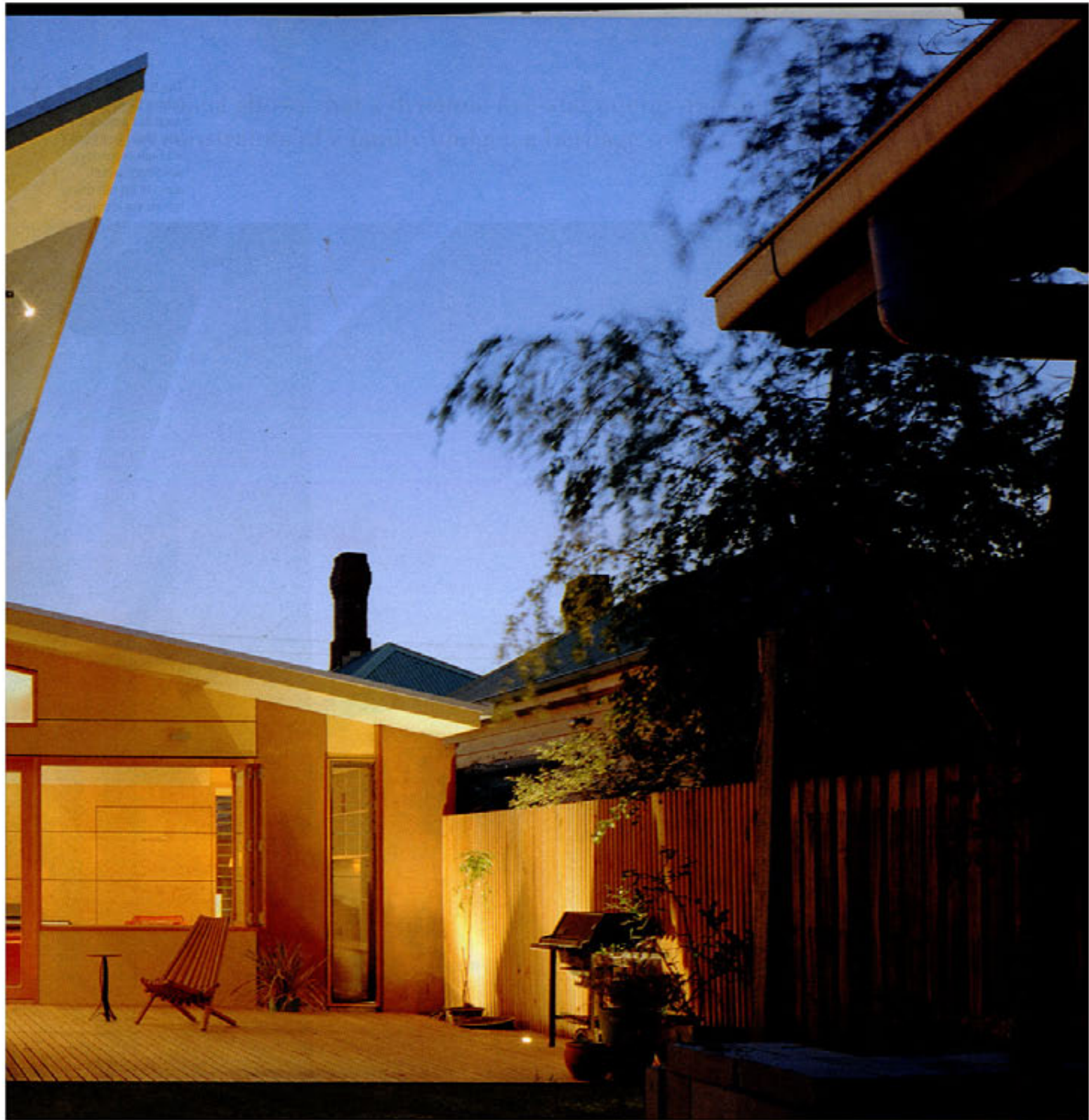


# The flexible home



A clever renovation has created extra space for a growing family without building a second storey or reducing the garden



ustainable design requires more than simply adding boxes. Sure, eco-friendly elements such as insulation, water tanks, recycled materials, and composting combine to build the picture, but the fundamentals of good design should never be overlooked. The clever use of space, the inspired integration of natural light, and the judicious zoning of the site are the basics that will make all the difference. **This five-star-rated house by Zen Architects covers all the bases (right down to its efficient showerheads) but really earns its stripes when it comes to the essential tenets of sustainable living.**

Jeremy Watson and Kim Shaw wanted more room for their growing family (two boys and one on the way at the time of building) and an improvement in general amenity. Where there was only one crowded living area they wanted two separate rooms, plus a study, plus a guest room. They assumed they would have to build a second storey to fit all this on the fairly modest block in Melbourne's northern suburbs. The brief they gave to project architect Shae Parker called for alterations and additions to a family home that suffered from poor energy-efficiency. The existing building comprised a Victorian house

with a dated extension that leaked warmth through badly-sealed, single-glazed windows. "We wanted to make the house nicer to live in and reduce our energy use. There was lots of waste in the old house which had no insulation", says Jeremy. Zen Architects, however, came up with a different scenario. The design team showed that with some clever spatial arrangements it could avoid the cost of building a second storey and still deliver everything on the clients' wish list. To help achieve this, the existing footprint has been altered and slightly enlarged to create space for extra living

The 5.5 metre skillion roof is tilted up to the west to capture the late afternoon light via high clerestory windows, which open to let out rising hot air via louvres.



and sleeping and to promote a better connection between indoors and out.

