



Densification and Decarbonisation

Portfolio: Original or Creative Work
2017-2022

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Research Statement

Research Background

The five projects collected in this portfolio represent a multi-year investigation into the potential for small-scale architectural works to densify and decarbonise Australian cities. The research asks the following questions: What strategies can architects employ to increase density without sacrificing amenity in dense urban environments? How can architects design small-scale works as exemplars that minimise waste, maximise onsite recycling and employ low-carbon materials?

Research Contribution

Each project addresses these questions. Wall House II and Timber and Stone House were undertaken as a micro development. Subdividing a small inner-city site in Adelaide, two houses accommodated, doubling the density with a minor reduction in open space. The Garden Flat project constructed a secondary dwelling in Dulwich Hill, Sydney, upgrading storm water storage and the installation of a large photovoltaic array. The use of pre-fabricated and panelised components was incorporated to reduce embodied carbon and waste. The Newtown House strategised reductions in embodied carbon through each stage of construction; recycling materials from demolition, minimising structural concrete, refurbishing existing linings and employing low-carbon materials. The Magpie Road House retained the existing structure, upgrading insulation and replacing windows with high-performance double glazing. The additions maximised the longevity of the house including improved access for an ageing client.

Research Significance

Wall House II was one of just 20 nominees for Habitus House of the Year in 2020, an award that recognises excellence in residential design across the Indo-Pacific region. The construction of each of these projects has demonstrated the feasibility of the strategies employed.

Wall House II + Timber and Stone House



Wall House II + Timber and Stone House



h issue #49 habitusliving.com/houseoftheyear

habitus house of the year #91

7 WALL HOUSE II × NATHAN ETHERINGTON ARCHITECT

ADELAIDE AUSTRALIA

TEXT RACHAEL BERNSTONE PHOTOGRAPHY NATHAN ETHERINGTON

Designing a new house for one's parents is a rite-of-passage for many young architects, although few draw on such a rich sense of history as this project in North Adelaide.

Publication in *Habitus* #49
"House of the Year" issue
2020

Wall House II + Timber and Stone House



The context is a dense urban environment near Adelaide Oval

Wall House II + Timber and Stone House



Stone for construction was sourced from a bluestone quarry less than 40km away requiring minimal treatment before construction.

Above left: Kanmantoo Quarry where stone was sourced

Left: stone being laid

Above: completed bluestone wall

The Garden Flat



The Garden Flat



Panelled materials were used to reduce waste and plaster-board linings. On the interior whole sheets of plywood were installed.

The Garden Flat



100% recycled hardwood
was used in the fabrication of
doors and windows

The Garden Flat



The design was adapted to the site to minimise excavation of the sandstone rock shelf



Off-the-shelf industrial products were used to minimise cost and material waste as seen in this sun shade

Newtown House



New doors and windows fabricated from 100% recycled hardwood

Newtown House



Photograph showing bricks recycled from demolition stockpiled at the rear of the site and being used in the construction of the building addition.



Completed interior with recycled brickwork and low carbon finishes

Newtown House



The parts of the house retained in construction were refurbished including the floors

Magpie Road House



Magpie Road House



The existing house was substantially retained, the additions help to control solar exposure and improved access

Magpie Road House



Magpie Road House



The interior had minor alterations made with the entire house re-glazed with high performance glass and the upper floor was re-insulated