

# Reclaimed, rebuilt

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The subtle eco features of this  
Adelaide renovation save energy  
in more ways than one.

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WORDS Robin Barton  
PHOTOGRAPHY Sarah Long

**IT WAS WITH A TWINGE OF GUILT THAT JANE COX AND PARTNER DAVID WRIGHT DECIDED** to knock down the back of their bluestone cottage and its antiquated extension. They'd lived for nine years in the 19th century property in a local heritage zone a walkable distance east of Adelaide's city centre. But the disorganised, south-facing rear of their house, on its sloping block and with its dark kitchen, didn't grant them easy access to the garden and didn't suit their desire to reduce their energy consumption.

A lack of experience in project management and construction led the couple to call in architect Kirsty Hewitt of KHAB Architects, to design and manage building their new extension, including a new kitchen, dining and living area, a laundry and a bathroom. "We really liked the principles behind her work and were very open to her ideas," says Jane. What's more, Kirsty thought she had the sustainable solution to Jane and David's guilty pangs over the imminent demolition: recycling materials from the demolished part of the house. A bluestone wall was salvaged and rebuilt into a garden retaining wall visible from the living area, and in the dining space rescued Baltic pine flooring was employed as a feature wall.

"If the owner is keen to recycle materials, we like to pursue it," explains Kirsty. "We work out what can be salvaged from the demolition and design in the materials where feasible; we always request that the demolition takes place with care. We also specify recycled materials from salvage yards and we're getting better at knowing what timbers, and in what sizes, are readily available." Jane agrees: "It seemed like the right thing to do." →



