

# Sanctuary

MODERN GREEN HOMES

ISSUE  
60

FLOOD RESILIENCE  
SPECIAL

Retrofit tips for fast flood recovery; sustainable tapware;  
mid-century gem restored; slow the flow in your garden

## WATER WISE

Flood-resilient design in action



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# Going with the flow

LOCATION Yeronga, QLD • WORDS Anna Cumming • PHOTOGRAPHY Shantanu Starick



## At a glance

- Renovation and modest flexible-use extension
- Now comfortable without air conditioning
- Landscaping for stormwater management and overland flood mitigation

**Fiona and Steve's rejuvenated Brisbane home features a new multi-use room as well as clever water management and landscaping to handle overland flow.**

Right on the river, the Brisbane suburb of Yeronga has seen its fair share of floods. Steve and Fiona are long-time local residents: "We were living in the area in 2011 and were aware of the characteristics of that flood," says Steve. "We're very fortunate that our current house is on higher ground so we don't have to deal with Brisbane River flooding, but it has an overland flow overlay associated with a gully across the back third of the property."

What might have dissuaded other buyers, though, hydro engineer Steve saw as an opportunity and a challenge. "You can look at the overland flow path in two ways – as a constraint, or as a natural feature that's an asset," he says. "Such a path is a vegetation corridor and a fauna movement corridor. If you don't put structures that can get damaged in it, then it's a fantastic bit of landscape."

Stormwater management and landscaping to accommodate the overland flow were important aspects of the couple's renovation plan for their little worker's cottage – along with making the spaces more useable, removing the air conditioning, and reducing energy use. "The house was pretty small, with minimal insulation," Steve says. "In particular, the living space on the west was blisteringly hot in summer, which wasn't helped by paving all down the west side of the house."

Working with architect Tim Bennetton, Fiona and Steve settled on a plan that involved the removal of a couple of internal walls, a small pop-out to the west to extend the living area and accommodate a new laundry, and an airy semi-attached pavilion extension to the rear that has been deliberately designed to fulfill many functions. "It can be a home office, a music room, a craft studio

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The overland flow path on Fiona and Steve's block has been landscaped with a dry creek bed and native planting. "When there's a lot of rain, it turns into a flowing creek," explains Fiona.









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The new pavilion is semi-attached to the house and functions as an office, craft studio and guest accommodation. It features a bank of windows to make the most of the garden outlook.

or a guest bedroom,” says Fiona. There is a fold-down wall bed with a screening curtain that can be pivoted to run across the space for privacy. “It’s about making spaces work harder, rather than adding more rooms,” explains Tim.

The new floor plan, plus extensive operable windows and shutters, catches breezes from every angle. “We added insulation and what we call ‘vent boxes’ to the western side of the existing house,” Tim says. “These plus new adjustable slatted awnings allow the whole house to breathe while blocking the hot western sun, and meant we could keep the existing windows.” Fiona says that the house is much more liveable in summer now, even without air conditioning. “It’s only

on the hottest days that the humidity can become a challenge.”

Outside, the western paving was removed and replaced with permeable surfaces and planting, helping to cool the house and reduce stormwater runoff. A 22,000-litre tank buried beneath the front courtyard captures almost all the rainwater falling on the roof; thanks to the fall of the block towards the rear, the overflow from the tank is directed to a raingarden in the backyard where it’s filtered and dispersed. A handful of times a year it rains heavily enough for the raingarden to overflow too.

Steve and Fiona reinstated a creek bed across the back of the property, planting around it with bird-attracting local

species. “Four years on, it’s really starting to take shape,” says Steve. “The creek is dry most of the time, but when we get a lot of heavy rain it turns into a bit of a billabong.”

He points out that the rocks and plants slow down the water flow, reducing erosion and allowing sediment to settle. “It works brilliantly. It causes us zero stress when there’s rain coming. The water in the backyard doesn’t cause any damage – that bit of the garden enjoys it.”

Tim agrees, and encourages all his clients to think about managing overland flow in this way: “When designed properly, you get to experience a seasonal stream that is attractive, useful and celebrates the different seasons.” 🌿



