

Sanctuary

MODERN GREEN HOMES

ISSUE
71

Flexible floor plans, student studios, shared projects and multigenerational living; knockdown-rebuild timber salvage and reuse; ideas for permeable paving and more

OFF *the* PLAN

Creatively different
approaches to housing

PUBLISHED BY **renew.**
WINTER 2025 • AU/NZ \$15.95
SANCTUARY.RENEW.ORG.AU

ISSN 1833-1416



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WIN

A furniture and interior
design package from Moss
Furniture, valued at \$6,000

Offer open to Australian residents. Details page 79

HOUSE PROFILE
Hamilton Hill, WA

WORDS
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PHOTOGRAPHY
Amanda Miller

Hard- working housing

This eco development in Perth's Hamilton Hill combines good design with higher density to create more affordable homes for renters and homeowners.





AT A GLANCE

- Existing house renovated and four new homes built on suburban block
- High Star ratings and excellent northern orientation to all homes
- Designed for flexible use and a sense of community





"We could have contracted a bulk project developer, but we thought it was important to demonstrate that there are alternative ways to deliver high quality yet inexpensive housing." – Jocelyn

Like most parts of Australia, Perth is undergoing a housing crisis. In fact, it had the most extreme change in housing affordability anywhere in Australia in 2024.

Local designer Jocelyn Broderick graduated from architecture school in the late 1990s, when sustainability was less of a focus. For most of her career since, she has been exploring ways to offer her clients better and more affordable environmentally conscious design. She and her husband Sergio recently completed a development on their own large suburban block, which she viewed as a chance to demonstrate her ideas; she's now using it as a case study for her lectures in architectural science at university.

As long-standing owners of a 1970s cottage in Hamilton Hill, Jocelyn and Sergio have watched the street's housing density double as a result of the state government's infill housing targets. Unfortunately, most developments are 'cookie cutter' style, with poor outcomes for sustainability and local character. The couple often discussed how they could do it better, sensitively adding new housing behind their existing house.

When the Covid pandemic struck and the city's housing problems were suddenly magnified, the couple took advantage of state and federal government grants for new residential projects to execute their plans.

Determined to retain mature trees and the original house, which was reconfigured and upgraded as part of the project, Jocelyn designed four new homes: a two-bedroom house at the centre of the block, and three connected double-storey homes that hug the southern boundary. Careful planning ensured that all five

dwellings have both living rooms and courtyard gardens that enjoy northern sun. Space dedicated to cars is minimised, and priority given to communal areas for residents to gather.

Inspired by time spent living in Ireland, where homes are typically smaller, Jocelyn works with three key values firmly in mind: economy, function and beauty. To maximise the tight budget on this project and achieve a fast and efficient build without compromising on spatial or material quality, all significant decisions had to balance these values.

The smallest new build, House 2, is in many ways a typical 70-square-metre ancillary dwelling, with timber-framed walls on a concrete slab. By incorporating simple passive solar design principles, however, it achieves close to an 8-Star NatHERS rating despite its single-glazed windows and economical construction.

For the terraces, Houses 3 to 5, Jocelyn opted for poured concrete ground floor slabs and tilt-up concrete panels for the exterior and party walls and upper floors. Designed to eliminate steel beams, the upper floor slabs lock the walls together. This super-lean structure helps to offset the high embodied energy of the concrete: the material performs multiple roles, providing acoustic and fire separation along with a resilient finished surface that doesn't require painting or cladding. The construction method was also very quick and easy, and importantly didn't rely on bricklayers, who were in short supply during the Covid building boom.

All four new homes are topped with Bondor roofing panels, a choice that also delivered multiple benefits such as faster installation, good thermal performance and generous ceiling heights, and



Above Jocelyn opted to retain and renovate the existing three-bedroom house at the front of the block, rather than demolishing it. Behind it, she carefully placed the new builds to maximise shared and private outdoor space and minimise space dedicated to cars.

eliminated suspended ceiling framing, lining and painting.

