

# designmag

the elements of style

Vol. 03



## Gehry's Sydney Masterpiece Uncovered

The Steampunk House: taking a shine to brick

House of Bamboo: precast concrete creates "living architecture"

Australian first: carbon neutral bricks ready to take on the world

A fashionable Athens villa and an award-winning Spanish dairy training facility





front cover. The Dr Chau Chak Wing Building,  
see page 6

this opening. Pane House, see also page 120



# THE ART OF LISTENING

The Estonian-born American architect, Louis Kahn (1901-1974), advised his students to listen to their materials when looking for design inspiration.

"You say to a brick, 'What do you want, brick?' And brick says to you, 'I like an arch.' And you say to brick, 'Look, I want one, too, but arches are expensive and I can use a concrete lintel.' And then you say: 'What do you think of that, brick?' Brick says: 'I like an arch.'"

The Canadian-born American architect, Frank Gehry, not only listened to the material but led it in a whole new direction in the newly-unveiled Dr Chau Chak Wing Building, soon to be the University of Technology, Sydney's Business School.

Gehry has described it as a "treehouse of knowledge", a reference to the internal design that will function as "a trunk and core of activity and ... branches for people to connect and do their private work."

However it is the curvaceous brick facade, a triumph of architectural and engineering design, that has captured the public imagination, causing some to consider the UTS Business School will take its place

alongside the Opera House and Harbour Bridge as a symbol of Sydney.

A building's function may be its soul but the facade is literally its face, setting the tone for our response to the rest of the building, or indeed to its surrounds.

Today's building materials landscape is more profound than ever, as can be seen in this issue of **designmag**. As well as the Gehry building, we feature roof tiles used as a wall cladding or to generate electricity; bricks as flooring, brick art or screening; and precast concrete that curves or mimics a bamboo forest.

What does this mean for the architect, designer, engineer, builder and building owner?

Increased choice. Greater design freedom. Enhanced functionality. The ability to respond to changing demands and requirements. Timeliness.

For those with the vision to recognise the opportunities, and the grasp to seize them, the potential outcomes will be both exciting and rewarding.

Lindsay Partridge AM  
Managing Director  
Brickworks Limited



The Block House (see page 108)

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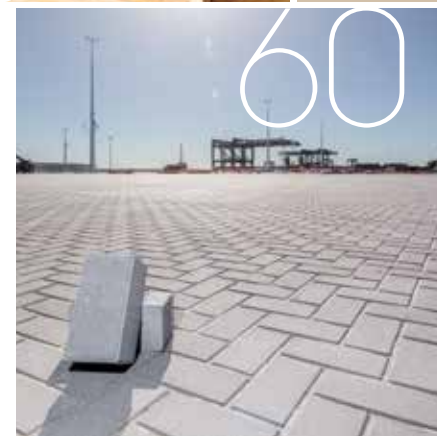
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# Defying Gravity

Gehry Partners first Australian building is an architectural and engineering tour de force that has captured the public imagination.

**Project:** Dr Chau Chak Wing Building  
**Location:** Corner Omnibus Lane & Ultimo Road, Ultimo NSW  
**Function:** UTS Business School  
**Owner:** The University of Technology Sydney  
**Design architect:** Gehry Partners  
**Executive architect:** Daryl Jackson Robin Dyke  
**Structural engineer:** Arup  
**Brickwork engineer:** AECOM  
**Builder:** Lend Lease Group  
**Bricklayer:** Favetti Bricklaying  
**Featured products:** Bowral Bricks dry-pressed clay bricks, five special shapes, in Limousin Gold  
**Photography:** Jacqui Dean





**Frank Gehry describes the curvilinear design of the Dr Chau Chak Wing Building at the University of Technology, Sydney as like a “treehouse” or “tree of knowledge.” Its brick facade has been popularly dubbed a crumpled paper bag or even a melting chocolate castle! Gehry himself has called it “wrinkly” and “gnarly”.**

Describing the building’s external design is a challenge, even for Daniel Beekwilder, director of Sydney’s Daryl Jackson Robin Dyke which acted as executive architects for Gehry Partners. “I wouldn’t attempt to describe it in words,” he says simply, “I would describe it by using pictures. It’s a brick building, but it’s one like you have never seen before!”

Although the twelve-storey building presents as glass when viewed from Pyrmont and looking towards the city, the overwhelming focus of public and media attention has been on the brickwork which dramatically marks the Ultimo Road and Goods Line elevations. The public is obviously intrigued by the use of this familiar building material in a way that defies description as well as gravity.

Despite this focus on the facade, this will be a surprisingly functional building, as you would expect in a Business School. The “tree of knowledge” theme informs the internal design which will encourage collaborative learning and the breaking down of hierarchies. “We wanted an ethos of light, spacious site lines, both horizontally and vertically, all very organic,” Roy Green, the school’s dean, told The Australian.

Bowral Bricks, a division of Brickworks Building Products, played a pivotal role in designing and manufacturing special bricks for this project, and helping develop bricklaying techniques that have transferred Frank Gehry’s vision from a jotting on a restaurant tablemat to reality.

Don Bradman had just left Bowral Public School and was playing for the local team when Bowral Bricks opened its first kiln in 1922. Brickworks Ltd acquired the company in 2001 and after a large capital injection, the plant began making premium-quality dry-pressed bricks for the architectural market.

It was their quality and the company’s wide experience at making special shape bricks, that made this relatively small “boutique” brick plant the ideal choice to develop and manufacture the five special brick types required for the UTS project.

Their manufacture was the final stage in a development process that took over three years and spanned multiple continents. It resulted in a new method of constructing brickwork, a method that had never been used before anywhere or at anytime, while maintaining the craft and skill of bricklaying.

But first, why was this innovation necessary? Surely a brick is a brick is a brick? Not when it is part of the vision of Frank Gehry, an architect whose work is famed for its unconventional use of materials and shapes. “I don’t think Frank Gehry actually owns a 90 degree set square!” mused Brian Moore, the UTS executive project manager on ABC radio.

Gehry’s design required brickwork that curves in three dimensions, not only horizontally but also vertically. There lies the problem.

Conventional brickwork is constructed by laying one brick on top of another, joined by mortar. But by the time the bricklayer has laid the tenth course, the mortar on the lower courses has hardened to the point where it will support the weight above without sagging or collapsing.

Substantial areas of brickwork in the Dr Chau Chak Wing Building are not vertical, but actually progressively sloping outwards toward or away from the bricklayer at about 26 degrees from the vertical. This is called corbelling, but it is normally confined to use in arches or as a decorative single course of brickwork.

In the UTS building, unless the brickwork is somehow restrained the force of gravity would cause it to collapse before the mortar had set.

**previous opening.** The brick colour chosen for the Dr Chau Chak Wing Building echoes that of Sydney sandstone. The projecting “K Brick” faces, (see photo of unit page 11), add texture and shadow to the facade. The building will open as the UTS Business School in time for the first semester of 2015.

**this opening.** The facade of the Dr Chau Chak Wing Building presents as glass when viewed from Pyrmont, reflecting the city beyond, and as brick from the city. The brick facade has captured the public imagination and prompted comparisons to the Opera House.





(from left) Eighty-five-year-old Frank Gehry has been renowned for his challenging, uncompromising designs since the 1960s. (Photo: Thomas Mayer.) The Dr Chau Chak Wing Building required the development of a ground-breaking brickwork system that allowed the brickwork to curve and progressively slope at up to 26 degrees from the vertical. Hand-laying the 380,000 special bricks was a slow, laborious task that challenged the skills of the bricklaying team.

"The brick engineering was quite a complicated feature of the building, perhaps one of the most complicated in the history of bricks," says Ken Morkaya, head of AECOM's Building Engineering Group, commissioned directly by UTS to develop the brickwork system.

Like all brick walling, whether veneer or double brick, a cavity separates the inner and outer walls of the Gehry building to allow any moisture that may penetrate the wall to drain to the outside.

The inner skin is prefabricated from steel and defines the meandering curves of the walling design. The outer face of the steel is coated with a waterproofing membrane.

Conventional brickwork uses wall ties that sit in the mortar bed and are fixed to either the timber frame or, in the case of double brick walling, to the inner skin of bricks. Once the mortar hardens, the tie is locked into place.

The essential difference in this design – and this is the key engineering development that gives integrity to the brickwork – is that the tie is locked into a channel in the brick. Each tie is then connected back to the inner steel structure, located in a small carrier. The position of each carrier was precisely

calculated by the designers and they were attached to the steel inner skin during fabrication.

The ties are adjustable to allow for variations in the cavity width. Additionally, a heavy-gauge stainless steel wire is located in the channel, running the length of the section of brickwork. It too is locked into place by the adjustable nuts on each tie.

Finally, a special mortar was developed for the project by AECOM's Advanced Materials division. It may seem logical to use something like a fast-setting glue but this is almost impossible for the bricklayer to work with. The solution was to tweak a conventional mortar recipe to combine increased strength with workability.

Each stage of the development of the technology was rigorously tested, both at a facility in Guangzhou, China and in Australia, including at UTS facilities.

"Testing the wall with angles of 26-degrees also gives us the knowledge that we can lean bricks and they will hold up. We've been really happy with how the structure has performed," says Brandon Bell, UTS senior project manager. On a practical note he adds that "We need to know that when a window cleaner abseils down the building that they're not going to dislodge any bricks."

The complexity of the brickwork required Bowral Bricks to develop five special bricks, unique to this project and never made elsewhere at any time.

The most unusual of these is the K brick which is shaped to project on one side from the wall, thus projecting shadows on the walling. Like all the brickwork on this project, these units are laid in a one-third bond, that is each brick overlaps the underlying unit by one-third of its width. This avoids the formation of strong lines running through the perpendicular (vertical) mortar joints. (Conventional brickwork is usually laid in a half bond.)

The 380,000 bricks required for the project were manufactured at Bowral over four weeks in mid-2013. That may seem a lot of bricks but the plant produces about half a million units every week so this special run was readily accommodated.

Gehry wanted a colour that echoed that of Sydney sandstone. Surprisingly, the colour chosen for this project is a popular standard in the Bowral range, Limousin Gold.

The final challenge was laying the bricks, and Ray Favetti had no illusions about the project's degree of difficulty. "It's hard," he told ABC Television's 7.30. "All I can say is it's like a snake trying to crawl up a wall, you know, wriggling

up the wall, a brown paper bag that's been crushed and then just released to try and find its natural form."

Because of the complexity, progress was painfully slow. "A normal bricklayer lays 400, 500, 600 bricks a day," explained Favetti's supervisor, Gus Galati, "but this job here, 70, 80, and a straighter wall, maybe 100, 120."

Gus describes the bricklaying for the Dr Chau Chak Wing Building as "the highlight of my career. I can bring my grandchildren here and say, "Look, I done this 40 years ago, 20 years ago, and that was a stressful job that I done, but, yeah, this will be the highlight of my career."

DJRD's Daniel Beekwilder concludes that "Frank Gehry has a long history of using different materials in a different way. The use of brickwork as a plastic facade material is an amazing idea and Gehry Partners has demonstrated how brick can be used in an unconventional way to create a facade that appears to have a lot of movement.

"In terms of my ideas on brick design, the building has obviously changed the way I look at the material and it will be interesting to see how other people continue to push those boundaries."



The special shape bricks were made by Bowral Bricks. From left: Centre Rebate, K Brick, Offset Rebate and L Brick. Not shown is the Solid Brick. A specially-engineered wall tie keys into the rebate and anchors the bricks to the inner steel wall, restraining the brickwork until the mortar hardens.



# Healthy outcomes

Colour, texture and natural appeal help  
enhance the healing process.





**previous opening.** The soothing bamboo pattern is the result of a formliner placed in the precast panel mould, a process Austral Precast calls PermaForm.

**this opening.** The weathered green finish is underlaid by a gold-bronze base colour that becomes more prominent under some lighting conditions. The patterned and coloured precast concrete decorates the entrance, street elevation and is also in three therapeutic courtyards.



**Project:** Nepean Mental Health Centre

**Location:** Penrith NSW

**Client:** Health Infrastructure

**Architect:** Woods Bagot

**Structural engineer:** Hughes Trueman

**Builder:** AW Edwards

**Featured products:** Austral Precast concrete wall panels in off-form and PermaForm and PermaTint finishes, manufactured, delivered to site and installed.

**Photography:** Alexander Mayes

**You may not have heard of salutogenic design. It's the concept that the quality of the built environment has an influence on our health. This has been especially taken up by architects as part of an inter-disciplinary approach to the design of healthcare facilities.**

At first glance it may seem that precast concrete walling is the antithesis of a nurturing, healing environment but the mellow, tactile exterior walling of the Nepean Mental Health Centre demonstrates otherwise.

Of course, the design of a healthcare facility must also consider treatment requirements and budgets (capital and ongoing), as well as patient safety and security. Precast concrete walling also helps tick many of these boxes.

Built on the extensive campus of the Nepean Hospital in the outer western Sydney suburb of Penrith, the NMHC includes 64-mental health beds servicing high dependency, acute and specialist mental health services for older persons. The unit includes a dedicated inpatient ward and new facilities for the outpatient day program.

The design creates what the designers Woods Bagot call a "living architecture." A facility such as this requires a hard edge for security but the building, both internally and externally, must engage with the patients.

The structure uses conventional commercial construction technology with structural steel columns, steel roof framing and concrete slabs. The extensive glazing, hard steel and prefinished fibre-cement panels relate closely to the adjacent hospital buildings.

They contrast strongly with the non-institutional feel of the interiors, with large areas of glazing and comfortable lounges allowing a visual connection to the three therapeutic internal courtyards. Patients are encouraged to wander in loops through the courtyards and engage with the landscaping.

The most striking building element is the precast concrete walling, substantial areas of which are decorated with a bamboo pattern that is debossed (engraved) into the concrete surface. All precast panels (plain and

patterned) are finished in a pleasant coppery green colour, applied on site using Austral Precast's PermaTint process.

The use of the green, patterned walling is most effective around the building entrance, on the long street elevation and most especially in the therapeutic courtyards where the colour and texture blend happily with the landscaping.

It's well accepted that colour has a direct effect on a person's wellbeing. You can see it in our language: colours are judged as warm or cold and we talk of feeling blue, seeing red or being in a black mood. Green is the benign colour of nature and has long been favoured as a positive colour giving permission and safety - think green light, green card, green room, green with envy.

The Nepean green was custom-formulated to an approved sample. The gold-bronze base is topped with a non-metallic weathered green. In certain lighting conditions the metallic base colour becomes more prominent.

The concrete panels were cast at Austral Precast's state-of-the-art facility in Wetherill Park NSW. The bamboo pattern is the result of a rubber formliner that is placed in the base of the casting form or mould. This is a process Austral Precast calls PermaForm, part of their PermaTech suite of precast concrete panel treatments and finishes.

A remarkable range of standard formliner patterns is available, from abstract geometrics to brick, stone and timber and in a variety of textures, subtle and overt. Custom formliner designs, including logos, are also possible.

Once the formliner is in place, steel reinforcement is positioned and finally the form is filled with concrete. When cured, the concrete panel is lifted out and the formliner stripped away, ready for reuse.

The 147 precast panels for the Nepean project were delivered to site and installed by Austral Precast. The company is proud to be able to offer a complete end-to-end service from

design consultation through manufacture and finishing, to delivery and installation, all with one contract and one point-of-contact and total responsibility.

"The design sought to create a building that fits with the colour palette of the surrounding environment," explains Woods Bagot's principal Domenic Alvaro. "The copper green colour and natural patina of the precast concrete panels has depth and tactility, providing a unique 'on weathering' finish that will continue to evolve over time."

While meeting strict budgetary, treatment, and safety and security requirements, the centre's design concept also provides a level of humaneness and connection to landscape that will assist the patients on their healing journey.

The Nepean Mental Health Centre was officially opened on 31 March 2014.



# Spoiled for Choice

How many brick colours does it take to bring a facade to life?  
One, two, three? Twenty?



Grand Prix Winner  
& Horbury Hunt  
Commercial Award  
Winner



**Project:** Kensington Colleges Redevelopment Project  
**Location:** University of New South Wales, Kensington campus  
**Function:** Student accommodation and support facilities  
**Developer:** Lend Lease  
**Architect:** Bates Smart  
**Structural engineer:** Robert Bird Group  
**Builder:** Richard Crookes Constructions  
**Bricklayer:** Lamio Masonry  
**Featured products:** Austral Bricks Burlesque glazed clay bricks (thirteen colours including 9 custom colours)  
 Austral Bricks Dynasty glazed clay bricks in Brushed Leather, Indulgent White and Karrington Silver  
 Austral Bricks Ultra Smooth Tempo clay bricks  
 Bowral Bricks Gertrudis Brown dry-pressed clay bricks  
 Bowral Bricks Purpose Made Commons  
 Bowral Bricks Simmental Silver dry-pressed clay bricks  
**Photography:** Jacqui Dean



**previous opening.** Four of the five colleges overlook a large courtyard with views to Randwick Racecourse.

**this opening.** Each college draws on an individual colour palette to impart a distinct personality. (from left) Goldstein College, Basser College, Fig Tree Hall, Baxter College.

**Architects have long used polychromatic brickwork to add pattern and design to walling. The acclaimed colonial-era architect John Horbury Hunt was a noted exponent. The designers of the new halls of residence at the University of New South Wales have given a new spin to this traditional design approach.**

Over the five colleges, they used twenty brick colours, including sixteen glazed bricks, in various blends to give an individual identity to each college while maintaining a consistency between the colleges and with the overall campus.

The polychromatic brickwork of old used a limited brick colour palette, typically red, cream and brown, usually in bands or panels. In the UNSW project, the architects also used three brick colours in each major facade element, but in a blended pattern, more akin to pixellation.

The University of New South Wales can trace its roots back to the Sydney Mechanics Institute founded in 1843. The Kensington campus of the then newly-formed New South Wales University of Technology was established in the middle of the last century, its foundation buildings reflecting the then-popular Brutalist brick and concrete aesthetic.

Basser, Goldstein and Phillip Baxter colleges were founded in that era and despite being good examples of student housing at the time, at fifty years of age all three were in need of renewal.

Basser and Goldstein colleges were demolished and the site density increased substantially to accommodate five colleges: Fig Tree Hall, Colombo House and Phillip Baxter College (replacing an older college elsewhere on the campus) joined the new Basser and Goldstein colleges. Together, the five buildings comprise 922 beds, five dean's apartments, 23 tutor studios, student common areas, student services and teaching space.

The site describes an L-shape, with High Street to the north and Basser Steps, an internal pedestrian street, to the south. The colleges step up the site in response to the steep, east-west topography.

Four of the colleges are grouped around a large central courtyard, the exception being Colombo House which houses senior students in

self-catered accommodation. The existing Goldstein Dining Hall, winner of the 1964 Sulman Medal Architecture Award, was renovated and enlarged and remains an important adjunct to all colleges.

The four undergraduate colleges vary between four and seven levels with accommodation arranged in single floor cohorts of 30 to 40 rooms, each floor supported by a resident tutor. All rooms are oriented east-west, allowing maximum light access. Generous balconies allow views to the north over the adjacent Royal Randwick racecourse and to the distant city, or to the south into the university grounds.

The internal planning and function is partly reflected externally. Basser, Baxter and Goldstein colleges have group balconies whereas Colombo House has individual balconies, as befits its senior students. Fig Tree Hall, specifically designed for the needs of Islamic students, is located on an elevated corner to increase privacy.



Brickwork was an obvious choice: it is the predominant material on the campus and the University is attracted to high-quality, low-maintenance finishes. "We agreed quite early on that brickwork's robustness, its tactile quality, and its consistency with the surrounding context meant that it had to be the predominant facade material," says Matthew Allen, Bates Smart's design leader for the \$110 million project. The project director was Guy Lake and Robert Graham was the project leader.

Allen had used glazed bricks while working in the UK and was attracted by what he calls "the playful quality in their colour and reflection." The designers chose a broad colour palette of bricks, both glazed and conventional, to link back to the existing campus buildings while allowing the creation of an individual identity for each of the new colleges.

"Part of the architectural challenge was to synthesise the different bricks so there was a similarity between the colleges, and just enough difference to identify them individually," he adds.

A number of prototype panels were constructed to finalise colour combinations and perfect techniques before the process of laying just under half a million bricks began.

The key to understanding the facade design is the use of three very different design approaches. Firstly, the top level external facades are rectilinear and apply a consistent brick palette to unite the appearance of the five colleges. "For that we selected a blend of three face bricks to respect the original clinker brickwork of the Dining Hall," Allen explains. Typically, this is 60/30/10 mix of Bowral Purpose Made Commons, Bowral Simmental Silver and Austral Bricks Ultra Smooth Tempo, respectively.

On the upper levels in the courtyards of the four undergraduate colleges, each of the faceted facades use a blend of three glazed bricks to reflect light and give a "playful expression" of light and shade. Two of these bricks are common across all colleges at this level: a 60/30 blend of Dynasty glazed bricks in Brushed Leather and Karrington Silver. The junior partner in this blend comes from the Burlesque glazed brick series and gives that elusive touch of individuality to the building:

- Basser College: Basser Burgundy (custom colour)
- Fig Tree Hall: Deepening Green (standard colour)
- Goldstein College: Bursting Orange (custom colour)
- Philip Baxter College: Ocean Blue (custom colour)

These signature colours are picked up at the podium level, usually as the background colour, the exception being Fig Tree Hall where it appears in the three course band against a background of custom-made glazed bricks in two green shades.

The blend in the courtyard facade of Colombo House is more sober, with a 60/30/10 mix of Dynasty glazed bricks in Brushed Leather, Karrington Silver and Indulgent White respectively. The podium level is a discreet blend of 70 percent Burlesque Chilling Black (a standard colour) and 30 percent Burlesque Gallant Black (custom).

A relatively smaller number of Bowral Gertrudis Brown dry-pressed bricks have been applied in panels at or near ground level.

Although the Burlesque and Dynasty glazed brick series are available in a total of 10 standard colours, custom colours were required to help create a subtle identity for each college. The design team supplied samples which were colour-matched in production, allowing for some natural variation that is inherent in kiln-fired masonry.

"The Basser Burgundy and Kensington Brown were the hardest to get right, but they were all accurate in the end," says Allen.

As well as creating more and a better standard of student accommodation, the college development project forms a new and vibrant urban precinct that bridges the upper and lower campuses.

The imaginative use of brickwork's modularity of form and colour has allowed each of the colleges to maintain a distinct identity while reading collectively as part of the Kensington Colleges precinct and the broader university campus.



Colombo House, the senior college, sits on the corner of Fig Tree Lane and High Street. Note the use of individual balconies as opposed to the group balconies on the other colleges. The podium level brickwork is a blend of two Burlesque brick colours: Chilling Black and a custom colour dubbed Gallant Black.



# Think Brick.

## Think Prize-Winning Architecture

Austral Bricks, Bowral Bricks and Austral Masonry scoop the pool at Think Brick Awards.

Architectural projects featuring clay bricks and concrete masonry by Brickworks Building Products won four of the six categories at Australia's richest architectural awards, recently announced in Melbourne.

The Think Brick Awards are conducted by Think Brick Australia in collaboration with the Roofing Tile Association of Australia and the Concrete Masonry Association. The cash prize pool totals \$50,000 plus a trip for two to the 2016 Venice Biennale, flying business class for the Grand Prix winner.

At its core are the Horbury Hunt Commercial and Residential Awards, celebrating excellence in brickwork and masonry design and construction. These commemorate the life and work of John Horbury Hunt, a colonial-era architect whose radical use of brickwork sowed the seeds of Modernism in Australia (see page 28).

The awards program was expanded in 2014 to include the Kevin Borland Concrete Masonry Award, the Roof Tile Excellence Award, and the Bruce Mackenzie Landscape Award.

The distinguished jury panel comprised Neil Durbach (Durbach Block Jagers), Emma Williamson (CODA Studio), Sheila O'Donnell and John Tuomey (O'Donnell + Tuomey, Ireland), Cameron Bruhn (Architecture Media), and Elizabeth McIntyre (Think Brick Australia).

Their daunting task was to whittle down the 281 entries in five categories to a shortlist of 25 projects.

The winners were announced at a glittering Gala Awards Dinner at Melbourne's Palladium at Crown on 8 August, before an architectural who's who. The event was hosted by Neale Whittaker, editor-in-chief of Belle, judge on The Block, and soon to be editor of Vogue Living.

"As one of Australia's leading building material manufacturers, we are honoured that our products have been selected and applied with such flair and imagination by so many of the country's leading architects," says Brett Ward, group marketing manager of Brickworks Building Products.

"Thank you to all entrants in the 2014 Think Brick Awards, and congratulations to those shortlisted and to the category winners. The 2015 Think Brick Awards should be even more inspirational!"



### Grand Prix

#### Horbury Hunt Commercial Award

##### UNSW Kensington Colleges (NSW) by Bates Smart

**Jury comment:** This is a compelling suite of buildings that exploit the inherent qualities and innovative potential of brick to great effect. Designed and built with an enviable attention to detail this exemplary project sets a new benchmark for the student housing typology.

**Brickworks products:** Austral Bricks Burlesque, Dynasty and Ultra Smooth clay bricks, Bowral Bricks dry-pressed clay bricks and Purpose Made Commons

**More info:** page 16

### Horbury Hunt Residential Award

#### Aperture House (Qld) by Cox Rayner Architects and Twofold Studio

**Jury comment:** This humble worker's cottage has been deftly extended. Aperture House is a home for a lifetime that celebrates the activities and beauty of daily life. A series of artful and finely crafted brick elements create spaces, edges and openings that are inherently adaptable and atmospheric.

