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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.



The double-height void above the dining area allows for stack ventilation and for natural light to filter down from upper level windows in the tree canopy. The polished concrete floor provides thermal mass to help regulate indoor temperatures and “creates the right subfloor moisture conditions to allow [Moonah] feeder roots to thrive,” says architect Ryan.

The couple also scaled up to a 3 kilowatt solar array to compensate for the reduced solar access. They left the slab floor exposed to better absorb direct sunlight and help regulate the inside temperature with thermal mass.

If windows are the soul of a house, this one is surely blessed. The couple didn’t stint on views to the trees, but it came at a cost. “Although it’s well shaded by the trees, glass is the weak point of a [sustainably designed] house,” says Ryan. “This house is on a north-south axis so there are a lot of windows facing east and west. It was a compromise based on connection to site.” Indeed, the expanse of windows contributed to the house’s lower-than-you-might-expect 5.3 star energy rating.

But the star rating doesn’t tell the whole story. Potential insulation black holes were met head on. In addition to best-practice R2 batts, the walls feature a layer of foil board to increase insulation efficacy by a further R1. Windows are double glazed to reduce heat transfer and those on the north are shaded in summer by a retractable awning. Small south-facing windows admit cool sea breezes, and the clerestory windows – which maximise natural light and look out onto the canopy – can be opened to flush out the hot air that accumulates at ceiling level. The passive heating and cooling system is so effective that there’s no need for air conditioning, and the gas heater has yet to be switched on.

The house follows through on sustainability specifications, including rainwater connection to most of the house and garden, a drying cupboard instead of a clothes drier, and recycled and reclaimed timber for cabinetry, floors and stairs. Chris and Neville relish the reclaimed timber through the house and chuckle good-naturedly that they “paid more for a staircase made from timber flooring joists with nail holes still in it” than if they had bought it new. “Thirty years ago builders threw this kind of thing out,” says Neville, gesturing to the flaws in the floorboards upstairs. “Now you pay a premium for it. But it all tells a story.” →



↑ The exterior is largely timber clad to blend in with the site. "Radially sawn [Silvertop Ash] board and batten cladding was chosen due to the efficiencies inherent in the milling process which significantly reduces waste compared to traditional techniques," says Ryan.



← "Boardwalk decks are used extensively to minimise soil compaction to the root zone of the vegetation, and to create a national park effect when moving around the site," says architect Ryan.



➦ The staircase was crafted by Coastal Staircases Geelong from recycled messmate flooring joists. Beside it, full length low-e double-glazed windows provide a visual connection to the treed site.



① Both upstairs bedrooms open to small private balconies.



↳ Lit using clerestory windows, an upstairs lounge between the two bedrooms allows for a separate quiet space or entertainment area.

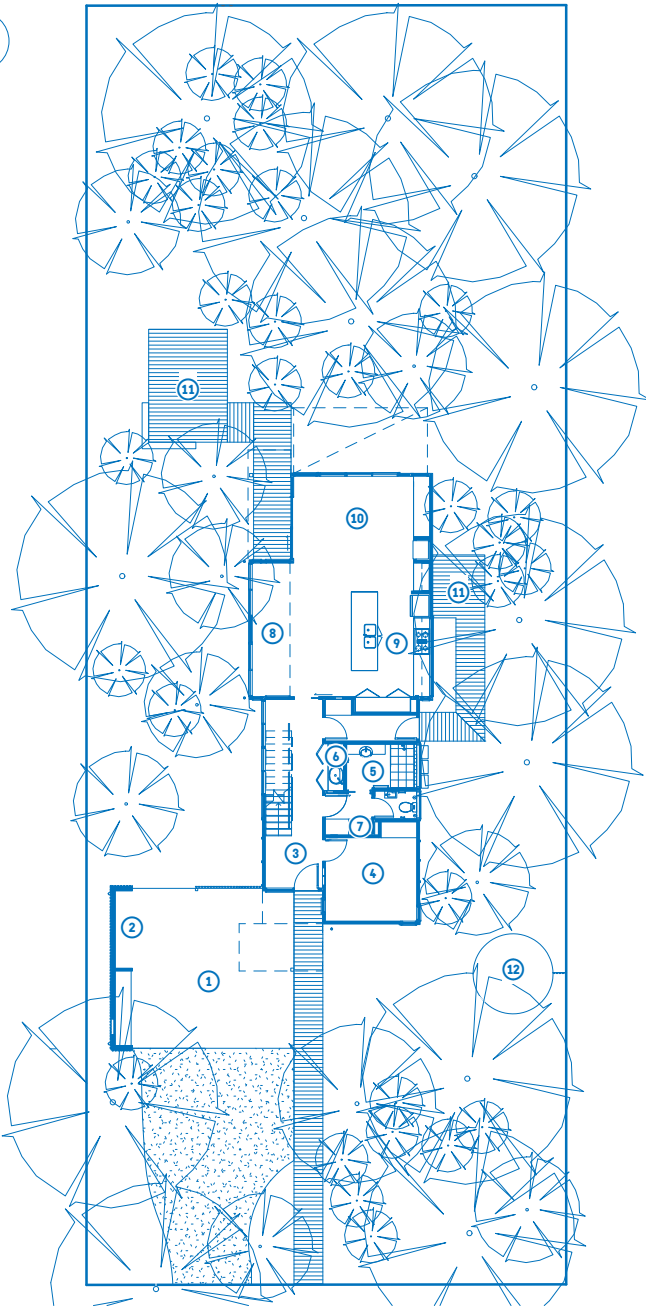
'Koorameet' is the Indigenous Australian word for the Tawny Frogmouth that lives in the ancient Moonah trees.