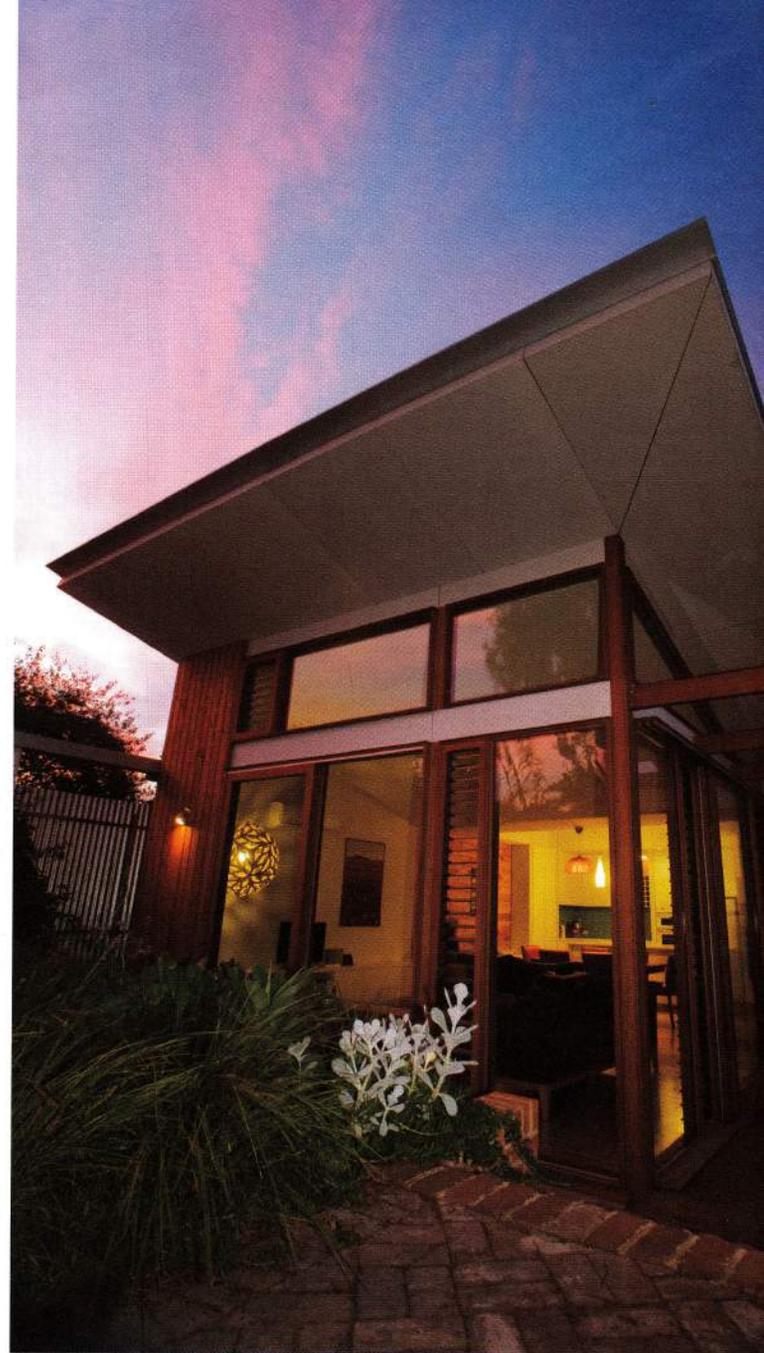


Kirsty's design for the extension focused on connecting indoor and outdoor living spaces. Three 5200 litre galvanised water tanks covered by creepers (featured centre left) sit on the western edge of the property.

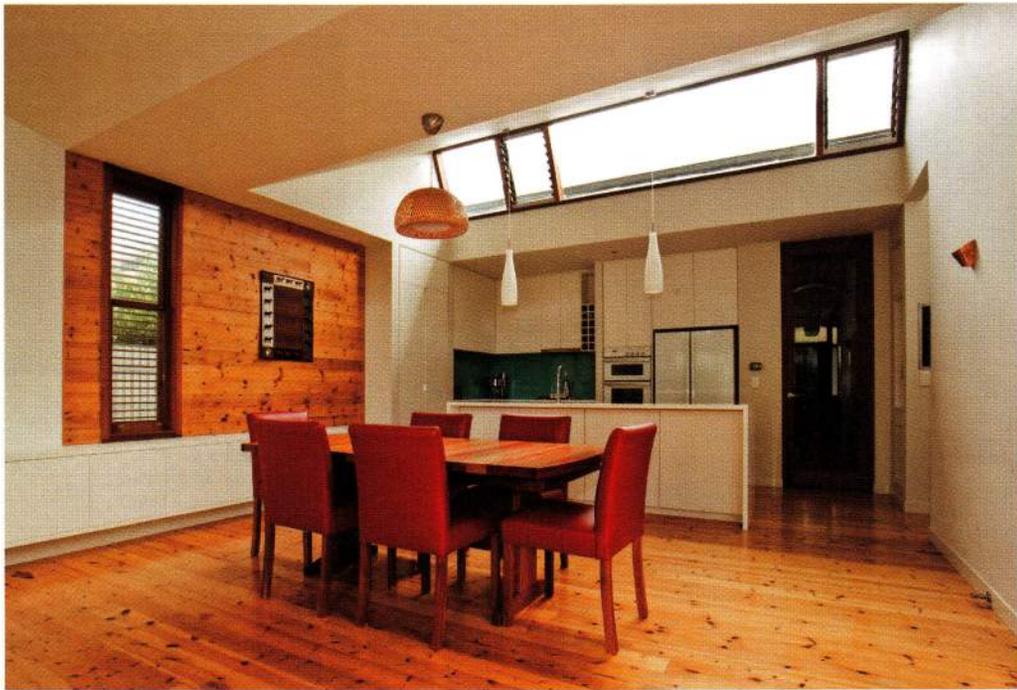
"You can live in a smaller house if you have outside spaces that are well integrated ... These 'outdoor rooms' mediate between the garden and the indoor area," says architect Kirsty.



Louvred windows throughout the extension let cooling breezes through the house. All of the Western Red Cedar-framed windows and sliding windows in the extension are double glazed. The extension retains views to the old Eucalyptus tree at the rear of the property.



Recycled hardwood has been used for exposed timber framing, rescued Golden Cypress Gold-Clad lines the building's exterior, and recycled Jarrah serves as decking.



↑ High north-facing windows bring winter sun and light into the new kitchen and dining area, which backs on to the existing part of Jane and David's Adelaide cottage.

