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EXCLUSIVE INTERVIEW

Scarlett Johansson's Indian Odyssey

"Small changes can ripple out and have a huge effect on a community"

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Scarlett Johansson
photographed by
Craig McDean

Eco-
Friendly
Home
Ideas

Hot
climate
COOL
solution



“Sustainability should be integral to design, not an adjunct, and the drought has been a wake-up call – increasingly people are looking for high-end architecture that performs.”

URBAN ECO-WISDOM

Saving 115,000 litres of town water a year, this three-bedroom Sydney home is a model of water efficiency. Its unique grey water filter – a three-tiered vertical garden – is a world first.

Words by **Peter Salhani**

234 SQUARE METRES

These days it can buy you a building extension, pool, courtyard, parking bay and water recycling system.



VERTICAL GARDEN ("GREEN WALL")

Grey water is filtered through layers of plants in hydroponic gravel, sand and charcoal, which polishes it to an almost potable (drinking) quality.

PHOTOGRAPHY BY JAMES BOWERS



“Space is the perennial problem in urban settings. This backyard had to squeeze in parking, a pool and water recycling, so we started toying with the idea of a vertical wetland, which is essentially what it is.”

Mary Henning's house in the Sydney suburb of Clovelly is a model of water efficiency. Since renovations to her three-bedroom semi were completed in 2004, the building's environmental strategies, particularly with water, have won it numerous awards and provided a leading case study for the New South Wales Government's Building Sustainability Index (BASIX) modelling.

The house has also attracted attention internationally, appearing on Britain's World Architecture News website and Canada's Slow Home website and featuring in US *Dwell* magazine. It was presented at the 2006 national conference of the Royal Australian Institute of Architects and tours of the house have been organised.

Renovations were designed by architects Kennedy Associates in conjunction with environmental engineers ENVDS. On an infill site of just 234 square metres, they shoehorned in an extension to the original house, a 9000 litre in-ground pool, a courtyard, off-street parking and a water harvesting and recycling system that reduces the household's town water usage by a staggering 75 per cent. This is nearly double the BASIX requirement of a 40 per cent reduction to water use and greenhouse gas emissions for "alts and adds" greater than AU\$50,000. The plans were approved by Randwick City Council before BASIX was introduced.

"I think you need to do things that spark debate in the community about conserving our resources," says Henning. "Water and energy are two major resources we use daily, so their impacts continue week after week. We went for really big reductions in water use, because you can buy green energy but you can't buy green water."



LIGHT SENSITIVE
Natural light penetrates the interior from the void above the living room and the skylights above the staircase.

PHOTOGRAPHS: BART MAIORANA

**ECO-CONSCIOUS**

The only direct town water connection is to the kitchen sink and the hot water system.

SUSTAINABLE DESIGN

The front of the semi was retained in its original format, with a two-storey addition grafted onto the rear. The new section houses the living and service areas, home office and main bedroom, with a void at the rear to channel light deep into the interior. It has solar hot water and pool heating, provision for solar power generation, external louvres to temper the western sun at the rear, skylights, a thermal chimney, cross-ventilation, LED lighting and ceiling fans instead of airconditioning.

"We set out to design a beautiful house as well as a sustainable one," says principal architect Steve Kennedy. "Sustainability should be integral to design, not an adjunct, and the drought

