



# Urban Oasis

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Architect Caroline Pidcock has lovingly restored her historic Sydney terrace to the highest standards of energy efficiency and sustainability.

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WORDS Liz Durnan

PHOTOGRAPHY David Iacono



The original facade, after careful consultation on the colour scheme, is heritage-friendly with water-based, breathable paints. The roof has been returned to its original look on the street side, with iconic Welsh slate. Since moving in, Caroline and John have given up their car and use a car-share scheme instead, which supplements their preferred methods of transport: walking, cycling, scootering and public transport.

## IT'S AN OPPRESSIVELY HOT NOVEMBER

day, with the mercury edging towards 40, but it's cool in the basement kitchen of architect Caroline Pidcock's newly renovated terrace in the heart of historic Sydney, at Millers Point.

Caroline, a regular columnist for this magazine, lives here with husband and fellow-architect, planner and former City of Sydney councillor John McInerney.

Millers Point made headlines recently when its iconic rows of Victorian terraces were subject to a public housing sell-off. Caroline and John purchased a 99-year lease three years ago after the tenants moved out, and have since joined the local action group bidding to protect the area from over development and forced evictions.

With Caroline and John's wealth of

expert knowledge, and that of their builder Darryn Parkinson of Your Abode, there was much debate around the products and systems that would retain its heritage integrity while ensuring its sustainability credentials. But Caroline waives away any suggestion of conflict between the two aims. "The house was built in 1887; it's 130 years old so that's sustainability in itself," she says.

Despite "a very large and dictatorial conservation management plan," Caroline successfully pushed for a few compromises, including opening up the two-room basement: with ongoing damp issues in the front room, sharing light and ventilation between the two rooms was crucial to make this level work. She retained definition of the two original rooms by use of materials – biodegradable and practical Marmoleum



Caroline's heritage Millers Point terrace has been lovingly restored with bold clay-based colours lighting up the renovated interior. The original fireplace was stripped of layers of paint and oiled to reveal its beautifully carved timber.

The kitchen needed overhauling due to damp and termites, allowing Caroline to inject her personal style. The cupboards are made from plantation-grown blackbutt plywood, while the bespoke study-bench (to the left of the image) is from reclaimed timber. The cheerful biodegradable Marmoleum flooring is matched by the yellow walls of the dining room.



provides a gorgeous burst of yellow on the kitchen floor, set off by the timber floorboards of the dining area.

The layout is otherwise largely unchanged, with the ground floor comprising two adjoining living areas; two bedrooms on the first floor and a further bedroom or study in the attic. Fortunately – and not always the case in houses of this period – there was already plumbing to the attic level for a small sink on the landing, to which they have added a toilet in the attic while hiding all plumbing in the floor. They also expanded the existing bathroom on the bedroom level.

The original layout allowed good ventilation; each of the four levels is only two rooms deep and with good-sized verandahs at the south and north, a cross-

breeze is possible even when it's raining. The verandahs also shade the exterior high-mass walls, helping to keep the house cool in summer.

Heating, originally from fireplaces, then gas, was a “whole long conversation” says Caroline. An energy-efficient heat pump provides domestic hot water and heat to the hydronic system – “a beautiful form of heating”. The system is small; there are radiators in the dining room and kitchen, with the expectation that heat moving upstairs will be sufficient to warm the upper levels. There is also a gas heater in the original fireplace in the lounge room installed when they first moved in and before they decided to move away from gas.

Not opting for rooftop solar hot water allowed room for a 2.4 kW solar PV system

on the rear, north-facing roof. Fortunately this part of the roof can't be seen from the street, so the panels don't violate heritage guidelines.

Secondary glazing installed on the windows helps to maintain temperatures and is perfect for retaining heritage windows while achieving some of the benefits of double glazing. “It also provides some soundproofing, thankfully, as there is a bus depot opposite,” says Caroline.

The original facade, after careful consultation on the colour scheme, is heritage-friendly with water-based breathable paints. The roof has been returned to its original look on the street side, with iconic Welsh slate. “The longevity of this slate justifies the travel miles,” says builder Darryn. →



The new opening in the brick wall, which provides great thermal mass, was left rough to differentiate it from the smooth door opening on the other side of the kitchen. The bricks and a piece of the slate damp proof course in the floor were left exposed to show how the house was made. The rest of the bricks were reused in the garden for paving and raised beds.