The new extension uses recycled floorboards and decking, and the exposed timber frame is made from recycled hardwood. Its cladding of Golden Cypress is also salvaged: old, sick or redundant trees from commercial plantations are used as a building material rather than being burned or dumped in landfill. "It's strong, as durable as Jarrah, naturally termite resistant, lightweight and beautiful," says Kirsty.

Another aspect of KHAB's approach to the design and build process appealed to Jane and David: treating the available indoor and outdoor area as one connected living space. Instead of the gloomy interior of the old extension – cold in winter, oven-like in summer – and the muddled, sloping garden, Jane and David wanted a space that brought the outdoors in.

"You can live in a smaller house if you have outside spaces that are well integrated; if the outside environment provides some shelter from the sun, wind and rain, it becomes an extension of the living area. These 'outdoor rooms' mediate between the garden and the indoor area," explains Kirsty. To achieve this, terracing and decking was used to level the garden. The design for the extension also took into account the garden's paths, shed, rainwater tanks, retaining walls and pergola. And, crucially for Jane, views to an old eucalypt at the rear of the property were retained.

To remedy the extremes of hot and cold, Kirsty designed a roof that slopes up at the north for winter sun. She specified large double-glazed north-facing windows to let the sun in, while the west-facing window is narrow. To the south the garden has been raised, channelling cooling southerly breezes into the house. The extension responds to the seasons with additional air space

between the inner and outer walls for better insulation, a concrete slab to retain thermal mass with under floor heating for extra warmth in winter, and high louvres to enhance cross ventilation in the hot South Australian summer.

"The under floor heating is particularly nice to come home to in the winter," says Jane. Although the couple's preferred air-conditioning solution, the Climate Wizard, wasn't available to residential buyers at the time of construction, they have found that they need run their new split-system only on the hottest days of the year.

Water conservation was an essential requirement of the new addition. Rain, collected from both the north- and south-facing parts of the roof, falls back to a central, metre-wide gutter that sends it to the rainwater tanks. The plumbing for a greywater treatment system was also installed. "We don't think of ourselves as exceptionally green people," says Jane. "We haven't made our own mud bricks but we did specify a lot of features that the average person will want, such as rainwater tanks, solar panels [already installed], recycled materials and a ceiling fan to increase the airflow in the living area."

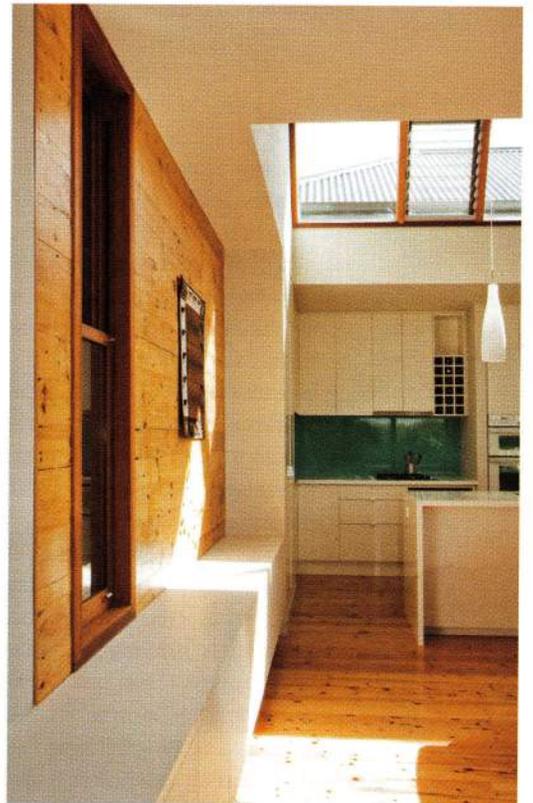
The results of Jane and David's first foray into sustainable construction have been remarkable. "The garden is now right up outside the windows," says Jane. "You feel like you're in the garden when you're inside. Yellow-winged honeyeaters come in close to the windows." But she says the biggest improvement is the light. "We used to have the electric light on all the time in that dark, old kitchen," she laughs. "We don't feel so guilty about knocking it down now." ↻



