

# Self Cleaning



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Set lightly into the bush, the Carver house has sparked plenty of controversy with its dramatic difference.



With the looks to make it a candidate to star in a remake of *The Jetsons*, this MacMasters Beach tree house north of Sydney has a futuristic clarity and lightness. A simple steel and glass box belies its remarkable, gift-wrap technology. Chameleon-like and integrated with its bush canopy, the house relies on some invisible technology to ensure a year round crystal clear 'skin'.



## HIGH FLIER

Malcolm Carver's first meeting with Philip Johnson in the early 1980s was anticipation tinged with awe. Creator of arguably the 20th century's most distilled glass residence at New Canaan, Connecticut in 1947, a rendezvous at Johnson's stupendous glass prism stitched into the emerald green of New Canaan, promised exciting insights. Carver recalls a house no less dramatic than the day it was built.

The meeting however was exceptional for other reasons. Johnson was in the process of high camp with a Chippendale chair as post-modern motif for AT&T's New York headquarters. Perhaps his reaction was a sign that he was tired of looking over his shoulder at early work.

Whatever the reason, his greeting was cool. "And where are you from?" he queried impatiently. Carver explained his Australian origins. "I can see that," the architect replied, unmoved by a young man's pilgrimage from the Antipodes. Johnson's deadpan gaze, delivered through signature, black doughnut sized spectacles reinforced the verbal. Polished but prickly, it was an impression that only reinforced Carver's view that humility is a good starting point for architecture.

Built just two years after Mies' more celebrated Farnsworth House, Johnson's work was even more

emphatically astringent, stripped to its barest essentials; a floor, wafer roof and fully glazed envelope. It remains the quintessential fishbowl house strangely prescient and at odds with Johnson's later preoccupation with style and varnish. "It is just extraordinary. It is of the earth and built slab on ground, yet appears as if it could float away," recalls Carver.

If not a turning point, the visit confirmed that structures of subtraction, instead of constant addition, could reveal a whole new way of living. Almost a quarter of a century after his strange encounter with Johnson, Carver has designed a house that has stirred locals.

Perched among treetops on heavily treed slopes, Carver's work is an aesthetic exception and technical revelation. Some neighbours view it as the work of the devil, yet others see it as heaven-sent, a totem for building on difficult sites where bushland preservation and prospect is crucial. Neighbours though, are not unanimous in their approval of this house of big ideas and discrete attitude.

"It's a folly in one sense," admits the architect who now better understands the feeling of stepping outside the square. "If you own a standard development house and live in that kind of fortress then this sort of house represents the dark side.

It's our holiday house and weekender so we wanted a tree house that was completely different to the idea of enclosure, bricks and mortar."

In time, Carver hopes such houses will be treated as signposts for an entirely different environmental response. Like all houses that are inventive and highly site specific, there is no universal application that will automatically translate en masse everywhere.

One aspect Carver believes will travel well is Pilkington's **Activ**<sup>™</sup> glass, which sheathes the whole job. "Phenomenal," he says of the new self cleaning surface that by virtue of its unique properties provides a startling clarity. "We never need to touch it and yet here it is by the coast always looking like the glass cleaners have just finished."

Despite the project's shimmering appearance, neighbours have been less than enamoured with the new arrival. "Nothing prepared us for the reaction.

■ "Nothing prepared us for the reaction of neighbours. They obviously felt threatened because it wasn't brick and tile and didn't require excavation..."  
Malcolm Carver.





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■ Site engagement is paramount. The design strategy of full height glazing and Pilkington Activ™ ensures sparkling visibility even with demanding coastal conditions.



They obviously felt threatened because it wasn't brick and tile and did not require excavation. We wanted to celebrate the site and setting and to tiptoe in. The house barely touches the ground," Carver explains of his efforts to design and build responsibly. Rehabilitation work of vegetation is already well advanced and within a few months it will be reclaimed with the original bracken fern.

The house touches the ground at only a few points via steel columns with minimal disturbance.

Carver sees his experience with the house as a case study in suburban prejudice and fear of difference. He recalls the central coast television news

story of his design proposal running as a lead item. "The neighbourhood objections ran as a headline just behind the invasion of Iraq and threatened demise of the Bulldogs rugby league club. It was huge," says Carver. "It really played into the hands of people who ignored the mega-mansions going up but couldn't come to terms with a transparent tree house.

Still bemused by the outcry, Carver defends his decision as environmentally conscientious.

"We didn't expect that level of objection." Instead of being encouraged and complimented for showing environmental initiative, he was treated as a villain.

"Unlike most around here, we didn't bench cut the site with excavators and bulldozers and only one tree was removed. It has a really modest footprint, is fully recyclable and considerate towards its neighbours.

"The furore occurred," believes Carver, "partly because the house progressed so quickly. People were shocked. One day it was a bush block and the next, without any cutting and scraping, or brick and tile deliveries, this steel frame was erected. It took less than a week and the glass was in." Still mildly bemused by the reaction he says that instead of a brick and tile stump, the neighbourhood now has a butterfly house.



■ The stilt construction left the site almost untouched. Just one tree was removed.



