

VISION

A woman in a black dress is sitting on a wide wooden ledge inside a modern house. The house features large glass windows and doors that offer a panoramic view of a coastal landscape with pine trees, a sandy beach, and the ocean under a blue sky. The interior has a warm, wood-paneled ceiling and floor.

The Butterfly House
South Coast, Sydney

Modernist School
Camberwell, Melbourne

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The Butterfly House

Preferring rescue to demolition, Sydney architect Alexander Symes sought the path of reinvention for a NSW south-coast residence. The result re-defines its immediate neighbourhood with sharp material and environmental connections.

04





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Professional Development Series — Seeing The Light

Alistair Coulstock, principal at Cundall contributes a technical perspective on the issues and challenges raised by evolving building code regulations.



Modernist School

Old and new combine in this secondary school makeover to produce a building with the feel of a sleek ocean liner.

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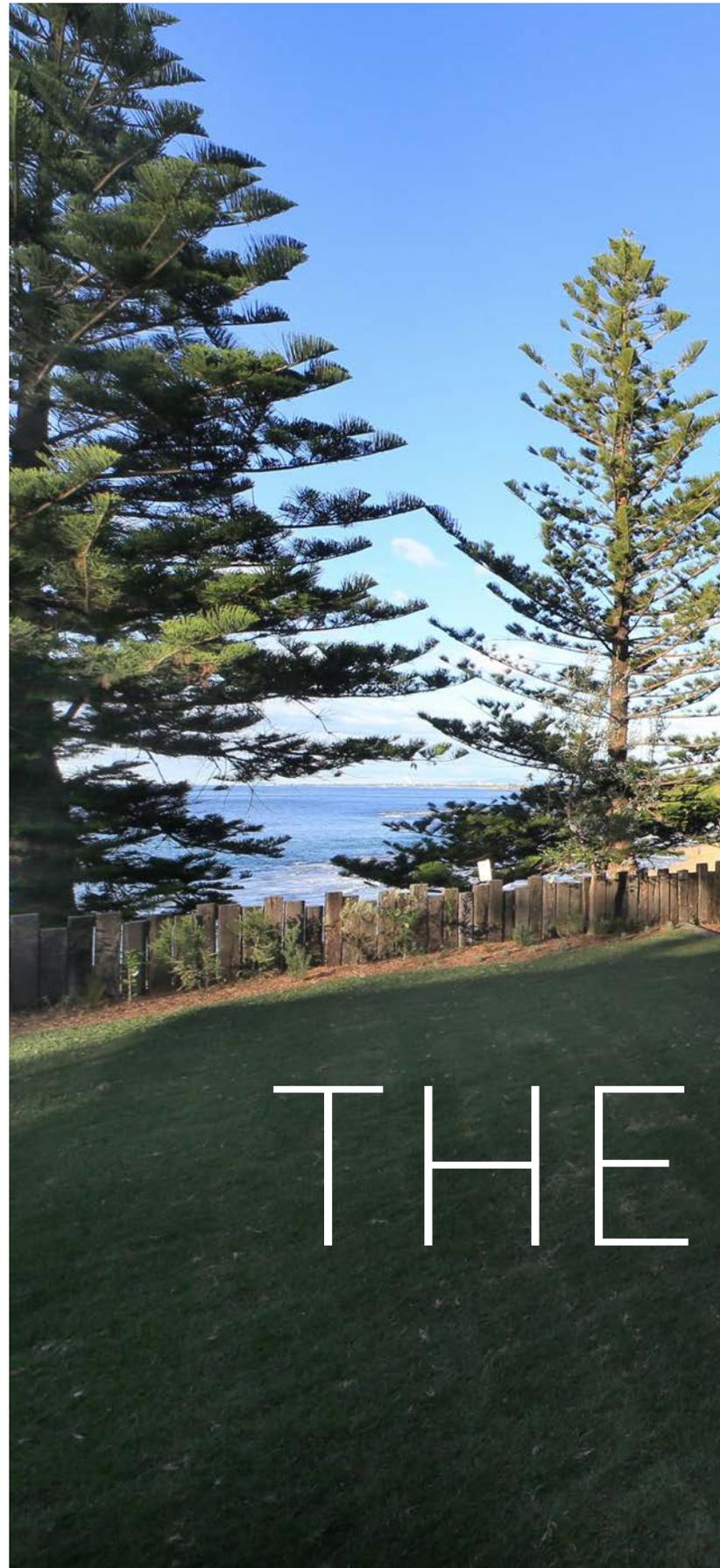
RECYCLED BONES RARELY TRANSLATE INTO SUCH POISE AND COORDINATION, BUT ARCHITECT, BUILDER AND CLIENT, ENSURE A FINE BALANCE. RATHER THAN CROWD ITS SITE WITH THE MONEY MANSION, THE ANSWER SALUTES THE SITE, SURF AND SKY WITH VIRIDIAN DOUBLE-GLAZED UNITS PROVIDING A UNIQUE FRAMING OF KEY VISTAS.

