

Sanctuary

MODERN GREEN HOMES

ISSUE
58

SMALL CHANGE
SPECIAL

Tiny Tassie treasure; latest eco-concrete options;
making space work harder; urban microforests

When less is more

Homes going small on
size, site and budget,
but big on heart



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Modest masterpiece

LOCATION Claremont, WA • WORDS Rebecca Gross • PHOTOGRAPHY Jody D'Arcy



At a glance

- Accessible three-bedroom home tailored for its 179m² urban site
- Prefab timber-frame construction
- Passive solar and Passive House principles for high performance
- 7.7-Star all-electric home delivered for \$500,000

Simple, prefabricated construction and careful design enabled a spacious-feeling and high-performing home on a seriously tiny Perth site – all on a budget.

When Marina found and fell in love with an awkward battle-axe block in Claremont, Perth, she knew it would take a smart, site-specific design to make the most of the tiny property and her modest budget. “I knew from the get-go that I would need an architect. It needed to be a custom-designed house and I wanted someone who was passionate about designing a small home and maximising its potential,” she explains.

She engaged Ben Caine, director of Leanhaus, who had approached local real estate agents seeking to work with people who had bought challenging blocks of land like Marina’s. “This was my first project through my own practice. I was aiming to offer a service with a more streamlined process, which would let me reduce my fee to make it possible for people to work with an architect and achieve a bespoke design,” says Ben.

Indeed, the cost of the site, efficient construction and Ben’s service meant Marina was able to afford a home suited to her needs and taste at a similar price to an entry-level three-bedroom apartment in the same area.

The 179-square-metre block is narrow and sloping, with a long driveway that makes access difficult. It’s surrounded by neighbours on all four sides, but importantly for Marina, immediately adjacent to the north-facing rear of the block is the driveway and carpark for the apartments next door, meaning solar access isn’t compromised. Her brief was for a three-bedroom house with a functional layout that made the most of every inch of space. She also wanted a double-height void and was prepared to sacrifice potential floor area for the benefit

→ Marina and her canine companion are very happy with their new home on a tiny Perth infill block. “Timber cladding on the south-facing facade around the entrance softens the building and speaks to its environmental credentials,” says designer Ben Caine.





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A driveway and carpark to Marina's immediate north mean that northern sun access is not impeded. Custom window shades help keep the house cool in summer.

and maintain on the facades that are more difficult to access. Timber cladding on the entrance facade adds softness and contrast to the exterior, and custom timber awnings and shades on the north side add bespoke detail.

The total floor area of the house is 137 square metres. The living, kitchen and dining are on the ground floor, with large north-facing windows and glass doors that open to the garden. Marina's desired double-height ceiling is above the dining table. There is also a bathroom/laundry plus a flexible room that is currently a pottery studio but could function as a bedroom if needed. Upstairs are two bedrooms, another bathroom and a study space.

To help keep costs under control Marina researched and selected the interior finishes, choosing a palette that reflects her taste and personality. "I had a lot of fun with materials and colours. At the end of the day, you're building a house from scratch, so you've got to have some fun with it and make it your own," she says. Terracotta tiles add warmth throughout the ground floor, pairing beautifully with olive green kitchen cabinetry, black Paperock benchtops and a brick and blackbutt kitchen island. The downstairs bathroom/laundry has green wall tiles, while the upstairs bathroom has pink porcelain tiles and white mosaics.

In line with Passive House principles, the house has high levels of insulation,

of greater light and spaciousness. There was no initial expectation for the design to be Passive House, but Ben's approach to architecture always pursues the high levels of energy efficiency, comfort and performance demanded by the rigorous standard. "There was a lot to squeeze into the small space and budget, so it became about how we could achieve everything without compromising the build standard," Ben says.

He designed a prefabricated timber-framed house, deliberately eliminating structural steel to reduce carbon emissions, cost and complexity. "If you make a conscious choice not to use steel, it focuses your efforts to work within the limits of timber structure and requires a good collaboration between the architect, engineer and builder to make it work.

The net result is a less carbon-intensive home, and it saves a lot of money that is otherwise locked up in the structure. Take out steel and you can often build a lot quicker and streamline the process and budget," he explains.

The prefabricated building envelope also sped up the construction on site. The walls, floor and roof were delivered fully insulated and membrane-wrapped, and the house was assembled and weathertight in three days with minimal waste. "There's a period of planning, detailing and pre-work required," says Ben, "but on a small site with minimal laydown space and parking for trades, it is more efficient overall."

The exterior is modern, durable and low maintenance. Colorbond was a cost-effective choice and easy to install

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A double-height void and built-in window seating helps give the dining area a feeling of spaciousness. Marina grew up in a house with a north-facing backyard, so this feature was a must-have for her. The extensive north-facing glazing means she never has to put the lights on during the day.



airtightness of 0.84 air changes per hour, double glazing and design to make the most of northern light and solar access, meaning no heating is required in winter. Mechanical ventilation with heat recovery, design for cross breezes and a ceiling fan in every room ensure rooms are well ventilated and cool in summer.