Like the Victorian and Edwardian terraces that inspired them, the new row houses have been designed to last for 100 years, but unlike their predecessors, they provide considerably more flexibility to adapt and change over time. Each terrace has a dual-key entry, bathrooms on both floors, a full kitchen downstairs and a small kitchenette upstairs, which means that each home can be split into two dwellings with separate access if desired. Upstairs, custom cupboards form a moveable wall that can divide the single large space into two if needed. All this flexibility means the homes can easily accommodate different family or rental configurations, or be used for live/work purposes.

And while older-style terraces can be dark and uncomfortable, these new homes are warm in winter and cool in summer. Thoughtful design moves include a generous overhang for shade on the northern elevation, operable windows and louvres on the south for cross breezes,

and thermal mass for stable indoor temperatures. As a result, none of the new homes requires mechanical heating or cooling beyond ceiling fans, and they are comfortable all year round. One tenant reported that they needed only t-shirts inside throughout winter.

As self-funded developers, Jocelyn and Sergio invested in spatial planning and high-quality materials in the first instance, knowing that internal features like kitchens, bathrooms, flooring and fittings could be upgraded as occupant needs change. Similarly, systems such as solar PV and batteries can be added later as budget allows.

“We could have made more money on the project and reduced stress by contracting a bulk project developer like the site next door did,” admits Jocelyn, “but we thought it was important to demonstrate that there are alternative ways to deliver high quality yet inexpensive housing.

“Not everyone finds these homes beautiful, but I love the way the light moves through the spaces,” she goes on.



Top left The terrace houses are cleverly designed so that each can function as two separate small apartments – upstairs and downstairs – if desired. The shared carport doubles as a covered communal entertaining space. **Left** Each upper level includes a small kitchenette. **Top right** Swapping rooms around in the existing House 1 improved liveability. **Above** Like all the living spaces, House 2's faces north for sun and natural light. **Below left** Moveable walls made with ply-backed wardrobe units allow the upper levels of Houses 3–5 to be reconfigured as needed. **Below right** The upper floor slabs of the terrace houses are designed to lock the tilt-up concrete panel walls together, minimising the need for structural steel.





Above Swedish artist Magni Moss currently lives in House 5 with his artist partner Kate and their young daughter (artwork by Magni).

“When you’re sitting inside in winter and the sun comes in and warms you up, that’s beautiful, and in summer, the homes are cavernous and cool. Also, there is a rawness to the materials that I really like.”

Sergio and Jocelyn lived in the newly renovated original house throughout the construction of the new dwellings, and were able to be very hands-on. They have since sold the front house, but retain ownership of the rest and take pleasure in providing more affordable rental accommodation to a community of

tenants. The single suburban block, close to amenities and good public transport, can now house up to eight separate households.

Having delivered a project that was years in gestation, and several intense years in the design and building phase, the couple are happy with the outcome, as are the people who call these five houses home. “We are really proud of the finished result, and the renters and new owners are really happy living here,” Jocelyn says. **S**



LEGEND

- ① House 1 (existing)
- ② House 2 (single-storey)
- ③ House 3 (two-storey terrace)
- ④ House 4 (two-storey terrace)
- ⑤ House 5 (two-storey terrace)
- ⑥ Semi-private gardens
- ⑦ Private courtyards
- ⑧ House 1 carport/covered outdoor space
- ⑨ House 2 carport
- ⑩ Houses 3-5 shared carport/covered outdoor space
- ⑪ Shared driveway
- ⑫ Potentially separate upstairs units with kitchenettes and moveable dividing walls

SPECIFICATIONS

DESIGNER

Jocelyn Broderick

BUILDER

Castello Homes

PROJECT TYPE

Renovation and 4-unit new build

LOCATION

Hamilton Hill, WA
(Whadjuk Noongar Country)