The project succeeds thanks to a handful of architectural masterstrokes. One of these is the long slice of space that almost runs the width of the site and separates the old Victorian front rooms, retained as bedrooms, from the new living and kitchen extension. This slender volume provides an effective airlock when sliding doors are pulled across, so the front or rear sections of the house can be heated (or not) in a contained and efficient manner. The space also functions as a study, with an inbuilt desk and storage at one end, and

“This project shows that a dynamic five-star energy-rated house is achievable within the constraints of a family budget, a heritage overlay, and a limited site”



store with another bank of storage at the Sections of the decking-clad floor lift up al cellar storage, and overhead skylights l valuable natural light into what was once a dull area. At either end, doors open to small irds to promote good cross ventilation. tanny use of inbuilt furniture and slide-away inels is carried through to the new living and i area. The need for extra living space, plus inal guest accommodation, was solved by g a space that would serve as both. Adjacent itchen, this secondary living space becomes oom in moments. Two door panels slide

across to separate it from the kitchen, and a double bed folds down from the ply-clad joinery in which it is usually concealed. Bingo! “The clients didn’t need a permanent guest room, just a space that could be adapted,” reasons the architect. “It made sense to be able to turn part of the living area into an occasional guest room.”

**“The flexibility is really great, we can open up the sliding doors to create a bigger living area when we have people over, make it a more intimate space when its just the family or close it off when a bunch of kids are around,”** says Jeremy.

A third keynote feature is the dramatic skillion

roof to the new extension, more than 5.5 metres high at its zenith. Tilted up to the west, it captures beautiful late afternoon light via high clerestory windows, which open to let out rising hot air via operable louvres. This creates a stack effect, as the windows are high enough to promote an effective, cooling updraught. While the old home had too much glazing that let heat escape in winter, the new extension has wisely placed double-glazed windows. The main living area is connected to the garden, and sliding glass doors open it to the outdoor deck (essentially another living space). The primary living room is anchored via a north-facing



A double bed folds down from the ply-clad joinery turning the living space into a guest bedroom.

“Insulating the floors, walls and ceilings in both the new and old parts of the building, and replacing the old single-glazed windows with new double-glazed ones, have helped make the house more energy efficient”

“In summer the house is 10 degrees cooler inside than outside. You can really open up the house at night to let in the cool air and close up again in the morning. There is no need for air-conditioning.”



at frames the view and decreases excessive loss and gain.

The concrete slab underfoot acts as a heat sink, taking up the warming afternoon sun, and giving heat back into the space at night. The ceiling is sufficiently angled that it can also bounce light down and back into the secondary living/room during the day. When the western sun gets too intense, external operable shutters on the clerestory windows can be closed, a huge outdoor shade sail can be installed, and fixed louvers protect the north-facing windows from the worst of the summer sun, while

the warming winter rays are allowed in when the sun is lower in the sky. “In summer the house is 10 degrees cooler inside than outside. You can really open up the house at night to let in the cool air and close up again in the morning. There is no need for air-conditioning,” says Jeremy.

Space and light strategies aside, the architects paid due attention to other sustainability staples. **Plantation timbers, low-emission paints, all-natural Marmoleum floors and plywood cabinets help reduce off-gassing and contribute to the building’s low-impact credentials.** Simple metal-effect painted fibro panels are used for external

cladding.

Rainwater is harvested via an in-ground tank (under the rear deck) and all areas of the roof, both old and new, have been designed to channel as much rain as possible. Grey water recycling and on-site composting feeds the garden, which has been populated with drought-tolerant and indigenous plants. The old roof has been used to house solar evacuated tubes which provide hot water for the house and the hydronic heating panels (helped along, when needed, by a gas booster).

“This project shows that a dynamic five-star energy-rated house is achievable within the

Extra space has been added to the kid's bedrooms in the old part of the house with built-in mezzanine beds.



straints of a family budget, a heritage overlay, a limited site," says Shae. "By doing things like razing the floors, walls, and ceilings in both the new and old parts of the building, and replacing the single-glazed windows with new double-glazed windows, we achieved the five-star rating for the whole house, not just the new section." And where the homeowners had believed they'd need 242m<sup>2</sup> to meet their needs, the architect was able to achieve everything in 187m<sup>2</sup>, saving money and maximising open space. ←

**Designer:** Zen Architects (Shae Parker and Ric Zen). [www.zenarchitects.com](http://www.zenarchitects.com)

**Builder:** Rex Building [www.rexbuild.com.au](http://www.rexbuild.com.au)

**Location:** Northcote, VIC

**Photography:** Emma Cross

**Features:**

- Solar hot water with gas boost supplies hot water and hydronic heating
- 10,000 litre Septech rainwater tank
- Eco Care grey water system
- Re-use of flooring, windows, fittings and appliances from original home
- Natural cross-ventilation and lighting
- Plantation and radially-sawn cladding, decking, flooring and fencing
- Dulux Breathe Easy paint
- Marmoleum flooring
- Polyester wool batts and Aircell wall and ceiling insulation and Foamular slab insulation
- Paco Jaanson water-efficient toilet
- Kusasi water-efficient taps and showerheads
- Drought tolerant native landscaping