Little Austinmer House,
South Coast NSW
Principal glazing resource:
Viridian ThermoTech™ double glazed
units incorporating ComfortPlus™

Architect:
Alexander Symes Architect

Photography:
Peter and Jennifer Hyatt

Text:
Peter Hyatt



THE



CORE PRODUCTS



ENERGY



NOISE



CLEAR VISION



DECORATIVE



BUSHFIRE



STRUCTURAL



STORM



SECURITY



BUTTERFLY HOUSE



Above
Pristine beachfront access and vista
framed by historic Norfolk pines



Sited between mountain and sea, the Little Austinmer beach house is a quiet beauty and counterpoint to the fingering coastal sprawl. The Illawarra escarpment is an under-sold star of Australia's east-coast. Most locals prefer to remain small time and low rise. Any mention of high-rise towers draws disdainful looks. Cloaked in sub-tropical forest, it's a breathtaking backdrop and micro-climate for the chain of small coastal communities. Few are more sublime than this quiet pocket of surf hardly more than a hop, skip and a jump from Sydney and just nicely north of Wollongong.

Many have been attracted to the area, yet not always with entirely sympathetic results. The Little Austinmer house is that exception with a special affinity for place. It helps that architect and builder — Matt Jolley — are so familiar with the area having worked on the Austinmer Beach house ('Guiding Light' Vision, 1 July 2013).

Waterfront property is always prized and this latest addition more so, given its evocative response. An absence of swagger says plenty about the client and design/build team who put invention before bulk and novelty.

RESPONDING TO THIS ENVIRONMENT
AS OPPOSED TO DOMINATING IT,
LEADS TO A SUCCESSFUL OUTCOME.

Alexander Symes
Architect



The Butterfly House



Above

One of two upper level lounge/living areas separated by a bluestone wall built from locally quarried stone. Large window above main entrance (right) maintains flow through effect and sight-lines.

Hewn, or so it appears, from basalt and articulated with a vivid glazing strategy, the project reflects a low impact, energy footprint. Alexander Symes explains how he turned an introverted bungalow into a virtual light-house.

What's the secret to design in such a setting?

The whole art and business of such a project involves collaboration. There's a calm beauty to the whole community and that environment means that it's a pretty special place. That energy can flow back into the work. Responding to this environment as opposed to dominating it, leads to a successful outcome.

It's obviously a myth that you can do no wrong building by the sea. Many people turn their backs on the opportunity. Why does your strategy reveal the gulf between environmentally attuned design and silo houses?

It's extremely difficult. You first have to ask yourself if this is the right place to build. Is the foreshore the right of private domain? How long will the location be habitable with sea level rises as a result of climate change?