**Brickworks products:** Bowral Bricks dry-pressed clay bricks, Austral Bricks reclaimed commons clay bricks

**More info:** page 24

### Kevin Borland Masonry Award

#### Clayfield House (Qld) by Richards and Spence

**Jury comment:** At the Clayfield House concrete masonry is imbued with a luxurious quality, elevating its status. The subtle, textural contrasts and modular interplay gives the blockwork a warm glow and creates an elegant backdrop to daily life.

**Brickworks products:** Austral Masonry Artique Classic Designer Masonry

**More info:** designmag issue 2, designplace.com.au see also page 119

### Roof Tiling Excellence Award

#### A House with Tiles On It (NSW) by Welsh + Major Architects

### Bruce Mackenzie Landscape Award

#### Devonport Surf Life Saving Club Precinct (Tas) by Hansen Partnership





HORBURY HUNT  
Residential Award  
Winner

# Exploring Space

Texture, detail and perspective key to the transformation of an inner-city cottage

**Project:** Aperture House

**Location:** Highgate Hill QLD

**Function:** Extension to family home

**Owners:** Jayson and Melissa Blight

**Architect:** Cox Rayner Architects in collaboration with Twofold Studio

**Structural engineer:** Westera Partners

**Builder:** Frame Projects

**Bricklayer:** Elvis & Rose

**Featured products:** Bowral Bricks Simmental Silver 50mm dry-pressed clay bricks and Austral Bricks reclaimed commons clay bricks

**Photography:** Christopher Frederick Jones

**Think classic Queenslander and you probably visualise an imposing high-set, timber-clad home with broad stairs reaching to a shaded front verandah. However this traditional housing style has been expressed in many forms, from grand country homes to modest workers cottages.**

This narrow 1890s cottage in inner-Brisbane nestles into the ground on its long eastern boundary and then exposes itself as a propped Queenslander to the west. The long, narrow site (about 10 by 50 metres, north facing to the front) gave the opportunity to double the floor area by creating an extension leading seamlessly to hard landscaping that weaves to the back boundary. It is terminated with a pool protected by a ha-ha, a recessed landscape design element usually employed on grand estates to separate grazing stock from formal gardens without obstructing the view!

This is home to Jayson and Melissa Blight and their children Mia and Jenson. The designing couple – Jayson is a director of Cox Rayner Architects and Melissa runs interior design practice, Twofold Studio – has created an extension that redefines the narrow inner-city lot while respecting the cottage's historic fabric.

This extension to an 1890s inner-Brisbane cottage is a celebration of the bricklayer's art. Note the quarter-bonded flooring, a pattern repeated throughout the house.





The breezeway (previous page) leads to the kitchen and dining pavilion and through into the back garden via stepped terraces.



The Blights rejected the common approach of raising the house and building under – “I actually liked the way the house sat with the natural ground,” Jayson explains – opting instead to utilise the depth of the site. Their design also sought to optimise northern and southern light penetration while dramatising the new spaces and accentuating their surfaces.

The existing cottage was remodelled to accommodate a lounge, library/study and master bedroom, while two new bedrooms, a family bathroom and breezeway form a courtyard infill leading to a kitchen and dining pavilion. Underneath are a garage, store, fernery and another bathroom.

An original brick fireplace continued its task of anchoring the old building. It marks the centre of the extended house, and the starting point for the new work. The fireplace’s quarter-bonded brickwork also provided the inspiration for an exploration of patterning using derivatives of this pattern. “We used it as the cue, it being the hearth and the central part of the house,” says Jayson.

He describes the loggia brickwork as “a deconstructed English bond”. Half-brick perforations alternate with open perpend (that is, the gaps

between the vertical brick ends are not mortared) creating a little-and-large rhythm to the openings and adding another layer of texture to the project. “Some of the brickwork is incredibly light and delicate in the way it works as a screen,” Jayson observes. Open perpend also decorate some solid brickwork.

The downstairs walls are a variation of English bond but with the bricks turned on edge. The garden walls and platforms are constructed in English garden wall bond, a further derivative of English bond.

The extension and hard landscaping is a celebration of the bricklayer’s art. The designers and the bricklaying team, Shane Norton and Rese Rose Gates, better known as Elvis & Rose, fully exploited brickwork’s small-format modularity and its capacity to be modelled, perforated and patterned. The brickwork is not confined to walling but wraps and folds through a variety of framed vistas, seating, nooks, niches, ledges, plinths and floor surfaces, ultimately transitioning into the rear landscape via stepped terraces.

Bowral Bricks premium-quality Simmental Silver 50mm dry-pressed clay bricks are used throughout the formal areas as both walling and laid on edge as flooring. White sand was used in the mortar for solid brickwork and flooring.

A darker, heavier sand with a little gravel was used in the perforated walling, imparting a more fleck-like appearance.

In contrast, the base brickwork, constructed with reclaimed bricks from Austral Bricks Rochedale QLD plant, is laid with open perpend and headers and stretchers alternating randomly, creating the illusion of a brick ruin. Reclaimed bricks are also used to create the hard landscaping.

The overall effect is one of openness alternating with enclosure, and texture with movement, all of which belie the compact plan and celebrate the small and intimate.

“It’s actually a very versatile material that can be used both externally and internally in very different ways to define surfaces,” says Jayson. “Being able to play with light and texture is quite exciting, especially in our climate where the sun is so harsh.”

This may be a relatively modest extension to an inner-city heritage cottage but it is grand in its volume, level of detail and execution.





# John Horbury Hunt: Eccentric Visionary

Derham Groves\* examines the life and legacy of the radical colonial-era architect.

When the Tropic berthed at Sydney Harbour on 5 January 1863, among its passengers was a 24 year-old Canadian-born architect, John Horbury Hunt, en route from Civil War-torn Boston to India where he intended to settle.

Fortunately for our architectural heritage, Edmund Blacket, the colony's leading architect, recognised Hunt's prodigious talent and persuaded him to stay.

Throughout his career, Hunt designed many highly individual buildings, mostly in Sydney and regional New South Wales, including churches, houses and schools. Characteristically, they were architecturally challenging and well ahead of their time.

In particular, he was a master, a virtuoso, of brickwork which is celebrated in the Horbury Hunt Awards, part of the Think Brick Awards, Australia's premier architectural prize acknowledging excellence in brick and block masonry design, and more recently, roof tiling.

A quick-tempered, eccentric person, Hunt spent just two years working for Blacket before entering briefly into a partnership and then working as a sole practitioner until his death.

His harmonious and rational use of materials – especially his skillful handling of brick and timber – characterise Hunt's architecture. Instead of applying decoration to his buildings, he simply relied on the materials to create the visual interest. As such, he unwittingly sowed the seeds of Modernism in Australia.

Among Hunt's most admired buildings were his Modern Gothic brick residences, such as Booloominbah (1888) at Armidale, and Camelot (1888) at Kirkham. The latter was the setting for the recent television series, *A Place to Call Home*.

Hunt's library of about 4000 architectural books was one of the best in the country. A number of historians consider that his designs relied too much on the illustrations in those books. JM Freeland, the author of *Architect Extraordinary: The Life and Work of John Horbury Hunt: 1838-1904* (1970), described him as "an inventive copyist".

However, others consider this backhanded compliment to be unfair, claiming that instead of merely copying the designs of some of the architects represented in his library, such as Emmanuel Viollet-le-Duc and Henry Hobson Richardson, Hunt actually understood their architectural theories and thoughtfully applied them to his own work.

He was very active in the affairs of Australia's fledgling architecture profession. Hunt was a founding member of the Sydney chapter of the Society for the Promotion of Architecture and Fine Art and the inaugural president of the Institute of Architects of New South Wales. He sought to improve the standards of the local architecture profession, particularly through education, and was highly critical of unqualified practitioners whom he once colourfully described as "the effeminate gentleman artist element."

Architecture has long been regarded as an eccentric profession, however Hunt was more odd than most. He was easily recognised around Sydney dressed in his knee-length frock coat, high-waisted trousers, blue waistcoat with silver buttons, and loosely tied string bow tie. Furthermore, his bell-topper hat had a compartment for drawing paper and his bicycle was fitted with a folding drawing board and a place for ink!

Hunt had strong views about most things, but especially the built environment. He was not shy of public debate and frequently aired his often-divisive opinions in the local press. For example, in 1889 *The Sydney Morning Herald* reported Hunt's observation "that a host of buildings is being planted in our midst, huge in bulk, vile in conception, false and reckless in construction – piles that are revolting to the cultured taste and positively demoralising to the public mind."

Charles W. Goodchap, a fellow architect and also, no doubt, a good chap, was deeply offended by Hunt's comments and wrote to the newspaper to remind his cantankerous colleague "that the huge piles referred to are the work of our leading architects". Possibly that was Hunt's point.

While he had no time for dumb architects, Hunt absolutely adored dumb animals. He was a vocal member of the Animals' Protection Society of New South Wales. If he saw a cabbie beating a horse he was liable to jump to the animal's defense and turn the whip on the man.

Hunt and his wife, Elizabeth (who died in 1895), were childless, and it was widely believed that they were buried with their pet pony, cats, dogs and geese in South Head cemetery.

His architectural practice was crippled by the 1890's depression. John Horbury Hunt was almost destitute when he died from kidney disease in 1904, aged 67, only escaping a pauper's grave through the charity of friends.

\* Dr Derham Groves, BArch (Deakin), MArch (RMIT), PhD (Minn) is a Melbourne-based architect, academic and author with a special interest in popular culture (derhamgroves.com).



John Horbury Hunt outside his home, Cranbrook Cottage in Bellevue Hill NSW. (Photo courtesy State Library of New South Wales).

His many works included Booloominbah (Armidale NSW), Cloncorrick (Darling Point NSW) and Fairwater (Point Piper NSW). (Photos courtesy Wikimedia Commons.)



# In Profile

## BARRY BALTINAS

He's been called a visionary and a boundary pusher. One of his designs was criticised as "like putting Lady Gaga next to the Queen." Meet Perth's most innovative and controversial architect/developer.







Artist's render of Halo on Mount, now approaching completion in West Perth.



Architect/developer Barry Baltinas has been a keen amateur car racer since the early 1990s. Photo by Anton Baltinas

**Project:** Halo on Mount  
**Location:** Mount Street, West Perth WA  
**Function:** 23 apartments, including two penthouses  
**Developer:** Baltinas Made  
**Architect:** Baltinas Architecture  
**Structural engineer:** Robert Bird Group  
**Builder:** Resolute Construction

**Project:** Velo  
**Location:** Aberdeen Street, Northbridge WA  
**Function:** 61 apartments plus a cafe/bar  
**Developer:** Baltinas Made  
**Architect:** Baltinas Architecture  
**Structural engineer:** Robert Bird Group  
**Builder:** Resolute Construction

**Barry Baltinas is a man of many passions, beginning with his two children. Then there's his work as one of Perth's leading architects and most innovative developers. Add in his interest in meditation and yoga. And finally, some might say paradoxically, he has a long involvement in car racing.**

Like most successful people, Barry spends his time juggling these activities but he doesn't hesitate to give priority to his family. On the day we spoke, he was running between meetings and helping his 16-year-old son apply for a driving learner's permit.

"I believe our greatest creation is our children. We are the architects of our beautiful children," he reflects, adding that bringing up children is the hardest job in the world "and the most rewarding."

Born and raised in Perth, Barry studied architecture at Curtin University but dropped out in year three to work as a scaffolder. It was an opportunity to earn high wages "but within 18 months I realised I wanted to go back to university. I used to observe the consultants and in particular the architects walking around on site with their plans rolled up and pointing at things, and I thought I'd rather be down there!"

Even in his uni days, Barry was a hustler, taking on private jobs, so it's no surprise that a few years after graduation he was working for himself and involved in small subdivisions, buying and renovating houses, and building townhouses.

In the late '90s he moved into a city office and began designing larger scale projects, hitting the big time with the landmark Miami Apartments in West Perth. The Art Deco style was unlike anything seen before in the Western Australian capital. In 2002 he won the Property Council of Australia's Future Directions Young Achiever Award.

In that same year, with his reputation growing and opportunities opening, Barry made a decision that few of us would be brave enough to take. He shut down his city office to allow him to focus on looking after his two young children while working from home to finish off work in progress.

"I did that until about 2008, when I came back in and set my office up in the city, a small office at that point, and then started to slowly get back into what I had started six years prior."

In that same year, his Art Deco-inspired Kingdom Apartments building was completed in South Perth. Soon after, Baltinas was drawn into controversy with his design proposal for a 20-storey apartment building adjoining the venerable Weld Club in Barrack Street. City of Perth's planning committee approved the design although one councillor said "it's pretty much like putting Lady Ga Ga (sic) next to the Queen", and then adding that "it might be a very entertaining combination" and a point of difference!

The committee chairperson said it showed "no respect" for its heritage neighbour, an accusation that still rankles Barry who rejects the assertion, and claims that architecture must be relevant to today's society and context. However, ultimately the project did not proceed.

His current business operations are divided into two streams: Baltinas Architecture and Baltinas Made under the collective banner of Baltinas Team. "We enjoy what we do as a studio, we love our architectural work, we're very passionate about it," Barry says, adding that it is important to work with like-minded clients who appreciate architecture. "But I have found that by doing our own projects" – under the Baltinas Made banner – "we get more freedom to do what we want. Obviously there is more responsibility because it has to be financially viable or that dream will be deflated very quickly."

The latest Baltinas project is approaching completion in Mount Street, West Perth, adjacent to Kings Park. Halo on Mount has 21 apartments and two penthouses over its nine levels. The facade design is dotted by a series of circular windows, contrasting with the linearity of expressed Wintergarden Balconies with openable, sashless glazing that will allow use of these spaces across the seasons.

Austral Precast were contracted to manufacture the concrete wall panels at their plant in the south-eastern Perth suburb of Maddington. Production of the 597 panels took place over a twelve month period.

"Austral Precast has done a great job because we have some challenges there with curves, circular openings and the finishing," Barry commends. The round openings had to be particularly precise to accommodate the imported prefabricated windows.

The building's upper level is clad in curved precast panels. "It would have been cheaper to build the curved sections out of lightweight but we wouldn't accept that option because of the need to maintain structural and aesthetic integrity, not just for first two or three years but over the long term."

The curved panels were cast in specially-made steel forms using surprisingly conventional techniques. The steel reinforcement is wired into place and the form flooded with a slightly denser than usual concrete mix. The manufacturing team then works quickly to ensure the concrete is evenly dispersed and vibrated to expel any entrapped air pockets.





**top row.** Final inspection of the placement of the reinforcement in the steel formwork. Curved screeding guides are positioned at intervals.

**middle row.** The steel reinforcement is tied off ready for the pour. (From left) Austral Precast's Peter Smith and Paul Peou look on during production with Barry Baltinas.

**bottom row.** While concrete pours from the kibble, an immersion vibrator settles the mix and releases trapped air. It's all hands on deck to screed, spread and trowel the concrete to produce the finished surface.

**facing page.** Once cured, the panels are delivered to site and installed.



An unusual precast feature is a 700 mm thick panel with a semi-circular opening framing the entrance to the ground floor cafe. This was cast in four sections and assembled on site. "The solid and robust form of this concrete element expresses a unique feel to this space," says Barry Baltinas. "As they walk through this circular opening, building occupants and visitors will experience the sense of its proportions. It also provides a strong Brutalist expression of concrete building support."

With Halo on Mount all but complete and pre-sold, Barry Baltinas is well on the way with his next project. Velo, a nine-level building that will house 61 apartments and a bar/cafe, is just coming out of the ground as we write (although 51 of the 61 apartments have been pre-sold). It shares the sustainability and lifestyle attributes of Halo on Mount and its precast construction, again by Austral Precast. However the strongly geometric facade design makes a very different statement and its inner-city location in trendy Northbridge squarely targets this development at a younger demographic.

At the other end of the scale, Baltinas Architecture is well known for its bar designs. Barry compares this unusual branch of interior design to fashion "in that you have to come up with a range for this year and then it's gone for next year, it's not in fashion. It's a lot of detail and hard work sourcing the latest, and most people want to have a bar that is different from everyone else's."

As well as being anchored by the needs of his family, Barry Baltinas also practices yoga and meditation, following the teachings of an Indian guru. "It's an opportunity to be in the present, to be still and not lost in the busy, hectic world that we live in."

And here's that seeming paradox again, as his other great passion is car racing! He's been competing since the early '90s and currently runs a 1970 BMW 2002 coupe in the Group Nc touring car class, racing against vintage Mustangs, Escort Twin Cams and the like.

"It's great because you get to rub shoulders with really great blokes, a lot of old boys who just love their cars," he reflects. "When you get out there it's like meditation, you are in the moment, you don't have too much time to think about anything else but what your racing line is and what your competitors are doing. It's a great sport."

There is no doubt that Barry Baltinas has a deep and enduring passion for the things that are important in his life, beginning with his family. Benjamin Franklin got it right (as he did in so many things) when he said "If passion drives you, let reason hold the reins."

It's safe to say that Barry Baltinas is driven by a number of passions but he has firm control of the steering, in more ways than one!

**Photography:** Gary Peters



# Bristile Solar.

Optimum energy.

Maximum street appeal.



Electricity prices are literally going through the roof as consumers grapple with rising energy costs by installing solar panels.

Bristile Roofing has developed a solar panel that blends into the roofline, combining a low profile with state-of-the-art electricity generation and control technology.

Conventional solar panels are fixed above the roof, requiring holes to be cut in the roofing and creating a trap for dirt and leaves. And they are very visible, some say unsightly.

**Bristile Solar is the solution.** Each solar panel simply slips into the roofline, replacing three standard tiles.

**Bristile Solar are efficient.** Each panel has a micro-inverter to convert power for entry to the grid, replacing a less efficient and inflexible central inverter.

**Bristile Solar are smart.** Their performance can be monitored and measured using a smart phone app.

**Bristile Solar are tough.** The glass face can support a person and is hail resistant.

**Bristile Solar coordinate.** The initial range matches the flat profiles of Bristile's popular Prestige concrete tiles and La Escandella Planum premium terracotta tiles.

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# Camilla



## Call of the wild. The Camilla Franks Collection

Having taken the kaffan from souks of Marrakesh to the world's main streets, Camilla Franks is now evolving her distinctive label into a complete lifestyle brand.

Undoubtedly, her innate style comes from her mother, a former model, whereas her father, an architect, contributed to the sense of form and structure that infuses her bold and colourful garments, now generically known as "Camillas".

Camilla Franks has been a style ambassador for Austral Bricks since 2012 and she has now lent her name (not to mention her flamboyant sense of colour) to a vibrant new range of bricks.

The newly-released Camilla Franks Collection full-gloss bricks are inspired by her love of the art and architecture of Mexico. And in true Camilla style, she didn't hold back when it came to colour. "You can have any colour you like, as long as it's not brown," she quips.

The first release of Austral Bricks Camilla Franks Collection comprises eight lively colours ready to lend a splash of colour to your next bespoke project:

The Camilla Franks Collection is now strutting its stuff at Austral Bricks' nationwide Design Centre network and selected resellers.



Aubergine  
(purple)



Flame  
(orange red)



Rosado  
(rose pink)



Azure  
(aqua blue)



Sol  
(yellow)



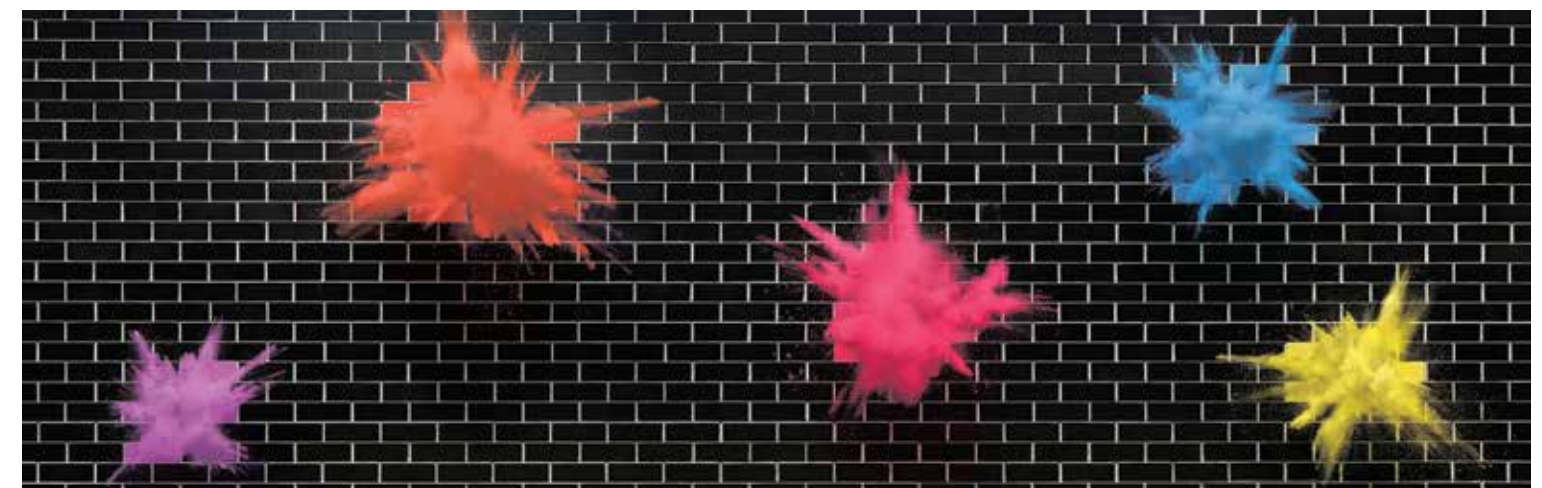
Oro Rosa  
(rose gold metallic)



Oro Brillante  
(gold metallic)



Plata Brillante  
(silver metallic)





# Blanca from the Pyrenees



A cow of a place? By no means! Derham Groves\* talks to Spanish architect Jose Ahedo about his Wheelwright Prize-winning concrete masonry project.





The Blanca from the Pyrenees Green Unit is an education centre for a dairy training facility in the Spanish Pyrenees. The mottled grey concrete blocks blend with the silver grey metal roofing and contrast with the verdant pasture backdrop.

**For a long time, concrete blocks were the building material of choice for penny-pinching administrators who didn't care how a building looked, only how much it cost. Those of us who attended state government schools in Victoria during the 1960s and '70s can certainly attest to this. Memories of the concrete block breezeways at my primary and high schools in Geelong put me off unit concrete masonry for years.**

However, in the hands of a skilful architect or designer, concrete blocks are not only very economical, but also aesthetically pleasing. A good example is the concrete block education centre at Blanca from the Pyrenees, a state-of-the-art dairy farm with high-minded objectives, which is located a two-hour drive from Barcelona.

According to the dairy farm's website "Blanca is a meeting point aimed at integrating dairy producers, the dairy industry, and dairy researchers, with outreach and professionalization programs with a final objective: Helping the dairy industry as a

whole, disseminating the benefits of milk, and capturing the attention of knowledgeable and responsible consumers."

Jose M. Ahedo, a talented young Spanish architect, designed this impressive high-tech facility, including its site planning, landscaping, architecture, interior design, furniture, and branding. Blanca was his first independent project after graduation.

Ahedo's current work includes a housing project in Tudela, Spain; an office building for a Canadian company that specializes in developing and enhancing the performance of wood products and their derivatives; a bovine genetics company in Lodi, Italy; and

integrated farming software in collaboration with Tecnozoo, an Italian company with over 25 years of experience in the stock feed additive industry.

I asked the architect about the rather unusual professional path he has taken so far. "In fact, I grew up on a small dairy farm in northern Spain," Ahedo told me, "but my interest in pursuing a design career somehow detached me from the rural environment for a long time. I studied architecture in Barcelona and got a Bachelor of Architecture in 2005. I was very lucky to be admitted to the Graduate School of Design [GSD] at Harvard University in 2008 and I received a Master of Architecture from there in 2010.

"By the time I was about to graduate, my classmates and I were mostly pursuing jobs in big firms, mainly in the USA. Then I was offered a farm to design, which gave me the chance to return to Barcelona and start my own firm. I must admit that this did not sound as attractive then as it may sound today. I did not have any interest in farming after finishing up at the GSD, but I felt the client wanted to do something special, so I accepted the offer.

"When we started to debate what challenges farming faced in the 21st century, I got extremely excited about working in a countryside scenario rather than in an urban environment. We have done some in-depth

research during the last four years and discovered that the countryside has somehow been an architectural blind spot since the industrial revolution. That is why we continue to pursue projects involving productive systems in rural areas."

Blanca from the Pyrenees has four colour-coded units: the Black Unit is the farm; the Red Unit is devoted to research into milk production, animal husbandry and the environmental impact of dairy farming; the Blue Unit is the genetic laboratory; and the Green Unit is the education centre.





Photography: Adrià Goula Sardà

The dairy farm complex is situated in a rural paradise at the foot of the mountains. It comprises 13 buildings in all. The education centre is constructed of concrete masonry, while the other buildings are clad in metal sheets.

Blanca's education centre has four separate rectangular pavilions, which sit on an X-shaped concrete plinth. There is a reception hall where the conferees are welcomed. It also houses the centre's public toilets. There are two classrooms that can each accommodate 40 people. Both have large windows that provide great views of the picturesque natural surroundings. Finally, there is a fully equipped auditorium that can seat 70 people.

An expansive corrugated metal roof supported on freestanding circular steel columns hovers sublimely above the four pavilions. Each pavilion has concrete block walls and a concrete slab ceiling. The interiors of the four pavilions are lined with acoustic panels made of oak.