Walking into the house feels astonishingly like entering the bush. Full-height sashless double hung windows open onto tree trunks on the ground floor; upstairs, windows at every height and in every nook frame views of boughs and leaves. Walk outside and the story continues: the colours and textures of the *melaleuca* are evoked in the fascia and the vertical lines of board and batten across the exterior. The varied profile of the Silvertop Ash cladding appears to mimic the density of the canopy and the space and airiness of the understorey.

Naturally, the owners are thrilled. "We're campers from way back," says Neville. "This house has the benefits of camping with the luxury of the built environment." They've named the house 'Koorameet', the Indigenous Australian word for the Tawny Frogmouth who lives in the ancient trees. It's not lost on them that though they needed to walk just a few metres from their present residence to cross the threshold of their new home, this singular journey has been more than 200 years in the making. ↻



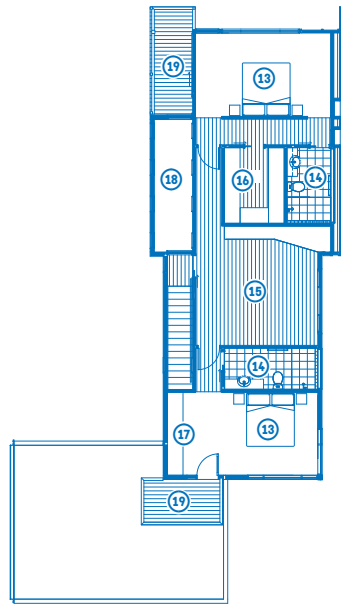
↑ The owners are proud of the fact that only one mature existing Moonah tree was removed to construct their new home among the trees.



SITE AND GROUND FLOOR PLAN

LEGEND

- ① Carport
- ② Bike store
- ③ Entry
- ④ Study/Guest bedroom
- ⑤ Bathroom
- ⑥ Laundry
- ⑦ Drying cupboard
- ⑧ Dining
- ⑨ Kitchen
- ⑩ Living
- ⑪ Deck
- ⑫ Rainwater tank
- ⑬ Bedroom
- ⑭ Ensuite
- ⑮ Lounge
- ⑯ Walk-in robe
- ⑰ Robe
- ⑱ Void
- ⑲ Balcony



UPPER FLOOR PLAN



⬆
Bedrooms are carpeted in Redbook Green carpet from Feltex, which is made using a corn sugar-based polymer that is less emissions intensive to produce than nylon.



⬆
Along with this open plan living area, the ground level accommodates a separate study or guest bedroom. The arrangement also provides the possibility for a main bedroom on the ground level if required in the future.