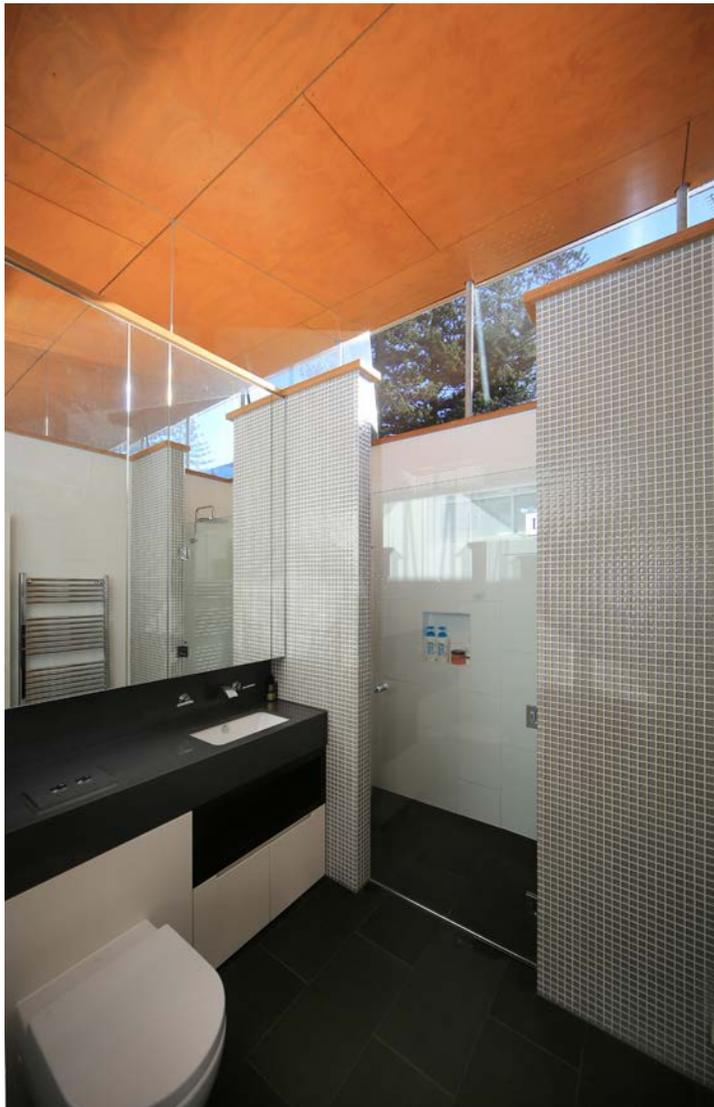
Is the embodied energy worth it?

This site is a low lying area and I hope that it will be habitable for many years to come. The ability to add new life to a building which did not respect its outlook or provide passive comfort and natural daylight to its inhabitants is a great challenge and one I love. The strategy is simple, find the right architectural balance which allows one to live comfortably via passive means while being able to admire the natural environment.



A deep window and sill as expanded sun-catcher.





What is the key difference between this house and many of its neighbours?

It's a high performance house that makes the most of its southerly aspect yet doesn't ignore the north. Its thermal envelope is a credible part of that design solution rather than being forced or arbitrary. My bottom line for this house is the importance of re-use, so that this isn't just an answer for a two-storey, beach house but the principles that work equally well for an existing skyscraper in Sydney. Adaptive re-use asks us to consider how we can re-think the possibilities with special products such as those Viridian offers to re-imagine environmentally responsible solutions.

How much of this project is the result of pre-conceived ideas versus interpreting the client's aims?

A lot of the design response flows from the three main principles that are primarily based on research. My architectural practice responds across three tiers of residential, multi-unit residential and health-care. These smaller projects are a chance to test ideas and so with Little Austinmer I looked at how that existing massing could be reduced and the relationship to the environment could be strengthened within that existing envelope and structure. One of my first objectives here was to create a passive house in terms of extreme R-Values in the walls, a very thermally efficient glazing system and really tight air infiltration limits.

Is the interior more important than the exterior?

I prefer seamlessness wherever possible.



Left and above

The floating roof on the north elevation permits deep winter sun penetration with little need for artificial day-lighting during any season.

How did you reconcile opening to the environment when there are such temperature variations?

The house when required, is quite porous. It's all about openings and accessibility. The coastal climate here can be quite extreme with high winds, so the design and build had to be fully water and airtight. The biggest challenge was that the clients enjoy a sense of opening to the sea and use of the decks, yet the house needs to hunker down at other times. Passive ventilation occurs through roof vents and optimal windows to create air movement. The big driver was creating a warm thermal envelope that would pick up solar gains in winter and manage those extremes of thermal gain across the seasons. Use of Viridian's double-glazed units incorporating ComfortPlus™ are brilliant in achieving that.



Above and top right

A feature bluestone wall and footbridge above the main entrance with seamless glass wall niched into the stone.

Right

Artful floating timber staircase sets the tone for the ceiling and roof.





THIS DESIGN OFFERS THE BEST OF BOTH WORLDS BY DELIVERING STUNNING VIEWS AND RE-DIRECTING DAYLIGHT WHERE IT'S NEEDED. QUALITY OF LIGHT IS ONE OF THE RESULTS OF THE BUTTERFLY ROOF.

Alexander Symes
Architect

The butterfly roof is a strong gesture. What was your key intention with this?

It's primarily for daylight re-distribution. The existing floor-plate is quite a large mass. We needed to get daylight throughout that floor plan and this meant we either had to install roof lights or some other means to counteract the tendency to lose natural light deep within the house. We went with the angled highlight roof with a highly reflective high gloss plywood ceiling.