The slightly mottled grey concrete blocks perfectly match the silver grey corrugated metal roof. Furthermore, the building "sparkles" against the backdrop of vivid green pastures.

"The decision to use concrete blocks, as with any other decision about tectonics or materiality, was determined by a complex array of factors," Ahedo told me. "First, we wanted the education centre to look different to the other buildings, which are mainly barns and industrial facilities made of steel."

Second, Ahedo wanted to maintain the architectural context of the region for the sake of coherence. "Most of the farms in the area are built of concrete blocks, mainly due to economic reasons," he said. While they are widely regarded as a cheap material, Ahedo also wanted to showcase the "extraordinary functional and aesthetic properties" of concrete masonry.

A third consideration was the skill of the local builders. "Unfortunately, the standard of construction in the region is rather poor," said Ahedo. So he decided to use concrete blocks, a material that the local builders were thoroughly familiar with.

"Finally, we thought that in order to make a good building with a prefab material, everything would need to be very accurate, especially the blocklaying," Ahedo said. "The concrete blocks are plain, not polished or modified in any way. However, we selected each block individually, so that construction would be as precise as possible."

Ahedo's creative use of everyday building materials shows that thrifty choices need not lead to boring architecture. Despite being constructed of exactly the same building materials, Blanca's education centre does not remind me one bit of my old schools' breezeways!

On the back of designing Blanca from the Pyrenees, Ahedo won the 2014 Wheelwright Prize, worth US\$100,000. This very prestigious travel grant aims to foster investigative approaches to contemporary design. It is awarded annually to promising early-career architects by the Harvard Graduate School of Design, Ahedo's alma mater.

In 2014, the prize received 196 entries from 46 countries. Ahedo's winning proposal was titled, "Domesticated grounds: Design and domesticity within animal farming systems".

In its press release, the Wheelwright Prize said: "Noting that livestock is a significant cause of land degradation, greenhouse gas emissions, social friction, and problematic development worldwide, Ahedo proposes to research a wide range of practices, from industrial operations driven by 'techno-capitalist policies' to informal or vernacular farms that have grown out of traditions. 'These two distinct production modes coexist in both developed and developing countries,' Ahedo writes in his essay, observing that neither responds adequately to the innumerable environmental and social challenges related to animal farming today."

With this project, Ahedo has demonstrated the potential for innovative and visually appealing design in an area often left to anybody but architects – at least nowadays.

Once upon a time, lots of architects, including many famous ones, designed farm buildings. The great Italian architect, Andrea Palladio (1508–1580), for example, designed many grand country villas for the Venetian aristocracy, which were also fully functioning farms. The impressive-looking wings on either side of these strictly symmetrical villas were often actually the farm's humble outbuildings.

A little closer to home, the Canadian-Australian architect, John Horbury Hunt (1838–1904), who I have written about elsewhere in this edition of designmag, was widely admired for his rural homesteads and farm buildings, including shearing sheds, stables and smokehouses.

Over the next two years, Ahedo plans to use his prize-money to travel to Taranaki, New Zealand, the premier milk exporter in the world; Ikhbulag and Orkhon Valleys, Mongolia, where half the population depends on livestock production; Schleswig-Holstein,

Germany, which has one of the longest histories of animal farming and where mid-sized family farms have prevailed; Hainan, China, an island with hundreds of aquatic farms (hatcheries); and various centres and companies around the world producing agricultural research.

"The Wheelwright Prize has been an unexpected and huge opportunity to follow the career path that I left as a teenager and to investigate the opportunities of design and its impact on the social formations around animal farming systems," concluded Ahedo.

Well, I say all power to him.

\*Dr Derham Groves, BArch (Deakin), MArch (RMIT), PhD (Minn) is a Melbourne-based architect, academic and author with a special interest in popular culture (derhamgroves.com).



# Delivering the goods

Toll turns to Austral Precast for  
its new Brisbane facility





**previous opening.** The 3500 square metre administration building functions as the national head office of Toll NQX.

**right.** The administration building is connected to the warehouse operations centre by an aerial bridge. The operations centre is partly set into the massive, drive-through warehouse. A workshop services trucks and forklifts and has two levels of offices and specialised work bays.

**Project:** Toll Group freight facility  
**Location:** 59 Forest Way, Karawatha QLD  
**Function:** Warehouse, operations centre, office, vehicle maintenance facility  
**Owner:** The GPT Group  
**Architect:** Arqus Design  
**Structural engineer:** Northrop Consulting Engineers  
**Builder:** FDC Construction & Fitout (QLD)  
**Precast panel installation:** Austral Precast  
**Photography:** Christopher Frederick Jones

**As Australia's largest mover of freight, Toll Group thinks and works on a large scale – and their new freight facility in Brisbane's southeast demonstrates that. Located on a 13 hectare site and constructed by FDC Construction & Fitout (QLD) for The GPT Group, the facility, leased by Toll, is the largest pallet and oversize freight depot Toll Group operates anywhere in the world.**

The heart of the complex is a massive drive-through warehouse covering 36,000 square metres. A two-level operations building controls the comings and goings of trucks and their loads. About two-thirds of its 2090 square metres is inserted into the warehouse.

An administration building covering 3500 square metres is connected to the warehouse by an aerial bridge. It functions as the national head office of Toll NQX (part of Toll Group) and has open workstation areas, a call centre, outdoor recreation areas and even sleeping quarters for drivers.

Across the site and flanked by hectares of hardstand and car parking, is a substantial 1946 square metre workshop for Toll's specialised fleet services business which services trucks and forklifts, and has two levels of offices as well as tyre and welding bays and a truck washbay. Completing the complex is a gatehouse.

These four buildings – operations, administration, workshop and gatehouse – are steel framed and clad with precast concrete, 137 panels in all totalling 2200 square metres of walling, manufactured and installed by Austral Precast, Australia's largest precaster. The blade signage at the front entrance is also a precast concrete panel.

Because the structure of industrial buildings – that is, the concrete and steel – is a large proportion of the building cost, there is a greater need "to get the design tight and efficient to build, fabricate

and deliver," explains Aaron Hughes, the lead structural engineer for this project.

He emphasises that less is not always more, especially when it comes to structural steel. "If the designer doesn't have a good idea of how the precasters work or how the structural steel contractor works, then they are not going to be able to produce the most efficient design, even if their analysis is superior to that of another engineer.

"Detailing and practicality are paramount; things like the way you detail around a door opening in a precast wall, or understanding how big a panel can be cast and transported to site."

The structural engineering team worked closely with the architectural team, whose job is to look at the functionality of the spaces and the overall site design, and related issues such as accessibility and meeting relevant codes. "It very much comes back to functionality and spaces and the way the client needs to use a facility like this," says Mitchell McGuire who was the co-leader of the architectural team with Emma Somers.

Both Mitchell and Aaron emphasise that speed of construction is essential on these projects and that the precast component is a critical component of the work program. This requires tight coordination between the engineering and architectural teams, as well as the steel and precast manufacturers and the construction team.

Drawings must be translated into concrete and steel with millimetre accuracy. "The steelwork contractor needs to coordinate with the precaster; because ultimately a bolt has to line up with a bolt hole," Aaron Hughes says simply.

Fortunately, he adds, there were no tolerance issues with the precast panels manufactured for this project. Not that he was surprised by that. "Typically, Austral's quality is pretty good. They would be considered the default choice for precast."

Mitchell McGuire was also impressed with the accuracy of the precasting process. "You can control what you are going to get on site. As such, you can design accordingly and know that it is exactly how it is going to be on site, which is a big advantage."

Speed, scale, coordination, accuracy, quality and innovation. These are the characteristics of industry-leading companies such as Toll. They are also the qualities that have made Austral Precast not just the market leader in their field but "the default choice" of the precasting industry.







# THE STEAMPUNK HOUSE

Art and craft come together in a Grand Designs Australia hit

**Project:** The Steampunk House

**Location:** South Melbourne VIC

**Function:** Home for extended family

**Owner/builder:** Greg Saunders

**Architect:** McAllister Alcock Architects

**Bricklayers:** Greg Saunders, John Agnoletti, Tristan Walker

**Featured products:** Austral Bricks Access

Ash clay bricks

Austral Bricks 70mm commons clay bricks

Austral Bricks shaped clay bricks (bullnose, socket)

**Photography:** Michael Laurie

**Greg Saunders is a brick tragic. It's more than the fact that he has been a bricklayer for 20-plus years. He took a few years off to set up and run a successful cafe but recently installed a manager and went "back on the tools."**

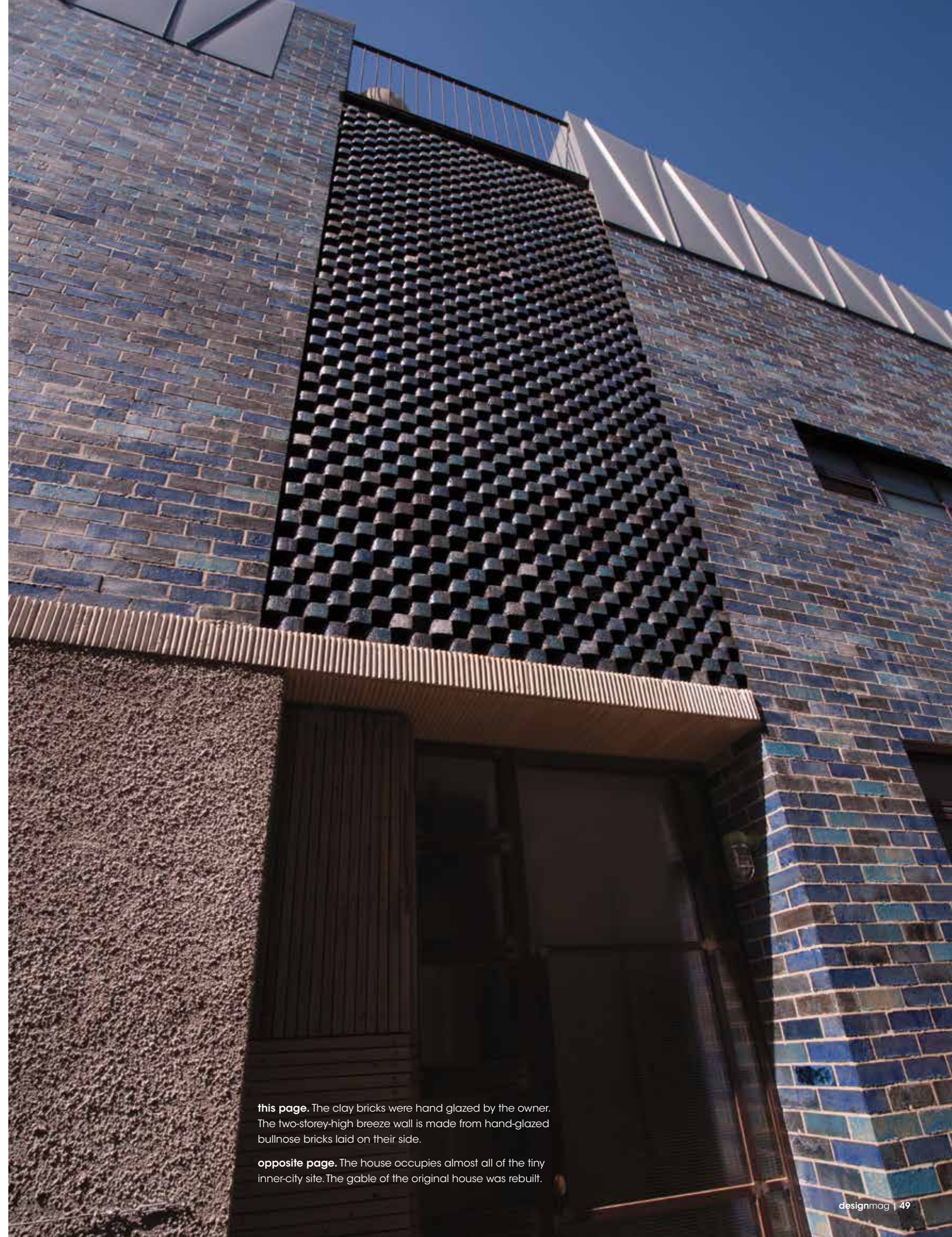
"It's just in me," he says simply. "Brickwork doesn't pretend to be anything it's not. It's honest and solid and if it's done properly it will be there forever."

The truth is that Greg is more than a bricklayer, he's a true artist. Not the type that displays in galleries, his latest work of art IS the gallery and all it contains.

Greg and his partner Emma Calverley, an arts administrator, lived in a tiny, one-bedroom brick cottage in a narrow inner-Melbourne street for about eight years. It was a fun house for this sociable couple. However, when son Archie came along - he's now seven - its limitations quickly became clear.

Greg was planning the changes from the day they purchased the cottage. "I think it was always in the back of my mind." He saw the potential of the narrow site bound by a 10 metre high wall on the left and a cobbled laneway to the right.

The final trigger was the decision to accommodate Emma's parents. How does a cramped site, one that couldn't accommodate a couple and a growing child, cope with another two adults? Greg and Emma turned to architect Karen Alcock who formulated the basic design concept and floorplan while allowing Greg to flesh out the details. Her answer was to go up.



**this page.** The clay bricks were hand glazed by the owner. The two-storey-high breeze wall is made from hand-glazed bullnose bricks laid on their side.

**opposite page.** The house occupies almost all of the tiny inner-city site. The gable of the original house was rebuilt.



"It was a true collaboration," Karen says. "We brought our technical skill and then Greg really took the role of the artist, creating the joy in the building."

The building has three levels. Emma's parents have a self-contained two-bedroom apartment on the ground floor, with its own street access. The upper floors, Greg, Emma and Archie's domain, are accessed from the lane. The middle level has two bedrooms and two bathrooms while the top floor has an open plan kitchen, diner and living area. A glorious, custom-made, electric-blue spiral staircase connects the levels.

With Greg as the owner/builder it's no surprise that the walling is brick. Even less surprising, it is cavity brickwork, with foilboard insulating the space between the two brick skins.

Greg carried out the bricklaying, assisted by his former apprentice master, John Agnoletti. "John's an old school Italian guy, he's really cool," says Greg, who all these years later is still in awe of his old boss. Completing the team was Tristan Walker, who was Greg's former apprentice. Three generations of bricklayers, three mates.

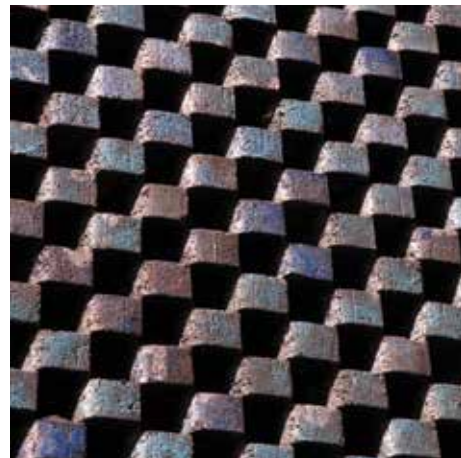
The internal brick face is simply painted white; no plasterboard please! The real treat is the three storey wall on the laneway, which is a demonstration of Greg's artistic abilities in its colour, texture and functionality.

But first, we need to go back to Greg's high school days when he finished a small clay pot with a blue glaze. It's still proudly displayed and this striking glaze became the basis of his colour choice for the laneway brickwork.

No one makes bricks that colour so Greg determined to glaze them himself, all 10,500 of them. By hand. That's quite a challenge so he went to Richard West at The Brick Studio in Richmond who offered Austral Bricks' technical assistance and access to production facilities. But the hard graft of hand-glazing thousands of individual bricks was down to Greg.

Working with Austral's technical staff, three glaze formulas were devised after a lot of trial and error, and a process developed. A kiln car, a giant trolley used to transport bricks through the brick factory on Melbourne's northern fringe, was stacked with thousands of green (unfired) bricks.

These were unloaded one at a time by Greg. Each brick face was brushed with a thick glue-like liquid and a small baker's sieve sprinkled the glazing powders over the face. The more powder, the more intense the colour.



Each brick was then reloaded onto the kiln car and the process repeated 10,499 times. The bricks were then fired at over 1200 degrees Celsius to a rock-like hardness. This high temperature also triggered a chemical reaction in the glaze, giving each brick face its distinctive, original colouring and pattern.

"For such a massive company to be into such a little project like this, it's just cool," says Greg. "I owe Richard West and the Austral Bricks technical staff so much. They were so good to us."

Even this glazed brickwork is not quite straight-up-and-down. On the two storeys above the entry off the laneway, the architect had originally proposed openable windows to catch the breeze off nearby Port Phillip Bay. Greg replaced this with a breezeway made from hand-glazed bullnose bricks laid on their side with operable windows inside. Ingenious.

In the house there are more quirky yet practical touches that could only come from Greg. A four metre by one metre plunge pool cantilevered over the front ("replacing Archie's old plastic pool"). A life-size Star Wars Stormtrooper

illustration hidden in a shallow recess behind a wired glass door. Finely fluted edges on the concrete slabs. Concrete's formwork repurposed to make trusses. A workbench curved around the spiral staircase at the second level; the bench top was Greg's father's. A massive riveted iron beam (very Steam Age) rescued from the demolished Myer Lonsdale Street store.

(You will need to watch the Grand Designs Australia episode to learn Greg's unique method of patinating a copper downpipe.)

So how was the Grand Designs experience? "It was just like blokes talking about a house," says Greg. "They were really respectful and just into it as well. Peter (Maddison) really liked it because it was all handmade." He believes that as an architect, Maddison had difficulty in coming to terms with the lack of detailed plans, but he eventually "really liked the fact that it was all in my head."

From the street, this unique project presents almost as a single-fronted cottage. Inside it looks like a renovated warehouse, an assumption often made by visitors. For Greg it's a "twenty-first century interpretation of the Arts and Crafts architectural style that flourished in the late 1800s."

To this observer it has more of a grunge aesthetic, a homage to the Industrial Age of the 18th and 19th century with its tiles, wired glass, glazes, riveted beams, polished concrete, steel and timber. Karen Alcock describes it as "flamboyant" and admits that Greg "probably pushed it a bit further than we anticipated in some areas. I think it is always interesting seeing people who are coming from a different design perspective and seeing what they come up with."

For Greg Saunders it is more simple. "To me this is like a homage to my friends who believed in me," he says modestly. Greg includes his in-laws in that tribute but more especially his partner, Emma, whom he describes as an "all round good chick. None of this would have happened but for her."

The kitchen and dining area (and even a small plunge pool, not shown) are at one end of the top storey, while the living area occupies the far end. All 10,500 face bricks were hand glazed and refired. Operable windows behind the perforated wall catch the cooling afternoon breezes from nearby Port Phillip Bay.







**“Social housing is not about  
straight-up-and-down design”**

Creative brickwork adds style and sustainability  
to an inner city development



**Project:** 205 Gipps Street  
**Location:** 205 Gipps Street, Abbotsford VIC  
**Function:** Multi-residential  
**Developer:** Common Equity Housing Ltd  
**Architect:** KANNFINCH  
**Structural engineer:** Wallbridge & Gilbert  
**Builder:** Becon Constructions  
**Bricklayer:** C&S Lightweight  
**Featured products:** Daniel Robertson Hawthorn Black clay bricks  
**Photography:** Emma Cross, Roger du Buisson

**A century ago, the inner Melbourne suburbs of Abbotsford and Collingwood were the powerhouse of the Australian boot and shoe industry. After almost 90 years residency, the area's last footwear manufacturer, the Harold Boot Company, moved out of a single-level, red-brick factory in Abbotsford in 2008.**

With three street frontages, the site was ripe for redevelopment as housing. The purchaser was Community Equity Housing Limited (CEHL), a not-for-profit company holding title to over 2200 properties across Victoria, most of which are managed by local housing cooperatives.

Of the 59 apartments and townhouses constructed on the Gipps Street site, 34 were sold and the balance retained by CEHL for letting as community housing. "The project had to be attractive to the market," explains Peter Dunn, CEHL's manager property developments and asset management. "We wanted a good finish to the development so we were not keen to progress with a rendered or textured wall finish." All the dwellings are designed to the same high standard.

CEHL and the architects, KANNFINCH, chose Daniel Robertson Hawthorn Black clay bricks as the dominant cladding material for the extensive new walling. Not content just with their natural textures and colours, the designers used these premium-quality bricks in creative patterns to add interest, shadow and articulation. "We were keen to demonstrate that social housing is not about straight-up-and-down design," says Dunn.

The brick facade of the old factory was retained on two elevations and two buildings constructed behind it over a common basement. There are five townhouses on the other (minor) street frontage. The remaining residences are apartments, mainly with one or two bedrooms. A delightfully landscaped communal courtyard sits between the two buildings.

The retained facade forms a plinth to the new structure which is progressively set back and appears to float above as it rises five levels. If anything, the required setback on the top level is a little extreme and obscures the zinc-clad, quasi-industrial sawtooth roofline from the street.

The brickwork is constructed as a simple veneer but laid in a Flemish bond, a pattern normally associated with solid brickwork, that is, two leaves without a cavity. This traditional brick pattern alternates headers and stretchers (the short and long sides of a brick), with each header sitting above and below a stretcher. A whole brick laid as a header traditionally links two thicknesses in a Flemish bond wall. In this application, a single thickness veneer, bricks were halved to create two headers.

"This particular bond gave us the opportunity to use three very different wall textures," says Max Bachimov, architecture director of KANNFINCH Melbourne. Omitting the header created a perforated wall, also known as hit-and-miss brickwork, which allows light penetration without compromising privacy. Alternatively, some headers project, creating a 3D pattern, an intriguing and surprising texture that also

creates shadowplay. The majority of the walling is conventional two-dimensional, although the "dot-dash" rhythm of the Flemish bond is unexpected.

Site context - this is a heritage precinct with old warehouses, light industrial sites and workers' cottages - was also a factor in selecting brick as was maintenance. "Since CEHL retain ownership of most apartments, it needs to be as low maintenance as possible," says Bachimov. "Obviously brick fits into this category perfectly."

KANNFINCH normally works on large commercial projects and Bachimov admits that his brickwork skills were a little rusty but says it was a "great experience. It took me back to the days when I started, when I worked on extensions and houses and you had to understand the courses and where the windows site and so on."

He praised the work of the bricklaying team who rose to the challenge of the unconventional bond and the design details. "I'm glad this art hasn't been lost. We were blessed with a contractor who had subbies on the site who could perform these skilful artforms."

The brickwork veneer is laid on shelf angles, flying past the slab edges to create a uniform soffit. The insulated brickwork mass assisted the buildings to achieve a 6.2 Stars NatHERS rating, along with double glazing, solar-boosted gas hot water and rainwater collection. "Brick played an important part in reaching some of these ESD targets," says Bachimov. "It takes the brunt of the external temperature fluctuations."

Unsurprisingly, the townhouses and private apartments sold promptly after the development's completion in May 2013.

In other good news, the Harold Boot Company, which traces its roots back to 15th century Leicestershire, successfully relocated to a nearby suburb, only its fifth move since 1650! The company continues to manufacture high-quality equestrian and dress boots, some under the Polo Ralph Lauren label.

All of which goes to show that quality and good design will always find a ready market, a fact that applies equally to footwear and housing, as it does to Daniel Robertson's distinctive clay bricks.



**previous opening.** The complex, a blend of townhouses and apartments, is managed by a non-profit community housing company. Almost half of the apartments are let for public housing.

**this opening.** The handsome facade of the former boot factory was retained on two street elevations with the new work set back from the street. A row of townhouses occupy the side street. The hit-and-miss (perforated) brickwork allows privacy and adds texture and interest to the walling.







# Odd Name, Great Timber

Is Wormy Chestnut "the next big thing in Australian hardwood"?

Wormy Chestnut adds character and warmth to the industrial chic of The Brick Studio in the Melbourne suburb of Richmond.



**Wormy Chestnut is the unusual name for a timber that was once the Cinderella of Victorian hardwoods. It was considered to have low value and consigned to menial tasks such as roofing tile battens.**

But first some history. Wormy Chestnut was a high-value American timber from trees that were all but wiped out by a disease in the early 1900s. Today in the US, it is usually available only as reclaimed timber.

Auswest Timber recognised some of the characteristics of this classic American timber in several species of Victoria hardwood.



The distinctive character of Wormy Chestnut is finding a home in furniture, commercial fitouts, and flooring. (Photos this opening courtesy Total Bedroom, Britton Timbers, NOWarchitecture, Auswest Timbers)

Wormy Chestnut is not perfect, and that's its attraction. It is timber with a very Australian story to tell, from the sinuous trail left by scribbly gum moth larvae as they search for nutrients under the bark, the peppering of pin holes by ambrosia beetles, and scorching by fire and lashing by rain.

It's all there, on display in the milled timber, imparting a character and uniqueness that cannot be manufactured or grown in plantation timber.

No two pieces of Wormy Chestnut are alike. The character marks vary in placement and intensity (or indeed, presence) as does the timber's colour which ranges from browns through pinks.

Wormy Chestnut is crown cut, a milling process that emphasises its unique character marks. The timber is very dense and requires air drying before being kiln dried, to prevent bowing. However it is still easily workable by conventional woodworking machinery.

What is Wormy Chestnut? It's not a single species but a blend of three eucalypts native to Victoria's south-east. Their harvesting is

controlled by VicForests, the Victorian Government business responsible for the sustainable harvesting, regeneration and commercial sale of timber from Victoria's public forests.

Their operations are certified under the Australian Forestry Standard and internationally recognised by the Geneva-based PEFC (Programme for the Endorsement of Forest Certification), the world's largest forest certification scheme which covers two-thirds of the globally-certified forest area. VicForests is also a member of the Forest Stewardship Council.

