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Architectural steel innovation with BlueScope Steel
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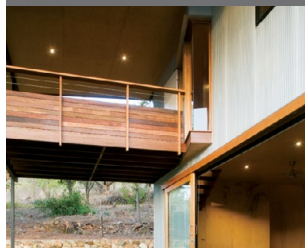
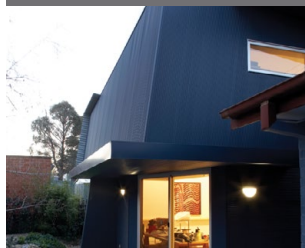
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(cover photography)
Sustainability and style. Melbourne's K2 apartments use steel cladding to create a striking new look for public housing.

(opposite)
The Australian Synchrotron is a world-class facility in the heart of Melbourne. Its 12-metre-high walls made from COLORBOND® steel allowed for durable, lightweight construction.



002

House of Windsor

Set in Melbourne's inner suburb of Windsor, the K2 sustainable housing project puts public housing in the spotlight for all the right reasons. Finally, Melbourne is gaining some energy-wise style that gives public housing a new identity.

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Tin-tech

Rarely does form follow function as succinctly as it does with artist Robert Boynes' studio, demonstrating what ACT-based architect-builder Dennis Formiatti calls 'tin-tech' – ribbed and flat-sheet skins stretched taut like canvas over functional framing.

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Light speed

The Australian Synchrotron is the first structure of its type in this country. Created to produce intense light sources for use by the scientific community, the building will allow some of our brightest minds to work here rather than travelling abroad.

020

Steel jazz

Architect David Langston-Jones' project reflects a remarkable flair for challenging design and adventure matched securely to place. His latest chapter is two row houses – one of them his own home – on a small block in Sydney's eclectic inner suburb of Alexandria.

028

Family flexibility

A thoughtful extension and adaptive reuse of an existing 65-square-metre worker's cottage has given fresh strength, flexibility and sustainable design to this property in Townsville, well known for its unforgiving tropical ambience.

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In vino veritas

New Zealand's Sileni Estate has led the charge in modern winery design and function. It's a true juxtaposition on any number of levels, and ranks as one of that country's wine-making wonders, renowned far beyond The Land of the Long White Cloud.



002

Project K2
Architect DesignInc Melbourne
Client The Victorian Department of Human Services, Office of Housing
Builder Hansen Yuncken

K2 could be a computer virus, breakfast cereal or reference to the fabled peak near Mount Everest, but in the world of medium-density housing, it's code for some damn pointy design. Set in Melbourne's inner-urban Windsor, K2 puts public housing in the spotlight for the right reasons. Here is green design that gives cause for hope after the less-than-grand legacy of housing commission flats and their lustre-less, second-rate residential progeny that cluster near the city's casino precinct. Finally, there is some very energy-wise style that gives public housing a brand new name.

HOUSE OF WINDSOR

Sustainability can be every bit the 'turn off' as 'turn on'. The deluge of politically correct language, design-speak and earnest ideas has replaced the rain that once fell regularly in Australia. And it is giving rise to a generation of buildings that tick boxes, yet are aesthetically underwhelming and have poor environmental scorecards. Worse still, so much residential development is destined for environmental damage control through retro-fitting as power and water shortages bite.

Which is why K2 is a brilliant piece of one-upmanship. An exemplar of economical material and energy consumption, it also caters for a group typically discriminated against, with or without housing to call their own. Project architect DesignInc has done a fine job with its thoughtful assembly of four linked apartment blocks. The beneficiaries of this architecture are the 150 or so public housing tenants occupying the 96 one and two-bedroom apartments.

While housing commission towers are typically stigmatised for their design shortcomings, K2 contradicts its forebears, seemingly modelled on the dumb, amputated international-style tower block. The overriding impression of the new building is a sense of optimism and

looking to the future. Being 'green' is part of it, but providing privacy, prospect and community are all relevant in the wider scheme. The project's alpha-numeric code is simply its Raleigh Street address.

Project architect John Macdonald of DesignInc admits to making the most of the mountain metaphor when giving a recent paper on the project. His presentation, titled 'A New Peak in Sustainability', proves that architects are indeed creative types. The winning design was selected unanimously from a field of 43 anonymous entries in an RAIA-endorsed competition, while the Australian Institute of Building awarded the project a Professional Excellence Award in the 2007 National Professional Excellence in Building Awards.

And if the Office of Housing has its way, the project will set a benchmark for longevity. The base building structure has an ambitious lifespan of 200 years.

In physical terms, the project is a series of connected low-rise apartments rather than soaring exclamation marks. Clustered yet independent, these four apartment 'blocks' are set in pairs and tiered to K2's street-front, north-facing elevation. These step from four levels at the front to eight at the





(above) A fully three-dimensional skin frays the relationship between indoors and out. The tilted upper section, made from COLORBOND® steel, houses the windows which are inclined to reduce solar loadings yet ensure indirect light penetrates the apartments.

(opposite top) Similarly translucent balcony glazing provides light-filled privacy for rear apartments.

(opposite below) The main north-facing Raleigh Street elevation reveals some serious energy management systems crowning the lightweight steel roof.

rear, with off-street basement parking. This arrangement allows winter sun to reach into the bottom level, rear apartments. Tenants at the rear also feel far less hemmed in despite being removed from street-frontage.

Although appearing obvious, the solution demonstrates that decent planning is as important as sexy, curvy shapes and ritzy foyers – none of which, thankfully, were in the project's brief.

Good design is also a balancing act of seasonal climatic extremes. Winter sunlight is frequently desirable, but by summer, formerly cosy rooms can become boiler-like with the injection of the harsh sun. In this regard, inclined and carefully scaled glazing permits the best of both extremes, as well as easy ventilation through and around apartments via the project's permeable form. And apartment balconies are real rather than the faux Regency, flower-box variety that blight far more expensive developments.

While the material palette is simple, a surface harmony is achieved through concrete, glass



and steel. The effect is less a 'skin' than an expressed, textured body. Stramit® Corrugated provides a lustrous, durable cladding that defines the inclined window treatments with the added bonus of easy recycling at the end of its life. Steel's cladding palette extends from that used for rainwater harvesting and Stramit® Corrugated and Stramit Speed Deck Ultra® made from COLORBOND® steel for general rooftops, through to Stramit Longspan® for soffits and walkway shelters. The subtle vertical striping of Stramit® Corrugated and Stramit Minirib® provides a rhythmic surface pattern and is backed by deep insulation battens to stabilise interior temperatures.

COLORBOND® steel cladding introduces a soft lustre, and this luminance from the north-facing elevation provides a soft reflection into the central shadowed courtyard spaces. The alternative of expressed concrete would have created other, less desirable associations without achieving the same quilted light.

This canyon-like cool creates a wonderful oasis in summer. The project's lightweight qualities are

exemplified by the courtyard's canopy shelter made from Stramit® Corrugated that doubles as a rainwater collector for one of the multiple storage tanks. John Macdonald says steel was used to achieve a very different building type. "It helped provide a vastly different expression from the public housing forerunner and develop a patina of varying, complementary textures, and these provided nuance rather than a blanket surface," he says. "Apart from its aesthetic, steel was well up there on life-cycle analysis and environmental performance.

"The other point to remember is that these are tough environments, and yet you can't be overt in a response to tough environments. You have to tread lightly, and I would say the material palette provides durability and refinement."

The emphasis on amenity – places in which to relax – is obvious, with ample seating in the handsome landscaping street-side or internal courtyards, designed (and used) for repose and community. Seating is constructed from broad, comfortable planks sourced from the same recycled





local wharf timbers that combine with the deftly layered leaves of steel to form a tough yet feathered transitional shelter. These qualities, at the edge of the main architectural statement, are essential to its calm, orderly circulation spaces.

