Perth downsizer  
Get your alfresco roof right  
Eco decking options

# Elegant downsizer

LOCATION Perth, WA • WORDS Rebecca Krispin • PHOTOGRAPHY Bo Wong



## At a glance

- 8.3-Star gas-free house for sustainability-conscious downsizers
- Designed to make a positive contribution to the streetscape
- Verandahs with screens and shutters to modulate shade, sunlight and privacy

**This landmark, light-filled Perth home provides energy-efficient and comfortable living for its downsizing owners, with a perfect balance between connection to community and privacy.**

The story of Adam and Kerry Mason's award-winning sustainable home started with a dream, a great block and a lot of homework. "We've been serial renovators over the years, but I've always had a dream of building my own home," says Adam. "We wanted to downsize and were looking to the future when our kids left home – which has since happened."

They fell in love with a 350-square-metre corner block located on a roundabout in busy suburban Applecross, not far from central Perth. "It's a small site, adjacent to a shopping village that gives us access to amenities without having to drive anywhere," Adam says. "We started doing our research with three publications: *Sanctuary* and *Renew* magazines, and *Your Home*, the federal government's free guide to environmentally sustainable homes. We

used these as a basis to help our decision-making process for the design. I got quite a lot out of reading case studies about what other people had done."

The couple also completed courses in passive solar design and attended Sustainable House Days in Perth.

Their research led them to local architect Philip Stejskal, who has a reputation for being a "really good communicator and working closely with his clients on their specific desires," as Kerry puts it.

According to Philip, "Kerry and Adam's site is unique in that it's quite public. They bought it specifically because they want that connection with the surroundings, but they also want to have their privacy. It was very much a case of balancing these two needs, along with proper orientation and passive solar principles."

→ Architect Philip Stejskal's sources of inspiration for this striking home included mid-century modern architecture, the work of Finnish architect Alvar Aalto and the traditional Australian homestead with wrap-around verandah.





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The interior layout has been designed for ageing in place, with a bedroom, study and bathroom tucked behind the stairs on the ground floor. The lower level is constructed of insulated double brick, while upstairs is reverse brick veneer.

The detailed brief was for a small and efficient home that would allow the couple to age in place. It had to be easy to clean and cheap to run as they headed into retirement. The couple also wanted functional spaces for daily use without any “dead spots”, as well as additional accommodation for visiting family and friends. On the sustainability front, Adam included a long list of technical stipulations from his extensive research. Adam and Kerry also requested a design that would be something different, something that would stand out, to counteract the growing trend of building ‘McMansions’ in this area.

Philip started his design work with careful consideration of the northern aspect. “The site is angled diagonally to north, so that orientation informed the northern elevation,” he says. The other

aspects were then designed around street alignment and climate considerations, evolving into the parallelogram shape of the footprint.

Allowing for ageing in place required all the functional rooms to be situated on the ground floor: kitchen, living and dining spaces, main bedroom, ensuite (which cleverly doubles as a guest bathroom with access via the kitchen), laundry and study. Due to cost constraints, Philip designed a partial second storey for the guest rooms – essentially a loft, with two bedrooms and a bathroom in the roof space.

The height needed for the loft in the centre of the building, combined with the need to taper down at the edges to create a respectful interface with the single-storey neighbours, resulted in the double-triangle plan and A-frame roof

shape. “This form also made a lot of sense when addressing the roundabout and the street corner location,” says Philip, “as well as maximising solar access for the photovoltaic panels on the roof.”

For passive solar performance “it made sense to wrap the building in a verandah, like a traditional Australian homestead,” he explains. “We needed to have shading on both the north and east street elevations, and this also then became the privacy buffer.” The traditional verandah can block winter sun from entering the house, but Philip improved on this by opening it up to the full height of the roofline and creating porosity with wooden slats and openable shutters.

The home has an 8.3-Star rating and a high level of thermal efficiency. As well as orientation for passive solar



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The double-triangle plan and A-frame roof shape were a response to the size and shape of the street-corner site and the need to be respectful of the single-storey neighbouring homes. High windows flood the house with natural light. A verandah wrapping around the north and east sides provides summer shade, and timber slats and shutters allow winter sun to enter.



performance, this is achieved through thermal mass, heavy insulation, thorough draught sealing and ventilation. The thermal mass includes internal brickwork as well as exposed concrete floors for the ground level and loft, which “stabilises temperatures for both levels,” says Philip. Extra attention was paid to gap sealing at all stages of the build. Windows and doors are double glazed with lift-and-lock mechanisms to minimise air leakage, and natural cross ventilation paths are designed to purge heat on summer nights.