Having been dubbed "the next big thing in Australian timber," Wormy Chestnut is finding a ready home as character flooring, in commercial fitouts, and as furniture timber.

A Melbourne furniture manufacturer, Total Bedroom, is using Wormy Chestnut to make upmarket architectural-quality furniture such as dining tables, buffets, entertainment units and bedroom furniture. The volume end of the residential furniture market has been decimated by imports prompting Total Bedroom to use this unique timber to stay one step ahead of his competitors.

The company also uses other imported and local timber species such as spotted gum and American oak but the face of Stace Karikas, Total's owner, lights up when he talks about Wormy Chestnut.

"It's the character of it, the grain feature, the natural worm holes and where the fires have gone through, all that smoke from the forest fires, and the bugs boring through it leaving their mark. It just looks alive!" he says enthusiastically.

Now Architecture selected Wormy Chestnut for the redevelopment of the Bairnsdale Library in regional Victoria to create a folded timber wall for the meeting room, and a distinctive information desk.

Wormy Chestnut has also been used in a number of commercial fitouts such as cafes and restaurants, including Schnitz fast food outlets in food courts dotted around Melbourne.

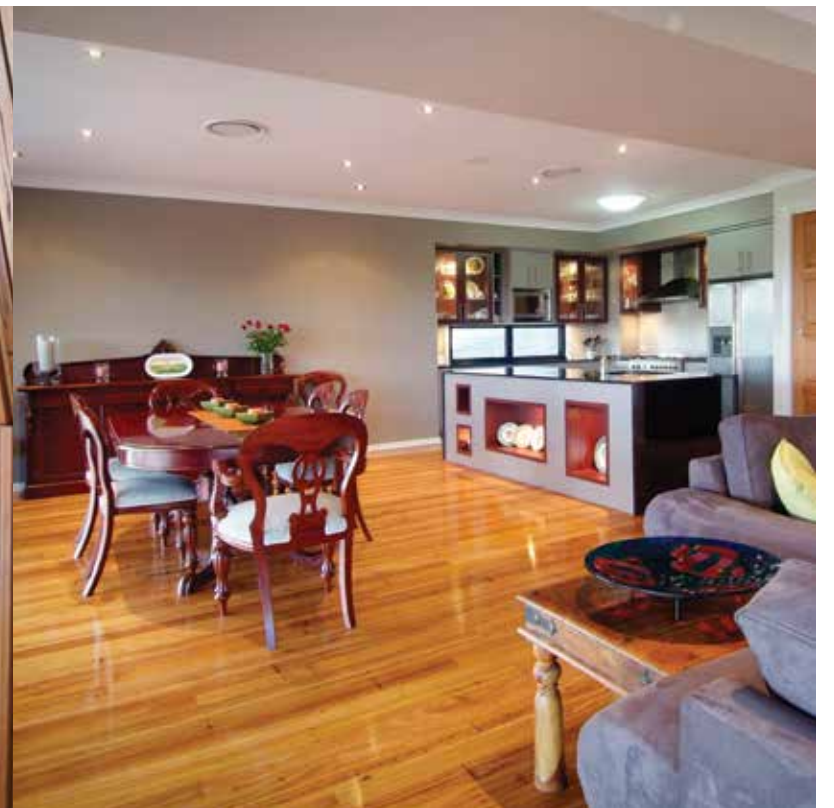
Hardwood flooring is remarkably popular and Wormy Chestnut is rapidly developing a following in this market. It is valued for its hardness (an average value of 8.1 across the species), workability and of course that uniquely Australian character. A suitable coating is all that is needed to enhance and protect Wormy Chestnut flooring.

Wormy Chestnut tongue-and-groove boards are available in three widths - 85, 130 and 180 mm - and in two thicknesses and a range of end conditions.

Wormy Chestnut even made it on The Block, Nine Network's popular renovation program which concluded in mid-October. Contestants Chris and Jenna chose Wormy Chestnut for the 22 treads of a U-shaped feature staircase in the apartment they were renovating. It was fabricated by Jamin Wheeler of Jamin Wheeler Staircases who says he uses "quite a lot" of Wormy Chestnut. "It's a good product," he remarks. "It has a good, rustic look to it," what he calls "a lot of feature." Jamin considers Wormy Chestnut to be a "good hard timber" and says it is "well priced for a Victorian hardwood."

Wormy Chestnut is also being marketed in China, Vietnam, South Africa and, appropriately, the USA.

With Auswest Timber as its fairy godmother, this distinctive timber with the funny name will be sure to go to the ball!





# Heavyweight Champion

For heavy duty installations, concrete pavers knock their opponents out of the ring.



Concrete segmental pavers are a cost-effective competitor to mass concrete that can reliably carry high loads and is easily repaired in the event of a localised failure. The installer described these Austral Masonry Techpave 100 pavers as "the best product we have used."





The extensive pavement will soon be carrying massive loads of containers and container handling equipment. The mechanised laying process includes a machine to spread and precision screed the bedding sand and mechanically position the pavers. Once compacted, the final pavement can handle considerable loads and is easily maintained.

**Project:** Patrick's Container Terminal

**Location:** Port Botany NSW

**Head contractor:** Fulton Hogan

**Paving contractor:** ACP Hardstand Solutions

**Featured product:** Austral Masonry Zetech Techpave 100 heavy duty concrete pavers, natural colour

**Photography:** Alex Mayes, production photos courtesy ACP Hardstand Solutions

**The humble shipping container has revolutionised international trade, lowering costs and simplifying handling and transport. Ports across the world are taking this to the next level by automating the movement of containers off ships, and into and out of the port.**

Patrick's Container Terminal at Sydney's Port Botany has recently been extended to cater for additional traffic and new straddle carriers that will operate unmanned 24/7 using guidance technology.

Austral Masonry's Techpave 100 concrete pavers from the Zetech range, were selected to cover the 60,000 square metres of the Port Botany extension. They were laid by Perth-based ACP Hardstands using specialised equipment that speeds up the construction process and lowers costs.

But first some background. Containers are heavy, even more so when they are stacked three high as they are for this site. (On some sites they reach up to five or more.) Each container stands on four small feet, multiplying the effective loading. Patrick's new straddle carriers are no lightweights either, each weighing 65 tonnes unladen.

Conventional asphalt paving cannot reliably carry these loads and mass concrete is expensive to construct and difficult to maintain in the event of wear or localised failure. Asphalt is also susceptible to damage by fuel or oil spillages.

In contrast, heavy duty concrete pavers are economical, hard wearing, easy to maintain, and highly resistant to being displaced by horizontal or vertical forces. In the event of damage, individual pavers can be easily removed and replaced or reinstated. The pavers are laid on a sand bed about 20mm thick.

The cost effectiveness of concrete pavers has been enhanced by the introduction of mechanised laying. ACP Hardstand Solutions is the market leader in heavy-duty segmental pavement construction through the use of specialised equipment such as the Probst Powerplan PP screeding machine which lays a thin bed of sand to support the pavers. Using laser guidance, the machine deposits the sand and screeds it to the finished level with a speed and precision that would be unattainable using manual methods.

The pavers are laid using a vacuum attachment on a skid-steer loader that lifts a layer of pavers from a pallet and deposits them in the pattern. For this project the pavers were laid at an average of 1500 square metres per day, peaking at about 2000 square metres.

The pavers are cast in special moulds at the Austral Masonry factory, arranged in the final laying pattern. The pattern chosen for Port Botany was 90 degree herringbone, which has strong interlocking characteristics.

"Pavers that are 80 to 100 millimetres thick and laid in a 90 degree or 45 degree herringbone patterns are the only ones we would use on heavily-trafficked areas," explains Ryan Daly, ACP's contracts manager.

The pavement is then compacted using a hydraulically-driven vibrating triple-plate compactor attached to a skid-steer loader. "The initial compaction is made as soon as a section of pavers is laid and then two further compactations are applied before the end of the day," says Ryan. Compaction drives some of the sand up into the joint between the pavers, enhancing their interlock.

The result is a smooth, massively strong pavement that will readily handle the loads at a container terminal. "One hundred tonne Caterpillar D11 bulldozers are driven over one ACP installation and it's not rutting at all," Ryan reports. "You are not really going to get anything heavier than that!"

This was the first time ACP has used Austral Masonry's Techpave 100 heavy-duty concrete pavers ... and Ryan Daly is impressed. "We didn't have any problems with size variation or anything like that."

As well as ports, heavy-duty concrete pavers are also finding a ready market in airports, car parks, intermodal terminals, mining sites, and more.

"From my point of view, and I've been in the industry for 12 years, these Techpave 100 pavers are the best product we have used," Ryan Daly concludes.



# In Profile

## m3architecture

Specificity, materiality and the art of surprise: three principles that have driven the success of a Brisbane architectural practice.







Since its establishment in 1997, m3architecture has developed and maintained a reputation for a considered and innovative design approach that is anything but formulaic.

"We have an interest in making every project specific to the client and to the site and its users," explains m3 director Mike Lavery. "We are particularly interested in public engagement in projects, how people other than the primary user experience a building." Another m3 hallmark is adding an element of surprise or joy (often under-the-radar) into a project.

There is no m3 house style, no focus on a particular material palette, nothing that says, at least overtly, that this is an m3-designed building. "There's a way of thinking perhaps, that's an m3 way, but not a style," Lavery contends. This way of thinking is no doubt informed by a collaborative process that sees every project influenced by the involvement of all directors.

Mike Banney, Mike Christensen and Mike Lavery were at university together and worked in various combinations before forming their partnership. Ben Vielle, m3's first employee, was invited to become a director soon after.

The practice now employs 16 including the directors, working from a refurbished carpet warehouse on the edge of Brisbane's CBD. Their work is mainly in institutional projects for state and local government, schools and universities, although m3 does some commercial and residential architecture.

Institutional buildings must be robust, adaptable and low maintenance, and not surprisingly brickwork fits these requirements. "Although a brick has high initial embodied energy, this is dissipated over a 40- or 50-year period making it a wonderful selection and I think hard to beat," Lavery contends.

m3architecture came to prominence in 2002 with the Health and Microbiology Laboratory at The University of Queensland's Gatton campus, aka the Brick Box.

Gatton is a typical campus of the 1960s and '70s with a series of brick buildings that Lavery describes as "very respectable and pragmatic, but lacking excitement." The external patterning of the Brick Box challenged all that while retaining (and respecting) the materiality of the existing campus.

The highly-patterned building skin began life as a series of self portraits developed by artist Ashley Paine. "The portraits are a collection of works that sought new representations of the artist," said the project's design architect Michael Banney in an interview at the time. "These were developed through a variety of

media and processes and ultimately transcribed into another medium/process, namely brickwork."

Two brick types were chosen, one smooth face, the other textured, both with different core hole patterns. Some whole bricks were laid as alternating courses of headers and stretchers, and others in a stack bond. The balance of bricks were bolster cut at different points to produce differing degrees of texture. To minimise wastage, all brick halves were utilised.

"This laboratory was a fantastic opportunity to show what the prosaic brick could be, a masonry unit turned into a piece of pottery," says Mike Lavery.

The craggy texture of the exterior is in stark contrast with the clinical white and stainless steel interior. A low-slung picture window allows views for passersby, chipping away at the mystery inside.

Not surprisingly the Gatton project won a string of architectural awards and was featured in many publications including the 2004 edition of the Phaidon Atlas of Contemporary World Architecture.

The laboratory encapsulated m3's approach then as it does today, with its consideration of specificity and materiality, to the site, the project, its users and to the wider campus population.



**Project:** Health and Microbiology Laboratory  
**Location:** The University of Queensland, Gatton  
**Structural engineer:** Mills Engineers  
**Builder:** McNab Constructions  
**Bricklayer:** Jack Morrisby, Gavin Sticklen, Trevor Jervis  
**Featured products:** Austral Bricks Premier Collection clay bricks in Morgan (discontinued) and Purpose Made Commons clay bricks  
**Photography:** Jon Linkins

**Project:** David Thiele Olympic Pool  
**Location:** The University of Queensland, St Lucia  
**Structural engineer:** Cardno  
**Builder:** Stewart Constructions  
**Bricklayer:** Young Bricklaying  
**Featured products:** Austral Bricks Precision clay bricks in Mocha  
**Photography:** Jon Linkins

A more recent project is the refurbishment of the David Thiele Olympic Swimming Pool at The University of Queensland's St Lucia campus. The pool was extensively damaged in the floods of January 2011 and the opportunity was taken to build a new change facility.

Again, m3architecture chose to respond to the specifics of the site, in particular the earth berm that was formed alongside the original pool using excavated material. This provided both shelter and privacy, and the designers extended this concept into the new change rooms.

The roof and soffit of the new change rooms are elevated above the walls, allowing ventilation while maintaining privacy and shelter.

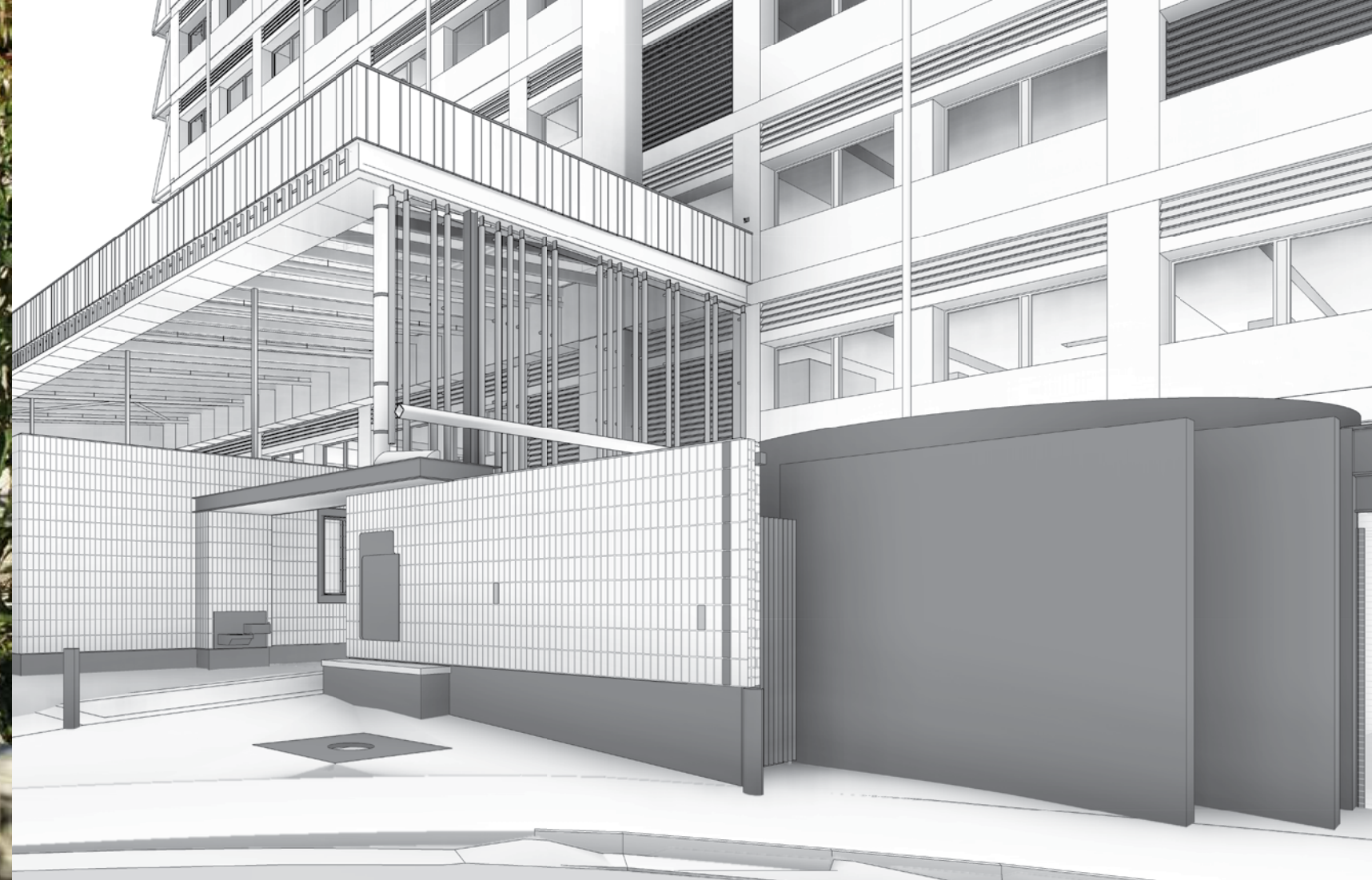
A variety of walling options were examined including roof tiles and conventional ceramic wall tiles. "In the end we decided on brickwork and that really gave a lot of flexibility, it gave that sort of rustic, deep shadow and did it in a really wonderfully-robust, public-building kind of way," says Lavery. "We were able to build patterns into



the brickwork, starting in the datum above the flood line. Brick was a natural choice and it provides that wonderful, weighty landscape base to the floating soffit.

"That choice of materiality to serve the idea and to serve the building is a hallmark of the way we think about the selection of materials."





**Project:** Act for Kids Child and Family Centre of Excellence  
**Location:** Townsville QLD  
**Structural engineer:** Bligh Tanner  
**Builder:** Hutchinson Builders  
**Blocklayer:** CN Jeffrey Blocklaying  
**Featured products:** Grey concrete masonry bullnose units  
**Photography:** Peter Bennetts

A recent project in Townsville is equally playful but with a very serious objective. Act for Kids is a Queensland charity tasked with preventing and treating childhood abuse and neglect. James Cook University donated a small site on the edge of their campus to allow the construction of a Child and Family Centre of Excellence, providing treatment, education, training and research in child protection.

For children at risk, a domestic architectural style can be threatening. Home for them is not necessarily a place of safety. So, what architecture denotes safety and security to a child? The answer: a castle, a place where the dragons are on the outside and the good guys are within.

Concrete masonry has a long history on the JCU campus. It was originally used with creativity but later in a more mundane manner, to the point where its use was being actively dissuaded in new construction. However the m3 team thought it was an appropriate material for their castle walls, it simply needed to be implemented with imagination and in a manner reflecting the approach of the original campus buildings.

The solution was to create walls using concrete bullnose blocks laid horizontally, nose to nose, to form a tapered void centred over an underlying unit. On the north wall, the centre is accessed through a series of portals, each capped with a precast arch.

Once inside, the three pavilions that constitute the centre are grouped around a walled garden, what m3 call a "landscaped oculus", with extensive use of familiar treated pine to create fencing and screening.

"It's a place of safety, a place of joy, and a place of fun, a place of learning, and a place of healing," says Mike Lavery. "Blockwork lends itself to all of those notions and that's where materiality and an idea come together."

**Project:** Chemistry Building  
**Location:** The University of Queensland, St Lucia  
**Structural engineer:** Bligh Tanner  
**Builder:** Stewart Constructions  
**Bricklayer:** Total Blocks  
**Featured products:** Bowral Bricks Bowral Blue and Charolais Cream dry-pressed clay bricks

Coming out of the ground at the UQ St Lucia campus is a brick-built ground-floor extension to the refurbished Chemistry Building, a tall building constructed from in situ concrete.

Why brick? It's complicated but another example of the m3 approach to materiality and specificity. The existing concrete is patterned from its rough-sawn timber formwork. So concrete takes on the notion of timber. Metal screens mimic the vertical patterns of the formwork. And the stack-bonded, vertical brickwork extends its language to take on the vertical forms of the concrete!

Hidden away in the reglets\* and in the joints, and occasionally even in a brick are some unexpected materials to catch the eye and inject that element of joy and surprise. Simple really and quite playful.

There's no doubt that many of m3's projects challenge the status quo. So it is not surprising that they have won multiple awards and been presented at the Venice Architecture Biennale on three occasions. So what is their secret to winning over clients and contractors to their often-challenging concepts?

"You need clients and builders who are great supporters of these kinds of projects," says Mike Lavery. "Any great project has had several people stick their neck out along the way."

"The most common reaction we get when we finish a project is that the contractors involved are really glad that they made the effort. We are looking for ways to celebrate their knowledge and their craft, and when they understand that they really take to it."

"The joy of that craft is completely and utterly evident in any good brick building," Mike Lavery concludes. "We remain interested and excited by brickwork."

\* A narrow strip separating moulding.





# OUT OF THE BLUE

A new rehabilitation facility breaks the pattern of institutional architecture

**Project:** Woy Woy Rehabilitation Unit

**Location:** Woy Woy NSW

**Function:** Thirty-bed unit accommodating patients requiring restorative care

**Client:** Health Infrastructure

**Architect:** Wood Bagot

**Structural engineer:** AECOM

**Builder:** ADCO Constructions

**Bricklayer:** Conrina Constructions

**Featured products:** Austral Bricks Expressions Bluestone, Burlesque Smashing Blue, Metallix Bronze and Metallix Emery clay bricks

**Photography:** DC Photographic

Once a small resort town, Woy Woy has long been a favourite of retirees, including the parents of legendary comedian Spike Milligan. He first visited the NSW Central Coast peninsula in 1958 and spent many months there over the following decades. "To me it was his home, that was where his heart was, at Woy Woy, where he always went back to," says Laura Milligan, Spike's eldest daughter.

The growing retiree population was a major factor in the development of the Woy Woy Hospital's Rehabilitation Unit, a 30-bed facility managed by the Central Coast Local Health Network for patients requiring restorative care following injury, surgery or illness.

Hit-and-miss (perforated) brickwork allows light into the courtyards behind. The high-gloss blue Burlesque bricks are laid in a seemingly random pixelated pattern.





The complex comprises three buildings keyed into the rear of the existing hospital and overlooking parkland. Innovative product selection, such as this blend of high-end and standard bricks, is a means of introducing interest while meeting a tight budget.



The Unit, designed by Woods Bagot, comprises three buildings that are keyed into the rear of the existing hospital but are operationally separate. Sited within a parkland environment, the buildings or "pods" are grouped in an inverted L-shape around a car park. The two pods to the east are residential, while the upper section of the western pod houses clinical facilities, dining and lounge rooms, gymnasium and nursing functions. The entrance is located at the link between the residential pods and the western pod. The lower section contains ancillary services for the entire campus such as linen, mechanical services and stores.

The internal design of any health care facility is a matter of striking a balance between patient needs and operational efficiency, and well beyond the scope of this article. Health care building projects, especially those funded by the public purse, are not known for their lavish budgets. So how did the exterior of this small regional facility come to have such an eye-catching appearance?

"Health projects come under a really tight budget," says Woods Bagot associate Mohammed Khaled, "and you have to start thinking of creative ways of making the buildings more interesting." His solution was to use the modularity inherent in brickwork to create a series of seemingly-random pixellated patterns. The factor that varies this patterning is a little unusual and will be revealed later.

Why brick is a simpler matter: "Conceptually we wanted to have a building that was on a scale sympathetic to the surroundings. So obviously this influenced the height, roof forms and the choice of walling material, namely brick."

The dominant brick is Austral Bricks Burlesque, a fully-glazed clay masonry unit in Smashing Blue, an obvious colour choice for a coastal location.

Sole use of the glossy blue bricks may have been visually overwhelming. However they came into their own as part of a mottled pattern when teamed with more conventional bricks in blacks, browns and greys.

So what was the factor used as the design variable for the brickwork patterning? "We had a bit of a play on the roofs," says Khaled. "As you walk around the buildings you can appreciate how we shaped the roofs. They are your normal hip roof but we did a bit more pushing and shoving to bring natural light into the centre of the building. And we played on that in the walling."

Using Rhino 3D modelling software, the designers drew deviation lines that essentially followed the roof lines above each wall. "In effect it's a mirror of what the roof does above. In some cases where it was an end of a wall, that's where the concentration of blue bricks was intense on one side and started vanishing towards the end."

The blue is at its most prominent at the entrance and all but disappears at back-of-house areas. "We wanted the blue bricks where we could see them at the entry sides and the back where patients are. The lines follow the roof in most cases and sometimes just disappear when they need to at the end of a wall."

While the software indicated how many Smashing Blue bricks were needed in a section of walling and the line their placement was to follow, the final creative control was left to the bricklayer. Although it would have been possible to detail every brick placement, this solution was more practical and added another creative dimension.