It's the antithesis of the standard suburban home. At the same time it's unassuming and you don't have to wait five years for the trees to grow around it. "A prefabricated house can be a terrifying experience if you don't understand the process. I suppose if we had cut and benched the site everything would have been fine.

"It's not a house for everyone but it's brilliant for the families and friends that share what it offers. We get beautiful summer breezes up here that many houses lower down don't receive. With the forest canopy, and flexibility of sliding doors and windows it is just beautiful.

"Living in the treetops, with easily modified cross ventilation, air-conditioning isn't necessary at all. A slow combustion fire will be installed for winter, but that's a small price for the benefits of so much glass and so little structure.

"We're all preoccupied thinking that we've got to keep glass sizes down to contain heat. That might be necessary in places with cold winters, but for much of Australia, big windows and openings are so efficient and permit cross ventilation that make mechanical cooling redundant.

"You wouldn't necessarily put this in the snow country, but when you have an environment with external modifiers and you're sitting among the canopy of trees, then you don't need shading devices and you certainly don't need air-conditioners. Raised in this way it has outstanding cross ventilation and comfort even on hot days. Visitors often comment on just how much cooler the house is than even those situated right near the sea.

"When you work with such a large glass envelope, you weigh up the pros and cons and on balance, the advantages far outweigh any negatives. By its very nature these are large panel sizes and therefore the glass is thicker and the result is it's extremely quiet once the windows are closed."

The last thing Carver wanted was the level of thermal mass that many authorities would like applied to new housing. "Guidebook design is an anathema to most thinking architects," he says of design regulations that deliver ponderous housing design in the name of energy ratings.

"I wouldn't expect everybody to live in a glass house. But it doesn't mean you're an exhibitionist either. Most people think that the windows should

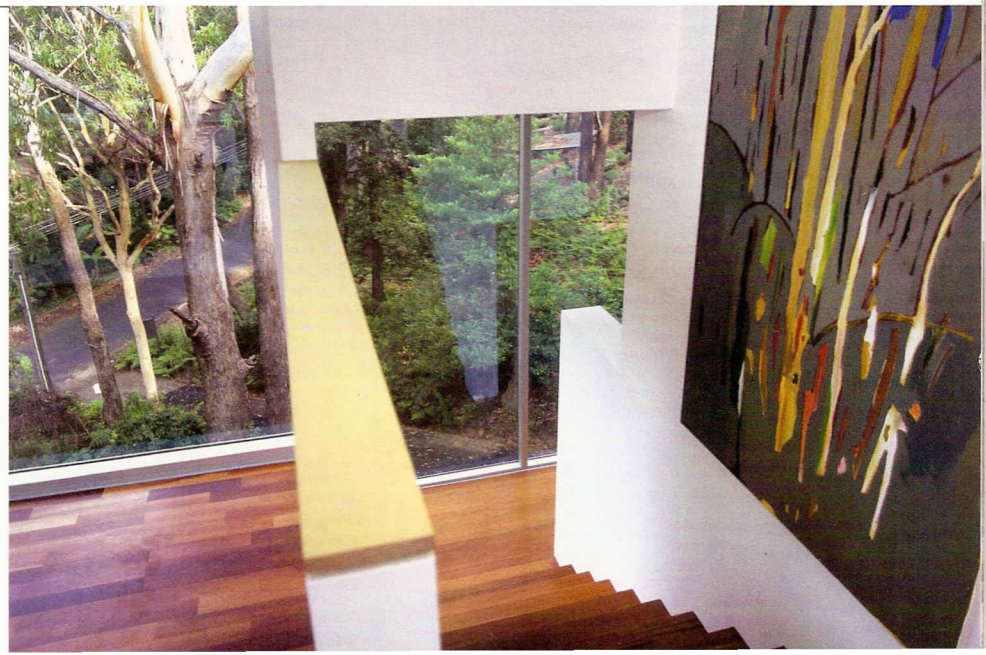
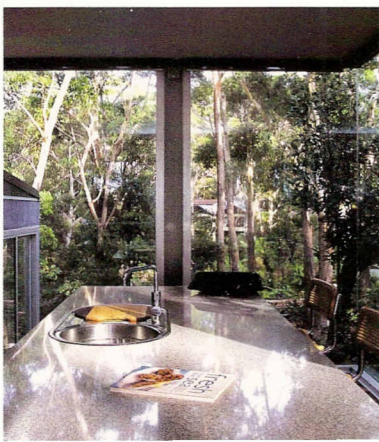
be small. We've grown up with this image of the archetypal house as a wall with holes in it. Ask a child to draw a house and they respond the same way. They draw a pitched roof with a chimney, a front door and two windows. We grow up with only a variation of that childhood view."

Housing estates reinforce this early learning of the English cottage as homely refuge.

But it's not for everyone. Despite his extensive experience and responsibility for distinguished commercial work as partner in Scott Carver, he was relatively un-tested in the residential stakes. The firm's interest in eco design was recognised with the RAIAs national environment award for its work with Pavilion Architects on the Homebush Olympic horse and cattle pavilion, but he still had to do some fast talking to convince his sister and brother-in-law as co-owners of the house. "Once they understood the environmental response they became increasingly supportive and then excited," he explains of architecture's role to innovate rather than replicate.