This level of amenity considers neighbours less as competition or as fellow cell-mates, and adopts a closer streetscape quality of the type found in towns throughout much of Europe where proximity invites easy neighbourhood contact.

cooling. In an alternative 'extreme temperature' summer, minimal daytime ventilation can allow for the retention and radiation of cool air by night-time purging and pre-cooling of the solid structure.

(opposite) The fragmented form of K2 is at odds with the old school architecture that characterised earlier attempts at public housing. Cladding materials are a vital component in creating a material palette of varied scale and surface.

Balconies, external passageways and courtyards all contribute to the leaf-like qualities of edges and openings that create vital transitional zones. Gone is the resolute, grey, beige or cream stump, replaced by an altogether friendlier, socially inclined experience. The top floor 'pods' – a contemporary take on the dormer window – with their inclined glazing are largely self-shading and contribute an un-self-conscious project identity.

Other benefits arise in the process of fragmented mass and smaller scale. Here the effect is so much better than the shadow cast by an anonymous tower that could have swallowed the whole site with a single enormous footprint. The cluster effect of medium density permits a strong lateral rather than vertical site relationship, allowing the landscape to mean more.

Key material responses include integrated natural finishes to minimise maintenance (specifically painting) such as oxide finishes to concrete, cladding made from COLORBOND® steel, expressed galvanised posts and screens. Fly ash is used as a cement substitute in concrete to reduce embodied energy. Class One durability timbers were left to age naturally. Recycled and sustainably managed plantation timber was specified for external screens, window frames and internal stud wall framing.

(above) The design vocabulary is as direct as it is robust. Transitional zones and careful landscaping create opportunities for social interaction.

The option to 'step outside', to feel the breeze and sunshine, is an all too forgotten part of 'contemporary' inner-city housing that prefers to homogenise occupants in air-conditioned isolation. K2's balconies project to become branches of the tree, allowing residents the option of far healthier daylight and breeze.

At K2, the space between apartments is as important as the buildings themselves. Residents choosing to enjoy their north-facing balconies experience either attractive landscaping or can engage with other residents if they so choose. Apartments are accessed from single-loaded external corridors for easy ventilation. Exposed concrete ceilings and masonry walls provide thermal stability and radiant

K2 also signals a reconsidered expression and material application of the standard issue. Instead of the trend to pre-cast tilt slabs, this project employs three-dimensional facades in preference to two-dimensional skin designs. Combined with a simple but convincing palette of materials – notably Stramit® Corrugated –



The north-facing elevation of the rear apartments frames the central courtyard which is filled with softly reflected light by day. Rain water captured from roof tops is stored in four major tanks for re-use.



hours a year – or a saving of 33.5 tonnes of CO₂ a year. Overall energy consumption is planned to be approximately half that of a standard development.

Depending on ongoing tenant education and choice of appliances, electricity usage is estimated at about 550 megawatt hours a year, a probable saving of about 55 per cent, or 716 tonnes of CO₂ a year over a standard development. This includes base building and tenant appliances.

Despite the densely populated urban development, the landscaping considers an ability for water uptake, robustness, aesthetic qualities (including colour), flowering season, form, biodiversity and habitat. Water consumption is based on 250 litres per person, per day. The potential savings in mains water consumption for K2 are again about half that used in a typical residential development of this size. This is achieved through use of efficient water fittings, rainwater harvesting, and grey water harvesting and treatment for toilet flushing and irrigation.

The real challenge for sustainable design is about interpretation and correct fit to win public acceptance. Much of what is meant to be good for us appears as reconstituted junk: so it not only has to be good, it also needs to feel right. Healthy design is the same as good diet and adequate exercise for a longer, better life. And that is the whole point of sustainability – trim consumption, live economically, efficiently and well.

Public housing has no real track record for innovation, and therein lies the surprise package that is K2.

It is a reminder of how sustainable design can be much more than mission statements, gestures and motherhood. It reveals commitment throughout from thoughtful material specification and use, robust form, and space-making to give residents an uncommon pride of place.

Peter Hyatt

Project:
K2

Location:
Raleigh Street, Windsor, Melbourne

Client:
The Victorian Department of Human Services, Office of Housing

Project manager:
Property Services and Asset Management, Office of Housing

Architect:
DesignInc Melbourne

Builder:
Hansen Yuncken

Landscape architects:
Landarche

Engineers & service consultants:
Arup Melbourne

Quantity surveyors:
Davis Langdon Australia

Cladding contractor:
Signal & Hobbs

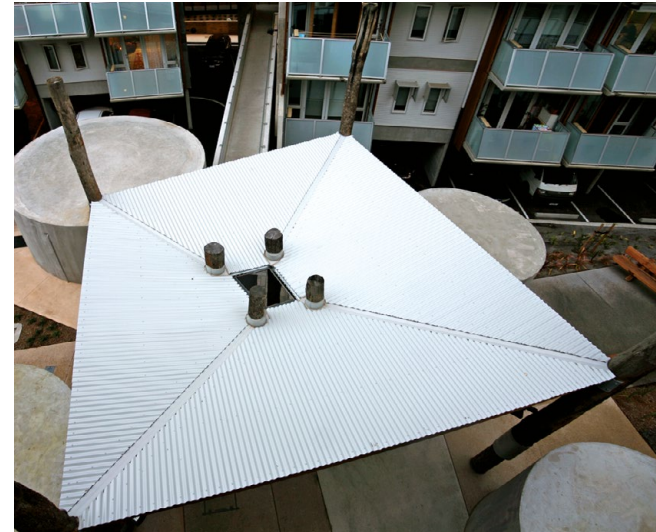
Principal steel cladding:
Roofing – Stramit® Corrugated, Stramit Speed Deck Ultra® made from COLORBOND® steel in the colour of Jasper®
Soffits – Stramit Longspan®
Walls – Stramit® Corrugated, Stramit Minirib® made from COLORBOND® steel in the colour of Shale Grey™

Site area:
4800 square metres

Site content:
96 units, community room and 52 car parking spaces

Project cost:
\$32.3 million

Photography:
Peter Hyatt



the overall effect is a satisfyingly quilted surface. Balcony glazing is translucent to provide filtered light transmission to apartments and tenant privacy.

Double-glazed windows retain warmth, and limited glazing on the south, east and west reduce potential heat loss. Well-insulated and sealed construction also minimises heat loss. Individual windows ensure fresh, relatively draught-free air can be introduced to stabilise comfort levels without constant reliance on

external heating or cooling. Roof level ventilators extract summer heat build-up and provide efficient ventilation.

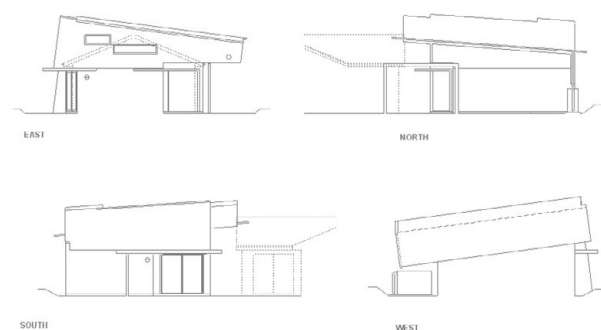
Roof-mounted solar panels and water storage tanks make an emphatic statement and decent contribution to the energy grid. While self-sufficiency is some way off, K2 produces a much smaller footprint than standard residential towers. Solar panels generate around 10 per cent of the project's base building load. This equates to 25 megawatt

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Client Robert Boynes
Architect/builder Dennis Formiatti
Design Dennis Formiatti, in collaboration with Robert Boynes

TIN-TECH

Rarely does form follow function as succinctly as it does with artist Robert Boynes' studio salon in Canberra.



Designed and built by ACT-based architect-builder Dennis Formiatti, this Studio Blue space clearly demonstrates what Formiatti calls 'tin-tech' – the use of ribbed and flat-sheet skins stretched taut, like canvas, over functional framing.