There are also several active systems, including a mechanical ventilation system with heat recovery (MVHR) which brings fresh air into the house, and heat pump hydronic heating in the slab. The solar panels on the roof provide much of the energy needed for these systems, and internal temperature is regulated via thermostats to maximise efficiency.

The house is all-electric with the exception of the wood stove installed for ambience, and the low-maintenance waterwise native garden complies with Adam’s zero-lawn policy. The couple also love the fact that they can fully clean the house in around 45 minutes, using only water and microfibre cloths. As they contemplate retirement, the financial bottom line is particularly satisfying, with their electricity bill totalling around \$1,400 per year.

The main challenge the couple encountered was that the build was considerably more expensive than expected. “Adam wanted a pretty high spec building, with all the gear, and we just found that once you start adding all these systems, it gets expensive,” explains Philip. Adam and Kerry decided to cover the extra costs, and are very happy they did.

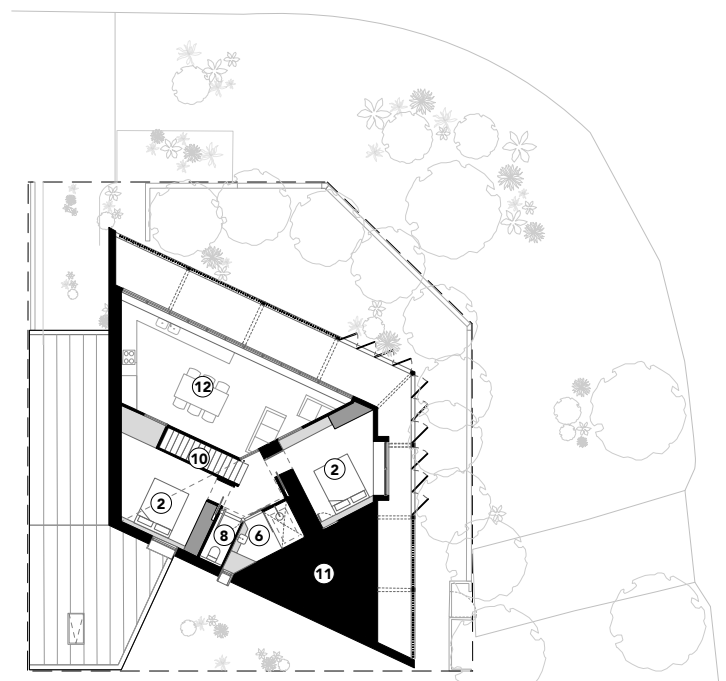
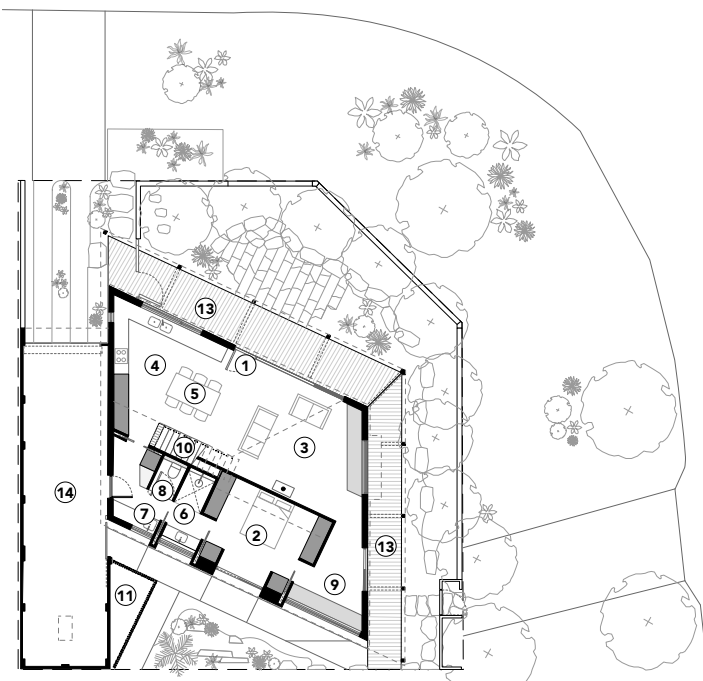
“My favourite part of the house is the light you get in during the different seasons. Just beautiful,” says Adam. “And in terms of functionality, it’s very easy to get around and very comfortable temperature-wise. When you get out of bed in the morning and your feet hit a warm floor in the depths of winter, it’s so good.” Kerry loves the fact that “it doesn’t feel small because of the void above the living area and the windows opening onto the garden. It has so many wonderful features.”