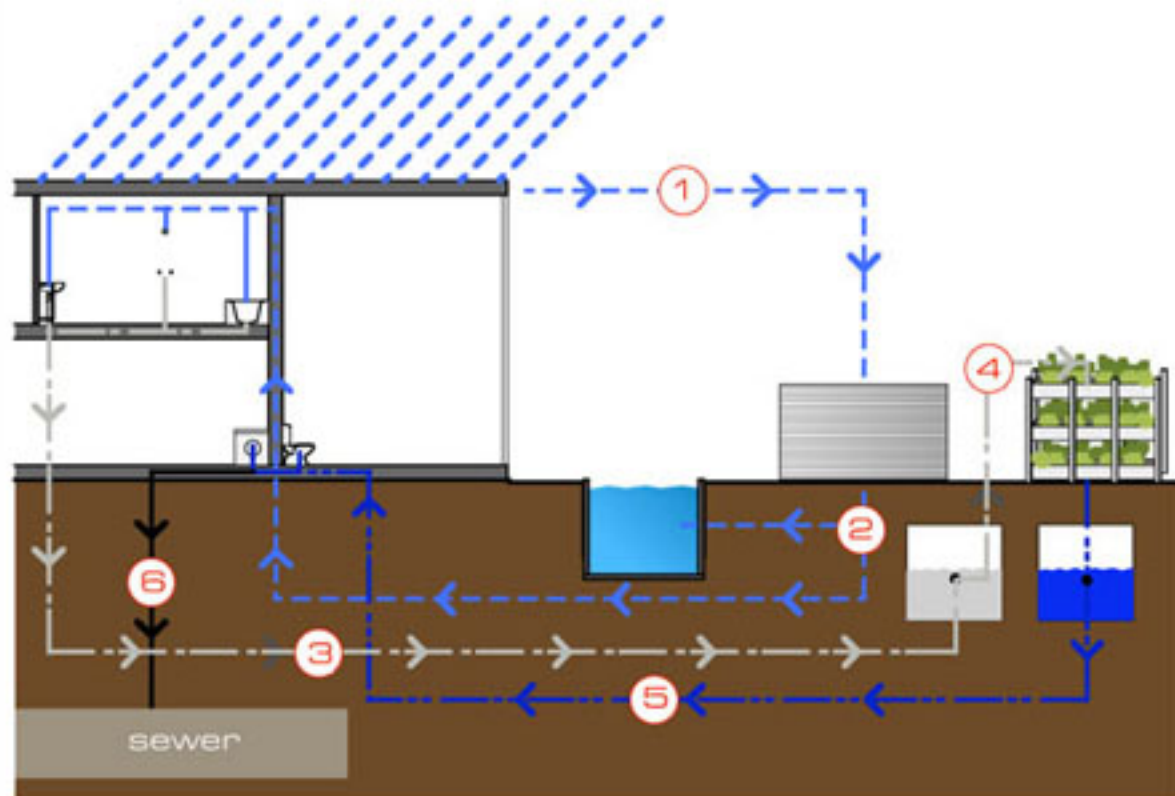
has been an important wake-up call – people increasingly are looking for high-end architecture that performs."

At the heart of the water system are three rainwater tanks, each holding 3000 litres of runoff from the 100 square metre roof. The tanks were custom made, because at the time their size (2.1m high by 90cm wide) wasn't standard. Now such options are readily available, partly because of the success of this project.

The showers, bath and hand basins are all fed from the tanks, as are the garden irrigation and plunge pool. Wastewater from the bathrooms or laundry (it's interchangeable) is recycled in a three-tiered "green wall" opposite the tanks. Pumped to the top of the three-tiered vertical garden, the grey

"I think you need to do things that spark debate in the community about conserving our resources."

“I know the pool is a luxury, but it’s not a drain on community resources. I’m providing for it with the tanks...”



water percolates down through the layers of plants in hydroponic gravel, sand and charcoal, which polishes it to an almost potable (drinking) quality – according to regular tests by ENVDS. The water is then held in an underground tank that supplies water to the toilets and washing machine.

The only direct town water connection is to the kitchen sink and the hot water system. There’s also a top-up valve in case the tanks run low, but it’s never been used. “The tanks have never run dry, though they’ve gotten low at times,” says Henning, a long-time advocate of environmental awareness. Her two-person household uses less than 100 litres of town water a day.