Yet despite its tautness, this tiny 7.6 by 7.2-metre building – occupying the only available space in the artist's backyard – has been designed to breathe, taking into account Canberra's often unrelenting climatic extremes of heat and cold, dry dust, pelting rains, frost and even snow.

Tin-tech relies on a pressure-equalised facade: if water manages to find its way under the skin, it must be allowed to drain away freely, ensuring maximum protection of the sub-structure.

In turn, this facade celebrates edging and finishing treatments, something Formiatti is renowned for.

Studio Blue's design also takes into strict account the way Boynes works as an artist and the scale of his art. It also ensures he executes his art in the same subdued lighting conditions in which his paintings are ultimately designed to hang.

The studio, an RAIA COLORBOND® Steel Award winner, can at one

level be described for what it is – a Class 10 non-habitable building. In other words, a shed.

Yet at another it can equally be described as an artistic space that allows Boynes to shut himself away in another world. And once inside, he's free to take urban images captured in the outside world – the mainstay of his art – and 'box' them into his canvases.

Resting on a concrete slab, Studio Blue sits on the western side of Boynes' original studio. It is clad in COLORBOND® steel in MINI ORB® profile juxtaposed with flat sheets of COLORBOND® steel in the same colour (Deep Ocean®). MINI ORB®'s smaller corrugated profile reinforces the illusion of a larger building. The roof, made from COLORBOND® steel in CUSTOM ORB® profile, extends eastward to form a covered work and storage area and highly functional breezeway between both studios.

The roof's design conjures up an image of a tilted box lid – reinforcing rather than downplaying the studio's box-like effect. The lowest corners of this roof dip subtly towards a tank, allowing for effective rainwater harvesting.

The sloping line of this roof, crisply draped over the south side of the





Formiatti's use of a dark, ribbed steel skin adds to the effect of his seamless edging and finishing.



(above and right) The studio expresses the elegance of steel externally, while it retains a basic plasterboard lining internally, an ideal backdrop for Boynes' artwork.

studio facing the house, acts as a visual circuit-breaker, diminishing that wall's overall perceived bulk. As a line, this fold is played around other external walls.

The design of the exterior walls has a base of horizontal sheeting.

Internally, the studio's form follows function to the letter. With just two high-set windows, maximising available working wall space, the only other concession to internal structure is a small mezzanine bulkhead which acts as a storage area for finished works and entry canopy.

Given the cinematic style of much of Boynes' work, these windows are playfully executed as projector booth windows with deep reveals.

Two external doors – one a glazed slider providing access to the southerly courtyard, the other a COLORBOND® steel-clad corner service door – complete the structure.

Plain plasterboard internal lining reinforces the studio's functional honesty, refusing to allow the building's interior to interfere with Boynes' creative flow.

Beneath the skin, full insulation coupled with anti-draft treatments around the service door provide for a secure environment that only needs a small gas heater, operating for minimal time, to heat the space in the depths of often bitter Canberra winters.

Formiatti, on site during the entire construction process, says that while Studio Blue doesn't reinvent the building process, its overall effect celebrates steel's flexibility in refreshing ways. And he was keen to build it "like a piece of furniture... removing all imperfections in the process."

Born and raised in the traditional 'timber and tin' environment of Innisfail in tropical Far North Queensland, Formiatti has long been enamoured by corrugated steel's iconic status as an Australian building material,

and the ingenuity with which it has been used.

"However, in the 21st Century, we have ample opportunity to move this material from its traditional rural setting and apply it to urban projects in ways our grandfathers could never have imagined," he says.

"It's important that we work with the grain and texture of steel as a building material, and learn to use it in different ways.

"We now have access to far better technologies and tools that allow us to move away from *insitu* cutting and treatment, allowing us to better explore its ultimate limitations."

Formiatti's attention to detail and his ability to address elegant finishing solutions springs directly from his intimate knowledge of materials like COLORBOND®, ZINCALUME® and galvanised steel. He says that as architect *and* builder, he understands intuitively the absolute limits of the materials he specifies.

He says bending corrugated steel on the vertical plane and the use of reverse flashing techniques allow for greater play of light and shadow effects in almost all environmental conditions.

"There's no need for traditional corner flashing that can detract from the overall effect of corrugated steel, and no need to blatantly 'bridge' structures as an afterthought," Formiatti says.

The finished execution? The successful, well-considered amalgamation of artist Robert Boynes' existing and new studio facilities has allowed the architect and artist, working in unison, to address user-specific issues with considerable imagination.

Here we have the ubiquitous Australian shed complementing the original structures and their surrounding neighbourhood, while making a bold, landmark statement.

Pete Heininger

Client:

Robert Boynes

Architect/builder:

Dennis Formiatti, assisted by Chris O'Rourke

Design:

Dennis Formiatti, in collaboration with Robert Boynes

Principal steel materials:

COLORBOND® steel in MINI ORB® profile in the colour of Deep Ocean® (wall cladding), COLORBOND® steel in CUSTOM ORB® profile in the colour of Deep Ocean® (roofing)

Size:

54.72 square metres

Photography:

Paul Bradshaw

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Project Australian Synchrotron
Architect Architectus Melbourne
Structural engineer John Mullen & Partners (JMP)
Steel fabricator DVP Engineering

LIGHT SPEED

The Australian Synchrotron, architecturally designed by Architectus' Melbourne office, is the first building of its type in this country. Created to produce intense light for use by the scientific community, the facility will enable some of Australia's brightest minds to work here rather than travelling abroad.

Commissioned by Major Projects Victoria, the Australian Synchrotron stands apart from many of its international counterparts.

"Many overseas synchrotrons are quite bunker-like; often made entirely of concrete," says architect Ruth Wilson, a director of Architectus' Melbourne office. "They're often seen as black holes, appearing to be impenetrable. The synchrotron light provides essential information for the materials and chemical sciences. The light is an essential tool for scientific and industrial research."

With the need to produce a highly controlled environment, it was crucial to minimise the transfer of any vibration from the external environment. Given the building's location on the busy corner of Blackburn and Wellington Roads in Clayton, this was a considerable task.

The site was excavated to a depth of around three metres. While not obvious from the front gate, this depression greatly reduces the impact of passing cars and trucks. "One of the key components to the brief was minimum vibration. It can also get fairly windy out here," Wilson says.





(above) The transparent reception area is separated from the technical equipment floor by a wall of toughened glass.

From the exterior, the Australian Synchrotron looks like a small stadium. By world standards, it is considered mid-sized. But what makes this synchrotron unique is its transparency and relatively lightweight construction. The two-storey building features horizontally laid Stramit Longspan® made from COLORBOND® steel in the colour of Surfmist®. This light colour is offset by two bands of windows framed with Stramit Mini Corry® made from COLORBOND® Metallic steel in the colour of Skybridge®. "While COLORBOND® steel allowed us to create the curved form, it's also extremely adaptive for further

expansion," Wilson says. "It's not as though concrete walls have to come down."

Architectus was also keen to use materials that allowed for quick construction. "Cost was an important component of the brief, and it was important to make sure our design could be achieved within budget," she says.

The 12-metre-high walls, made from COLORBOND® steel attached to a steel frame, also conceal multiple layers of thermal insulation. "We wanted it to appear lightweight, yet it had to achieve great thermal performance," says Wilson, who

spaced the external windows to suggest movement rather than create it. Like all the high-performance materials used, these aluminium-framed windows feature high-performance glass. "You can't open the windows," Wilson says. "The temperature inside has to be controlled to +/- one degree. Having a stable environment is a design fundamental."

Unlike many Australian buildings, which feature generous overhangs to protect against the elements, this one is almost awning-free. There are no overhangs on the roof, which is also made from COLORBOND® steel, and the windows are free from trims or canopies. "To reduce the chance of wind creating vibration in the building, it was essential to have the building as minimal in design as possible," Wilson says. Its circular form further minimises wind vibration.