All existing timber windows were protected by strict heritage requirements so had Magnetite secondary glazing added to improve their thermal and acoustic performance. Electric hydronic heating, powered by an efficient heat pump, services the kitchen and dining room with panel radiators. The existing hardwood timber floor in the dining room was patched as required with recycled mixed hardwoods.





Leftover decking from the replacement of the balcony flooring lines the new exterior shed and seating area, while reclaimed sleepers are used for seating over the gabion walls, made from reused bricks from the demolished internal wall.



There was no garden in place when Caroline and John moved in, with all open area either built on or concreted over, and due to its location near the Sydney Harbour Bridge, the existing soil was contaminated with lead. Caroline has worked to reduce the built-on area and begun to develop a productive permaculture-inspired garden using rejuvenated soil in raised garden beds.



The kitchen, which needed overhauling due to damp and termites, is an area where Caroline was able to inject her personal style: the beautiful cupboards are made from plantation-grown blackbutt plywood from her family’s company. The cheerful Marmoleum in the kitchen is matched by the yellow walls of the dining room.

Many other materials have been salvaged from the house itself and reused, including timbers for cladding in the bathroom, shed and drying area, and bricks for some garden walls and paving, with more broken ones in gabion containers that

act as retaining walls in the garden. The original timber floors, doors and fireplaces have been cleaned of many years of paint so their stories can be told.

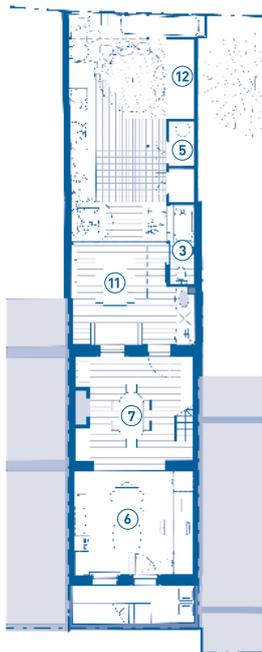
The garden – “a work in progress” – will be an urban oasis with every centimetre put to use. A slimline 4000-litre rainwater tank will be used for toilets and washing machine, and irrigating the garden’s vegetables and green wall.

Shading of the north-facing verandah they also discussed at length, finally opting for a pergola with operable louvres to provide shading and rain shelter.

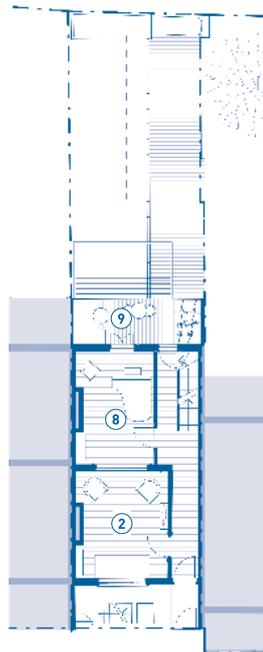
“There was lots of discussion around what is sustainable and where to apply it,” says Caroline. “The whole issue of energy use was a really interesting one.”

In many ways heritage restrictions and Caroline’s aims coincided. “There was an inevitability about what we did,” she says. “People say, ‘why don’t you open up this north-facing wall with concertina doors?’” she says, referring to the single door and window leading to the rear garden. “I think there’s some charm in not doing that.”

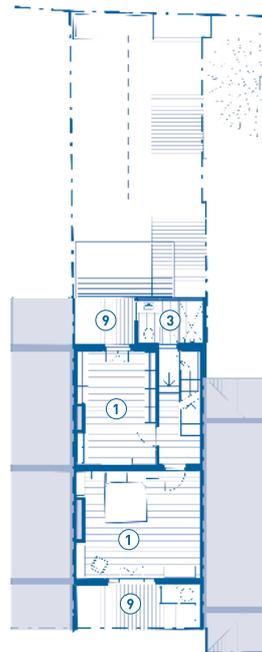
LOWER FLOOR PLAN



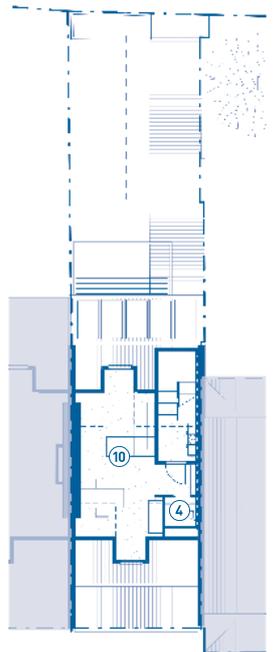
GROUND FLOOR PLAN



FIRST FLOOR PLAN



ATTIC PLAN



Caroline’s house will be open as part of Sustainable House Day on September 13th.  
[www.sustainablehouseday.com](http://www.sustainablehouseday.com)