COST

\$967,500
(after grants of \$105,000)
Completed 2024

SIZE

House 1: 120m²
House 2: 70m²
Houses 3-5: each 99m²
Land: 963m²

ENERGY RATINGS

House 2: 7.8 Stars
Houses 3-5: 9+ Stars

ENERGY ASSESSOR

Nathan Peart, EcoForm

HOT WATER

- Houses 2–5: Dux Proflo 160L single-element electric storage units
- House 1: existing instantaneous gas system retained

WATER SAVING

- Water-efficient showers and tapware
- Low water use gardens

PASSIVE DESIGN, HEATING & COOLING

- Living areas and most glazing to north
- Thermal mass (concrete walls and slabs) exposed to northern sun in winter and shaded in summer
- Bondor insulated roof panels
- Design for optimal cross ventilation
- Heavy lined curtains to prevent winter heat loss

ACTIVE HEATING, COOLING & VENTILATION

- Bayside Lagoon 132cm reversible ceiling fans with lights to all rooms
- House 1: existing Mitsubishi 5kW reverse-cycle air conditioner retained

BUILDING MATERIALS

- Walls: House 2: timber frame construction; Houses 3–5: loadbearing walls tilt-up concrete panels, infill walls timber framed with HardieFlex fibre cement cladding
- Roofing: Houses 2–5: 150mm Bondor Solarspan insulated panels in Surfsmist (R3.6); House 1: Colorbond Custom Orb
- Concrete slab floors to Houses 2–5
- Insulation: Houses 2–5: Knauf Earthwool HD SoundShield batts (R2.5) and James Hardie Hardie Fire batts (R2.5) to timber-framed walls; House 1: Bradford Gold batts to ceiling (R4.1), Anticon blanket to roof (R1.4)
- Interior wall linings: Villaboard, FSC-certified plywood from ForestOne
- Stainless steel benchtops custom made by Krimco, South Fremantle
- IKEA wardrobes and kitchen and bathroom cabinets, some secondhand
- Suntuff Solarsmart polycarbonate sheet to carport roofs
- Jack Matrix Classic Diamond Lattice recycled polypropylene privacy screens
- Recycled brick and salvaged industrial steel grates to paths

- Boral Envirocrete lower-carbon concrete driveway and paving

PAINTS, FINISHES & FLOOR COVERINGS

- CFP Clear Satin polyurethane (water-based) mixed with Cabot's Stain & Varnish in Liming White to plywood walls
- Dulux low-VOC interior paint
- Crommelin Stain Repel water-based sealer to buffed concrete floors
- House 1: Livos Ardvos Universal Wood Oil to existing jarrah floorboards

WINDOWS & GLAZING

- Jason Windows aluminium-framed single-glazed windows and doors

LIGHTING

- LED interior and exterior lighting

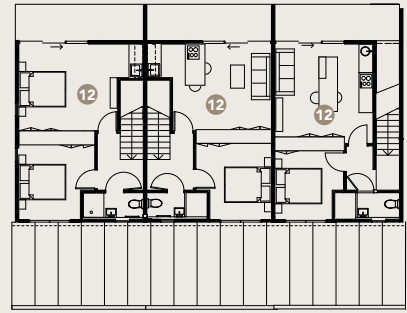
COOKING

- Houses 2–5: electric freestanding oven/cooktops
- House 1: existing gas cooktop retained

OTHER ESD FEATURES

- Higher density housing, close to good public transport
- Future-proofed design means longer lifecycle and a better embodied energy outcome
- Reduced use of structural steel through efficient design of wall panels
- Use of recycled and repurposed materials where possible
- Reduced waste on site during construction by careful management, recycling, and no skip bins
- Houses 3–5 designed for dual-key living, allowing flexible, more affordable housing
- Site planned to encourage social interaction between residents
- Existing house retained and renovated:
 - Cracked walls repaired, bathroom refitted, new kitchen, new roof
 - Living area moved to north, bedrooms to south
 - Ceiling insulation added
 - Windows replaced
 - New open carport doubles as roofed outdoor entertainment space

UPPER LEVEL PLAN, HOUSES 3–5



GROUND LEVEL PLAN