Marina was involved in every step of the process, working closely with Ben and the builder, Tru-Line Construction. "They included me in every decision, so now being able to live in this home that I helped create is really exciting," she says.

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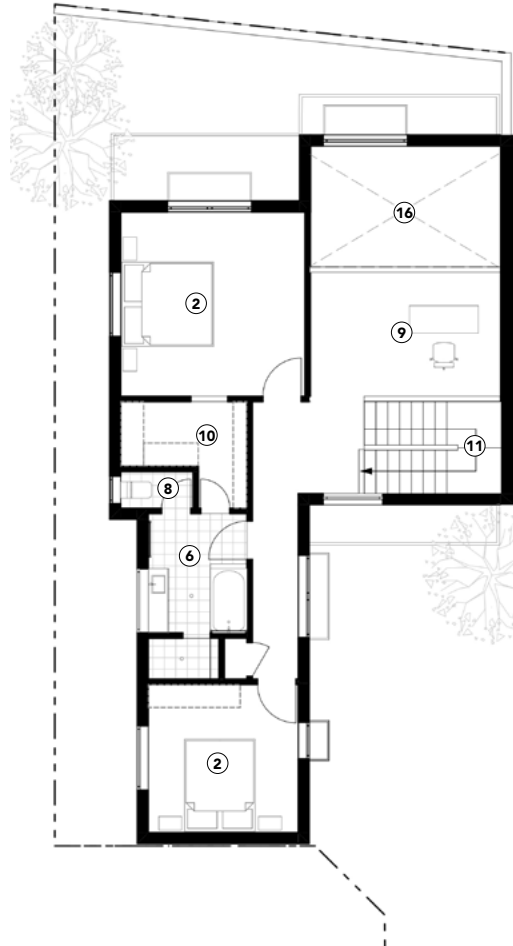
→
There is no air conditioning in the house, which is instead kept cool with the help of cross ventilation and ceiling fans.



GROUND FLOOR PLAN



FIRST FLOOR PLAN



LEGEND

- ① Entry
- ② Bedroom
- ③ Living
- ④ Kitchen
- ⑤ Dining
- ⑥ Bathroom
- ⑦ Laundry
- ⑧ Toilet
- ⑨ Study
- ⑩ Walk-in robe
- ⑪ Stairs
- ⑫ Store
- ⑬ Porch
- ⑭ Deck
- ⑮ Carport
- ⑯ Void

HOUSE SPECIFICATIONS

HOT WATER

- Stiebel Eltron 220L heat pump hot water system

WATER SAVING

- Water-efficient tapware and appliances
- Water-sensitive garden design

PASSIVE DESIGN, HEATING & COOLING

- Passive solar design with north-facing glazing for winter solar gain, and summer shading
- Very compact form for low heat loss
- Design for cross ventilation to capture cooling sea breezes in summer
- Very airtight home tested to 0.84 air changes per hour at 50 pascals (ACH50)

ACTIVE HEATING, COOLING & VENTILATION

- Stiebel Eltron LWZ 280 mechanical ventilation system with heat recovery (MVHR)
- Lucci Airfusion Climate III ceiling fans to all bedrooms and living space

BUILDING MATERIALS

- Timber frame construction - no structural steel used
- Colorbond corrugated roof and cladding
- Iron Ash feature cladding and custom shade awnings
- Bradford mineral wool bulk insulation to walls (R3) and ceiling (R6); bulk acoustic insulation to interior walls (R2) and underfloor (R4)

- Building wrap: Pro Clima Solitex Extasana to walls, Pro Clima Mento Ultra to roof
- Paperock kitchen benchtops
- Bricks and blackbutt to kitchen island

WINDOWS & GLAZING

- Deceuninck Zendow uPVC-framed double-glazed doors and windows

LIGHTING

- LED downlights throughout

PAINTS, FINISHES & FLOOR COVERINGS

- Dulux Wash&Wear low-VOC paint
- Cutek clear wood preservative to exterior timber cladding
- Cork flooring to upper floor
- Terracotta tiles to ground floor

OTHER ESD FEATURES

- Prefabricated building envelope (walls, roof and floors): house assembled and weathertight in three days with minimal site waste
- Adaptable design with accessible ground floor bedroom and bathroom
- Located less than 100m from train station and shopping centre to reduce car use; single carport provided, with provision for future EV charging
- Waterwise garden with gravel driveway for rainwater infiltration.

DESIGNER

Leanhaus

BUILDER

Tru-Line Construction

PROJECT TYPE

New build

LOCATION

Claremont, WA

COST

\$500,000

SIZE

House 137m²

Land 179m²

ENERGY RATING

7.7 Stars

ENERGY ASSESSOR

Greenstart

INSIGHTS

"Steel structure has a lot of hidden costs that provide little value to the client, such as engineering, junction design and coordination, shop drawings, checking, fabrication, delivery, traffic management, site welding, and finally isolating the thermal bridges - for all those reasons, we avoided it in this project."

Ben Caine, designer

