SUSTAIN

SUSTAINABLE PRACTICES INDESIGN

RURAL ECO-HOUSE

SUNPOWER DESIGN HAVE PULLED OUT ALL THE STOPS WITH THIS RURAL HOUSE IN VICTORIA, CREATING A BUILDING THAT IS BOTH ENERGY AND WATER-EFFICIENT, AND USES LONG-LASTING AND RECYCLED MATERIALS

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PHOTOGRAPHY **RHIANNON SLATTER**

Achieving sustainability objectives on a tight, inner-urban residential project can be incredibly demanding – an architect must do the best they can, given the site's orientation and context. If they're refurbishing a Victorian terrace house with a south-facing rear yard, for example, they'll be hard pressed to make much of default eco-design strategies like harnessing natural cross ventilation and thermal mass. But what about designing an environmentally responsible home on a large rural block? An architect can orient the house any way they choose, and open up windows and ventilation without concern for privacy or overlooking. Then they just have to make it look good, right? Should be a cinch. In some ways, yes, but achieving the highest levels of sustainability still requires sharp thinking and a complete commitment to rigorous performance goals.

The commitment to environmental performance manifested in Tomintoul House, a holiday house by Melbourne practice, Sunpower Design, is hard to ignore. The property, located in a secluded pocket of countryside that separates Kinglake National Park, Yarra Ranges National Park and the Cathedral Ranges State Park, north-east of Melbourne, is a working cattle farm and a rural retreat for a busy city-based family with a keen interest in conservation. The raft of sustainability initiatives employed here by the architects reads like an encyclopaedia of eco-design.

The external appearance of Tomintoul House is defined by its cladding of square-edged Silvertop Ash weatherboards. The specified timber was grown in Victorian native re-growth and plantation forests and milled using a radial sawing technique that reduces timber wastage. Because the ash was selected for its propensity to develop a soft, silvery patina when exposed to the elements, the owners won't have to worry about paint or varnish, which saves money and time, but also keeps potentially harmful chemicals out of the ecosystem. As time goes by, and rain, wind and sun exact their tolls, the structure will sit more and more comfortably in the landscape alongside the property's aging fence posts and windmill.

The house is sited to the south of a picturesque dam, allowing the architects to open the interior up to the northern sun while making the most of the bucolic panorama. The requisite concrete slab floor provides thermal mass to help regulate the internal temperature and, in a bid to reduce the house's embodied energy, has been reinforced with recycled steel bars. To further mitigate the need for mechanical cooling and heating, all windows have been double-glazed. This is particularly important in the central living space, which occupies the second of the house's three linked pavilions (the other two house children's/guests' quarters and a parents' retreat). It is defined by a massive glass aperture that looks out over the dam. The use of double-glazing means that this generous access to light and views does not significantly compromise the building shell's insulative properties. Retractable awnings to the northern façade and sliding shutters on all other windows provide an additional layer of defence against the elements.

On the odd winter's day when the sun doesn't provide enough energy for the concrete slab's thermal mass to take effect, a slow-combustion heater in the living space provides extra warmth. Heat shifter ducts channel warm air from here into the adjacent pavilions so no additional heating is required in these spaces. A gas-boosted solar hot water system provides all hot water, and wiring is in place for the future installation of photovoltaic cells. To maintain the house's carefully crafted timber box aesthetic, parapets have been designed to conceal these features and any other roof-mounted paraphernalia.

But energy efficiency is only half of the sustainability imperative; the other is water efficiency. Predictably, this house has it in spades – or is that buckets? Either way, it is totally independent of the mains. Water is pumped up from the dam and rainwater is collected from the roof in a small header tank. Grey and black water is treated on-site and used for gardening. Large reserves of water are also stored in two tanks on a nearby hill – in the case of a bushfire, there is no danger of pump motors burning out because the comprehensive sprinkler system relies only on gravity to maintain water pressure. (This strategy almost came into play early in the life of the house, as the flames of Black Saturday came perilously close.)

We could go on, but you get the picture. And besides, calling a house an eco-house doesn't mean that the other essential elements of good architecture take a back seat. Aesthetics and amenity are vital no matter how small your carbon footprint. Luckily, this house looks great in the landscape. Inside, the feel is open, fresh and clean, with a neutral materials palette of white plasterboard and rich timbers, with rust-coloured doors and kitchen bench. A blank canvas, then, upon which the subtle play of striated light through timber screens creates gentle movement and a languid dynamic wholly suited to lazy weekends spent in the countryside.

In a final act of recycling, an ablutions block left over from the property's previous life as a scout camp has been rejuvenated as a separate, self-contained guesthouse that provides sufficient accommodation for large gatherings of friends and family. The architects' neatest design manoeuvre, however, was motivated by guests of an entirely different kind. After a series of incursions by miscreant dirt bikers and adventurers from the neighbouring state forest, the owners wanted to be sure that, each time they arrived for a relaxing rural break, they'd find the house in the state they'd left it. Sunpower's solution was simple but very effective (and just a little evocative of *Get Smart*). When it's time to head home, lights are turned off, window shutters are slid closed and, with the help of electric winches, the large outdoor timber decks are pulled vertical, sealing off the glazed openings to the living pavilion. With the decks in this position, native grasses are encouraged to grow around the perimeter of the building, and the house is securely boxed up, safe and sound from intruders and vandals, and ready to be unpacked at the push of a button the next time its owners come to stay. Now that's sustainable.

Mark Scruby is a freelance architecture and design writer and previous Editor of Houses.

TOMINTOUL HOUSE

DESIGNERS Sunpower Design (Andreas & Judy Sederof)
BUILDERS Yarrambat Building & Plumbing (John Hewish, David Smith)

SUNPOWER DESIGN
(61 3) 9386 3700 sunpowerdesign.com.au

LIGHTING All lights from Custom Lighting.

FINISHES Cladding is Silvertop square edge external weatherboards from Radial Timber Sales, left untreated. Decking is also radially sawn Silvertop timber from Radial Timber Sales. Concrete slabs are Eco Blend concrete, available from Independent Cement. Windows are double-glazed with cedar frames. Reinforcement bars are recycled steel.

FIXED & FITTED A gas boosted close-coupled solar system LX305 with 3 Australis Comfort 200a panels on the north facing roof provides all the hot water. Slow combustion heater is Chimnees Philippe Radiante 845. An all waste Biocycle system is installed to handle grey and black water.

Biocycle (61 3) 9747 0487 biocyclejowagroup.com.au Chimnees Philippe Australia (61 3) 9417 3315 chemphilaust.com.au Custom Lighting (61 3) 9822 0001 customlighting.com.au Independent Cement (61 3) 9676 0000 independentcement.com.au Radial Timber Sales (61 3) 97682100 radialtimbers.com.au

PREVIOUS PAGE Silvertop Ash cladding was grown in sustainable forests
OPPOSITE The living room with concrete slab floors and double glazed windows
ABOVE Water from the dam is solar heated then recycled for gardening
BELOW Outdoor timber decks double as protection