Do you see this design as appreciably different to the modernist, box-like response with a singular, hero facade towards the sea?

If you took all of that glass and directed it towards the ocean view the result would be much more predictable and conventional. This design offers the best of both worlds by delivering stunning views and re-directing daylight where it's needed. Quality of light is one of the results of the butterfly roof. Streaming specific views guides the eye where various aspects can be appreciated. There is a subtlety too with the various windows that dissolve the idea of the traditional window or sliding doors. We've added long slot windows and triangular panels and these definitely contribute to a whole other range of experiences with site-lines right up to the escarpment.

How would you describe the project's degree of difficulty?

There are all of the issues of working around an existing dwelling. Once you start demolition you have to question what to retain and what to recycle. It's always a juggling act about how much to demolish and to best manage resources for the optimum result. A lot of the timber framing in the butterfly roof couldn't be retained because of the high wind loads. It was finally recycled elsewhere by the builder Matt Jolley.

It's a house of exceptional build quality requiring your eye for detail and a builder capable of carrying that through.

I cannot speak highly enough of our builder and his team of craftsman and trusted sub-contractors. It's no use having great ideas about a house if no-one is willing to work with you to find a way to execute them. Both in craft and environmental initiatives Matt brought passion and care to the project.

What percentage of the original bungalow was retained and incorporated in the new?

In its original form only approximately 50% of the original dwelling remains as it was originally onsite, however those altered materials have either been re-purposed onsite (such as timber re-used to create the cellar, bed-heads, and coffee table), or recycled (excluding the plasterboard and insulation).

Any concerns building right on the water's edge in such a corrosive environment?

All external stainless steel is marine grade 316 and then all external timber elements had to be very accessible. Durability of the external envelope was critical and the client's work in the metal fabrication industry meant he was especially aware of the need for really robust materials to minimise maintenance and ensure longevity.

And the glazing?

The glass has a high VLT (visual light transmission) which means a high level of daylight can enter the dwelling. The glass also has a low internal and external reflectivity which helps create the link between inside and out. Even when creating that thermal envelope through high performance glazing, glass mediates and connects occupants while providing a high level of comfort and temperature control.

Did you seek Viridian's technical input?

There was an existing understanding of the product – especially at Austinmer Beach, my previous house, so I really felt as if I was working within my comfort zone with a product that gave me full confidence.



Above
Main family living room directs viewers' gaze towards the ocean.

View from footbridge through living area and kitchen absorbs indirect quality of south light. Note black mirrored Viridian splashback.







The Butterfly House



Left
Master bedroom with box bay window
and spa bath to eastern ocean views and
northerly light through butterfly roof.

Any other considerations with your choice of glazing?

It wasn't about sourcing the most expensive glass, such as triple low-E coated low-iron double glazed units. It was more about a relatively affordable glass and obtaining a balance of well performing U values, high transparency, low reflectivity and all-round performance. Buying local was also one of the projects initiatives and it's given us a very beautiful result.

Credits

Project

Little Austinmer House,
South Coast NSW

Architect

Alexander Symes Architect

Builder

Matt Jolley

Structural Engineer

Detom

Principal glazing

contractor

Acacia Joinery

Principal Glazing Resource

Viridian ThermoTech™ IGUs

Frame

Timber framed sliding doors
by Acacia Joinery, Composite
timber/aluminium operable
sashless anetta DGU glazing
by Acacia Joinery

Principal Glass Provider

Viridian

Principal Glazing

Viridian ThermoTech™
double glazed units
incorporating ComfortPlus™





Above

Early morning light catches the wafer roof line and box-bay window with the majestic Illawarra Escarpment as sublime backdrop.

SEEING THE LIGHT

BCA REGULATIONS USHER MAJOR CHANGE

Alistair Coulstock

Alistair is a Principal at the Sydney office of Cundall Australia. Among other responsibilities he is charged with seeking out innovation, developing new strategies and processes to tackle the growing issue of resource use in the world. This position allows him to explore the current building environment and processes and investigate ways to enhance and enrich the projects. www.acoulstock.com

The story of glass and J

Building Code Australia section J has come a long way since its early days in 2006 and what is interesting is the story of glass within this journey. In the early years, as a general rule most buildings could still pass either BASIX or BCA J with a relatively clear glass and only a single pane. The advent of the ABGR/NABERS scheme in 2003 coupled with the federal government mandating a 4.5 star target for all their tenancies meant that higher performing glass was required in order to achieve these ratings. The introduction of these tools also drove a

greater understanding of buildings because now developers, signing up to NABERS commitment agreements would pass the commitments on to the builders to deliver their ratings. This provided the framework for designers to be able to verify the simulated design of the buildings against the actual performance.