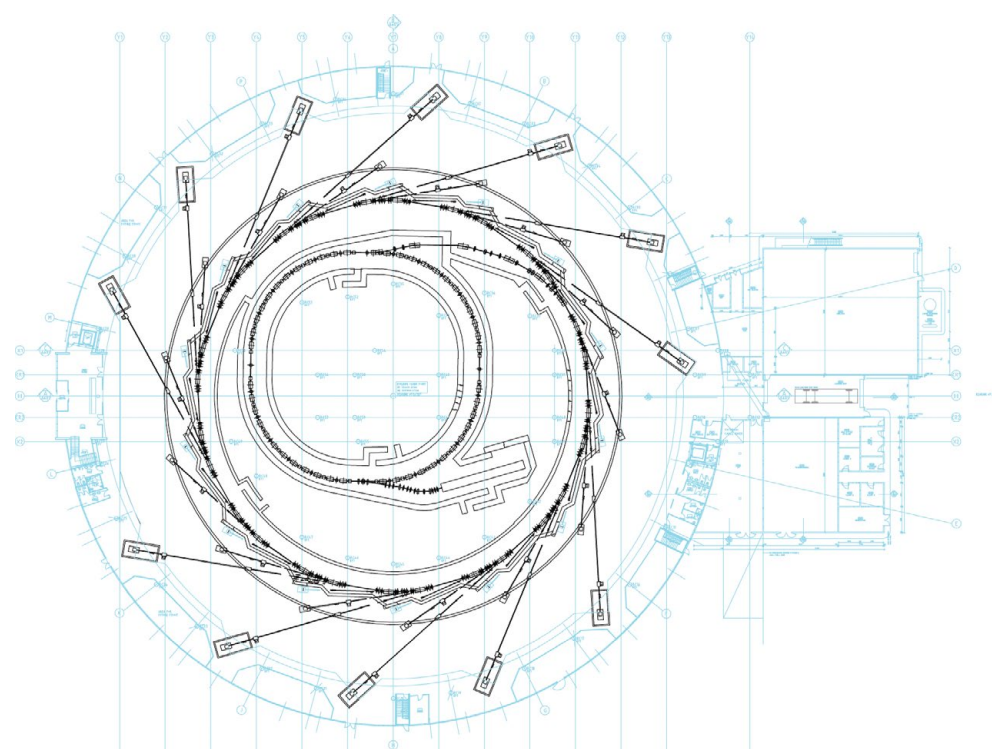
One exception to the building's round shape is the glazed entrance, with double-height toughened glass walls. Framed with an external steel canopy on two levels, the entrance is the most transparent part of the building. While visitors can easily access the reception area in the foyer, a wall of toughened glass separates the visitor from the technical equipment floor.

Sound is muffled by acoustic hoop-pine timber panelling featured in the ceiling foyer. Hoop-pine was also used in the balustrade of the staircase leading to the public gallery located on the first level. "Our architecture always aspires to be humane; material selection plays a key role in our response to any environment," Wilson says.

While there are impressive views from the reception area, the gallery offers an overview of the operation and provides an idea of the synchrotron's size.

The key component of the design is the 'machine tunnel', where electrons travelling almost at the speed of light orbit through a vacuum tube around a circular,

(below) A plan of the 116-metre-diameter building. Columns supporting the roof are anchored to the ground by bored piers. The 'machine tunnel' sits within the inner circle.



The circular gallery overlooks the heart of the operation, the lead-lined 'machine tunnel', which has concrete walls 800mm thick.





The building presents an impenetrable exterior with windows made from high-performance glass and 12-metre-high walls made from COLORBOND® steel.



The curved minimalist exterior is broken only by the double-height entrance overhang.

mazed environment made of concrete. Concrete walls 800mm thick are enclosed with a concrete lid, and the tunnel is lined with lead to minimise the threat of x-rays escaping to the outside world. With more than 200 giant electromagnets guiding the electrons, an important part of the design brief included an elaborate cooling system reticulated on the tunnel's roof.

The tunnel has two parts: the accelerator ring, where the electrons are brought up to almost the speed of light; and the storage ring, where they travel around, continually emitting brilliant synchrotron light into 'beamlines'. The experiments occur at the end of the beamlines in customised experiment 'hutches'.

Like a growing suburb with several vacant plots of land, the concrete floors in the building have been marked out for future beamlines. "Eventually these lines will be 'filled in' with experiment hutches," says Wilson.

One of the synchrotron's most impressive design features is the roof, as it appears to float above

its steel trusses. To achieve this engineering feat, 59 concrete columns, 14 metres high and weighing up to 16 tonnes each, were required. And to ensure there was no movement in the columns, each was socketed into bored piers, placed three metres into the ground.

Architectus also utilised an ingenious way of assembling the 116-metre diameter roof. It was assembled on the ground using 'Ortech' ceiling panels (in 10 by 8-metre modules) with installation hand rails around each roof section. The sections were hoisted into position and formed the safe working platform for the roof sheeting installation.

The Ortech panels remain visible as the internal ceiling lining and are ideal for acoustic absorption as well as thermal control. The selection of pale colours for the roof made from COLORBOND® steel was also based on the need to minimise heat absorption.

"The key to the design was establishing a roof form that would shed water effectively, minimise the need for unconventional



The central spine of the roof is made from COLORBOND® steel in the colour of Blue Ridge®.

construction detailing and be straightforward and safe to build," Wilson says. As a result, the straight truss sections are pitched at three degrees and emanate from a common springing height on the perimeter wall. "It might look quite simple, but there was a whole team working on every detail," Wilson says. "Architecture is always in the detail."

Like the roof and outer walls of the synchrotron, the flooring couldn't allow for any movement. To minimise vibration transmitted from external sources, the flooring was constructed using a unique concrete mix and curing method to eliminate micro-cracking over the entire slab. It consists of a 200mm-thick bottom layer and a 300mm-thick top layer. The top layer was also laser-screened to achieve the required super-flatness.

While the core of the design is the synchrotron itself, the rim features

a continuous band of enclosed spaces. On the ground floor, laboratories and workshops wrap around the entire building. Above are offices, meeting rooms and staff rooms. Enclosed by lightweight steel-framed plaster walls, these spaces benefit from both internal views of the synchrotron and the external views of the landscape, designed by Tract Consultants. "We didn't want to make staff feel as though they were locked into the building, even though the elements are locked out," Wilson says.

Given the nature of the building, construction and service elements are not concealed. Two-metre-long steel air-conditioning ducts that circle the building remain exposed. "Even the air supplied to the building requires minimum vibration," Wilson says, pointing out the regularity of the four-metre spacing of low velocity droppers. Perforated steel balustrades enclose the continuous open

walkway on the first floor. "It's a robust building. We didn't want to pretend it was something that it wasn't," she adds.

Australian Synchrotron communications manager Stefanie Pearce, of the Department of Innovation, Industry and Regional Development, liaised with Architectus during the construction phase and recently celebrated the launch of the completed facility.

"I was impressed that the entire staff of Architectus Melbourne was keen to engage with our project," Pearce says. "They requested a presentation for their office after hours one evening. Everyone, from the IT people to the receptionist, wanted to understand the project and feel involved. That to me was the sign of a really cohesive team that demonstrated a pride and 'ownership' in each and every part of the project."

Australian scientists and researchers share the same pride, and appreciation for the convenience of not having to travel regularly overseas. Previously, they had to head to Europe, the United States or Japan with their often fragile samples for analysis.

"Air travel can degrade some samples, so it really meant our scientists had to compete on an un-level playing field," says Wilson, who was delighted to be part of an Australian first. And unlike many synchrotrons overseas that appear unfriendly, the Australian model has an enveloping, human-like quality.