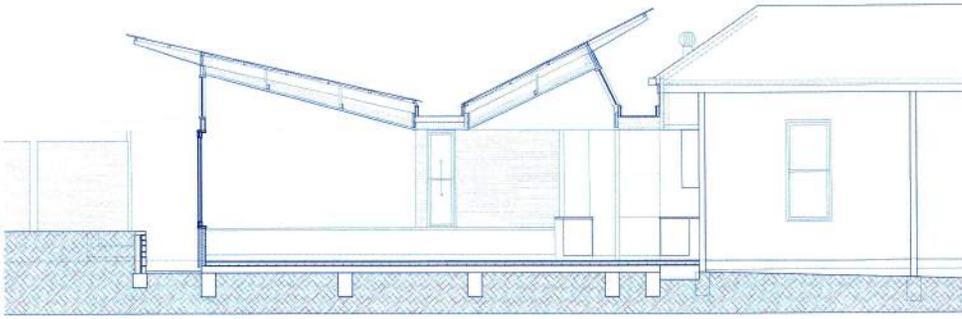
Recycled Baltic pine floorboards sit on top of a concrete slab with insulated screed. Internal temperatures are further regulated by wall and ceiling insulation. The roof form dips over the dining table to a central, metre-wide gutter that captures and sends collected rainwater to the tanks outside.



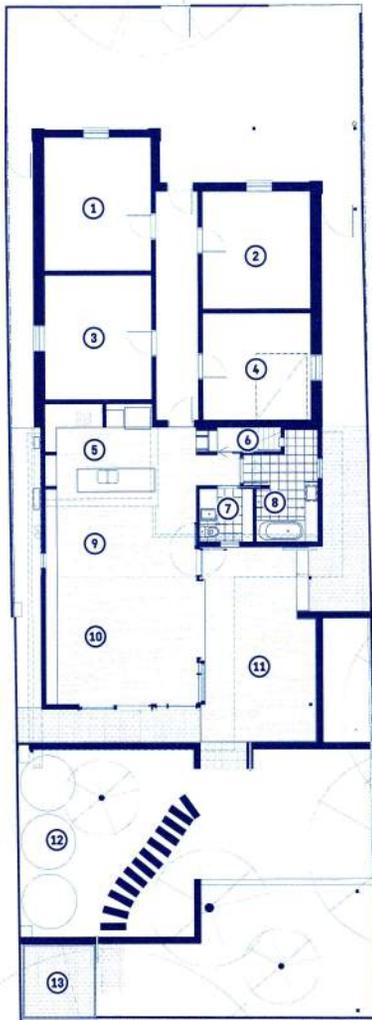
Terracing and decking was used to level the garden, which has been landscaped and contains paths, a shed, rainwater tanks, retaining walls and pergola. Salvaged bluestone from the demolished part of the existing cottage has been reused to create part of the garden wall.



Baltic pine flooring from the demolished kitchen has been turned into a feature wall.



④ The roof form was created for winter solar access to the south-facing extension and for optimum rainwater collection. Rain, collected from both the north- and south-facing parts of the roof, falls back to a central, metre-wide gutter and is transferred to rainwater tanks that sit on the western edge of the property.



LEGEND

- ① Sitting room
- ② Bedroom
- ③ Study
- ④ Bedroom (cellar below)
- ⑤ Kitchen
- ⑥ Stairs to cellar
- ⑦ Laundry/WC
- ⑧ Bathroom
- ⑨ Dining
- ⑩ Living
- ⑪ Deck
- ⑫ Water tanks
- ⑬ Shed



④ High north-facing windows bring natural light into the bathroom. Greywater is transferred through pipework under the concrete slab to a junction for a planned greywater treatment system.



# Norwood residence

—Specifications

## Credits

### DESIGNER

Kirsty Hewitt, KHAB  
Architects  
[www.kha.net.au](http://www.kha.net.au)

### BUILDER

MDM Commercial and  
Residential Construction  
[www.markdimauro.com.au](http://www.markdimauro.com.au)

### PROJECT TYPE

Renovation and extension

### PROJECT LOCATION

Norwood, SA

### SIZE

House 160 sqm (extension  
75 sqm); deck 25 sqm; land  
430 sqm

## Sustainable Products

### HOT WATER

- Re-used existing instantaneous gas unit.