This greater understanding of buildings threw up some anomalies in the thinking of the time. For instance, through detailed modelling it was found that, for a commercial office building in Sydney a single low e laminate could perform better in overall energy consumption than a double glazed unit (DGU). Therefore and from an energy perspective only, the best type of glass you could specify for an office building in Sydney was a low e laminate. Within the BCA 2006 there were five methodologies put forward to use as verification of a complying development. These were; Deemed to satisfy (DTS), 3 verification methods, alternative solution and lastly expert opinion.

As part of the DTS a glazing calculator was introduced. This calculator provided two methods with which to calculate the solar exposure against a stated threshold. Many projects could use either method in the beginning with varying answers. This led to inconsistencies in the results leading to confusion and eventually method 1 was scrapped.

2006 – 2007 issues of the BCA had two verification methodologies to choose from for classes 3-9 (BCA JV2 or JV3). JV2 allowed for a building to be modelled against a stated value for its class. This methodology was an easier way to achieve compliance than JV3 and as a result lower performing glass systems could be used. If solutions could not be found using the DTS calculator then JV2 was the preferred methodology. Slowly the performance requirements of the envelope were being tightened and in 2008 BCA JV2 was scrapped. For any complex building form, JV3 methodology was becoming the preferred way to reach compliance.

2010 saw a significant increase in the performance requirements of the DTS glazing calculator. You could no longer blindly go through the planning approval process and hope that there would be a glazing manufacturer that would have a glass type that would suit your purpose. A dialogue opened up with project managers, developers and architects. Rather than waiting for construction certificate (CC) to assess the envelope for compliance, a quick check was essential at development application (DA). The last thing anyone wanted was to pass through DA only to find that there was no commercially available glass around that would satisfy the results from the glazing calculator. A reduction in glass area would ultimately result in a resubmission of the DA to council and a programme delay and embarrassment for the design team.

In the commercial sector the difference between a façade performance required to achieve a NABERS 4.5 rating and a BCA compliant façade was reduced significantly due to these new changes in the BCA 2010. Thermally broken frames were introduced from Europe which significantly improves the U-values of the window and the resulting heat gains/losses. The introduction has been slow due to cost but finally they are gaining traction.

We have seen more of a reliance on automated façade elements to compliment the high performance glazing types in the last few years, particularly on commercial buildings. These façade types come at a premium, but they do start to assist in providing a façade solution that achieves more than just energy efficiency. A good façade should provide thermal comfort for the occupants, high levels of daylight and glare control.

The latest 2014 National Construction Code (changed to NCC from BCA in 2013) calculator has seen a relaxation in the performance of glazing for Class 9c aged care buildings. My view for the NCC ongoing is that uplifts to the NCC J would be targeting the sources of energy more than the tightening of the envelope. The rest will be fine tuning.

Ongoing issues

There are always going to be a variety of ways to interpret regulations because the design of buildings is complex. But some issues keep repeating and this warrants education of the industry to ensure they are addressed.

The most common mistake is the assumption that the values within that calculator are glazing values only, and not whole window values. Designers and architects were selecting glass from a glazing manufacturer's catalogue to meet the value in the calculator. The lack of understanding resulted in non-compliant designs. When the glass type selected was fitted with a typical aluminium frame, the U-value could be reduced in performance by up to 50%.

Before J was introduced, the architect would provide a concept. The mechanical engineer would offer a glass performance relative to the impact on their mechanical air conditioning plant. With the advent of Section J the mechanical consultant has somewhat relinquished the control of this aspect of the design and on many projects in the early days this small but important role has been overlooked. Anomalies still arise in terms of how the DTS calculator is used which can impact the mechanical services.

For example the DTS calculator calls for a façade height and length to be entered. Within this façade area the window area is entered and an allowable maximum thermal performance is calculated depending on orientation and class of the building. One common mistake still being made is the height of the façade.