The other design driver was minimalist maintenance. "It's a holiday house, not a permanent house.

■ High levels of filtered daylight provide a suffused light that minimises artificial lighting and cooling.





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■ "Every room gets to appreciate the world we're in."  
Malcolm Carver.

The last thing we wanted was a commitment of chronic lawn mowing, painting, repairs and glass cleaning." In this regard the house is peerless. The galvanised steel frame has already developed a tree-trunk patina that blends with the eucalypts and angophoras that soar in majestic union. The crisp, seamless façade presents few opportunities for dirt and foliage to accumulate. An absence of eaves and gutters also helps it respond to and meet bushfire codes.

One concession to new technology is its radical self cleaning glass developed and produced by Pilkington. Carver says Pilkington **Activ™** actually exceeded his expectations.

"I was sceptical at first that it could clean itself anything like the technical material promised, but it does. It's extraordinary. My understanding is, it has a patented coating that quickly breaks down organic matter - everything from dust, pollution and salt spray to bird droppings. There's been no need to clean the windows once since we've been here. They're as clean as the day they were delivered."

Pilkington **Activ™** uses a permanent coating that has a dual cleaning action. The coating uses UV in natural light to break down organic dirt such as tree sap and debris. The coating is hydrophilic so water simply sheds off the glass surface leaving it streak free. Residue such as salt spray that doesn't

dissolve is simply washed away by rain. The Pilkington **Activ™** coating is part of the glass surface and never wears out, working for the life of the window.

"Pilkington was fantastic. Once they learned of our interest, they provided technical support and reassurance because we hadn't used the product before. It was brand new at the time. Did we know it was going to work for sure? Not really. If you buy a new car and it has ABS brakes, all that most people know is that in an emergency, it's worth having. So we had a certain faith that the technology could do its job here. It was an informed risk and in line with the idea of a maintenance free house that would never need paint or external cleaning.

"We had already specified standard laminated glass when our builder came back from a trade exhibition. He set the cat among the pigeons. He said to consider this new product because he knew of our aim not to become slaves to home maintenance."

Carver is quick to acknowledge the builder who he credits for working above and beyond the call of duty throughout the whole construction process.

"In the end though, it's not just about labour saving," he says. "It provides improved clarity, daylight quality and has fantastic reflectivity. Some glass is relatively lifeless, even when it's clean,

but Pilkington **Activ™** has a noticeable brilliance and depth that sees the house shimmer among the trees."

Built on a 9m<sup>2</sup> structural tartan grid, it provides a total floor area of 163m<sup>2</sup>.

The ground floor comprises of a gallery that connects the boardwalk at the entry to four double bedrooms and two bathrooms. A glazed boxed staircase leads to the upper living level. Being sited on a north south axis is almost problematic given the minimal segmentation of plan.

"Every room gets to appreciate the world that we're in," he says. And it's true. There's no 'dodgey' rooms or master bedrooms with discernibly superior views. It's a truly democratic design that provides stunning prospect.

Roller blinds are provided for every window other than stairwell, so privacy and adjustment of daylight levels are fully considered. From the access road below, views of the house are filtered through the trees and essentially project up towards the ceilings, thus permitting occupants a level of privacy that would surprise its detractors.

"We live in a world of light," says Carver, an accomplished artist and who is old-fashioned enough to believe that modern architecture has become too reliant on computers and has lost the art to render. But he's no Luddite. He carries a digital camera and laptop computer everywhere for design work.





■ "We live in a world of light," Carver says of his design that opens itself to the elements so completely.

He recently attended Santiago Calatrava's gold medal presentation by the American Institute of Architects. "A wonderful experience. He drew these beautiful watercolours that were projected up for the 3,000 plus audience enraptured by his skill." Carver's anecdote about Calatrava's fluid, light filled forms supports his belief in light filled, sculptural forms to generate delight.

"There's been a huge change in the past decade towards bringing the outside inside. Many people want to experience nature, and glass can make that possible in a way that wasn't

available or technically possible even a decade ago."

The simpler solution for Carver at MacMasters Beach would have been to fall into line like everyone else and follow the trend of the latest project houses that bulge from their allotments. But freed from these moribund attitudes, the horizons broaden. Suddenly real environmental conversations are possible. Sublime views, scented breezes and filtered light are there for the taking all year round. It's enough to make aggrieved neighbours feel even more short-changed.

**Project** The MacMasters Beach Residence  
**Architect** Scott Carver  
**Project architect** Malcolm Carver  
**Builder** Nexgen Constructions – Ward Phillips  
**Structural engineer** Connell Wagner  
**Glazing fabricator** Central Coast Shopfronts  
**Glazing supplier** Pilkington  
**Glazing system specification** 8.38mm Pilkington Activ™

"Many people want to experience nature, and glass can make that possible in a way that wasn't available or technically possible even a decade ago."

■ Louvre windows provide cross ventilation.