### WATER SAVING

- 3 x 5200L galvanised tanks from The Tank Store  
[www.thetankstore.com.au](http://www.thetankstore.com.au)
- Grundfos Pump with twin 20" Big Blue filters
- Greywater is transferred through pipework under the concrete slab to a junction for a planned greywater treatment system.

### RENEWABLE ENERGY

- 1.68kW grid-connected solar photovoltaic power system.

### PASSIVE HEATING & COOLING

Passive heating:

- High north-facing double glazing
- Thermal mass provided by a concrete slab under timber flooring

Passive cooling:

- Cross ventilation
- High louvres for hot air release
- Three Spinaway ventilators for roof venting, including one over the fridge [www.ampelite.com.au](http://www.ampelite.com.au)
- Large eaves
- Pergola with cables for a deciduous vine
- Elevated garden to the south provides cool southern breezes through the house
- Rainwater tanks to west boundary provide shade
- Only one small west-facing window shaded by timber louvres
- Insulation system (see below).

### ACTIVE HEATING & COOLING

- Gas in-slab hydronic heating in insulated concrete slab by Howat Hot Water and Heating Solutions
- Hunter Pacific Concept ceiling fans
- LG inverter split system air conditioning unit.

### BUILDING MATERIALS

- Bluestone and bricks salvaged from the demolition of the old house, used for deck retaining wall
- Hardwood salvaged from demolition for handrails, clothes line and step
- Baltic Pine flooring salvaged from demolition used to line internal wall
- Termimesh termite system  
[www.termimesh.com.au](http://www.termimesh.com.au)
- Concrete slab with insulated screed. The slab is insulated with Emmeti floor insulation panels  
[www.emmeti.co.uk](http://www.emmeti.co.uk)
- Recycled Baltic pine flooring and recycled Jarrah decking from Adelaide and Rural Salvage  
[www.adelaidेरuralsalvage.com.au](http://www.adelaidेरuralsalvage.com.au)
- Plantation Radiata pine frame with additional battens to create air gap to increase wall insulation
- Recycled hardwood pergola and hardwood posts to living room
- Golden Cypress Gold-Clad shiplap cladding from Rescued Golden Cypress [www.goldencypress.com.au](http://www.goldencypress.com.au)
- Cypress pine deck structure
- Recycled Western Red Cedar for cladding cover battens
- Ceiling insulation: R1.5 AGI roof blanket and R3.5 Glasswool batts, minimum 25mm air gap between  
[www.agiinsulation.com.au](http://www.agiinsulation.com.au)
- Wall insulation: Aircell Permishield and R2.0 Glasswool batts, 35mm air gap between  
[www.kingspaninsulation.com.au](http://www.kingspaninsulation.com.au)

### WINDOWS & GLAZING

- Western Red Cedar framed double-glazed windows and Dayview sashless sliding windows by MF Gordon [www.mfgordon.com.au](http://www.mfgordon.com.au)
- Breezway louvres with Comfort Plus Clear low e laminate  
[www.breezway.com.au](http://www.breezway.com.au),  
[www.viridianglass.com](http://www.viridianglass.com)
- Western Red Cedar louvre shutters by Shutterkits  
[www.shutterkits.com.au](http://www.shutterkits.com.au)

### LIGHTING

- Compact fluorescent lights in fittings supplied by Paradigm Lighting, SA.

### PAINTS, FINISHES & FLOOR COVERINGS

- Recycled Baltic pine flooring from Adelaide and Rural Salvage
- Polycure Aquapro Hitek water based floor finish  
[www.polycure.com.au](http://www.polycure.com.au)
- Livos Alis Oak Oil to timber cladding and external hardwood and deck [www.livos.com.au](http://www.livos.com.au)
- Dulux 'Eco Choice' low VOC paint  
[www.dulux.com.au](http://www.dulux.com.au)

### OTHER ESD FEATURES

- Roof form created for winter solar access to south-facing extension and for optimum rainwater collection
- Extension designed for maximum connection to garden.