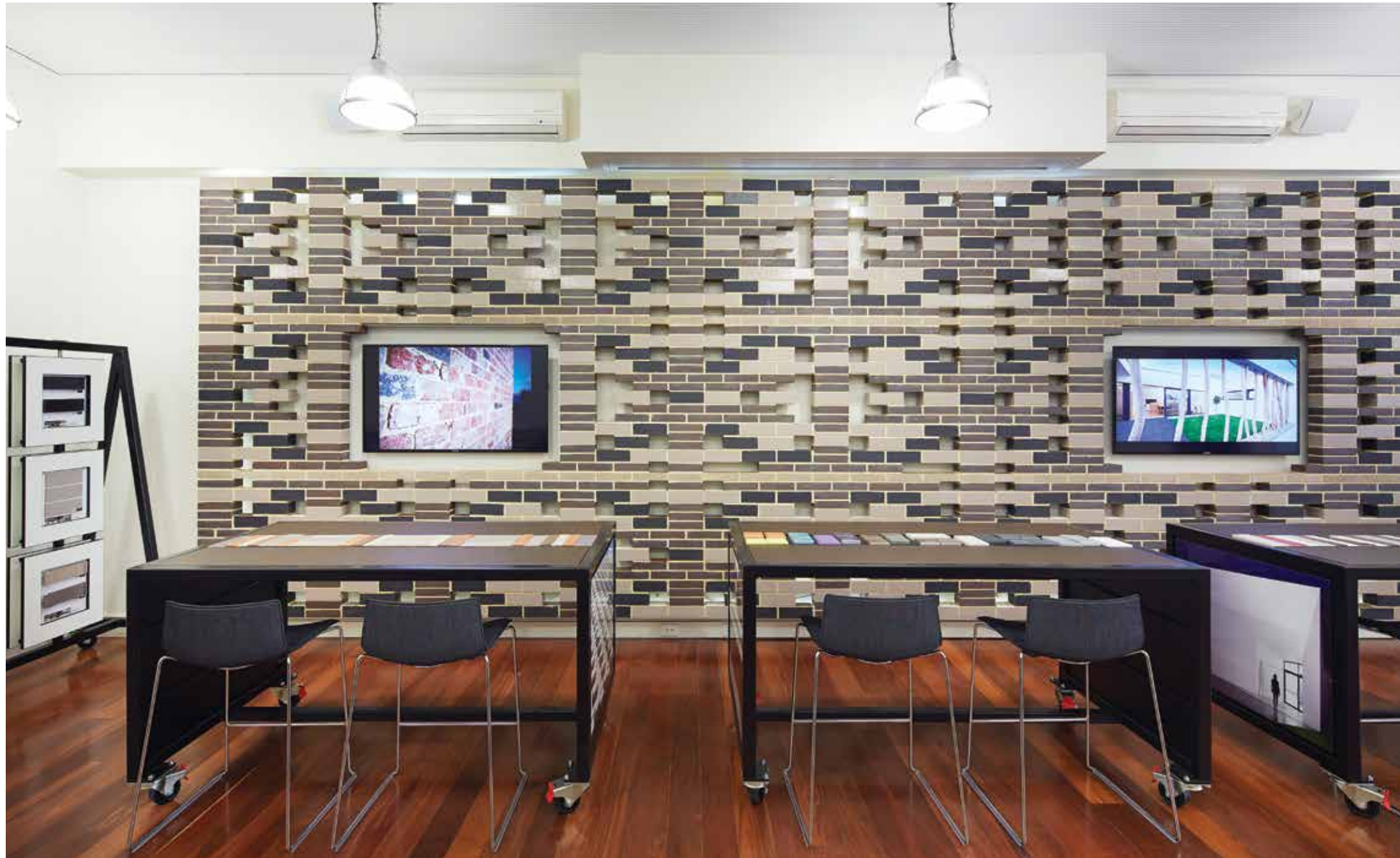
The design makes further use of brickwork's modularity to create hit-and-miss (or perforated) walling which allows light penetration and ventilation while maintaining privacy. A section of hit-and-miss features in the southern wall separating the two residential pods. It allows light into the maintenance-access courtyard and the adjacent glass link.

Another hit-and-miss wall flanks the staff courtyard. "We wanted to give it some privacy but not kill it from the ventilation and light point-of-view and to maintain a soft link with the building's geometry," Khaled explains.

After an expenditure of \$11.6 million, the Woy Woy Rehabilitation Unit opened in mid-2013 to the acclaim of local residents who love their town despite its odd name. Spike Milligan once mused that if the name comes from the local indigenous words meaning 'deep water' then "which Woy means 'deep' and which Woy means 'water'? It makes you think."

You can't help but believe that the zany and "random" wall patterns of the new Rehabilitation Unit would have appealed to an unconventional thinker like Spike Milligan.





## New Design Presence in Perth's Premier Street

**An elegant new designer outlet has landed in King Street, in Perth's fashionable west end.**

It's chic and sophisticated, and housed in a gorgeous heritage building. Louis Vuitton, Chanel and Tiffany are just down the street.

The Brickworks Building Products Design Studio at 67 King Street is a showroom for Australia's most stylish and innovative building materials from such iconic brands as Austral Bricks, Bristle Roofing and Auswest Timber.

The Design Studio, the first of its kind in the West, joins those in Sydney's CBD (50 Carrington Street), Melbourne's design precinct (490 Swan Street, Richmond), and Adelaide (392 South Road, Richmond). The network will be completed shortly with openings in Brisbane and Hobart.

The Perth Design Studio was designed by leading architects Fratelle Group, reflecting Brickworks' commitment to supporting and engaging with designers, builders and home owners.

Upon entering through the heritage portal, the space opens into an uncluttered arrangement of low-key displays, with the focus being on informal gathering spaces to allow customers and Studio consultants to discuss projects and requirements, and select from the vast array of products marketed under the Brickworks Building Products banner.

A design highlight is a captivating multi-coloured, perforated brick wall, inset with two large screens connected to iPads to allow viewing of plans and other imagery. Keen eyes will admire nearby bespoke desks made from beautiful marri supplied by Auswest Timber.

The space will also host events and presentations that will attract building industry professionals. As well as catering facilities, including a full-size kitchen, the Perth Design Studio has a technical library and two boardrooms set up for teleconferencing.

The Design Studio is a very exciting development for Brickworks as it provides the Brickworks brand with a premium street profile in a high end location.

**The Brickworks Building Products Perth Design Studio is open Monday to Saturday from 10 'til 6, and Sunday by appointment.**



# Life on the Edge



Reach and Drift are the first stage of Waters Edge, a \$570 million, three hectare development which when all stages are complete will blend residential living with retail and commercial developments.





A major new apartment complex in Brisbane takes the economy and efficiency of precast to a new level



**Project:** Waters Edge  
**Location:** Duncan Street, West End QLD  
**Function:** High-quality residential apartments  
**Owner:** Pradella Developments  
**Architect:** ML Design  
**Structural engineer:** R Bliem & Associates  
**Builder:** Pradella Constructions  
**Featured products:** Austral Precast concrete wall panels, off-form Class 2 finish in grey, manufacture and installation  
**Photography:** courtesy Pradella Developments

The Brisbane suburb of West End sits on an oxbow of the meandering Brisbane River, directly linked by three bridges to the CBD (including the aptly-named Go Between Bridge which actually celebrates the '80s indie rock band).

Like inner suburbs everywhere, West End is undergoing substantial change, attracting young professionals, academics and "empty nesters", drawn by its proximity, motorway access and lively street life.

Reach and Drift are the first stage of Pradella Developments' Waters Edge, a \$570 million, three hectare development along Riverside Drive. When all stages are complete, the site will blend residential living with retail and commercial developments.



The two towers of Waters Edge accommodate 234 high-quality apartments in a prime Brisbane riverside location. Austral Precast manufactured and installed 377 wall panels for the project. The company assisted in redesigning the precast curved balustrades allowing cost reductions.

Together the 11-storey towers (including two basement levels) offer 234 high-quality apartments, with accommodation from one to three bedrooms. Many of the apartments have panoramic northerly views across the river to Auchenflower.

Common to all apartments is a high standard of finish, with the developers giving particular attention to the design and quality of the kitchens, bathrooms, balconies, lighting and flooring.

On-site facilities include an air-conditioned gym, 25-metre infinity-edge lap pool, wading pool, multi-purpose theatre, recreation room, and a communal outdoor room dubbed The Summer House.

In all, Austral Precast manufactured and installed 377 panels for this first stage of the Waters Edge project, 207 panels covering 1900 square metres for Reach and a further 170 panels or 1840 square metres for Drift.

The double-height precast concrete panels forming the basement perimeter walls were especially innovative in their design and construction. Increased reinforcement allowed the builder to use shorter props that finished just below the soffit of the upper basement slab, thus removing the need for costly slab penetrations.

Efficiencies were also introduced by redesigning the curved precast balustrade elements to increase their length and minimise the number of radii, thereby reducing manufacturing, transport, lifting and installation costs.

The tightly-controlled conditions of the precast manufacturing process allows a high level of quality and efficiency in both materials and labour, along with the potential for economies of scale. Production delays due to weather becomes a thing of the past.

The completed panels are precisely engineered, consistent and have a high level of durability. On site, precast technologies allow rapid construction, reduced site congestion and reduced trades.

Austral Precast also offers a complete installation service, which Pradella Constructions chose to utilise for this project, completing the end-to-end service with one contract and total responsibility.

Reach and Drift, the first stage of Pradella Developments Waters Edge project, has won a string of HIA and MBA awards for its design, construction, innovation and housing technology.



# New Traditions

In Athens, contemporary living meets time-honoured materials and techniques.

**Project:** Kostala House  
**Location:** Athens, Greece  
**Function:** Family home  
**Architect/project manager:** ArTA | Architect  
Thanos Athanasopoulos  
**Structural engineers:**  
Michael Athanasopoulos &  
Alexandros Karageorgous  
**Photography:** H Louizidis

**The upmarket suburb of Ekali in the Greek capital is the unlikely location of a unique contemporary home that blends modern architecture with traditional materials and construction techniques.**

The most dramatic expression of the designer's philosophy is a double-curved, tiled roof that cascades over the north side, touching the ground at the north-eastern corner.

The project's architect, Thanos Athanasopoulos, describes home owners in Ekali as typically "wanting to project a traditional image while also wanting to have all the amenities and luxuries of contemporary life." The result, he believes, is often "fused and confused."

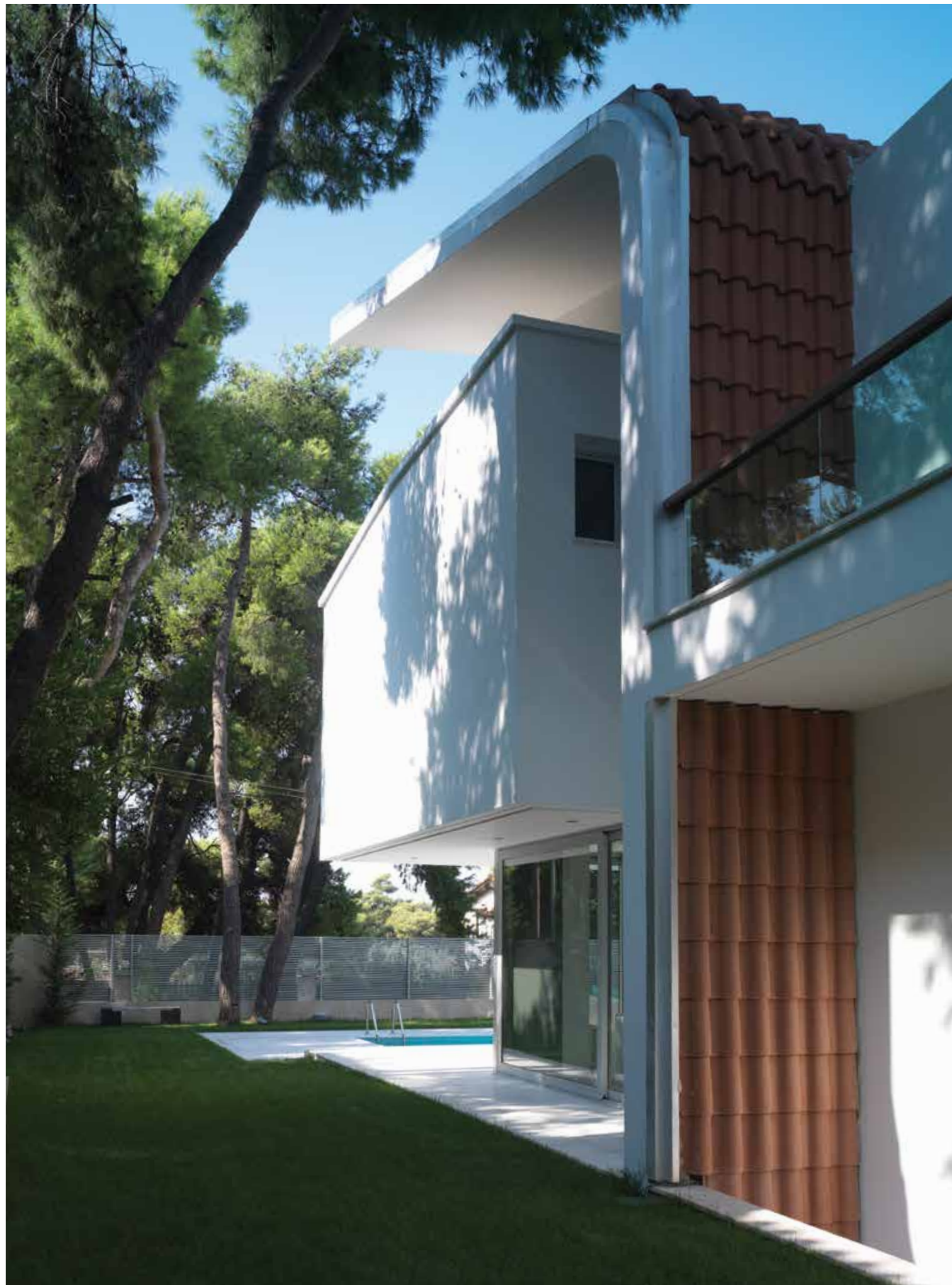
Athanasopoulos is a graduate of the National Technical University of Athens and completed his Masters at Harvard University's Graduate School of Design. He has operated as a sole practitioner since 2006, working on commissions ranging from private residences to leisure and retail developments.

His designs reflect southern European "white modernism" but don't think that Thanos only embraces the new. "I'm interested in using a traditional materials and techniques such as stucco rendering, roof tiles, stone cladding and travertine," he tells us on the phone from his Athens office. "This is the palette that you will see in old villages and we are trying to find innovative uses for them."

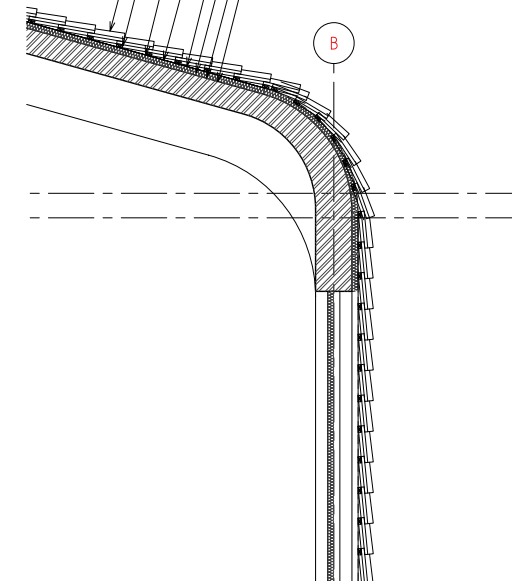
The use of terracotta roof tiles as a walling material is consistent with the architect's vision of combining modern design with traditional materials and crafts.





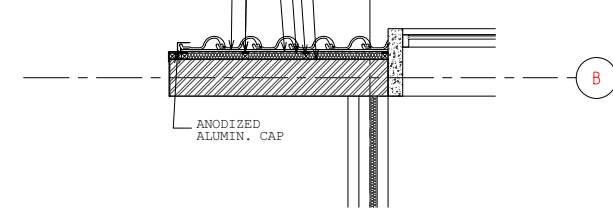


CERAMIC ROOF TILES, ROMAN PROFILE,  
MECHANICALLY ATTACHED, ANCHOR W/ EPOXY ADHESIVE  
WOODEN ROOF BATTONS  
MARITIME PLYWOOD SPACERS, 12/50 AT 60CM OC  
WATERPROOFING MEMBRANE  
2cm PLYWOOD SHEATHING  
XPS RIGID INSULATION 5cm  
WOODEN ROOF STUDS 50/50@60cm OC  
VAPOR BARRIER ON REINFORCED  
CONCRETE SLAB

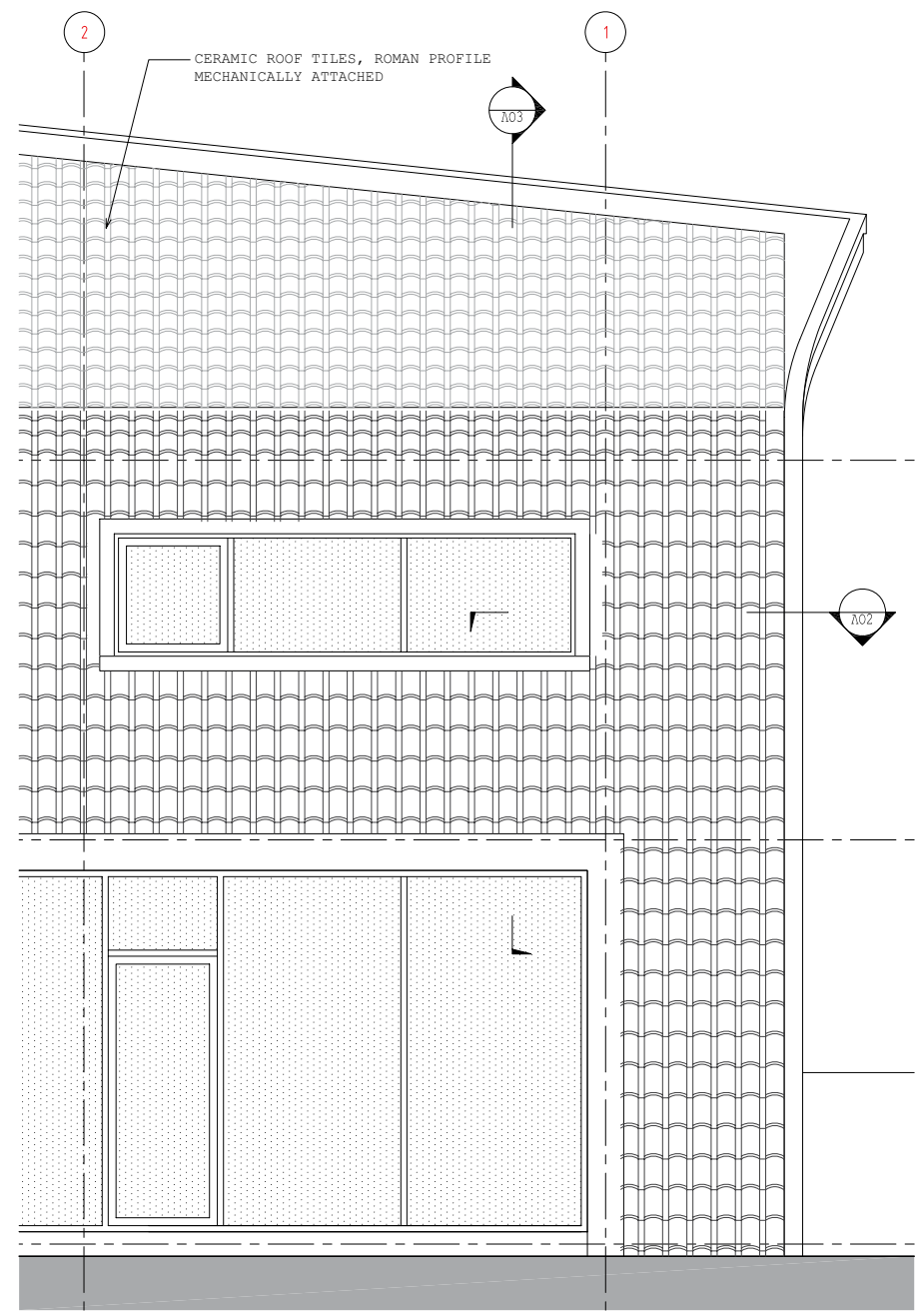


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WOODEN ROOF BATTONS  
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ΚΕΡΑΜΙΔΙΩΝ ΣΤΕΓΗΣ - ΤΟΙΧΟΥ





The Kostala house in Ekali, named after Tania Kostala, the co-owner and driving force behind its realisation, is a case in point. A continuous, operable glass envelope surrounds the south and east sides of the ground floor, overlooking a pool to the south and allowing light to penetrate deep into the open plan living area, while simultaneously allowing uninterrupted views into the garden and the towering pine trees dotting the boundary.

The double-height void above the living area acts as a thermal chimney. The kitchen, dining room and formal entrance are also on this level. The upper floor has four bedrooms – three with ensuite facilities – and a study.

The overall effect of the interior is one of warmth, light and transparency and a richness of detail without ostentation.

The use of ceramic tiles as both roofing and wall cladding is consistent with Athanasopoulos's vision of combining traditional materials and construction techniques with contemporary design. "We are modern architects and we are trying to do modern designs," he says simply. "But we are very open to using all sorts of traditional techniques and materials but in a way that brings something fresh and modern to the outcome."

To say that roof tiles are a traditional Greek building material is somewhat of an understatement. Archaeological excavations in Greece have found fired terracotta roof tiles dating back to the third millennium BC. The spread of roof tiles throughout Greece and across the Mediterranean region was simultaneous with the rise of monumental architecture beginning in about 600 BC that came to define ancient Greece and ultimately global architecture for millennia to come.



A glass envelope encases the southern and western sides, overlooking a pool while the roof tiles cascade over the edge and down the wall at the north-eastern corner. Each vertical tile is nail fixed at one point and the nose adhered to the underlying tile with epoxy resin. The interior is bright, white and open.

The Kostala house's structure is conventional, for Greece at least, although very different from Australian residential construction practice. The floor slabs, roof slab and reinforced concrete frame beams and columns were formed and cast on site. (Timber is expensive and scarce.) The infill walling of insulated cavity brickwork is plastered internally and stucco rendered to the exterior, all traditional materials and techniques.

The architect acted as project manager, supervising trades and scheduling materials. Not appointing a head contractor is standard practice in Greece, even on a substantial residential project such as this.

As in Australia, issues of sustainability and energy efficiency are uppermost in the minds of architects and home owners. The high thermal mass of the Kostala house ticks a key passive design box as does insulation (walls and roof), orientation (light penetration) and ventilation (thermal chimney).

The complex curve of the reinforced concrete roof slab created some design and construction challenges. However the actual tiling was surprisingly straightforward.

The selected tiles have a Roman profile similar to Bristle Roofing's Curvado from the La Escandella premium terracotta tile collection.

The underlying roof structure is a sandwich sitting on 50x50mm timber studs fixed at 600mm centres to the reinforced concrete roof slab. To this is fixed 50mm rigid insulation, 20mm plywood sheathing, a waterproof membrane, 12x50mm marine ply spacers, again at 600mm centres, and finally timber roof battens.

Each ceramic roof tile is nail fixed at a single point and the tile nose adhered to the underlying tile with an epoxy resin.

Technicalities aside, it is the dramatic expression of this roof/wall cladding that is the design's signature. It forms a rainscreen that contributes to the house's environmental performance while giving the visual impression of a seamless protective blanket.

"The roof reaches its top part at the focus of the house, the living room," Thanos explains. "Then on the side it folds, the height becomes lower so that you have a better relationship with the neighbouring building. So it has a sort of contextual and environment aspect for the shape."

Creative external lighting also highlights the tiled walling, with the narrow and medium beams of ground-level uplighters subtly tracing the curves and framing the house.

When the owners first approached Thanos Athanasopoulos, they were looking for a traditional design approach. "I had to talk them in to making it look more modern," he recalls. "They wanted to use a roof with roof tiles and I said OK we'll do that but with a spin."

The result is a home that has been described as "a true showcase of modern living", combining the convenience and liveability of modern design with the time-proven values of traditional materials and techniques.



# No need to go grey!



## PermaTech adds the finishing touch to precast concrete

Concrete is a versatile material. The ancient Romans probably thought concrete technology had reached the peak of its development with the massive roof of the Pantheon which, almost two thousand years later, is still the world's largest unreinforced dome.

The Pantheon's giant dome was covered in bronze but today it isn't necessary to go to this extravagance to give concrete a handsome, durable finish.

Where a finish is specified, precast concrete is often painted on site. Austral Precast, Australia's largest supplier, now offers a suite of finishing alternatives that allow the architect to exploit the full design potential of this extraordinarily popular building material.

Austral Precast call it their PermaTech Finishing Systems. The variations that are available are infinite but the finishes fit into three categories.

For more information on Austral Precast's PermaTech finishing system visit [australprecast.com.au](http://australprecast.com.au)

### PermaGraf:

**Photo-realistic images that bring a wall to life**

Concrete goes graphic! More than just patterning, Austral's PermaGraf process etches a photo-realistic image into the surface of a precast concrete panel. This is not an applied finish, the image is the result of a chemical reaction within the concrete as it cures in the form. The surface can be patterned, smooth or even exposed. The strength and integrity of the concrete is fully maintained.

### PermaForm:

**Building in articulation and texture**

Formliners are a cost-effective means of building dimension and articulation into the precast panel surface. A large range of liners are available off the shelf and custom liners can be made. The liner is placed in the form before introducing the concrete.

The finish can be anything from a deep relief to a subtle texture such as timber grain. The resulting surface can be left natural or a finish can be applied.

### PermaTint:

**Longlife colouring systems**

This factory-applied system is a long-lasting alternative to the on-site painting of precast panels. Unlike paint systems, the PermaTint system penetrates the substrate producing a deep, long-lasting colour finish. The finish will not peel and is highly resistant to UV, mould, mildew and weather. It resists cracking and fading, is non-hazardous and has low VOCs. That's why Austral Precast can confidently guarantee a PermaTint finish for an industry-leading 25 years!



# Designing by degrees

The face brickwork continues in the house. Note the use of a course of slim Roman bricks after each four courses of standard bricks. The horizontal mortar joints are raked while the vertical (perpends) are finished flush, further emphasising the horizontality.

A sustainable, contemporary family home rises out of a ridge not far from Brisbane's centre

**Project:** Pullenvale House

**Location:** Pullenvale QLD

**Function:** Family home

**Architect:** Arkhefield

**Structural engineer:** Bligh Tanner

**Builder:** MCD Construction

**Bricklayer:** Gabao (Keith Cockburn)

**Featured products:** Daniel Robertson premium clay bricks in Hawthorn Black and London Blend, standard height (76mm) and Roman (50mm high)

**Photography:** Angus Martin

**South-east Queensland's sub-tropical climate with its marked diurnal (day into night) temperature movements is ideal for a passive design which harnesses thermal changes to stabilise temperatures in a home to within a comfortable range.**

This family home in Pullenvale, 15 kilometres from the Brisbane CBD, exploits the four pillars of passive design – orientation, ventilation, insulation and thermal mass – to create an environment that does not rely on artificial heating and cooling.