“I love the fact that my clothes are washed in water recycled from shower and bath water,” Henning says. “It’s marvellous. And I know the pool is a luxury, but it’s not a drain on community resources. I’m providing for it with the tanks, so I feel very good about having it.”

VERTICAL WETLAND

Sydneysiders in general have buckled down with their water use since the drought began to bite. Sydney Water estimates usage per person has dropped by 32 per cent, from 500 litres a day in 1991 to around 340 litres a day.

“The beauty is, apart from black water [from toilets], all water from the site is retained and used on site... you’re recycling water you got for free.”

Imagine the savings if more homes – and businesses, for that matter – were hardwired like Henning’s.

Sydney Water was initially sceptical about Henning’s recycling system, understandably perhaps, given the lack of precedent – it’s a first for Australia and possibly the world. But the science isn’t new.

According to environmental engineer Toby Gray of ENVDS, “It’s like using a wetlands garden to clean and polish the water – like the one in Michael Mobbs’ house.” (Mobbs designed the systems for and lives in the Sustainable House, a renovated 19th-century inner-city terrace house in Sydney that has provided for all its own water, sewerage and energy needs since 1996.)

“But space is the perennial problem in urban settings. This backyard had to squeeze in parking, a pool and water recycling, so we started toying with the idea of a vertical wetland, which is essentially what it is,” Gray says.

Randwick City Council applauds the lateral approach: “Apart from its role as a grey water filter, it changes the way we view and use small courtyards,



GREEN WALL ONLINE
WWW.MINDFOOD.COM
 Want to DIY? For more information about the green wall, project materials, energy savings and FAQs, visit www.mindfood.com.