Philip was, of course, thrilled to win two awards for this project at the 2021 Australian Institute of Architects National Architecture Awards: the Wallace Greenham Award for Sustainable Architecture, and the Award for Residential Architecture – Houses (New).



GROUND FLOOR PLAN

FIRST FLOOR PLAN



LEGEND

- |           |            |            |
|-----------|------------|------------|
| ① Entry   | ⑥ Bathroom | ⑪ Services |
| ② Bedroom | ⑦ Laundry  | ⑫ Void     |
| ③ Living  | ⑧ Toilet   | ⑬ Verandah |
| ④ Kitchen | ⑨ Study    | ⑭ Garage   |
| ⑤ Dining  | ⑩ Stairs   |            |

# HOUSE SPECIFICATIONS

## HOT WATER

- Rheem 250L electric storage hot water system
- Catch Power Green Gen2 controller for heating water using solar generation

## RENEWABLE ENERGY

- 6.5kW solar PV system from SEM Solar, grid connected with ability for future battery connection: 20 x 325W Trina solar panels and Sungrow Hybrid 5.0 inverter with Reposit monitoring

## WATER SAVING

- Waterwise native garden with subsurface irrigation
- Bore for garden watering

## PASSIVE DESIGN, HEATING & COOLING

- Optimised northern glazing with considered shading design
- Insulated concrete slab for thermal mass
- Roof form maximises solar harvesting potential while maintaining solar access to rear rooms
- Natural cross ventilation paths designed for effective night purging of heat in summer
- External sliding screens to east-facing windows
- Operable shutters to verandah to the north and north-east to augment solar ingress in winter
- Minimal openings on western elevation

## ACTIVE HEATING & COOLING

- Rehau hydronic slab heating to lower level powered by Stiebel Eltron heat pump
- Daikin VAM350 mechanical ventilation system with heat recovery (MVHR)
- Big Ass Fans ceiling fans to main bedroom and living area
- Nectre N15LE wood heater

## BUILDING MATERIALS

- Double brick construction to lower level, reverse brick veneer to upper level
- Fielders Prominence standing seam roof and upper level cladding

- Barestone prefinished fibre cement cladding in selected areas
- Polished concrete slab floor to both levels
- Insulation: Knauf Earthwool batts to ceiling and Anticon blanket to roof (total R5.3), Knauf Earthwool batts to upper level walls (R2.7), Fletcher PiRFormatherm 25mm rigid thermostet board to double brick wall cavities (R1.14), Kingspan Kooltherm K3 under slab floor (R2.3)
- Plywood joinery, Victorian ash stairs and spotted gum exterior timber screens and decking (all FSC-certified)
- Dekton benchtops (made from quartz, porcelain and glass, including recycled material)

## WINDOWS & GLAZING

- Aluminium-framed double-glazed windows and sliding doors from Mandurah Glass; lift & lock mechanism to sliders to minimise air leakage
- One high-level Victorian ash-framed double-glazed window by Cockburn Joinery

## LIGHTING

- All LED from Unios (Australian designed and owned)

## PAINTS, FINISHES & FLOOR COVERINGS

- Interior and exterior brickwork bagged and painted with Dulux WeatherShield
- Dulux low-VOC interior paints
- Osmo oil (low-VOC) to plywood joinery and stairs
- Cutek Extreme to exterior timber screens and decking

## OTHER ESD FEATURES

- No gas supply to house
- Waterwise native garden with vegetable production
- Easy walking distance to shops and public transport to reduce car use

## DESIGNER

Philip Stejskal Architecture

## BUILDER

Portrait Custom Homes

## PROJECT TYPE

New build

## LOCATION

Perth, WA (Whadjuk Noongar Country)

## COST

Approx \$1 million

## SIZE

House 183.5m<sup>2</sup>  
Land 350m<sup>2</sup>

## ENERGY RATING

8.3 Stars

## ENERGY ASSESSOR

Sustainability WA

## INSIGHTS

“We had a clause in the building contract that required the builder to ensure that all of the usual layers that go into a building – like the insulation and moisture-proof membrane – were installed meticulously, and particularly that the membrane was taped at all junctions so that there’s a continuous taped and sealed airtight skin wrapping the building. It’s really what should happen anyway; it just represented an undertaking to be really vigilant about it.”

Philip Stejskal, architect