Despite its relative closeness to Brisbane, Pullenvale is a semi-rural area with large houses on even larger blocks. The owners of this property lived next to their new site for over ten years. They were looking for a home that could separately accommodate their two young-adult sons and frequent overseas visitors, while bringing the family together for meals.

Their new home sits in a natural clearing straddling the top of a ridge. The one-hectare greenfield site has a stunning northerly aspect. "It's perfect," enthuses architect Karen Ognibene of Arkhefield. "You couldn't ask for better. There are beautiful views over the surrounding hills and from certain points in Pullenvale you can see right down to the border ranges between Queensland and New South Wales."

Despite having previously lived in a classic timber Queensland, the owners, originally from South Africa, didn't want their new house to "touch the ground lightly," Karen explains. "They wanted it to feel like it had grown out of the ground, quite the opposite to a Queensland!" Aside from the accommodation requirements, this was top of their brief.

That's not surprising, as South Africa has a strong heritage of building in brick, stone and concrete. However the selection of brick was not a foregone conclusion. "We tossed around various materials but in the end came back to brick because of its richness," says Karen. "Stone can also be rich but structurally it has to be fixed to concrete block or the like and all of a sudden it starts to lose its integrity."

The spine of the house is a massive brick wall travelling 40 metres along the southern elevation and rising to an average of about four metres. Behind the wall is a circulation corridor allowing access to the linear room programming. Joinery is also built into the brickwork, including wine storage and part of the kitchen.

Two more cavity brick walls bookend the house, running at right angles to the southern wall. A fireplace is built into each of these flanking walls, indoor to the east servicing the living area, outdoor to the west warming a terrace. These two walls and the southerly spine wall enclose the entertaining space.

Unusually (for south-east Queensland at least) these walls are constructed in cavity brickwork and finished as face brickwork, internally and externally.

We asked Karen why she and her clients chose internal face brickwork. "Brick is such a rich material," she considers. "The balance of the interior has quite a crisp, clean modernist aesthetic with white walls, a lot of glass facing north and nice polished floors. Brick was just a way of bringing the landscape into the house and it gave an enhanced texture without adding another material to the palette."

Two brick types were chosen from the Daniel Robertson range of premium quality clay bricks: Hawthorn Black and London Blend. These were expertly blended to create a distinct visual aspect for this project. "They look rich, quite rustic, like they have been dug out of the ground," Karen contends.

This was taken a step further by laying a course of Roman (50mm high) bricks for every four courses of standard height (76mm) bricks. The resultant banding is a subtle disturbance from the expected regular pattern of brickwork.

Not satisfied with that, the decision was made to lightly rake (recess) the horizontal mortar joints and flush finish the vertical joints. "So when you look down the wall you read the horizontal nature of the brickwork rather than the individual brick form."





There's a lot of steel in the structure, partly due to the lightweight upper level which cantilevers off the underlying structure. It carries the master bedroom, ensuite and one of the two studies in the house.

Steel posts support the superstructure including the considerable roof, a hipped design with a two degree pitch that precluded trusses. These supports rise through the brickwork cavity, performing double duty by bracing the tall walls. This structural design also allows the highlight windows lining the upper level of the southern wall to be recessed about a metre from the outer edge of the brickwork.

Not surprisingly, sustainability was to the fore. The site has 45,000 litres of rainwater storage for topping up the swimming pool and as a firefighting reserve. Extensive use is made of ceiling fans while air-conditioning is limited to bedrooms and studies. There is no central heating, just the two fireplaces and reverse cycle heating. Deep eaves shade the interior from the high summer sun, while allowing the lower winter sun to penetrate and warm the internal thermal mass of brickwork and concrete floor slab.

An unexpected bonus is that all Daniel Robertson bricks are now certified as Carbon Neutral under the Australian Government's National Carbon Offset Standard. This is largely due to their manufacturing process which uses waste sawdust as the primary firing material instead of natural gas. Incremental improvements were also made to other aspects of the manufacturing and associated processes, and the relatively small residual CO2 emissions are offset by purchasing carbon credits that assist in projects such as tree planting under the Forests Alive program (forestsalive.com).

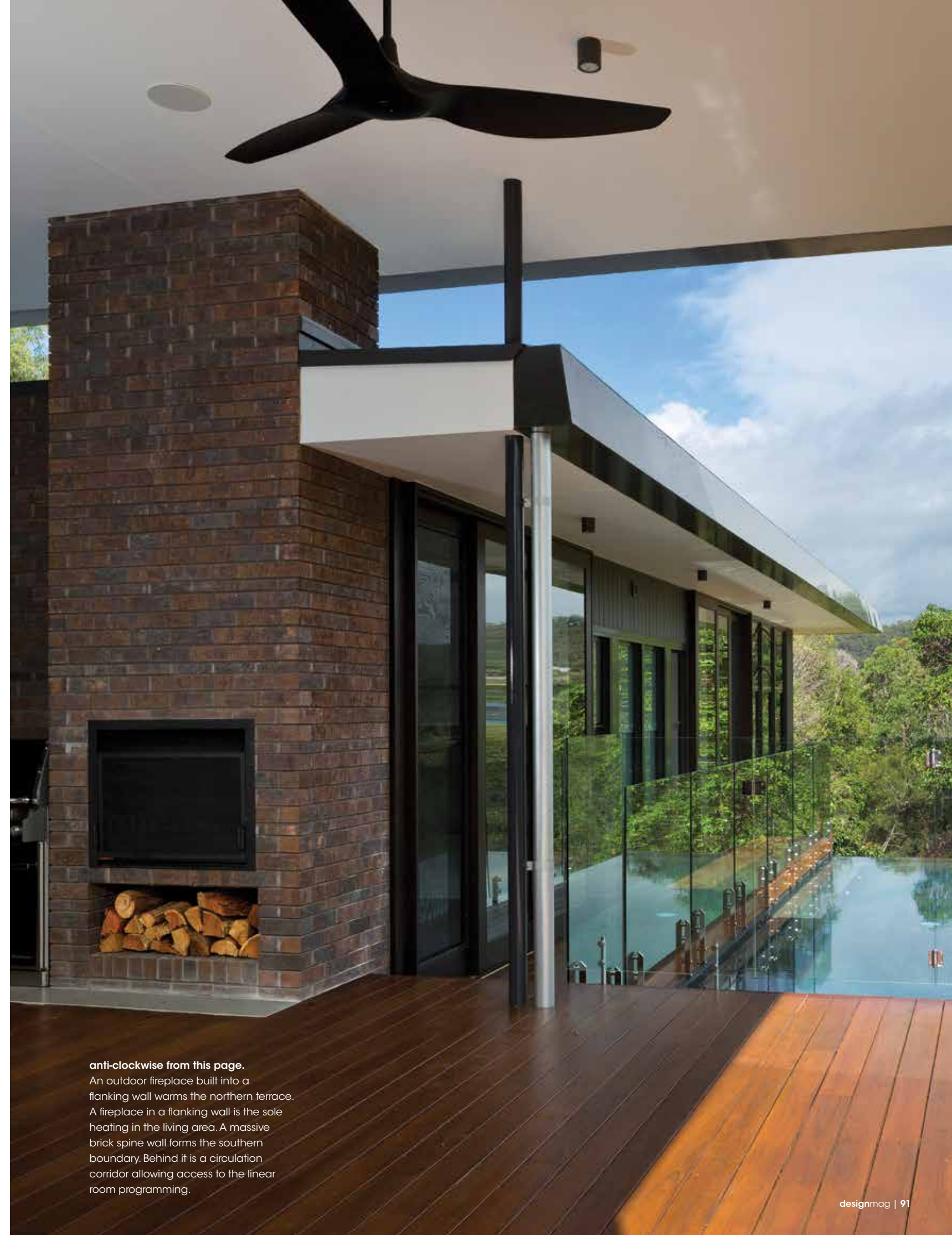
Even the carbon expended in transporting the bricks to the customer – anywhere in the world! – is fully offset. All Daniel Robertson bricks are certified Carbon Neutral from raw material excavation through to delivery of the finished products to the work site.

This is on top of the life-cycle advantages of clay bricks such as their longevity, contribution to thermal mass, and the fact that they don't require expensive, energy-hungry finishes such as paint or render to maintain their good looks and durability. The Pullenvale home achieved six stars on the BERS Pro housing energy rating scheme.

Building in a bushfire-prone area required a number of concessions. The site was already largely clear, minimising the tree removal required to create a buffer zone. The degree of threat varies from highest near the garage to lowest on the long northern elevation. Fire-resistant timber species such as kwila and black butt were specified for window and door frames, decks and to clad the lightweight upper level.

Brickwork is naturally immune to fire but the horizontal mortar joints were required to be raked to minimise the formation of ledges that could catch embers. Alternatively, the joints could have been finished as ironed (half-round) or a weather-struck, which slopes upwards and inwards from the edge of the lower brick.

Bushfire resistant. High thermal mass. Rich colours and textures. Long life. Low maintenance. And now certified Carbon Neutral. Building with Daniel Robertson bricks is the perfect answer for a sustainable, attractive, liveable home ... wherever you are in Australia.



anti-clockwise from this page. An outdoor fireplace built into a flanking wall warms the northern terrace. A fireplace in a flanking wall is the sole heating in the living area. A massive brick spine wall forms the southern boundary. Behind it is a circulation corridor allowing access to the linear room programming.



# TOP DECK

The speed and convenience of precast with the structural integrity of a slab. That's Austral Deck, the permanent formwork system from Austral Precast.



**Lighter. Faster. Safer. Flexible. Economical.**

**Those are the five key advantages claimed by Austral Precast for its Austral Deck flooring system. But first, what is the Austral Deck system and how does it work?**

Conventional suspended concrete floor slabs are cast in situ on a formwork base, sometimes timber, more often a metal 'tray', supported at frequent intervals by a forest of props. The formwork is then fitted with reinforcement mesh, and concrete poured and screeded to the finished height.

It sounds simple and basic ... and it is. It's also very slow, and time is money, no more so than on a large commercial or multi-residential project.

The Austral Deck system combines the speed of precast elements with the considerable structural qualities of a monolithic floor slab.

Here's how it works. The Austral Deck elements, let's call them planks, are precast in lengths up to 12 metres and a standard width of 2.5 metres. Thicknesses vary from 60mm to 75mm and 90mm, to suit the required loading specification. Each unit is custom made, with dimensions to specification.

The plank is reinforced and also has multiple rows of triangular truss reinforcement (steel lattice girders) following the length of the plank. These are embedded into the precast plank and project through the upper surface.

Cast-in items such as ferrules, conduits, and other service fittings and penetrations can be incorporated during manufacture. The system also allows for void formers to be placed and secured on top of the planks to reduce the concrete required for the in situ pour, typically by 30 percent.

After curing, the Austral Deck planks are then transported to site and craned into position, instantly creating a strong, safe working surface that will easily carry the load of trades and their materials. Work on routing floor services can begin immediately.

A layer of reinforcing mesh is then positioned and tied, and a layer of concrete poured and screeded to the finished height. The result is a strong, composite floor slab with the structural benefits of a conventional monolithic slab.





**Project:** Vibe Apartments  
**Location:** 35 Wellington Street, East Perth WA  
**Function:** Apartment building  
**Developer:** Vibe on Wellington  
**Architect:** Campion Design Group (design), Aztec Architects (administration)  
**Structural engineer:** Peritas Group  
**Builder:** Ren Construction

We spoke to a leading Perth builder about the use of Austral Deck on an eight-storey apartment building as it approached the end of its structural phase. Vibe Apartments is located in Wellington Street, East Perth close to the restaurant and cafe life of this newly-regenerated inner suburb.

Once completed in early 2015, Vibe will have sixty apartments, mostly one- and two-bedroom, including five two-storey penthouses, as well a gym, pool, two levels of parking (one below grade), and even a rooftop garden, outdoor theatre and viewing deck.

Rodney Naef of Ren Construction is an old hand when it comes to building in precast, both walling and flooring, and his enthusiasm for the Austral Deck system is undimmed.

"It's quick," he says, "very quick." Rod describes as "time-consuming" the preparation required for a conventional in situ monolithic slab. "Basically, we'd be up there for three weeks trying to deck it out."

How does this compare with the Austral Deck? "With the Austral system we'd be backpropping for a day, maybe a day-and-a-half, and the next day you've got a whole level covered!" Rod estimates that the Austral Deck system halves the number of props required. According to Austral Precast, an average of ten Austral deck planks covering an area of 150 square metres can be installed per hour.

Rod adds that "You've got a nice, clean, safe working deck straight away for everybody to start working on."

So how quick is quick in the real world? "On this job we have floorplates of about 900 square metres each and we are doing a floor level basically every eleven working days. So it goes in fast."

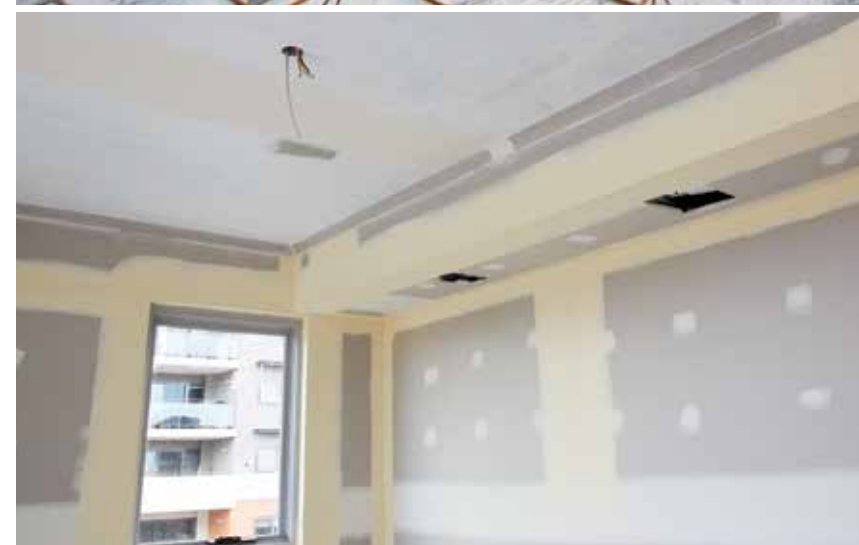
Rod was caught by surprise when we asked about any downsides with the Austral Deck system. "Do you know what, I can't tell you any, to be honest!" He says it's a little more costly on a material per square metre basis than a conventional in situ slab but this is quickly recouped in time and speed. "So I can't really give a negative on the system."

As well as supplying 533 Austral Deck planks, Austral Precast also manufactured 736 precast wall panels for this project, 75 upstands and 28 precast stairs. "The stairs are craned in off the truck, lowered straight in," to the fire-rated stairwells made from precast panels, of course, "and there's your access immediately," he says with enthusiasm.

As we talked to Rod, the final level of the Vibe Apartments project was being poured and the structural phase was all but complete.

About six kilometres downstream on the Swan River is the University of Western Australia. The award-winning University Hall project created apartment-style accommodation for over 500 undergraduate and post-graduate students in three buildings over three, five and seven levels.

Again this project made use of the efficiencies of both precast walling and the Austral Deck precast flooring system. The project was designed by HASSELL and constructed by Probuild.



"Speed of construction was a primary consideration because of the scale of the project and its short time frame," Simon Marrion, Probuild's design manager told The Builders Choice magazine. "Probuild's response was to use precast concrete walls and floor planks for the structural system. These can be manufactured off-site and erected quickly. This also defines the external materials, of white concrete and block work, which are self-finished for ease of maintenance."

Russell Perkins, Probuild's construction manager, echoed these words and the experience of Rodney Naef. "The use of precast concrete walls, precast floors and pre-made, unitised bathroom pods certainly facilitated the actual construction of the University Hall buildings and ensured students could occupy them in semester one."

Austral Precast supplied 611 Austral Deck panels for this project as well as 143 upstands.

UWA's University Hall project was awarded the Harold Krantz Award for Residential Architecture - Multiple Housing in recognition of the "sensitive and considered" way HASSELL catered for the varied needs of the student residents.

Austral Deck is a versatile system that offers a wealth of design and construction possibilities such as cantilevering, cast-in balcony and edge formers, and safety rail fitting points.

Its versatility doesn't stop at flooring. Austral Deck can also be used to construct roofs and lids for tunnels, shafts, culverts and tanks. Add to that decks and platforms, including vehicle and pedestrian bridges, curved flyovers, platforms and jetties.

However it's as a flooring system that Austral Deck is unparalleled. Probuild's Russell Perkins said of his experience at the University Hall project "The precast and pre-made elements certainly made a difference." Or as Rod Naef said with his usual enthusiasm after that final pour at Vibe Apartments "It's a great system, eh!"

Props are positioned to support the Austral Deck panels which can span up to 12 metres. The standard width is 2.5 metres. The number of props required is about half that for a conventional in situ monolithic floor slab.

Each Austral Deck panel is lowered into position to create continuous permanent formwork. The panels are relatively light and custom made to specification. Panel thicknesses are 60mm, 75mm and 90mm.

The panels easily support the weight of trades and materials, enabling services, conduits and ducting to be installed. The formwork is topped with concrete to form a monolithic slab. Void formers can be used to reduce the concrete volume.

All Austral Deck panels are finished to Off-form Class 2, ready for finishing. Ferrules, conduits, service fixings and penetrations can be cast in during manufacture.

(Location photography by Gary Peters)



**Project:** University Hall  
**Location:** Thomas Street, Crawley WA  
**Function:** Student accommodation  
**Owner:** University of Western Australia  
**Architect:** HASSELL  
**Structural engineer:** Robert Bird Group  
**Builder:** Probuild  
**Photography:** Douglas Mark Black



# Are These Australia's Most Stylish Roof Tiles?



Bristile Roofing's newly-released La Escandella Ceramica Planum Blackstone terracotta rooffiles, combine a contemporary flat profile with a traditional slate-like texture and the timeless elegance of a deep charcoal grey colour.

The designers gave thoughtful consideration to the texture, creating various patterns that can be simply blended to ensure a random distribution across the roof.

These premium quality roof tiles are flat and light with superior frost resistance, while still achieving a strength rating almost equal to that of stone. In addition, their unique weatherproofing design allows Planum Blackstone tiles to be laid on roofs with a pitch as low as 15 degrees.



Planum Blackstone tiles are manufactured in Spain by La Escandella Ceramica, one of the world's most respected roof tile manufacturers. Bristile Roofing is proud to be the exclusive Australian distributor for La Escandella Ceramica.

Like all La Escandella Ceramica terracotta roof tiles, Planum Blackstone comes with Bristile Roofing's exclusive Colour for Life Warranty, which guarantees that the tile colour will not alter during its long life.

Planum Blackstone roof tiles are as at home in traditional designs as they are in contemporary applications where the light texture is a subtle addition to their simple geometry.

See the full range of La Escandella Ceramica terracotta roof tiles at [laescandella.com.au](http://laescandella.com.au)



## Viva La Revolución! Viva La Paloma!

There was a time not so long ago that the words "fashion" and "brick" wouldn't have been used in the same sentence.

Over the past decade brick design has undergone a revolutionary change, beginning with metallic finishes such as Austral Bricks Elements series and the high gloss surfaces of the popular Burlesque and Dynasty ranges.

The revolution continues with Austral Bricks new La Paloma series which takes brick surface finishes in a stylish new direction.

There are four colours in the La Paloma series. Bookending the collection are a white, Miro, and Gaudi, a black. But these are whites and blacks that haven't been seen before in clay bricks, with an evenness and colour depth that is unparalleled.



Straddling the spectrum between are Picasso, a fiery and flamboyant red, and Dali, a soft, neutral dove grey.

The La Paloma revolution also extends to their format. As well as the conventional Australian Standard brick size of 230 x 110 x 76mm, the four colours will be available in two panoramic formats: a slimline 230 x 110 x 50mm high and a wide-format 290 x 110 x 76mm.

Of course some things never change and like all Austral Bricks products, La Paloma bricks are all but maintenance free, long lasting, and add valuable thermal mass, an essential component of an energy-efficient design.

La Paloma bricks are now available through Austral Bricks' nationwide Design Centre network and selected resellers. Long live the revolution!





# STAR QUALITY

Stage Two of the redevelopment of Melbourne's former Channel Nine site is ready for its close-up.

**Project:** Studio Nine

**Location:** Richmond VIC

**Function:** Medium to high-density residential

**Developer:** Lend Lease

**Architect:** Hayball (masterplanning of overall development and design of second and subsequent stages)

**Structural engineer:**

Robert Bird Group (apartment buildings), Structural Works (townhouses)

**Builder:** Lend Lease (apartment buildings), Glenvill Homes (townhouses)

**Bricklayers:** Byrne Construction Systems (apartment buildings), Glenvill Homes (townhouses)

**Featured products:** Austral Bricks Elements semi-glazed clay bricks in Mercury and Zinc

Bowral Bricks dry-pressed clay bricks in Charolais Cream

**Photography:** Michael Laurie, Mike Scully

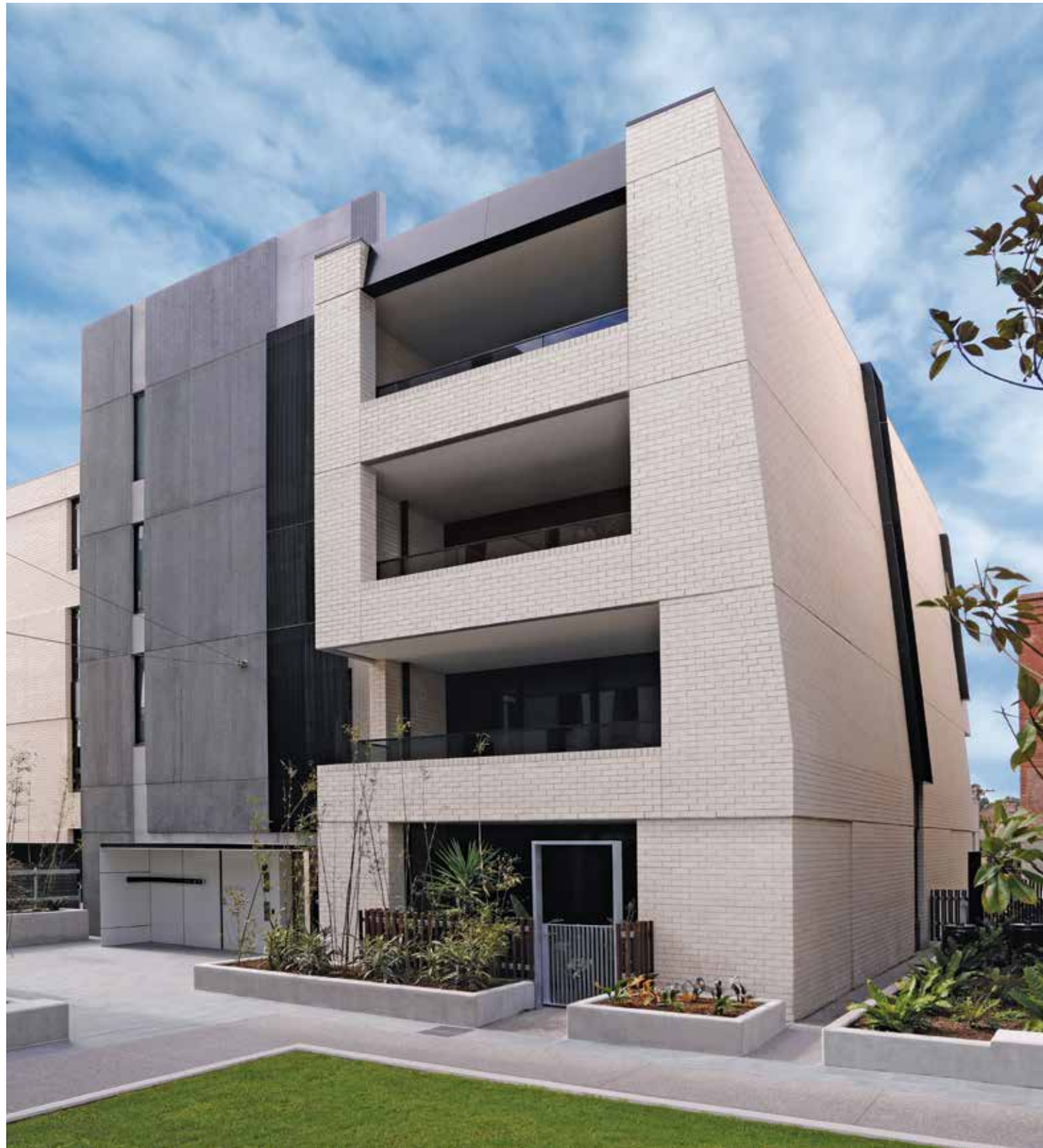
**In the 1960s, "22 Bendigo Street, Richmond" was probably the best known address in Australia. It was the Melbourne home of the Channel Nine television network and more particularly of In Melbourne Tonight, a phenomenally successful variety show fronted by the legendary Graham Kennedy.**

IMT, as it was popularly known across Australia, had a following today's television programmers can only dream of. The nightly program had a 16-piece studio orchestra, as well as a 14-member ballet and a chorus!