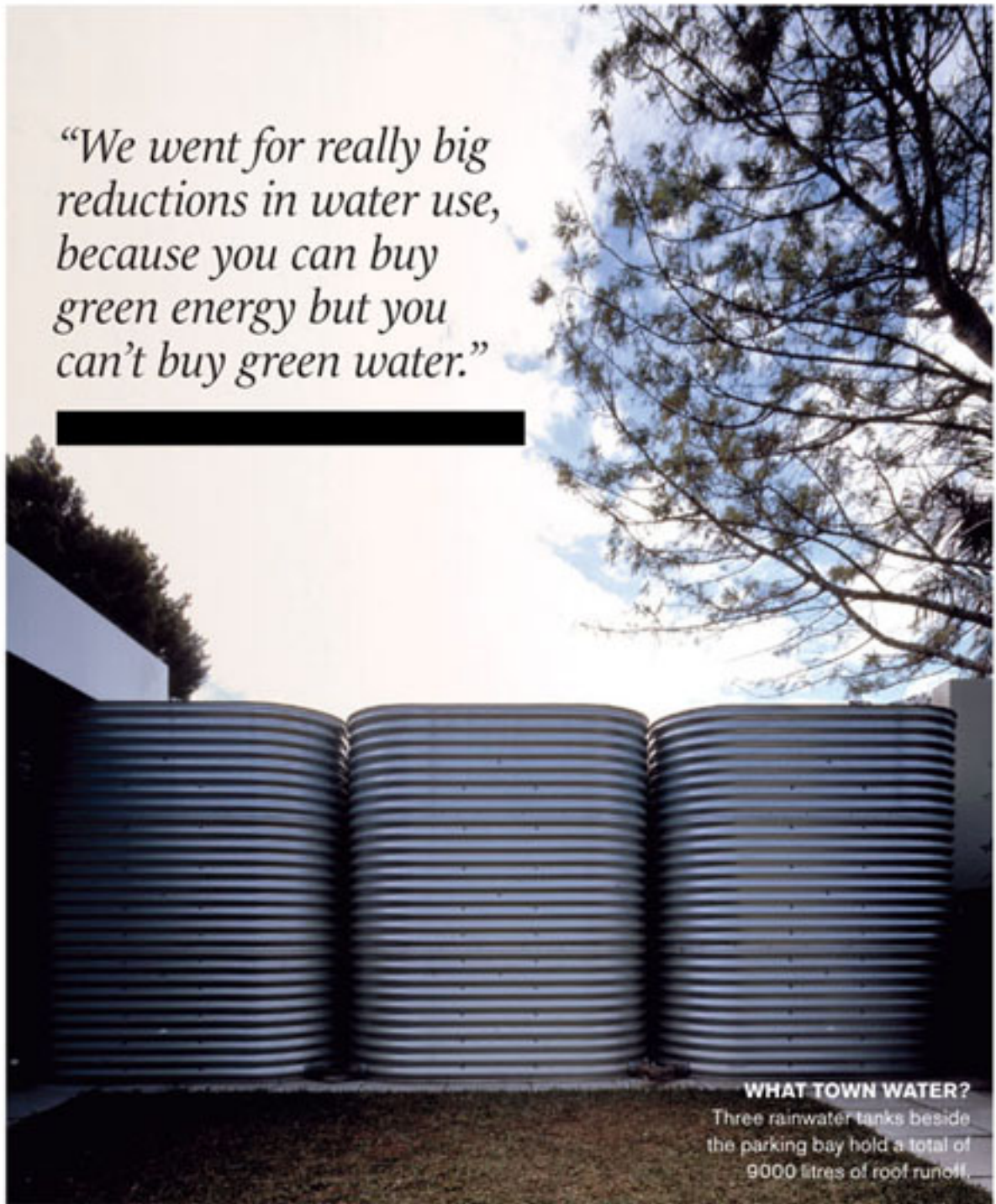
PLANS: KENNEDY ASSOCIATES ARCHITECTS



A wide rear eave tempers the sun to the living area and kitchen.

which is particularly important as urban densities increase and private open space decreases. In this case, the vertical garden triples the garden area."

Kennedy likes the system's circularity. "The beauty is, apart from black water [from toilets], all water from the site is retained and used on site. The rainwater tanks supply most of the taps where the grey water comes from, so you're recycling water you got for free." Now that's making every drop count! ☺



"We went for really big reductions in water use, because you can buy green energy but you can't buy green water."

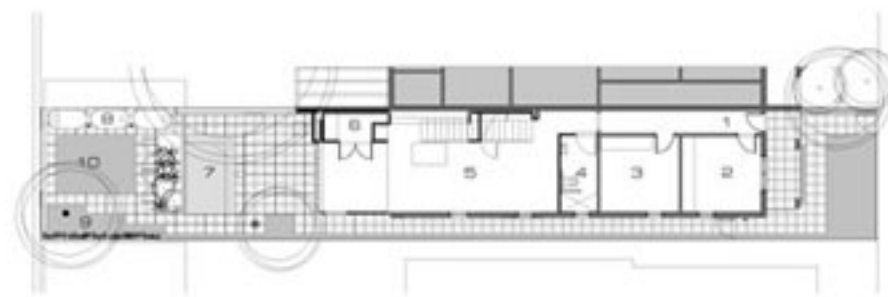
WHAT TOWN WATER?

Three rainwater tanks beside the parking bay hold a total of 9000 litres of roof runoff.

A MODEL OF SUSTAINABILITY

FLOOR PLANS BY KENNEDY ASSOCIATES ARCHITECTS

PHOTOGRAPHS: TOP LEFT, SIMON ANDERSON; TOP RIGHT, BART MAIORANA



GROUND FLOOR PLAN



FIRST FLOOR PLAN

GROUND FLOOR PLAN

1. Entry
2. Bedroom 2
3. Bedroom 3
4. Bathroom 2
5. Living/kitchen
6. Laundry
7. Pool
8. Rainwater tanks
9. Stormwater absorption
10. Parking/stormwater absorption

FIRST FLOOR PLAN

1. Library
2. Void
3. Study
4. Bathroom
5. Master bedroom
6. Deck