Koorameet

—Specifications

Credits

DESIGNER

Third Ecology
www.thirdecology.com.au

BUILDER

Peter Wilkinson

PROJECT TYPE

New build

PROJECT LOCATION

Barwon Heads, VIC

COST

Approx \$520,000

SIZE

Ground floor 103 sqm, upper floor 105 sqm, decks & carport 88 sqm, land 892 sqm

Sustainable Products

HOT WATER

Rinnai Infinity 26 gas instantaneous hot water system with four internal temperature controllers
www.rinnai.com.au

RENEWABLE ENERGY

– Grid interactive 3.04kW photovoltaic system supplied and installed by City to Surf Solar, Geelong
www.citytosurfsolar.com.au
 – SMA Sunny Explorer PC energy monitoring and data recording software www.sma-australia.com.au

WATER SAVING

– Rainwater is collected from all roof surfaces and stored in an 18,600L Colorbond Aquaplate rainwater tank, made and installed by Metroll, Geelong
www.metroll.com.au
 – Rainwater supply is connected to toilets and outdoor shower and used to water existing trees on site
 – Low flow Gracott shower heads, Zucchetti tapware and dual flush Caroma Opal II toilet suites reduce water demand and therefore the overall size of the rainwater tank required www.gracott.com.au, www.streamlineproducts.com.au/zucchetti, www.caroma.com.au

PASSIVE HEATING & COOLING

– Living zones are orientated to the north with glass concentrated in this elevation to maximise access to northern winter sun.
 – An automated folding arm canvas awning supplied and installed by Brax Window Treatments, Geelong, provides flexible shading to north-facing windows and does not accumulate leaf litter as may happen with a fixed shading system www.braxwt.com.au
 – The house was designed to maximise cross ventilation despite the main axis of the floor plan

running north-south. The void over the dining area assists in flushing the hot air that accumulates at ceiling level.

– Insulation: Bradford Gold high performance glasswool wall (R2) and ceiling (R4.1) batts, Optimo mid-floor acoustic insulation, EnviroSeal Wall Wrap, EnviroSeal Roof Sarking, 15mm Foilboard Insulation Panels
www.bradfordinsulation.com.au, www.foilboard.com.au

ACTIVE HEATING & COOLING

– Rinnai Energysaver K309FTR space heater with rear power flue to heat upper living area
www.rinnai.com.au
 – Coonara Chateau Series II inbuilt gas log heater with climate controller
www.shamicheating.com.au/coonara
 – Westaflex Air Transfer kit moves warm air from the heated living zone to the study and a dedicated drying cupboard in the laundry
www.westaflex.com.au
 – Cooling is achieved via natural ventilation and reversible ceiling sweep fans. Pedestal fans provide supplementary air movement when required.

BUILDING MATERIALS

– Radially sawn Silvertop Ash board and batten external cladding and decking from Radial Timber Sales, with water-based preservative finish by Cutek www.cutek.com.au, www.radialtimbers.com.au
 – Reclaimed Australian hardwood timber flooring from Timber Zoo
www.timberzoo.com.au

WINDOWS & GLAZING

– Double-glazed timber windows throughout with low-e coating and argon filled 12mm air space, from Canterbury Windows
www.canterburywindows.com.au

– Window and door frames are made from Primex Protim treated finger jointed/laminated pine sourced from plantation timber. Victorian Ash hardwood door sills were used where greater durability was required. “Finger jointing means multiple smaller lengths of timber can be used to make up the larger length, therefore reducing waste,” says Ryan.

– Highlight windows to the upper level maximise natural light on the heavily treed site. Natural light filters down to the lower level via the double-storey void over the dining area.

LIGHTING

– Compact fluorescent and LED light fittings from Beacon Lighting
www.beaconlighting.com.au

PAINTS, FINISHES & FLOOR COVERINGS

– Triple blend cement with up to 25 per cent recycled concrete aggregate, ground and sealed finish
 – Redbook Green carpet from Feltex
www.feltex.com
 – Low VOC Nature’s Palette and acrylic range from Haymes Paints
www.haymespaint.com.au
 – Bona Traffic water-based polyurethane timber floor sealer
www.bona.net.au

OTHER ESD FEATURES

– Only one mature existing Moonah tree was removed to construct this dwelling on a heavily treed site.
 – Recycled timber benchtops from Nullarbor Timbers
www.nullarbortimber.com.au