In the four decades from the Melbourne Olympics in 1956, Channel Nine dominated Australian television, due in no small part to the constant stream of programming emanating from a ramshackle collection of industrial buildings surrounding a former piano factory in inner-city Richmond.

Following masterplanning by Hayball, the old industrial buildings were cleared from the three hectare site, with the exception of the Wertheim Piano Factory, a red brick building designed by the prolific Melbourne-born architect Nahum Barnet and opened by Prime Minister Alfred Deakin in 1909.





**previous opening.** The Studio Nine redevelopment comprises a series of apartment buildings flanked by townhouses to the existing streets.

**this opening.** The corner apartment building is clad in white brickwork and features an intriguing canted wall. The townhouses use contrasting panels of Elements semi-glazed bricks.



Its iconic status, elaborate brickwork detailing and solid construction made this handsome building an ideal candidate for repurposing into 34 luxury apartments. This was Stage One of the project, completed in mid-2013. Kerstin Thompson Architecture was responsible for this redesign.

The rest of the site is in the process of being populated with a mixture of apartment buildings and townhouses, providing accommodation for a diversity of households and allowing what has been an enclosed industrial site for over a century to embrace the neighbourhood and be embraced in return. Hayball is responsible for the architecture of the subsequent stages.

Stage Two of the project was recently completed with the opening of five medium-to-high-density apartment buildings surrounding Wertheim Square and bounded on two street frontages by 27 townhouses. Another 10 townhouses will be built in the same bricks in Stage Three and a further 20 are anticipated in a future stage.

"The townhouses provide a reference and a scale to the cottages in Stawell Street and Wertheim Street, and to Richmond generally," says Hayball director Rob Stent. Thomas Gilbert leads the project team comprising Luc Baldi, Helen Cheng, Bianca Hung and Ann Lau.

"We sought to imbue the project with the fine scale of small cottages in the local streetscape," Stent adds. This drove the team to seek a common palette of materials to give the townhouses "a sense of composure and a sense of order within a diverse architectural form."

In effect, the townhouses' brickwork, although the dominant facade material, becomes a backdrop, allowing the facade articulation,

diversity of heights, and balcony and roof forms to come to the fore, highlighted by secondary details such as doors, letterboxes, pelmets and climbing plants.

"We played with the form rather than making it overtly colourful," says Stent who contends that this gives "a cinematic quality with the scenes revealing themselves as you walk along the street."

The bricks chosen for the townhouses are from Austral Bricks Elements series. These are very non-traditional units, finished in a low-sheen, metallic glaze, which put paid to the notion that bricks only come in red, cream or brown.

Hayball's design team worked closely with Austral staff at The Brick Studio, conveniently located in Swan Street just around the corner from the Studio Nine site. Two colours were chosen: Zinc, the darker main colour, accented by the lighter Mercury.

The Elements Zinc brickwork sits neatly with the zinc roofing and upper-level features. The colour also draws on the local heritage of quarrying basalt (bluestone) for use as a building material. There was a small pit, long-forgotten, on the Studio Nine site.

Townhouse accommodation varies from one to three bedrooms over two or three levels. All have one- or two-car garages accessible from rear lanes and allowing direct entry into the house. All townhouses are sold on a freehold basis.

A very different brick was chosen to clad the four-storey apartment building at 10 Jago Street, on the corner of Kennedy Avenue. Stent calls this a "highlight building. We wanted to distinguish it because of its prominent engagement with the existing public street."

They chose Bowral Bricks Charolais Cream, a premium quality dry-pressed clay brick, to give the building its distinct character. "We chose Charolais Cream as a means to highlight the masonry qualities that you can find in brickwork," says Stent pointing to the use of inset balconies and other incisions. He believes the resulting tension between void and mass gives the building "a muscular quality."

Whereas the townhouses use conventional residential construction – brick veneer to timber framing – this apartment building employs concrete columns and floors with some precast walling. The brickwork is largely carried on shelf angles although the canted brickwork on the southern face is supported on a steel frame.

For Hayball, this project began in 2009 with due diligence and masterplanning for Lend Lease and has been a long haul culminating in the completion of Stage Two in mid-2014. But there's no intermission for the design team who are busily working on Stage Three of the project which isn't expected to be complete for several years.

In a century and a half, Richmond has gone from being an aspirational suburb (Dame Nellie Melba was born near the Studio Nine site) to a working class industrial area with larger-than-life characters such as the notorious criminal "Squizzy" Taylor and Aussie Rules legend Jack Dyer aka "Captain Blood".

The cycle has now turned again. While this inner suburb is well and truly down the path to gentrification, the Studio Nine project is still celebrating Richmond's past while embracing a bold new future.





# Form Meets Function

Bristile Roofing hangs up its shingle in Port Macquarie

**Project:** Bristile Roofing Port Macquarie Design Centre  
**Location:** 1/28 Fernhill Road, Port Macquarie NSW  
**Developer/ Builder:** Lanfranchi Housing  
**Tiling contractor:** TRS  
**Featured product:** La Escandella Ceramica Planum terracotta roof tiles in Caviar  
**Photography:** Hydro Photography

## Functional design and ease of construction usually trump aesthetics when it comes to small-scale industrial buildings.

The new Bristile Roofing Design Centre in Port Macquarie on the New South Wales Mid North Coast demonstrates that a little imagination and design flair can lift an otherwise conventional development out of the ordinary.

The key point-of-difference is the use of black terracotta roof tiles as an external wall cladding. At first glance this three-unit building is clad in black painted steel sheeting, an unusual colour for an industrial building, but well on trend.

And then the unexpected, as the eye picks up the black roof tiles used as wall cladding, complementing the black tiled awning roofs.

Upon further inspection, a further subtle difference is revealed, with the wall tiles being laid in a stack bond so the vertical and horizontal lines are continuous. This is in

contrast to the awning roof tiles that are laid in a conventional crossbond pattern, similar to the stretcher bond used in brickwork.

Horizontal sunshades protecting both levels are finished in vibrant orange, a slightly more intense version of the orange of the Bristile Roofing logo.

The walls and awning roofs of all three units are tiled with Planum terracotta roof tiles, a shingle-like tile from La Escandella Ceramica in Spain, and distributed exclusively in Australia by Bristile Roofing. As well as its flat profile, again on trend, the tile colour, Caviar, is distinguished by a semi-gloss finish.

This combination of colour, profile and glaze is only available in the La Escandella Ceramica Planum Caviar roof tile.

The wall tiling construction was surprisingly straightforward. Conventional battens are fixed horizontally to the underlying structure and each tile positioned by a single screw and two batten lugs. The corner and window flashings were custom made in black steel.

All La Escandella Ceramica terracotta roof tiles carry Bristile Roofing's exclusive Colour for Life warranty, guaranteeing against fading or colour change for the life of the product. As the painted finish of the black steel inevitably fades, the La Escandella Planum Caviar terracotta roof tiles are guaranteed to retain their pristine finish.

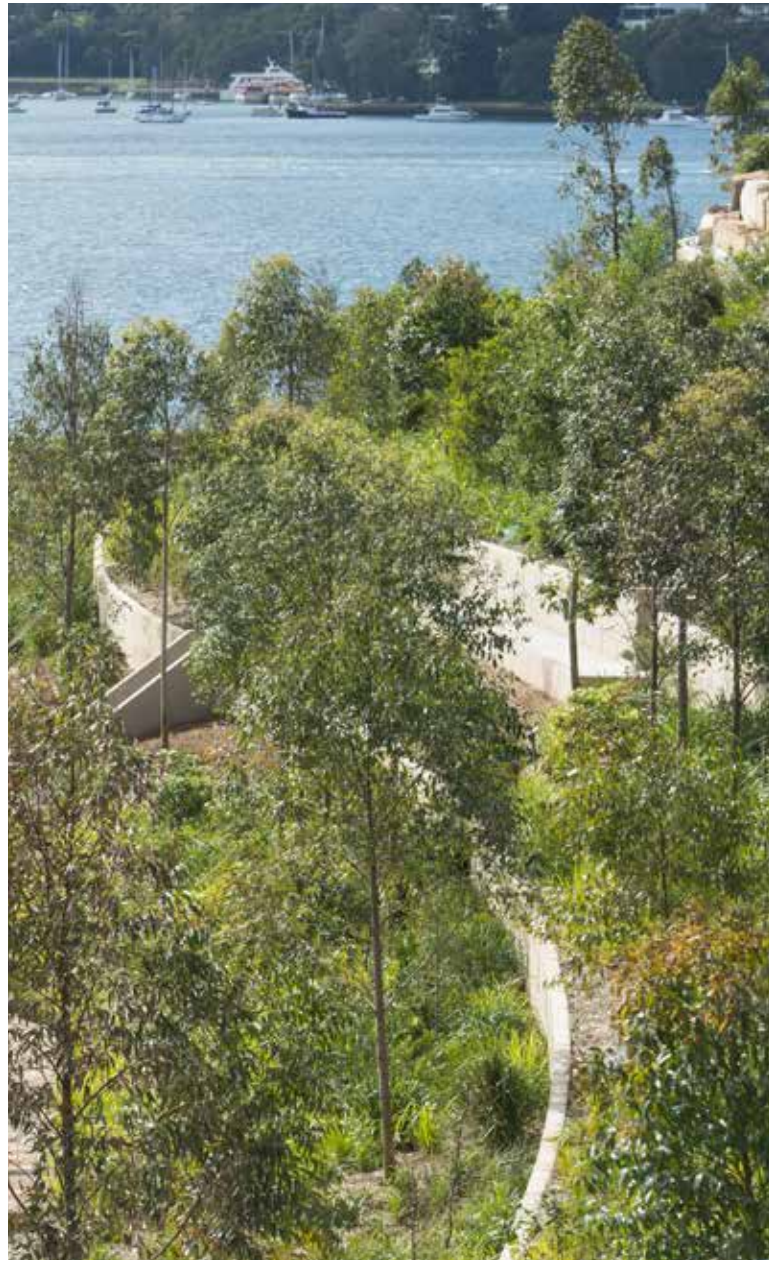
The Bristile Roofing Port Macquarie Design Centre was one of five finalists in the 2014 Roof Tile Excellence Awards, part of the Think Brick Awards. The Award winner, the uniquely-named A House with Tiles on It, also used vertical tiles.

Finally, page 80 of this issue of **designmag** features the Kostala House in Athens which makes spectacular use of vertical tiling. Be sure to check out the design detail drawings.

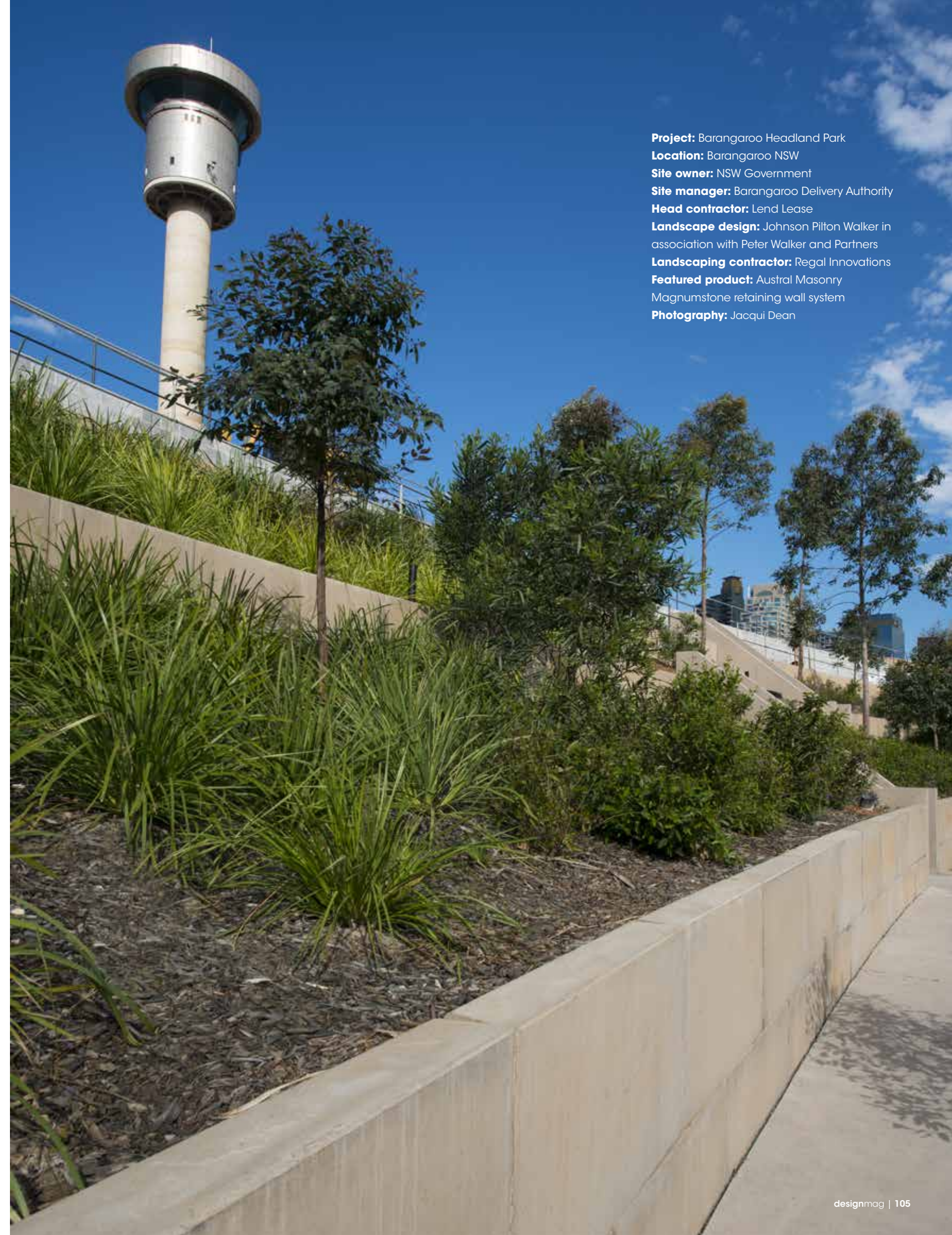
Three distinctive buildings each part-clad with roof tiles. Do we sense a trend?



# Big, Bold & Beautiful



One of Sydney's oldest industrial sites is being returned to nature and to the people.



**Project:** Barangaroo Headland Park  
**Location:** Barangaroo NSW  
**Site owner:** NSW Government  
**Site manager:** Barangaroo Delivery Authority  
**Head contractor:** Lend Lease  
**Landscape design:** Johnson Pilton Walker in association with Peter Walker and Partners  
**Landscaping contractor:** Regal Innovations  
**Featured product:** Austral Masonry  
Magnumstone retaining wall system  
**Photography:** Jacqui Dean





**It's said to be Sydney's last CBD waterfront development. A derelict 22 hectare site in the former dockside suburb of Barangaroo is being transformed into a \$6 billion blend of residential, commercial and recreational precincts.**

Barangaroo Headland Park, a six hectare headland fronting Sydney Cove, will be open for public and community use, with unique tidal rock pools, lookouts, and walking and cycling tracks.

Extensive retaining walls are being constructed at Barangaroo using Austral Masonry's unique Magnumstone system, to help bring form and order to the landscape while maintaining an environment of 75,000 plants native to Sydney.

(Austral Masonry's sister company Austral Precast is also supplying product into the Barangaroo project. Their precast panels are being used in the construction of the first two residential towers.)

The Magnumstone retaining wall system is appropriately named, as the standard unit weighs in at a mighty 621 kilograms! It's the basic component of what engineers call a passive retaining wall. This means the wall is engineered to use its mass to resist the lateral forces of the soil it retains.

Sydney-based commercial landscaping contractor, Regal Innovations, is carrying out the installation of almost two kilometres of Magnumstone retaining walls at Barangaroo Headland Park.

The retaining walls curve gently across the landscape, some carrying elevated walkways and others providing a bed for the wide range of flora being planted.

The process of constructing such a large retaining wall is simple and surprisingly speedy. The project has been broken down into six runs of walling, each about 300 metres long. A blinding slab – a level pad of unreinforced concrete – is formed to support the retaining wall.

The base blocks are then lifted and lowered into position using an excavator. The higher courses require a slightly different block, one with a double lug in its base that keys into the unit below. Austral Masonry calls this the SecureLug system which allow interlocking between units without mortar.

Each level is tied back to the retained soil using a geogrid soil-reinforcement material. Drainage also needs to be installed at the base of the wall.

At each stage the Magnumstone blocks, which are hollow, can be filled with aggregate to increase their weight and thus their retaining capacity. When the wall reaches its design height, it can be finished with top units (full or half height) or step/cap units.

The Barangaroo Magnumstone retaining walls are two units high and comprise a base unit and a standard-height top unit. Each course is offset from the underlying course by half, identical to a stretcher bond in brickwork.

The rear of the wall is drained by slotted pipe in a layer of free-draining aggregate wrapped in a geotextile material. All blocks are also filled with aggregate. A layer of geogrid material is inserted between courses. Finally, the area behind the walling is back filled with selected subsoil material and capped with top soil.

Constructing a Magnumstone retaining wall is a straightforward process, according to Daniel De Chellis, Regal Innovations foreman who led the onsite construction team. Although the blocks are heavy, his team members found them easy to lift and manoeuvre using an excavator boom. Two chains are attached to lifting points cast into the units which are then elevated about half a metre off the ground and transported into position.

The Magnumstone system offers a range of advantages over competitive methods. Each unit is manufactured using nearly half the amount of concrete required in a traditional solid concrete retaining wall blocks.

Magnumstone blocks have low absorption and excellent freeze/thaw characteristics, ensuring enhanced durability in challenging environments.

As shown in the Barangaroo project, standard units can be laid in gentle curves. Special units are available for tighter curves.

But the greatest advantages are on site. Blocks can be unloaded two at a time. There is no mortar to mix, no formwork, no stream of concrete trucks coming onto the site.

And it's quick. Daniel De Chellis reports they are laying up to 130 blocks per day. That's up to 80 metres of 1.2 metre high walling per day. Not bad for just two men and an excavator.

Barangaroo Headland Park is scheduled for completion in 2015. While the flora settles into the new landscape, the overall site will evolve over the following decade into what promises to be a dynamic and attractive harbourside precinct.

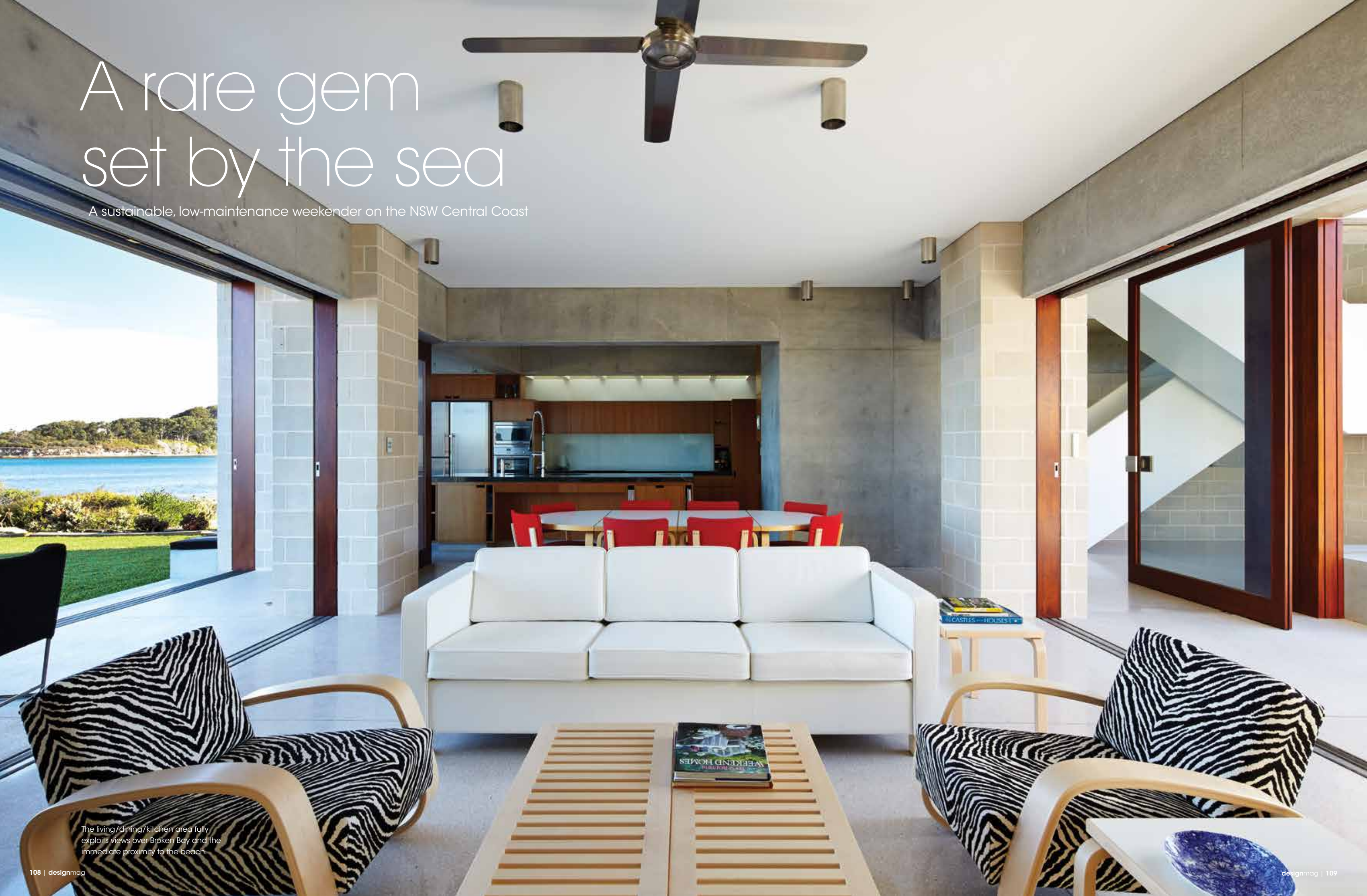
**previous opening.** The new Magnumstone retaining walls curve sinuously through Barangaroo Headland Park, a six-hectare site fronting Sydney Harbour. The walls carry elevated walkways and beds that are being planted with a wide range of local flora.

**this opening.** The Magnumstone blocks each weigh 621 kilograms but are quickly manoeuvred into position using an excavator boom. Lifting lugs are built into each block. The Magnumstone block keys into the unit below and doesn't require mortaring.



# A rare gem set by the sea

A sustainable, low-maintenance weekender on the NSW Central Coast



The living/dining/kitchen area fully exploits views over Broken Bay and the immediate proximity to the beach.





clockwise from bottom left. Concrete masonry is a durable, low-maintenance material in this saline and abrasive environment. The house is set over two levels with living below and sleeping quarters above. The courtyard does double duty, allowing northern light while screening the afternoon wind.



**Project:** The Block House  
**Location:** Pearl Beach NSW  
**Function:** Holiday residence  
**Architect:** Porebski Architects  
**Structural engineer:** James Taylor & Associates  
**Builder:** Kendale Homes  
**Featured products:** Austral Masonry Architec  
 Smooth Face concrete masonry in Alabaster  
**Photography:** Conor Quinn

**Technically, Pearl Beach is a suburb of Gosford. In reality it is a secluded coastal community with a population of under 500 and just one road linking it to the cosmopolitan trappings of nearby Umina Beach.**

With views over Broken Bay, ready access to wetlands and bush walks, rainforest and the Hawkesbury, it's little wonder that this idyllic spot attracts a large weekend population.

The owners of this stunning and imaginative house retained their previous holiday home, a duplex shared with another family, built just a few doors away in 1992. The new and the old homes share three characteristics: location (both have absolute beach frontage), designer (Porebski Architects), and walling material (concrete masonry).

"The client liked the concrete block from his previous house so much that there wasn't a question of not using it again," says Alex Porebski. His father, Andre Porebski (who designed the original house) and Caomhán Murphy were the project architects, with Murphy also handling site works. Andre's daughter, Victoria D'Alisa, is the practice's interior designer.

Weatherboards are a popular cladding material in this location, however the designers took their cues from the caves and sandstone cliffs in the surrounding area "which seem to have lasted a lot longer than the trees!" Alex quips.

The saline environment and windborne sand were another factor in choosing to once again specify concrete masonry which is highly resistant to abrasion and attack by moist, salt-laden air. And face blockwork, both internally and externally, doesn't require expensive finishes such as paint to maintain its durability. As well as being high in embodied energy, painted finishes must be reapplied frequently in this demanding environment.

The Alabaster coloured masonry units selected from Austral Masonry's Architec range have a Smooth Face finish. Three other colours are available in the series and four additional finishes: Split Face, Honed Face,

Shot Blast Face and Polished Face. These blocks are available in many of the same sizes as their industrial grey concrete masonry cousins, but with a much finer surface finish and contemporary colours.

The house is set over two principle living levels, with a large courtyard and living spaces on the ground floor, and three bedrooms and a study in an L-shaped arrangement above, following the south-western side boundary.

The site and its projected use presented a number of challenges to the designers and the numerous consultants required for this project.

The beachfront location placed parts of the house seaward of the predicted Sea Erosion Line. This required specialist engineering with deep piers bored, effectively allowing the house to be wholly supported on the piles in the event of severe erosion.

For the architects, the major challenge was to protect the residents against the daily onshore winds that make an opening to the south-eastern beachfront all but unusable every afternoon. Their solution was a central courtyard protected by operable screens and windows against the prevailing winds.

The courtyard does double duty, also allowing northern light to penetrate along the north-eastern boundary. "It really

becomes a sunken suntrap," says Alex Porebski. "Most houses in this situation orientate all their outdoor space to the beachfront but come afternoon there's no sun and often you can't sit out there because of the wind."