"Scientists require controlled environments," Wilson says. "But they're like the rest of us. They don't want to feel isolated, as though they're in a bunker."

The cathedral-like quality of the building's interior, its clarity and legibility, make this building surprisingly comfortable to occupy – perhaps not surprising given the Architectus focus on humane architecture.

Stephen Crafti

Client:
Major Projects Victoria

Architect:
Architectus Melbourne

Project team:
Including Ruth Wilson, Peter Slifirski

Managing contractor:
Thiess Pty Ltd

Structural engineer:
John Mullen & Partners (JMP)

Steel fabricator:
DVP Engineering

Cladding contractor:
Aldeck Roofing

Principal steel components:
Roof – COLORBOND® steel in the colour of Shale Grey™ with the central spine of the roof made from COLORBOND® steel in the colour of Blue Ridge®
Wall cladding – A combination of horizontally laid Stramit Longspan®, made from COLORBOND® steel in the colour of Surfmist® with accent strips in Stramit Mini Corry®, made from COLORBOND® Metallic steel in the colour of Skybridge®

Landscape architects:
Tract Consultants

Building size:
116 metres diameter with mezzanine level achieving a total of 13,000 square metres of floor space

Cost:
Building cost \$39.4 million
Total project cost \$207 million

Photography:
Paul Bradshaw

020

Project Alexandria Row Houses
Architect/designer David Langston-Jones
Builder Sebastian La Rosa,
DLR Enterprises

From the sombre, cobbled streets of London to the lush meandering laneways of Far North Queensland and narrow, near-hidden laneways of inner Sydney, architect David Langston-Jones' projects reflect a remarkable flair for challenging design and adventure. His latest chapter revolves around two row houses – one of them Langston-Jones' own home – on a small block in Sydney's eclectic inner suburb of Alexandria.

STEEL JAZZ

Like dolls' houses, these miniature terraces are filled with light, colour and fun, courtesy of clever, thoughtful design and the lively use of steel.

Tucked away in a cosy back lane and surrounded by back yards, garden sheds and garage doors, these homes come as something of a surprise, offering a solid presence in a jumbled neighbourhood where old factories can disappear almost overnight to be replaced by stark apartment blocks for modern young city-livers.

The almost windowless, mostly steel facade towers above the footpath, providing a stern front for any would-be intruders, and blocking the western sun. Langston-Jones relieves the harsh exterior by experimenting with vertical and horizontal placements of LYSAGHT CUSTOM ORB® to emphasise the architectural elements of the elevation, giving it grain and texture. By adding a touch of jazz to the mix, the facade's central feature is created from the pair of garage doors that form a bold chequerboard effect, using LYSAGHT MINI ORB® made from ZINCALUME® steel, that picks up on the theme of the contrasting directions of the steel used elsewhere.

An inspired moment for Langston-Jones led quite irrevocably to the use of MINI ORB® which became the triumph of his design; a far cry from the ubiquitous white glass doors originally contemplated which he now admits would have been cold and featureless.

Three-dimensional stainless steel numbers direct you to the front doors, again a reflection of Langston-Jones' play on LYSAGHT MINI ORB®. The detail extends to the downpipes, which have lobster-back pressed turns made from ZINCALUME® steel.

"There's a shanty town-like quality that comes from using corrugated steel in different directions. It works well with the surrounding tapestry because there is no uniformity in the neighbourhood," Langston-Jones says.

The homes, a mirror design, are spread densely across just 144 square metres. With the challenge of creating space where there wasn't much to begin with, Langston-Jones acknowledged that a back lane wasn't the ideal setting for a mansion but instead set out to design two 'dolls' houses', a snug fit for a 16-metre-long frontage.

Council guidelines determined much of the envelope, restricting building





height, the angle of the roof at the back (so as not to overshadow neighbours), the minimum amount of open space and the setback of the garages from the street.

“Initially, Council thought the 72-square-metre homes were too small to be habitable,” Langston-Jones says. But he persisted and plans for the two bedroom, one bathroom homes were approved at Appeal.

In a city where the creation of spacious small buildings is becoming the architectural norm, Langston-Jones’ Alexandria Row Houses are miniature miracles of urban design. You’d expect nothing less of someone from Langston-Jones’ architectural lineage. His roots in English architecture were cultivated at the Royal College of Art in London where he studied under British Architect James Gowan. On graduating, he was invited to join Foster + Partners. Apprenticed to Norman Foster, he worked closely with him on an extension to the Sainsbury Centre for Visual Arts at the University of East Anglia, and Foster’s own penthouse.

The lure of working on his own with ‘green field’ sites led Langston-Jones to Cairns in 1990, at the height of that city’s tourism and building boom, where he built his first Australian project on approximately 2.5 hectares in the Atherton Tablelands for a modest \$65,000.

Working in the climatic extremes of Far North Queensland allowed

Langston-Jones to apply two techniques he had some experience of in London – pre-fabricating buildings as much as possible, and using materials that would be durable in the Far North Queensland climate, such as steel, plywood and glass.

The Alexandria Row Houses in turn reflect the Far North Queensland experience but in a Sydney context. Pre-fabrication allowed initial building work to advance quickly, with Langston-Jones choosing a steel skeleton as the backbone for the homes, welded rather than bolted in this case to create greater space within the very tight geometries.

“Using steel has been instrumental in saving space, as much psychologically as physically because of its elegant profiles,” he says.

A wafer-thin steel skin envelopes the homes and adds to the illusion of space, an additional benefit Langston-Jones associates with the material’s durability, strength and resilience. “Building with steel is cost-effective and ensures that members are true and plumb, allowing much closer tolerances,” he says.

Sadly, Langston-Jones admits the homes go unnoticed in their rapidly changing neighbourhood. The solidarity and gravity of the facade so cleverly represented through the creative use of steel suppresses the carefully crafted spatial mechanism within,

which is passed unappreciated by busy city folk speeding through the maze of laneways.

In stark contrast to the front, the back of the homes are light and translucent. Appearing to float and fly, they are centred by a 16-metre-long steel truss that runs the entire length. A large frameless panel of glass 3750mm wide x 2100mm high, made up of three separate sheets joined together, appears to hang across the back wall of each home, providing seamless connections between inside and outside spaces. Langston-Jones enlisted the help of specialist glass engineers Eckersley O’Callaghan from London to advise on the frameless wall, and produced a custom-built stainless steel track that glides open to deliver this unobstructed transition.



The frameless theme is continued throughout both houses, with minimalist Aneeta sashless windows used in the upstairs bedrooms to minimise the barriers between inside and outside. While there’s not a single window covering in either house, Langston-Jones says there is always total privacy in spite of the close proximity of so many neighbours.

Frameless artwork complements the design detail in his own home – the dining room backdrop is an oversized black and white image on canvas of the heritage-listed White Bay Power Station at Rozelle, a complex photograph filled with interesting layers of old corrugated steel roofs.

(above) Tucked away under the stairs, the study makes use of a cosy, often-wasted space.

(opposite top) Langston-Jones has enhanced the outdoors feel of the dining area by cladding the ceiling in MINI ORB® to reflect the exterior cladding.

(opposite below) A textured, lively palette of materials unfolds as you wander through Langston-Jones’ home. The living room and kitchen play on colour and space.





(above) The houses are nestled on a back lane in an eclectic inner Sydney neighbourhood, surrounded by back yards, garden sheds and garage doors.

Langston-Jones selected a textured, lively palette of materials for the interior to enlarge and create points of interest in the small spaces – glass mirrors, walnut timber-lined and cement-rendered walls, stainless steel benchtops, and ceilings lined with LYSAGHT MINI ORB® in ZINCALUME® steel, stretched across the soaring six-metre-high ceiling above the dining area.