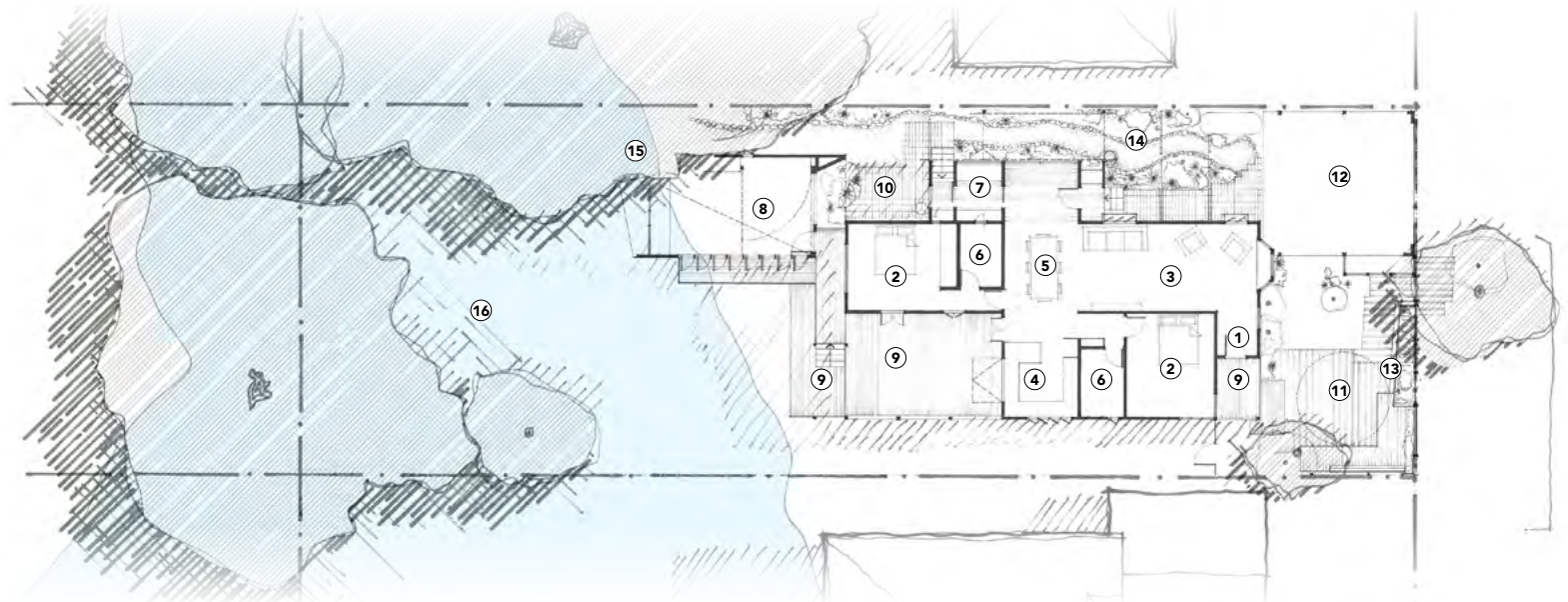


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A small addition to the western side of the house extends the living space and accommodates a laundry. Louvred 'vent boxes' to existing windows and adjustable slatted awnings provide shade.



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The new pavilion is flooded with light. A fold-down wall bed and purpose-built storage for craft supplies help maximise the usefulness of the modest-sized space.

## SITE PLAN



### LEGEND

- ① Entry
- ② Bedroom
- ③ Living
- ④ Kitchen
- ⑤ Dining
- ⑥ Bathroom
- ⑦ Laundry
- ⑧ Office/studio/guest room
- ⑨ Deck
- ⑩ Courtyard with clothesline
- ⑪ Courtyard with rainwater tank under
- ⑫ Carport
- ⑬ Vegie beds
- ⑭ Permeable surfaces and planting
- ⑮ Rain garden
- ⑯ Dry creek bed
- Overland flow path

# HOUSE SPECIFICATIONS

## HOT WATER

- Existing electric hot water system set to heat using solar generation

## RENEWABLE ENERGY

- 7.75kW solar PV system

## WATER SAVING

- Allcast Precast 22,000L concrete water tank under front courtyard collects rainwater from all roofs and is plumbed to laundry and toilets
- Tank overflow directed to raingarden and dry creek landscaping in back garden
- Sponge City overland flow drainage strategy incorporated into stormwater and landscape design; see below for more

## PASSIVE DESIGN, HEATING & COOLING

- Large northern window to new pavilion for natural light and solar gain
- Pavilion roof and ceiling rise toward the south to make the most of the views to the back garden and surrounding trees, and to create a chimney effect to exhaust hot air
- Insulation, 'vent boxes' to existing windows and draped slatted awnings added to western side of existing house for shade, ventilation and thermal control
- Some existing internal walls removed for more natural light and ventilation

## ACTIVE HEATING & COOLING

- Hunter Pacific Concept 2 ceiling fans to bedrooms, living area and deck
- Existing air conditioning system removed

## BUILDING MATERIALS

- New pavilion:
  - Pine weatherboard and unpainted magnesium oxide board cladding
  - Zinalume roof
  - Solid-core doors used for adjustable panels on eastern facade
  - Australian northern beech floorboards
- Insulation: polyester batts to pavilion walls and ceiling (R2.5) and underfloor (R2), and to western wall of existing house (R2.5)
- Spotted gum decking

## WINDOWS & GLAZING

- New pavilion: timber-framed fixed and casement windows by Darra Joinery; tall sashless sliding window to south allows venting of hot air; polycarbonate skylight with custom cover for summer
- Solatube skylight to existing house

## LIGHTING

- LED lights from Lumen8

## OTHER ESD FEATURES

- The design incorporates water sensitive urban design (WSUD) and Sponge City principles, meaning decreased stormwater runoff from the property, reduced mains water use and increased drought and flood resilience. Principles include:
  - Replacement of driveways and paved areas with permeable landscaped surfaces
  - Rainwater harvesting, storage and use for toilet flushing and clothes washing
  - Active engagement of the property's overland flow path.

## DESIGNER

Tim Bennetton Architects

## BUILDERS

Greg Thornton  
Constructions and  
Charles Warren  
Constructions

## PROJECT TYPE

Renovation and extension

## LOCATION

Yeronga, QLD (Jagera  
and Turrbal Country)

## COST

\$490,000

## SIZE

House 150m<sup>2</sup>  
(new built area 50m<sup>2</sup>)  
Land 690m<sup>2</sup>

## ENERGY RATING

6 Stars

## ENERGY ASSESSOR

Energy Rating Consulting

## INSIGHTS

"The water management for this property includes a raingarden and a landscaped creek bed, whose plants filter stormwater before it enters the river. They also slow the water velocity, which reduces scouring. If these principles were applied over a whole catchment, stormwater runoff would take longer, reducing peak flood heights."

Tim Bennetton, architect



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At the front of the property is a courtyard with generous bench seating and planter boxes for vegetables. A 22,000-litre rainwater tank under the courtyard supplies toilets and laundry, and overflows to a raingarden and to the dry creek landscaping in the back garden.