Outside in

Rather than exclude the elements, this rainforest house harmonises with them

By Jenny Brown

The house is designed as two elevated pavilions to catch all possible cross-breezes, while the pitched roofs guide downpours away from the louvred windows

"Never turn your back on an excavator." That's the advice of Sydney building designer Dick Clarke after the "green screen" he'd planned for the vulnerable western face of a sustainable house 15 kilometres north of Cairns was razed. All in a morning's work.

All along the western edge of a 1000 square metre sloping block, the rainforest trees that would have shielded the house from the road and sheltered it from the afternoon sun were flattened. "It was deeply upsetting", says Dick. "And it will take about 20 years to get them back." A bamboo screen must suffice as a shade screen in the meantime.

Fortunately for owners Marty and Helen Rowe, who have been living in the home for the past two years, there are some blessed compensations. They still have their view of the dramatic escarpments of the Kuranda Plateau, **while at the rear of the house they enjoy the annual spectacle of a seasonal waterfall crashing two metres beyond the deck of their master bedroom. "Part of the magic of living in the tropics," says Marty.**

After spending 11 years working in aboriginal communities on Groote Eylandt in the Gulf of Carpentaria, Marty and Helen were adamant they must continue to live in open engagement with the environment, which around Cairns means World Heritage–listed wet tropics rainforest.

They asked Dick Clarke, who has been working within the evolving parameters of sustainable design since 1977, to design their house in the form of two elevated pavilions – one for living, one for the three bedrooms – and to make it a place that "was brave, that blended with the environment, that caught all possible cross-breezes, and that was climate engaging rather than climate denying".

The Rowes wanted "something different," especially to what Marty sees as the heat-locking insanity of the ground-hugging concrete homes of modern Cairns that "retreat from the environment and that require massive air-conditioning".

They preferred a house that allowed them "to

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The master bedroom has a private deck that has an outside shower - and looks out onto a seasonal waterfall

The bathroom is designed with large tiles and simple surfaces to make cleaning easy and to minimise the use of cleaning chemicals

feel as if we're camping, all year round," and which in its raised pavilion configuration had an Asian reference – a nod to the regional environment, in addition to the local one.

The resulting design has succeeded in both respects, with the twin pavilions connected by a central deck where the Rowes manage to take most of their meals, most of the year.

To ameliorate the less comfortable aspects of Cairns' tropical climate, with its trans-seasonal wetness, sometimes cyclonic winds and heavy, muggy heat (for all but a couple of weeks in "winter"), you need sustainable treatment of the troppo kind.

Troppo design, as Dick explains, is all about maximising cross breezes "to catch every possible zephyr of wind" and about creating deep shade by building below the tree canopy and under generous pitched rooflines that provide covering to decks of between 3.5 to four metres.

The pitched rooflines double as a rain hat, which guides tropical downpours well away from the many floor-to-ceiling louvred windows. Even in the worst days of the wet season Marty marvels at the sheltering efficiency of his home. "Rain never gets in the windows, so we can leave them open to another experience of living in the tropics.

"When it rains here, it rains! But we thought 'if we're gonna live here, let's enjoy it to the max!'"

To Dick Clarke, the challenge was to create a new take on "the iconic Queenslander – the Far North Queenslander," he says. Original Queenslanders, he tells, "were lightweight and elevated but tended to be more cubic. They are 'one pavilion houses'. And that's OK for south Queensland.

"But Far North Queensland is very different and the cubic shape doesn't work. To get the shade, ventilation and massive openings of whole walls, we needed to split the house up into pavilions that are one room wide."

This means cross-ventilation, which in the siting of the Rowe's house brings "cool muted breezes" down the slope of a descending gorge. The ventilation is so constant – "even when the outside air seems totally still" – that in two years occupation Marty Rowe has only ever used an air-conditioner (given as a gift) once. "We feel a breeze all the time".

The volume of the pavilions and especially the roof pitch is critical to the working of natural ventilation systems. "In this case" says Dick Clarke, "the room width is three to four metres with ceilings rising to an apex of 2.4 to 2.7 metres. If you have a bigger floor plate, you have to go higher.

"Splitting it into two pavilions meant we could keep the height low to keep it below the tree