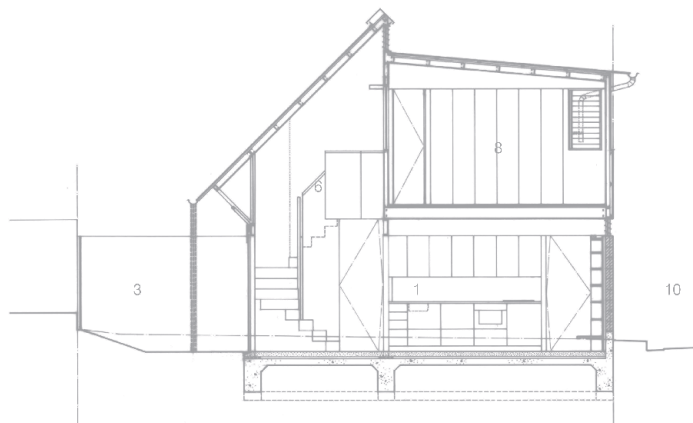
“The MINI ORB® ceiling brings the outdoors into the dining space because it’s an extension of the exterior cladding . . . It also adds a romantic quality you associate with living under a corrugated steel roof,” Langston-Jones adds.

The kitchen and living room are a play on colour and space. A vibrant red splash back enlivens and centres the kitchen, while bold-coloured chairs contrast the mirrored and bookshelf-lined wall of the living room.

“Bold-coloured furnishings were a deliberate choice to emphasise the architecture,” Langston-Jones says. “They disengage the furniture from its surroundings, giving the impression that it is floating within the space.”

As expertly as Langston-Jones captures lightness through colour and tricks of the eye, he introduces a free-standing sculptural element – an abstract Arc de Triomphe. It acts as both wine rack and room divider that modulates the space of the living area around which household traffic revolves. It was built to showcase a model, atop the rack and encased in perspex, built by Langston-Jones when he was 21 that kick-started his career by catching Norman Foster’s eye.

“I worked at Foster Associates [now Foster + Partners] for four years, and on Foster’s own penthouse for two-and-a-half years. He expected so much and had the highest standards in terms of the level of conceptual resolution, detail and craftsmanship,” he says.



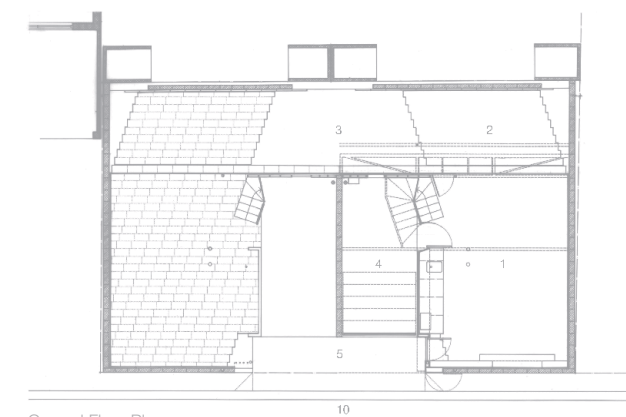
1. Living
2. Patio
3. Garden
4. Garage
5. Porch
6. Balcony
7. Bathroom
8. Bedroom
9. Void
10. Branding Lane

Section



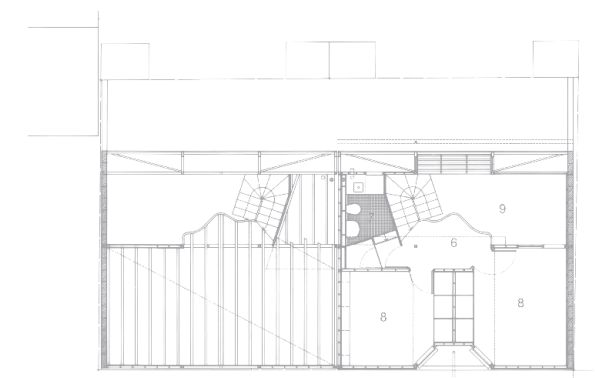


Contrasting placements of
CUSTOM ORB® and MINI ORB®
relieve the stern facade.



Ground Floor Plan

- | | |
|-----------|-------------------|
| 1. Living | 6. Balcony |
| 2. Patio | 7. Bathroom |
| 3. Garden | 8. Bedroom |
| 4. Garage | 9. Void |
| 5. Porch | 10. Branding Lane |



First Floor Plan

Project:
Alexandria Row Houses

Client:
David Langston-Jones

Architect/designer:
David Langston-Jones

Structural engineer:
Richard Green,
Taylor Thomson Whitting

Builder:
Sebastian La Rosa, DLR Enterprises

Steel fabricator:
Jack Romano, Rose Metalwork

Cladding contractor:
Wayne Brown, Ocean Roofing

Principal steel components:
Garage doors – Monarch Sovereign
doors with LYSAGHT MINI ORB®
in ZINCALUME® steel infill

External wall cladding – LYSAGHT
CUSTOM ORB® and MINI ORB® in
ZINCALUME® steel

Roofing:
LYSAGHT CUSTOM ORB® in
ZINCALUME® steel

Building size:
72 square metres each –
144 square metres in total

Photography:
Paul Bradshaw

Langston-Jones has carefully honed and applied these same techniques to his own dolls' house-like home, where he can happily spend all day without feeling the need for more space.

"People underestimate the demands placed upon domestic buildings. A home has to perform 24/7 because you live in it, unlike, say, an airport in which you simply spend a couple of hours passing through. The demands, of course, are different but homes are no less challenging," he says.

Langston-Jones' favourite room in the home? Amazingly, it's the darkest place, tucked away behind a walnut door under the stairs. No surprise though why he is so fond of this room – it is the study, the cosy space where, surrounded by papers, his next projects will unfold.

Sonia West



Project Courtyard House
Architect Stephen de Jersey Architect
Builder Townsville Constructions,
 Cypress Constructions,
 Stephen de Jersey

This extension and adaptive reuse of an existing 65-square-metre worker's cottage is 'battle-axed' between seven neighbouring Townsville properties. The development forms a courtyard at ground level, with the upper level capturing distant tree and mountain views.

FAMILY FLEXIBILITY

The public spaces of the house include and pivot around a central outdoor room and open directly onto each other, allowing them to act as a continuous space.

The old cottage is juxtaposed against the separate new building's mass, which is further referenced through the materials of the existing cottage against the extension's plywood, hardwood and cladding made from ZINCALUME® steel.

Although the existing house had been renovated it became clear that new areas needed to be created to fulfil a growing family's needs.

The clients, who both work from home, shared an office space which had been converted from a verandah – which was also divided into a new bathroom. The kitchen had been installed with the renovation in mind, allowing the addition to link inside and outside dining areas via the kitchen.

The original kitchen/dining area did not allow for a lounge area, and the clients envisaged a shared playroom/lounge space.

A connection with the yard was also imperative. The existing cottage was set down two metres from a terraced yard which could only be accessed by leaving the

cottage (via the garage), and climbing some steps.

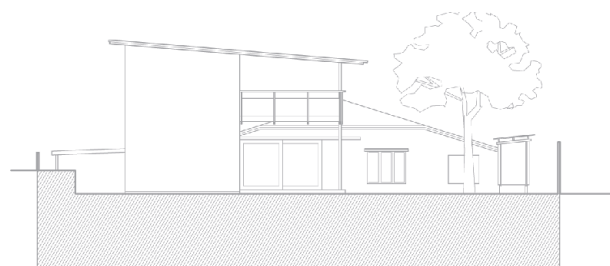
Linking the kitchen to the outdoor room and the yard via a set of long steps – which provide smooth seating for lunch while chatting to Mum in the kitchen – further blurs the inside and outside areas. This also provides continuous visual connection from the major work space in the house (the laundry is concealed behind folding ply doors in the kitchen/dining area) to the yard where the children play.