LEGEND

- ① Bedroom
- ② Lounge
- ③ Bathroom
- ④ Toilet
- ⑤ Laundry
- ⑥ Kitchen
- ⑦ Dining
- ⑧ Living
- ⑨ Balcony
- ⑩ Study/bedroom
- ⑪ Outdoor living
- ⑫ Drying area

# Millers Point terrace

—Specifications

## Credits

### DESIGN

PIDCOCK – Architecture + Sustainability

### BUILDER

Your Abode

### PROJECT TYPE

Renovation

### PROJECT LOCATION

Millers Point, NSW

### COST

Approx. \$600,000

### SIZE

House 173 sqm (reduced from 191 sqm),  
land 120.8 sqm

## Sustainable Features

### HOT WATER

- Sanden Eco hot water heat pump (with a COP of 4.5) selected for efficiency and to optimise space for solar PV on roof.

### RENEWABLE ENERGY

- 8 x 300W LG Mono Neon solar panels + 8 x SolarEdge 300W DC optimisers and inverter by Autonomous Energy.

### WATER SAVING

- All appliances and fittings were chosen for their water efficiency
- The existing front-loading Miele washing machine is also very water-efficient
- A slimline 4000 litre water tank in back yard collects water from the northern roofs of the house for toilets, clothes washing and gardens
- A Redwater water diversion unit has been fitted to the bathrooms to re-direct the cold water in the hot water lines to the rainwater tank.

### PASSIVE DESIGN / HEATING & COOLING

- Existing house had optimum north orientation to rear and cross-flow ventilation across 2-room deep plan to make use of sea breezes and southerly winds throughout year
- Exposed brick walls internally provide thermal mass
- Electric Velux skylight over stairs to aid with stack venting the house
- Operable sunshade to rear deck for summer/winter solar control.

### ACTIVE HEATING & COOLING

- Hunter Pacific ceiling fan installed in the bedroom
- Electric hydronic heating system by Enter, Energy & Water Saving Shop using Port Klasik radiators and Sanden Heat pump to the kitchen and dining room
- Existing Metal Dynamics Gourmet Cooker slow burning wood fire to dining room to be occasionally used in winter for both heating and cooking
- Existing Pecan Engineering Wonderfire gas fireplace in lounge room
- Options for capturing heat in the attic and ducting it down to the lower ground level have also been considered, but without success at this stage.

### BUILDING MATERIALS

- Autex GreenStuf polyester insulation batts in walls, combination of Rockwool batts and Kingspan Kooltherm insulation boards in roof
- Welsh slate for front roofing
- Forbo Marmoleum for kitchen and toilet
- Lysaght Mini Orb corrugated sheeting for bathroom walls
- Blackbutt plywood from Big River Group for kitchen joinery
- Recycled timber workbench in kitchen from The Woodage
- Original bathroom timber cladding reused for new bathroom lining
- Salvaged timber from the deck's replacement used for lining of the new exterior shed and seating area
- Recycled sleepers for the lower deck and seating over the gabion veggie garden walls, made from bricks from demolished internal wall

- Recycled Oregon timber used to line the covered washing/sitting area.

### WINDOWS & GLAZING

- Magnetite secondary glazing was added to heritage windows to improve thermal and acoustic performance
- New reclaimed hardwood timber windows by JM Joinery: double-glazed windows in attic and breezeway louvres in timber-framed windows in both bathrooms for ventilation
- Accoya timber used for the new double-glazed external door to the dining room.

### LIGHTING

- Wide use of natural light despite narrow floor plan, supplemented with electrically-operated skylight over the stairs and improved glazing to the doors into the stairway
- All new lighting is LED.

### PAINTS & FINISHES

- Murobond water-based paint used on facade
- Volvox coloured clay paints used internally
- Bio Paint used for White walls and painted timber trim are
- Natural oils throughout on timber: Livos Ardvos for floors and stairs, Organoil on the kitchen joinery, Livos Alis decking oil on the decking.

### OTHER ESD FEATURES

- A Wattwatchers power meter and remote monitoring system helps reduce energy use
- Any material removed from site was disposed of using best practice recycling techniques wherever possible.