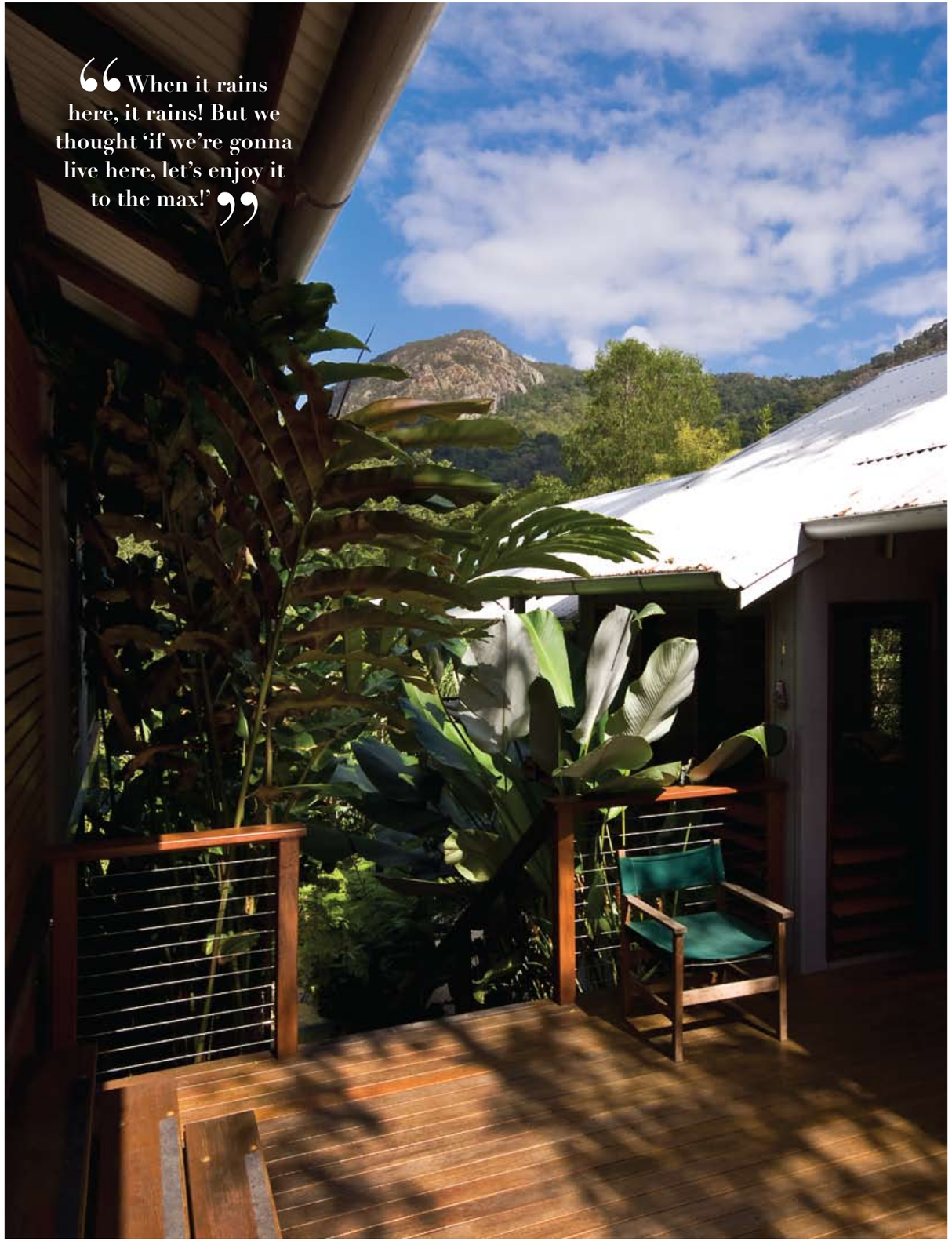
Cross ventilation is achieved with fans, floor-to-ceiling louvred windows and wide openings between rooms

canopy." Keeping it low "also meant it was cheaper to build". Dick reckons that by the end of the first phase of making such a responsive home, the build cost was around $330,000. "A great achievement."

The house boasts a myriad of clever corners: a ground-level laundry with an ingenious clothes drying frame; a cyclone shelter "really a brick box"; heat-bouncing bubble foil ceiling insulation ("six millimetres thick in two layers; a space blanket rather than a jumper"); and lightweight construction that proves that slim materials can still deliver five-star performance.

Of course, there will always be more the Rowes would like to do. Happily, Marty and Helen got to the end of their initial budget in a climate that is suffering no diminution in its water supply, and the house is already very water efficient. Says Dick, "The water use is very low". Nevertheless, in Phase Two, wise water management will be the focus. The Rowes would like to install water tanks and a greywater system that takes their household outflow out of the sewers and ultimately out of watersheds and oceans. As Dick explains, "Even though the tropics are getting wetter, it's important that water wastage be minimised".

Meanwhile, Dick Clarke is looking far into the future. Having worked with sustainable principals for three decades, he is gratified with the progress



The master bedroom enjoys spectacular views over the forest

to date but says there is still a lot more that can be done. "Many new technologies are still considered too 'out there'. Out there is where we need to be!"

The more he works into sustainability "the more I see that it gets a whole lot deeper, wider and further out. But if we've come this far in the last three years," he muses, "where will we be three years from now?"

Designer: Envirotecture (Dick Clarke) **www.envirotecture.com.au**
Builder: Mal Arthur
Location: North of Cairns, QLD
Photography: Doug Drummond
Features:

- Beasley solar hot water system
- Bradford AntiCon blanket and AIR-CELL reflective 'bubble foil' roof insulation
- Elevated platforms and multiple pavilions maximise cross-ventilation
- Lightweight elevated construction retains little heat
- Overhangs on western windows
- Plantation and recycled timbers
- Internal and external walls shadowclad ply, hoop pine ply and plasterboard
- Plantation Tasmanian Oak flooring
- Louvred windows
- House sited to retain existing trees and optimise shading
- Elevated platforms to minimise site disturbance
- Revegetation with local species
- 4-star WELS-rated water fixtures
- Low-VOC paints