As two generations of families had lived in the original house, there was no impetus to 'super-size'. Producing efficient space was a consideration in terms of cost, and the family's real living needs. The multi-functional nature of each room is imperative to the home's overall efficiency.

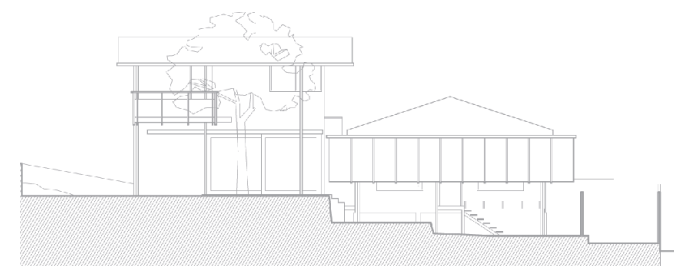
The playroom/lounge incorporates a large toy store (concealed under the stairs), allowing the space to be transformed from children's area by day to the parents' media room by night. This area acts as the family lounge, and converts into a performance space for one of the client's violin students.

Seating trickles from the outdoor room into the yard, providing the perfect setting for evening recitals.





North East Elevation



North West Elevation

A key component of the upper-floor bedroom, bathroom and deck is the privacy and detachment they provide from the ground-level business of family life.

However, this parents' area can also act as a private guest area. The bathroom is positioned to provide guests wandering onto the deck with access to the facilities, while maintaining the owners' privacy in the master bedroom.

The deck still interacts with the outdoor room and yard, and visually engages with the kitchen. The deck also allows the family and guests to gather and watch the sunset or look out onto the wider landscape beyond.

Sustainability – in terms of life cycle and the environment – was a major consideration when selecting materials for the addition. The use of LYSAGHT MINI ORB® made from ZINCALUME® steel was inspired by the material's multi-functional nature. The product's reflective qualities, coupled with the advantage of never having to

paint it, were useful attributes in terms of life cycle and cooling. The marrying of LYSAGHT MINI ORB® with considered timber detailing also provides a highly desirable aesthetic outcome. MINI ORB® is a refined product, allowing the subtle connection with other materials.

The extension does not intend to imitate the existing home, instead providing a contrast with the cosy cottage. The opening of walls via the sliding glass panels contrasts with the cottage, breaking the spaces leading into the yard. This strategy was crucial in reducing the home's cooling requirements, but still allows for efficient use of air-conditioning in the at-times unbearable November to February heat.

The clean, hard edge of the concrete floor is subdued by plywood walls and ceiling, with timber detailing softening MINI ORB®'s sleek profile. Inverting these elements was the result of considering the durability and efficiencies of the materials.

The internal sheeting is ply, again selected to avoid repainting. The fabric wrapping the inside and outside of the extension is extremely easy to keep clean, and little children's finger marks are not as evident as in many 'white', plasterboard-lined houses.

The polished concrete provides thermal mass and a material honesty that's important to the extension's overall simplicity. It is a continuous form oozing from the inside to the outdoor room, playing on the formality of the indoor. The concrete provides a cool surface for the children to play on, especially in summer.

A dynamic feature of the house is a two-storey curtain which protects the extension's rooms from the western sun. The sun is stopped at the edge of the extension, providing a buffer to the living spaces.

These features are imperative to building in climatic conditions such as those encountered in Townsville.

Stephen de Jersey

Project:
Courtyard House

Client:
Louise, Stephen, Oliver, Sophie and Christian de Jersey

Architect:
Stephen de Jersey Architect

Builder:
Townsville Constructions, Cypress Constructions, Stephen de Jersey

Principal steel components:
LYSAGHT MINI ORB® in ZINCALUME® steel

Extension size:
56 square metres internal plus 32 square metres external

Cost:
\$200,000

Photography:
Jon Linkins

(below) Lightweight, low maintenance and durable, MINI ORB® is a key part of the exterior materials palette which is softened by hardwood detailing.



Architectural steel innovation with BlueScope Steel number 99, november 2007

Project	Sileni Estates winery and vineyard
Principal architect	George Paterson, Pacific Environments
Builder	Amtech Construction

New Zealand's Sileni Estates winery and vineyard has led the charge in modern winery design and function around Hastings, in the Hawke's Bay region on the eastern side of the North Island, and ranks as one of viticulture's wonders, with its reputation extending far beyond the Land of the Long White Cloud.

IN VINO VERITAS

The Sileni Estates winery and vineyard is the result of a long-standing interest in wine held by Graeme Avery, a pharmaceutical scientist and former owner of medical publishing company Adis International.

With financial director Chris Cowper and winemaker Grant Edmonds, Avery established Sileni a decade ago as an export-oriented producer committed to crafting world-class fine wines.

With more than 40 years' international business experience behind him, Avery has not only been responsible for Sileni's strategic planning and export market development, but has also been a driving force behind the overall functionality of the winery's main building.

Appropriately named after the fabled half-man, half-horse ancient Greek woodland gods – who themselves enjoyed a good time with fine wine and food – Sileni is today a far cry from its heavy-handed, stone-laden, medieval European counterparts, thanks largely to the design grace of seasoned architect George Paterson.

Like its namesakes, the main structure of the Sileni Estates winery is a true juxtaposition on

any number of levels. Crouching low against stark, treeless hills framed by the blue North Island sky, the estate's main building nevertheless soars as you approach along the driveway leading from Maraekakaho Road.

Its almost total steel construction is in stark contrast with its green, rural setting. Corrugated cladding made from ZINCALUME® steel, coupled with front and side glazing, has been stretched over a structural steel skeleton for ultimate functionality.

Framed by substantial gates constructed from local riverstone, you reach the distant building only by driving past multiple rows of vines, underscoring this place's ultimate sense of purpose.

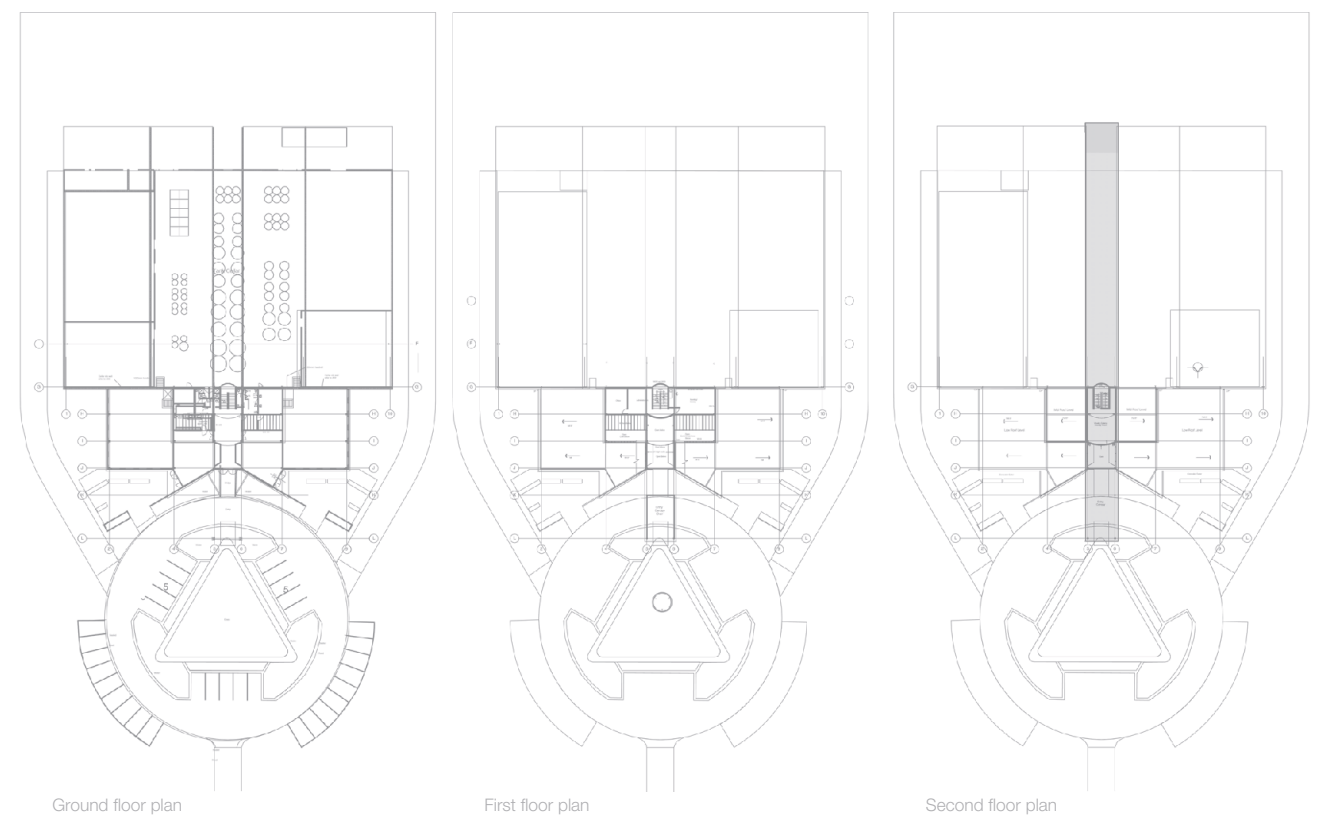
On one level a simple corrugated steel 'shed', this building succinctly combines all functions that have come to underscore Sileni's success.