Designers misinterpret the calculator and do not assess their design and the use of the calculator using first principles. The objective of J (JO1) is to reduce greenhouse gas emissions. The use of the calculator should be coupled with the intent of the buildings air conditioning services. Therefore the calculator should reflect the mechanical zoning designed to suit the intended space. Additionally the façade height used in the calculator should reflect the identified conditioned zone behind. For example a standard office building typically uses the ceiling void as a return air plenum with return air via light troffers. As a result, the ceiling void effectively

becomes part of the conditioned zone and a floor to slab height can be entered into the calculator. However, if the building services design is to be a ducted return and the intent for the use of space will always be this type such as a hospital with infection control, then the ceiling void will not be part of the conditioned zone. The difference between these two methods of measurement of the façade could result in 20% difference in glazing performance or more. What is presented now in the non-conditioned ceiling void case above is the question of whether the ceiling now requires insulation or not. This example identifies an area within J that has a level of ambiguity and yet to be resolved. It also emphasises why it is so important to ensure the Section J assessments on façade and glass are carried out in conjunction with the mechanical services design calculations to ensure that oversized equipment is not installed. The result of oversized equipment is that it will operate at lower than optimal efficiencies. This error in design will result in an energy penalty for the operating life of the plant.

What does need to improve drastically is the policing of the final installations. It strikes me as ridiculous that the developers and their team of designers can go to great expense to develop higher performing buildings when there is very little being done to ensure J is being policed appropriately.

The Future

As understanding of construction materials and occupant behaviour improves, so should the performance of buildings. Among this glass plays an important role. The main problem between architects and energy efficiency designers is that one wants high visible light transmission (VLT) and the other requires low SHGC values. As glazing technology improves, we can hope that there is an uncoupling of these constraints and advancement in the outcome from both perspectives. Lately there has been an improvement on this front and we are now seeing glass types with SHGC's in the 0.30's and VLTs in the 0.55's. Is triple glazing required in Australia? Probably not all but for the most remote regions of Tasmania or the mountains.

More and more integrated façade solutions should be available on the market and the biggest issue for me that needs to be overcome is embracing a mixed mode design philosophy. Throughout Australia there are significant periods of the year where the external environment is comfortable. Buildings need to be designed to accommodate this benefit for a variety of reasons, but the biggest energy efficiency leap that can be made is turning air-conditioning and lights off altogether.

World leading projects

Alistair has been fortunate to work upon world leading projects, from residential buildings through to the design of large town centres. A few projects that have won awards in the field of sustainability are Rouse Hill Town Centre NSW Australia, 1 Bligh St, Sydney Australia, Coca Cola Place NSW North Sydney, NSW, Westfield Sydney shopping centre and commercial towers.

Collaborative Competition

Alistair's latest projects target a collaborative competition model bringing together Universities, professionals from the construction industry and non-government organisations (NGO). Bringing professionals into undergraduate and post graduate education program enhances their learning experiences. Targeting engineers and architectural students, Alistair has worked with universities to create mixed groups that better represent the working environment.

These projects enhance all aspects of the design and construction process and provide an environment that all individuals – including the professionals – benefit from participation. Ultimately – in partnership with RAW impact, the NGO in Cambodia – this initiative provides a vehicle with which to deliver infrastructure and housing for those in need. This latest set of projects not only provides improved infrastructure in some of the poorest areas of Cambodia but also aims to build sustainable livelihoods. Assisting in the education of the people for improved agriculture projects, simple waste collections systems and sustainable energy solutions provide a systems thinking approach to families out of poverty and into a life where they can support themselves.



Alistair Coulstock

Alistair Coulstock is a leading expert in the subject of sustainable environments. His expertise spans strategy, design and engineering in outdoor spaces, buildings, towns and cities. He has significant experience developing and facilitating sustainable vision and values workshops and has a talent for inherently understanding the importance between creating places for people and the environment.

For almost 20 years Alistair has focused his efforts on professional projects across the world assisting clients such as Lend Lease, GPT, Investa, Westfield and many more achieve world leading status in sustainability. During this time he has raised compelling arguments for sustainable change. Utilising systems thinking he has presented leading ideas at conferences and lectured at various universities on, passive and active design for buildings and worked on developing strategies for delivering sustainable livelihoods.



MODERNIS

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THE SCHOOL AS SHOWCASE IS MUCH LESS ABOUT SHOWING-OFF, THAN SLOW REVEAL OUTSIDE AND HIGH CONNECT INSIDE. A CINEMATIC SIZED SOUTH FACING WALL OF VIRIDIAN GLAZING AND LOFTY CLERESTORIES BUILD A SERIES OF KEY CONNECTIONS.