The whole house can be opened up to sun access. "If you are sitting in the courtyard you can connect with the bushland behind and also with beach quite easily. The courtyard was really one of the driving principles of the design."

The building is designed for low maintenance and a long life. Stainless steel roofing and rainwater goods are essential in this corrosive environment. The flooring is terrazzo. The use of paint internally is minimised. The structural elements are concrete masonry and off-form concrete.

The sliding doors and screens use stainless steel sailing hardware and the nautical theme is continued with teak window frames and screens. In perhaps the only concession to regular maintenance, the owners decided to oil the teak rather than leaving it to weather.

The house also has excellent sustainability credentials. Thermal mass, a key but often overlooked cornerstone of passive design, requires heavyweight materials such as masonry. Concrete slabs also assist thermal mass but the greatest benefit is derived from perimeter mass.

"Besides the passive environmental side of things with massed walls to the west and south, there are quite heavily insulated roof areas, good cross ventilation, good solar access into the house, and the operable timber shutters and double glazing with low-e glass," says Alex Porebski. These work in unison with thermally-massed materials to smooth the high diurnal (day to night) temperature variations.

Alex praises the work of the builder who "did an exceptionally fine job." He singles out the detailing of the off-form concrete staircase leading from the street and the precise laying and alignment of the concrete masonry.

The challenging location and the expected affects of climate change required the collaboration of a number of specialists, including structural, geotechnical, hydraulic and coastal engineers, as well as an ESD (environmentally sustainability design) consultant.

Throughout this, Porebski's clients maintained an active and considered involvement which has resulted in an outcome that Alex Porebski describes as "a thoughtful sequence of meticulously crafted pieces forming a house that celebrates the act of living on the beach."



# Shift into neutral



Australia's first Carbon Neutral Certified bricks are now available

**In an Australian first, all bricks from Daniel Robertson and Austral Bricks (Tasmania) are now certified as Carbon Neutral under the Australian Government's National Carbon Offset Standard.**

Achieving this environmental "holy grail" largely results from the use of sawdust to fire the kilns at the Longford TAS plant where these bricks are manufactured. Most, if not all, other brick kilns in Australia, are fired using natural gas.

Sawdust, a byproduct of the local timber industry, is a biomass, that is, a biological material derived from living, or recently-living organisms.

Brickworks Building Products' national energy and sustainability manager Steven Mouzakis said the use of low emissions biomass as opposed to fossil fuels is largely responsible for a dramatic reduction in the plant's carbon dioxide emissions.

"Emissions from the biomass are just 215 tonnes per year, about the same as 12 average Australian households," he said. "In contrast, a conventional natural gas kiln of the same capacity could emit approximately 8000 tonnes of greenhouse gases."

To meet the National Carbon Offset Standard for a Carbon Neutral Certified product requires more than the reduction of emissions from the direct manufacturing process. The emissions resulting from ancillary operations such as raw material extraction, transport, water usage, packaging, waste and business operations, including administration are also taken into account. Even the lubricants used in production machinery are part of the equation.

All remaining greenhouse gas emissions are offset by purchasing carbon credits that assist in local projects such as tree planting under the Forests Alive program ([forestsalive.com](http://forestsalive.com)).

Even the carbon expended in transporting the bricks to the customer – anywhere in the world! – is fully offset. This means that all Daniel Robertson and Austral Bricks (Tasmania) bricks are certified Carbon Neutral from raw material excavation through to delivery of the finished products to the work site.

Clay bricks are often accused of being environmentally compromised due to the relatively high natural gas consumption required in kiln firing. This simplistic approach overlooks their long life, role as thermal mass in an energy-efficient design, reusability, and the fact that bricks do not require resource-hungry finishes such as paint or render to maintain their good looks and durability.

However, architects, builders and consumers seeking a carbon neutral solution can now specify bricks from Daniel Robertson and Austral Bricks (Tasmania) knowing that their manufacture results in zero net emissions of greenhouse gases into our atmosphere.

As well as producing bricks for the Tasmania market and the high-end Daniel Robertson bricks, valued across Australia for their unique and varied colours and textures, the Longford plant exports its products, mainly to New Zealand and Japan.

This latest innovation is part of Brickworks Building Products ongoing program to reduce the environmental impact of its extensive operations and conserving our precious natural resources.

"We are totally committed to conserving our natural resources and becoming a low carbon emitter, while not compromising on the high quality of our products," Stephen Mouzakis concludes.





# BACK ON TRACK

A modest rail training facility embodies contemporary architectural values



Even a prosaic building such as a rail training facility takes on a special quality with imaginative design and material selection. The massive reveal spans 76 brick widths or more than 18 metres.





Stack bonding of brickwork demands more of the bricklayer's skills but produces a spectacular result. The high-gloss Burlesque bricks also decorate the rear wall of the lunchroom.

**Project:** Kwinana Network & Infrastructure Training Facility  
**Location:** Kwinana WA  
**Function:** Railway perway, signalling and communications training  
**Owner:** Public Transport Authority of Western Australia  
**Architect:** Coniglio Ainsworth Architects  
**Structural engineer:** Arup  
**Builder:** Pyramid Constructions  
**Bricklayer:** C&W Bricklaying  
**Featured products:** Austral Bricks Burlesque fully-glazed clay bricks in Chilling Black  
**Photography:** Ron Tan, Jonathon Trask

**In the glory days of rail travel, train stations were often grand architectural conceits. And not just high-profile destinations such as London's St Pancras, Manhattan's Grand Central or Melbourne's Flinders Street: even humble suburban and regional railway stations, and associated infrastructure such as signal boxes, were among the most splendid of public buildings.**

Western Australia's industrial port city of Kwinana, 38 kilometres south of Perth, is the location for a striking new rail training facility built for the WA Public Transport Authority. Austral Bricks Burlesque high-gloss bricks played a pivotal role in bringing an architectural presence to what could easily have been a modest utilitarian building.

"Part of our pitch behind this building was that architecture and design have an important role to play in projecting an image and marketing an organisation to prospective employees and the community," says architect Matthew Coniglio.

Although only a young partnership, Coniglio Ainsworth Architects has already made an impact, winning the small project category of the AIA 2012 National Awards for the Perth Cultural Centre amenities. Their work is in the public, residential and commercial arena and includes railway infrastructure.

The Kwinana Training Facility is located on a Public Transport Authority site, shared with a rail freight yard and adjacent to some of the heavy industry that is Kwinana's lifeblood. It's a dusty, windswept site but the new landscaping planted around the training facility will eventually soften that impact.

The southern half of the broad, single-level building is clad in pre-finished fibre-cement panels. This is the business end of the building, housing classrooms, an office and a technical room with links to a dedicated 300-metre section of rail track simulating a typical metro line with a level crossing and signalling.

The primary architectural impact is reserved for the northern half of the facility, its public face, which is clad in Austral Bricks Burlesque high-gloss bricks in the appropriately-named Chilling Black.

"The black is a very confident colour that stands its ground well," Coniglio comments, adding "It was about making a strong statement without overdoing it."

Amplifying the effect is the brickwork pattern chosen: stack bonding. Conventional brickwork is laid in a stretcher bond, that is, with alternate courses offset by a half brick. "The stack bond pattern reinforces the rectilinear form of that part of the building," Coniglio considers.

The skillion roof structure is carried on steel columns. The brickwork is tied to these columns at broad intervals and to the inner leaf (or skin) of brickwork, which is also constructed in Burlesque Chilling Black.

Possibly the most dramatic element of this facade is the massive reveal spanning 76 brick widths or over 18 metres. And most surprising of all, the six courses of brickwork appear to have no visible means of support. That's quite an achievement!

The engineered solution is a structural steel fascia with angle steels top and bottom that acts like a large parallel flange channel, restraining the brickwork top and bottom and effectively clamping it into place.

The resulting broad reveal allows excellent northern light penetration into the building, assisted by clerestory windows that run above the west-east central corridor separating the two halves of the building. The northern section houses a lunchroom, toilets and breakout areas. The deep northern reveal can also accommodate external breakouts.

The northern elevation overlooks landscaping with low maintenance plantings that will help tame and beautify the dusty industrial environment.

The Kwinana Training Facility was completed in March 2013 and has reportedly been well received and is already achieving its design intentions.

As well as the Kwinana project, Coniglio Ainsworth Architects are the lead consultant for the Public Transport Authority on the new \$25 million Butler railway station at the end of Perth's northern suburbs line and are delivering a range of station upgrade projects for the Authority on their heritage lines.

Today's train stations and railway infrastructure may not be the elaborate edifices of old. However the Kwinana training facility demonstrates once again that however humble the building, good design is an investment now and for the future.



# Character Building

A new generation revisits and reinterprets the internal display of concrete and clay masonry.

**Kevin McCloud has had enough. "Most of the Grand Designs homes I visit are too big and too bright," he told a reporter from London's Telegraph newspaper while they sat in a restaurant, the interior of which the article described as a "postmodern fish tank."**

McCloud continued: "I don't enjoy living in a white box flooded with light. I like shadows, small spaces, old furniture."

Unlike McCloud, not all of us want to live in a 15th century Somerset farmhouse. However, there is a move towards reintroducing "character" into house interiors. Is this possible while retaining a clean modernist aesthetic?

Brisbane architects Richards & Spence thought so. The interior of their award-winning Clayfield House (featured in designmag issue 2) is characterised by the masonry walls defining two boundaries and forming the circulation space. All four walls are constructed in polished concrete masonry which is nicely matched with the travertine tiled floors.

The walling is predominately full-height masonry units, but interspersed with bands of half-height units, the latter finished with an angled mortar joint to create shadowlines.

Internal masonry, whether concrete or clay, also has the potential to boost thermal efficiency by placing thermal mass on the inside where it has the greatest benefit.

Richards & Spence's Clayfield House won the Kevin Borland Masonry Award in the recent Think Brick Awards. The jury wrote that "the subtle, textural contrasts and modular interplay gives the blockwork a warm glow and creates an elegant backdrop to daily life."

A similar approach is shown in the Pearl Beach house by Porebski Architects, featured on page 80 of this issue of **designmag**, which uses smooth-face concrete masonry units.



Kevin Borland  
Masonry Award  
Winner

Clayfield House  
**Architects:** Richards & Spence  
**Featured product:** Austral Masonry Artique Classic  
Designer Masonry in Porcelain (full- and half-height)  
**Photography:** Alicia Taylor





**Pane House**  
**Location:** Hawthorn VIC  
**Architect:** Judd Lysenko Marshall Architects  
**Builder:** Canson Homes  
**Featured products:** Austral Bricks Access, Elements and Burlesque clay bricks, Bowral Bricks Charolais Cream and Black Angus dry-pressed clay bricks  
**Photography:** Emma Cross



**The Wall**  
**Location:** Craigburn Farm SA  
**Designer/builder:** Scott Salisbury Homes  
**Bricklayer:** BVDK Bricklaying  
**Featured product:** Austral Brick Colossus clay blocks in Aniseed  
**Photography:** Mark Zed



**Zanzibar**  
**Location:** Parrearra QLD  
**Designer:** MRA Design  
**Builder:** Costa Constructions  
**Featured product:** Austral Masonry Artique Designer Masonry in Pewter  
**Photography:** Ross Eason

Here the design approach is more allied to blurring the distinction between inside and out and creating a low maintenance holiday home in a challenging, corrosive environment. Unlike many building materials that require constant refinishing in a beachside locations, concrete masonry and clay bricks are self-finished and most are rated as resistant to salt attack.

The Wall was the appropriate name for Scott Salisbury's distinctive Adelaide home that features a two-storey central spine wall constructed in large-format clay blocks. The massive wall effectively cleaves the floor plan, punctuated here and there with large openings and popping up as a backdrop in every room including the upper-level bedrooms and ensuites.

The tan brick colour and light mortar colour are picked up in decor and furnishings and complementary interior finishes. Once again, the internal placement of this large mass has the potential to enhance the building's thermal performance.

The Aperture House by Cox Rayner Architects in collaboration with Twofold Studio is a celebration of internal face brickwork in all its forms. The winner of this year's Horbury Hunt Residential Award (part of the Think Bricks Awards), the design fully exploits the modular diversity inherent in brickwork, with hit-and-miss (perforated) walling, open perpend, and brick flooring in an extension that adds utility and character while linking the renovated inner-Brisbane worker's cottage to a revitalised back garden.

There's full coverage of this exciting project on page 24 of this issue of **designmag**, but the Think Brick Awards jury comments described it best as "A series of artful and finely crafted brick elements create spaces, edges and openings that are inherently adaptable and atmospheric."

A further approach is shown in the Pullenvale House by Arkhefield (also covered in more detail on page 88 of this issue of **designmag**) which features a long (40 metre) wall that defines the southern boundary and acts as an internal circulation corridor facilitating access to the linear room programming spread along the north.

Architect Karen Ognibene saw brickwork as "just a way of bringing the landscape into the house" while enhancing texture without adding to the material palette.

Finally, Judd Lysenko Marshall Architects took that modularity to the max in the Pane House, creating vibrant splashes of colour that run through the interior and exterior.

In all there are seven different face brick colours in the Pane House, ranging from a conventional, inexpensive extruded brick in a tan colour to pressed bricks from Bowral Bricks in black and off-white, three high gloss colours from Austral Bricks Burlesque collection, and an Austral Bricks Elements semi-glazed brick.

The takeaway from these examples is that there are no hard-and-fast rules when using clay bricks or concrete masonry for internal walling:

- It can be a small feature wall or a whole

house, or anywhere in between.

- Choose a single, solid colour. Or don't.
- Large format masonry units (clay or concrete) look great. So do standard brick sizes. As does mixing the two sizes, with alternating bands.
- Some designs (and designers) favour flush mortar joints. Another may rake back some or all joints to create shadow lines. (The Pullenvale House rakes the horizontal or bed joints but not the vertical or perpend joints to subtly accent the brickwork's horizontality.)
- Colour match the mortar to the unit? If you wish, or you can contrast. Again it's your call.

Whatever your choice, placing clay or concrete masonry on the inside has the potential to add to a building's thermal performance.

The design and detailing of internal masonry walling can be a little demanding but some would say less so than a true minimalist design. As Kevin McCloud has observed on many occasions, a high-spec minimalist interior demands precision detailing because there is nowhere to hide.

Defining what is character in a home is elusive to the point of being both impossible and irrelevant. What can be said is that character is not a discreetly placed cushion or vase. It's that elusive quality that makes a house a home.



# Three part harmony

With vision and skill, a classic clinker brick house is reborn for a new generation.



A massive glass wall on the rear of the existing house looks over the courtyard which links to the extension, hence Three Parts House. Note the stack bonded wall using perforated bricks laid on edge, a motif continued in the kitchen bench base.

**Project:** Three Parts House

**Location:** Hawthorn VIC

**Function:** Extension to family home

**Architect:** Architects EAT

**Structural engineer:** R Bliem & Associates

**Builder:** Sargant Construction

**Bricklayer:** Melbourne Brick & Block

**Featured products:** Austral Bricks Symmetry clay bricks in Terracotta

**Photography:** James Coombe, Earl Carter

**The clinker brick houses built for the prosperous, post-war middle class are much loved for their solidity and character-filled facades. Less endearing are their frequently dim interiors and labyrinthine corridors.**

This family home in a Melbourne middle-ring suburb was no exception. "The interior was a rabbit warren, there was no entry space, and the corridors were deep and dark with lots of doorways," recalls Albert Mo, director and co-founder (and the "A") of Architects EAT. (He freely admits that the quirky name has nothing to do with food, "except that we like to eat", but it did help secure restaurant commissions when they were starting out in 2001!)

It has been dubbed the Three Parts House because, well, it's in three parts. The rear half of the existing two-storey house was demolished and the interior reprogrammed to relieve the corridor and doorway congestion. It's called The Lantern, for reasons we will come to.

To the back is a new build, The Brickhouse, which accommodates living, dining, kitchen and laundry facilities.

Linking the two is The Courtyard, an open yet private area underpinned by a three car basement.

Three parts. Three very different design approaches. So how does it tie together?

"By splitting the design into three we knew that was how we needed to arrange the spaces," says project architect James Coombe. The design team, led by Albert Mo, also included Julie Sloane, Emma Gauder and James Taylor.

The looming presence of a five-storey apartment block, a recent addition along the eastern boundary, strongly influenced the design of The Courtyard and the placement of elements within it to reduce or eliminate overlooking.

Following demolition of the rear of the existing house, the remaining functions were largely

retained but the convoluted corridors reworked to reduce wasted space and allow an uninterrupted sightline from the entry through The Courtyard to The Brickhouse at the rear, prompting the owners to quip that the new layout has "straightened the spine of the house."

The brick walling at the entrance was also demolished and replaced with a glass and aluminium structure, the first step in bringing more natural light into the existing house. The bricks from this demolition and that of the rear section were reused to form new brick walling along the western elevation. "We made sure there were enough recycled bricks to reach the corner," says Albert Mo. "There's quite bit of history in those bricks, which came from the Auburn and Fritsch Holzer brickworks, both local"

Possibly the most startling change to the existing house, and the primary reason for it being dubbed The Lantern, are massive glass walls that separate it from the courtyard and also continue along part of the western elevation. No ordinary glass, these are U-section vertical panels imported from Germany that nest to form a pocketed double skin. They carry a variety of finishes from almost clear to subtly patterned and opaque. This exotic glass was also used in the new entrance. It is thought to be its first non-commercial application in Australia.

A three-car garage underpins The Courtyard, accessed by a staircase that doubles as a visual barrier to the neighbouring property. A tall ginkgo tree is strategically placed in The Courtyard for the same purpose.





clockwise from bottom left. The internal courtyard is private and shaded, with a staircase leading to the basement car park behind the perforated walling. The extension, dubbed The Brick House, is a blend of re-used clinker bricks and new brickwork, continuing the stack bonding theme. Light, both natural and artificial, penetrates the brick perforations. The precision of the laying of the edge brickwork is a tribute to the bricklayers' skill.

The western wall flanking the staircase is where the brickwork innovation begins. "We wanted to create a functional facade and use natural ventilation for the garage rather than mechanical," explains Albert Mo. "We were looking to use some sort of perforated brickwork." One day he spotted a cored brick laying on edge on a colleague's desk "and I thought why not go with that!"

The terracotta colour bricks were carefully chosen for their ten-core pattern, which allows ventilation while retaining privacy. "Because of the location it doesn't need glass behind it or another screen for weatherproofing," says Albert. "If the owner wants to ventilate the garage," James Coombe adds, "they open a large pivot door and air pulls up through the bricks and they open a door on the other side. It works perfectly."

We asked Albert Mo if the concept challenged their client? "As with any architecture project, you need a willing client to take that leap of faith with you. Fortunately they are those people. The only question they asked me was how do we deal with spider webs in the core holes!" A fair question but so far spiders and their webs have not been an issue.

An unexpected benefit of the core holes being horizontal is that they provide a convenient, hidden fixing point for a shade sail which according to James Coombes "works perfectly and is a little neater." A blade wall of perforated brickwork supports an island bench in the new kitchen.

Unusually, all the new brickwork in The Brickhouse has been laid in stack bond rather than the conventional stretcher bond. (Only the staircase wall is laid on edge.)

Stack bonding threw a challenge to the bricklayers as the horizontal and vertical mortar lines must be perfectly aligned. Even more challenging was the corner line in the perforated wall which required mitering that cut through the core holes! As the photograph shows, the resulting line is perfect.

"At the beginning we thought the brickies are not going to be happy but it turned out they loved it," says a relieved Albert Mo. "They were really happy to do this because it was something different and they really put in 100 percent," he commends.

An interesting detail occurs at the corner of the brickwork flanking the rear entrance. It is finished with an inverted black steel angle that Albert Mo calls their "Miesian corner" a homage to the details that typified the work of Mies van der Rohe.

The owners lived in the house for over six years and seriously considered demolishing the entire house and rebuilding before committing to this major extension program. This was especially brave in light of the recent construction of the neighbouring apartments which replaced a handsome older house on the large corner block.

The owners' determination and the vision of Architects EAT design team has come together to allow the retention of the building's traditional character and street appeal with a newly functional interior that brings this family home well and truly into the 21st century.





# A family affair

What happens when two brothers come together to design and build their parents a home?

**Project:** Concord House  
**Location:** Concord NSW  
**Function:** Family home  
**Architect:** Adam Mosses Architecture  
**Structural engineer:** Wehbe Consulting Engineers  
**Builder:** OSC Projects  
**Bricklayer:** Anything Bricks  
**Featured products:** Bowral Bricks Bowral Blue dry-pressed clay bricks  
Austral Bricks Clay Commons (various)  
**Photography:** Jacqui Dean

**For many of us, a home is all about family. For John and Fay Mosses, this was taken a step further when their architect son, Adam, designed their new home and his brother, Joseph, built it!**

John has a background in the building industry, having worked as a builder, survey draftsman and project manager (as well as a TAFE teacher and locksmith, but that's another story).

He insisted on brickwork but Adam was determined to deliver no ordinary brickwork and no ordinary home. And there was no ordinary purpose informing the design: John had a stroke five years ago and the new house needed a pool to aid his physical therapy and as few level changes as possible.

Adam completed an undergraduate degree in design and arts before doing a Masters in architecture. After six years with BVN, he now operates as a sole practitioner, mostly on residential projects, with a specialisation in 3D visualisation. He also works as an independent artist in mixed media and photography.

Concord in Sydney's inner west has been dubbed the 'parkland suburb'. Although it has many large homes, this site is a more modest 400 square metres. The two-level, four-bedroom house has a footprint of about 225 square metres.





Adam describes the architectural design as "Modernist with an industrial feel," thanks to its linear design and the use of 'engineering' materials such as steel, bricks and concrete. "As the elements were exposed rather than concealed, we kept a sense of truth to the materials chosen," he contends.

The interior of the lower level is comprehensively linked to the outdoors. The living area is flanked by a Japanese garden to the west and an east-facing garden terrace, both accessed by folding doors. An internal courtyard leads to the pool, while the back lawn and deck are directly accessed from the dining and rumpus rooms respectively.

The western elevation is a solid blade wall to block the low afternoon sun. Like most of the masonry walling on both levels of this house, it is constructed in cavity brickwork, aka double brick, a common construction form in Sydney. "Dad was adamant on using double brick construction with a 50mm cavity, mainly for thermal reasons, but also aesthetically as he grew up in brick homes," says Adam.

He describes the lower level as "like a huge platform that opens up but also encloses for privacy and warmth," contrasting this with many conventional houses that are largely disconnected from their external spaces. The requirement for broad access to the garden and courtyard areas prompted the use of a substantial steel frame which supports cavity brickwork above.

The use of an engineered structure to support upper-level brickwork is unusual but readily achievable, extending the thermal and aesthetic values of brickwork (not to mention its low maintenance requirements).

The first response of Adam's builder-brother, Joseph, to the proposed design was "How am I going to build this thing!" The brothers met many times to sort out issues before engaging trades. "Being able to see that end result with Adam's 3D visualisations images made it a lot easier for me to construct," says Joseph.

"Setting up the flashing details where the brickwork met the beams at the first floor slab level was a bit of a challenge," he admits, adding that in the end "we didn't have any issues, it was all planned out well."

The house is built on a concrete slab underpinned by a gravel layer, with a suspended slab at the first floor. The insulated cavity brickwork further enhances the thermal massing. The open design also allows excellent crossflow ventilation, an often overlooked component of passive design.

The rear of the house faces north, allowing the low winter sun to penetrate over the pool and through the internal courtyard into the living space. Hard flooring throughout the lower level substantially enhances thermal absorption into the slab.

The external face of the brickwork features Bowral Blue dry-pressed bricks, a popular choice from Bowral Bricks renowned range of premium architectural bricks. The inner leaf of the cavity walls and the single-skin internal walls were constructed with Austral Bricks purpose-made commons - mostly Standard 76mm and 119mm high, but with a scattering of Maxi and Through Wall commons - and sheeted in plasterboard. There are no stud walls.

Joseph is used to building in cavity brick and prefers its quality. "Timber [framing] is good," he says, "but for a house that you may want to keep for the rest of your life, double brick is the way to go."

We asked Adam what it's like having your parents as the client and your brother as the builder. He admits the design was "really challenging" for John and Fay but the 3D visuals "helped them get a better grasp of what was going on."

The sibling rivalry of the brothers' childhood has been replaced with a mutual respect. "Joe and I worked well together and we are definitely considering doing more projects in the future," says Adam. "Adam has a very creative mind," Joseph commends, adding that "it was definitely a challenge but it was a great result in the end."

The project came in close to budget, one of the advantages of keeping it in the family. "We worked for minimum wages," Adam says laughing, "so our parents saved a lot of money which is good. It's the least we could do for them after all they have done for us."



The upper level brickwork, Bowral Bricks popular Bowral Blue dry-pressed bricks, is supported on a steel framework. The rear of the property faces north, allowing the low winter sun to penetrate the central courtyard and into the house.





**this opening.** Camberwell House  
**Location:** Camberwell VIC  
**Architect:** Haluk Aysu  
**Roofing contractor:** Roof Top Roofing  
**Featured product:** La Escandella Ceramica  
Planum terracotta roof tile in Slate  
**Photographer:** Michael Laurie

**back cover.** Little Brick Studio  
**Location:** Abbotsford VIC  
**Architect:** MAKE Architecture Studio  
**Builder:** 4AD Constructions  
**Bricklayer:** Robin Gifford, John Dafnis,  
Richard Baigent  
**Photographer:** Peter Bennetts



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