The theme of earth-anchored riverstone continues around the main entrance, again aiding in securing the winery structure firmly to place. A circular drive, itself encircled with a riverstone-laced water feature, is the only other reinforcement of curves in an otherwise angular, industrial-like environment.





(above) Riverstone and cladding made from ZINCALUME® steel prove a striking combination for the facade of the industrial, shed-like building.



Ground floor plan

First floor plan

Second floor plan

With two distinct areas – the industrial/operational area for wine-making, and another commercial area for the food and wine experience, from education to procurement, under a single roof – the internal structure branches into any number of sub-elements.

The operational area, which includes the tank farm, is located under a central high-roofed form with working cellars and warehousing located under the lower roof extensions. Here, running the length of the building, are the huge 55,000-litre maturation tanks for both red and white wines.

The huge curved front portico, complete with the Sileni mark, juts out confidently to shade the entrance, while the roof runs back at this height to accommodate the high maturation tanks. The overall height of this central roof span creates a very high atrium space with visual links to all commercial activities.

This internal ‘linking’ also reinforces the winery’s internal airiness. Immediately inside the huge steel-framed vaulted portico, visitors are able to enter the winery’s cellar door sales centre on one side, or the restaurant section on the other. There are upper-level administration

offices, the wine makers’ office, a laboratory and education and marketing facilities, which all about the main working area.

The commercial area rises over four levels, from three sub-terrain barrel cellar spaces to the library and meeting rooms. These have panoramic views over the vineyard and neighbouring landscape. The restaurant and marketing areas overlook two mid-level barrel halls, and the stair landing provides views of the tank farm at various levels.

The boardroom also features expansive views across the estate and surrounding countryside.

Avery stresses, though, that Sileni Estates is much more than just a winery. It is an epicurean centre, complete with alfresco and indoor dining, a culinary school and gourmet foodstore designed to showcase all the finest Hawke’s Bay, New Zealand and international food products.

“The site on Maraekakaho Road created an opportunity to give the building a form that encapsulated the terrain that provides the backdrop to the building,” architect Paterson says. “While it wasn’t Graeme’s initial preferred site, we believe it’s ideal as a showcase for Sileni’s operations.”

Paterson says the initial architectural briefing took place in Australia, and from the outset the winery was intended to encapsulate the local environment and industrial aspects of the wine-making functions.

“The finished result also needed to embrace commercial opportunities arising from Graeme Avery’s other ventures in epicurean and fine foods – especially those linked to wines. Subsequently, I visited many established wineries throughout New Zealand and Australia to gain a clearer understanding of current wine-making processes.”

The results speak for themselves, with Sileni having featured in America’s *Architectural Digest* as one of only two New Zealand steel buildings covered by the magazine in this part of the world.

The Sileni facility has also secured the New Zealand Institute of Architects Hawke’s Bay Branch Award for commercial projects, and features in the recently published book *Adventurous Wine Architecture*, by Michael Webb and Erhard Pfeiffer.

So why use steel? Paterson, who has worked with Avery for the better part of 30 years on a wide range of projects, says he needed

to commission the building quickly (it was up and running initially after only nine months!). He also needed to specify as economically as possible, which ruled out almost all other materials. And the building needed to span large spaces, given its industrial purpose.

The budget was \$NZ4 million, which had to be met strictly, within the timeframe allotted.



Sileni Estate's cellar door sales centre and boardroom (above) form part of the four-level commercial area of the building.

"Its scale also allows for internal alterations to be made easily," Paterson says. "I also understood that Graeme is renowned for requiring low-maintenance buildings, and ZINCALUME® steel was the ideal skin and roofing material under the circumstances. All other steelwork was fabricated locally, which accommodated our short building timeframe."

ZINCALUME® steel works as readily on the curve of the portico's roof as it does on the walls and flat roof areas. The same corrugated profile was selected for overall design and build simplicity, and to create a sense of uniformity within the building's environment.

Paterson says his firm, Pacific Environments, also designed all the internal furniture, thus reinforcing the winery's of-a-piece internal design.

Landscaping has been integrated into the overall design and incorporates many services, such as waste disposal and rainwater harvesting, in turn helping to reinforce Sileni's green credentials.

The adjacent Sileni Estates Lodge – overlooking one of the Sileni Estates vineyards, and with distant views of the Kawekas and Te Mata Peak – continues this connection with place.

The lodge's simple gable-roofed building with full verandah compliments the main winery by accommodating international wine and food connoisseurs as well as providing a first-class venue for small conferences and functions in the Hawke's Bay area.

Again, the roof made from ZINCALUME® steel, cedar cladding and low riverstone walls have been designed to keep maintenance to a minimum. Outside, deep verandahs protect multiple bi-fold door arrangements. Interior materials have also been chosen with low maintenance in mind. A polished concrete floor slab extends through the entry, living and dining areas as well as into a small maturation cellar. The lofty ceiling height adds

to the spatial qualities and provides some upper level sanctuaries for library resources, reading, television and work areas.

Comfortable accommodation for up to 12 guests is ensured with the provision of five bedrooms, each with their own tiled en-suite and outdoor access. Upstairs lies a sixth bedroom and en-suite at one end of the lodge, with a library and TV room, featuring a double-sided riverstone-faced fireplace, at the other.

"We are proud to have been associated with this project, which is already proving to be flexible enough to accommodate internal alteration as Sileni expands and changes," Paterson says.

"Structural and corrugated steel were also the ideal building elements, addressing maintenance and industrial-strength issues, while still allowing the overall structure to accommodate an air of elegance for visiting wine enthusiasts from around the world.

"I believe the results speak volumes for the informality and youthfulness of New Zealand's wine industry. We have expansive skies, clean air and a relaxed pace of life – all of which called for a structure far lighter than that offered by centuries-old stone in the northern hemisphere."

Pete Heininger

Project:
Sileni Estates winery and vineyard

Client:
Graeme Avery, CEO, Sileni Estates

Principal architect:
George Paterson,
Pacific Environments

Builder:
Amtech Construction

Structural engineer:
Lewis and Williamson

Main steel elements:
Wall and roof cladding –
Fabricated structural steel and
Corrugated ZINCALUME® steel

Cost:
\$NZ4 million

Photography:
Paul Bradshaw



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