The Wheelton Centre,
Camberwell Grammar School

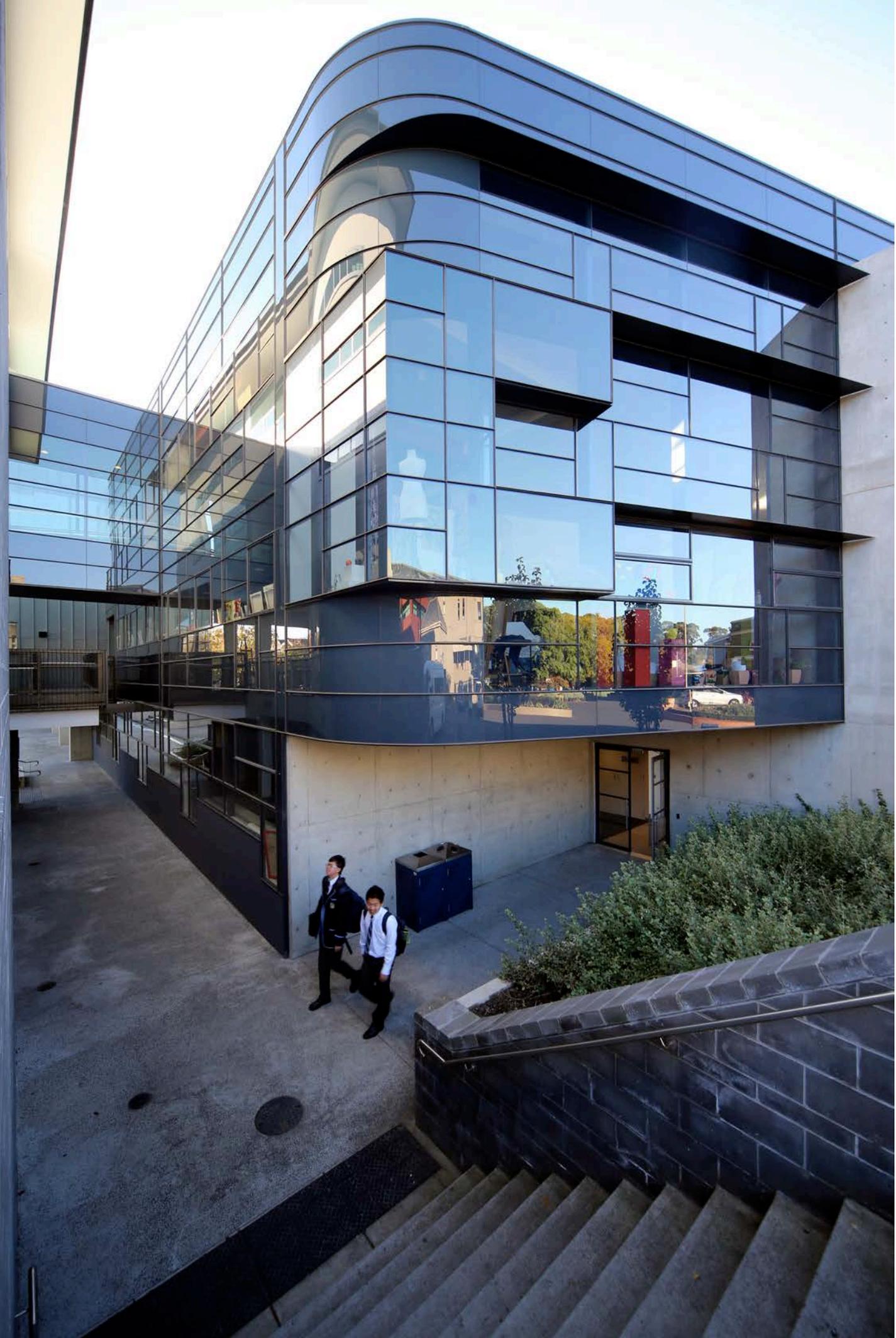
Architect:
Peter Crone Pty. Ltd. Architects

Principal Glazing Resource:
Viridian Comfortplus™ Neutral and Clear,
Viridian Seraphic™ custom spandrel,
Viridian Seraphic Design Dots

Photography:
Peter Hyatt and Jennifer Hyatt

Text:
Peter Hyatt



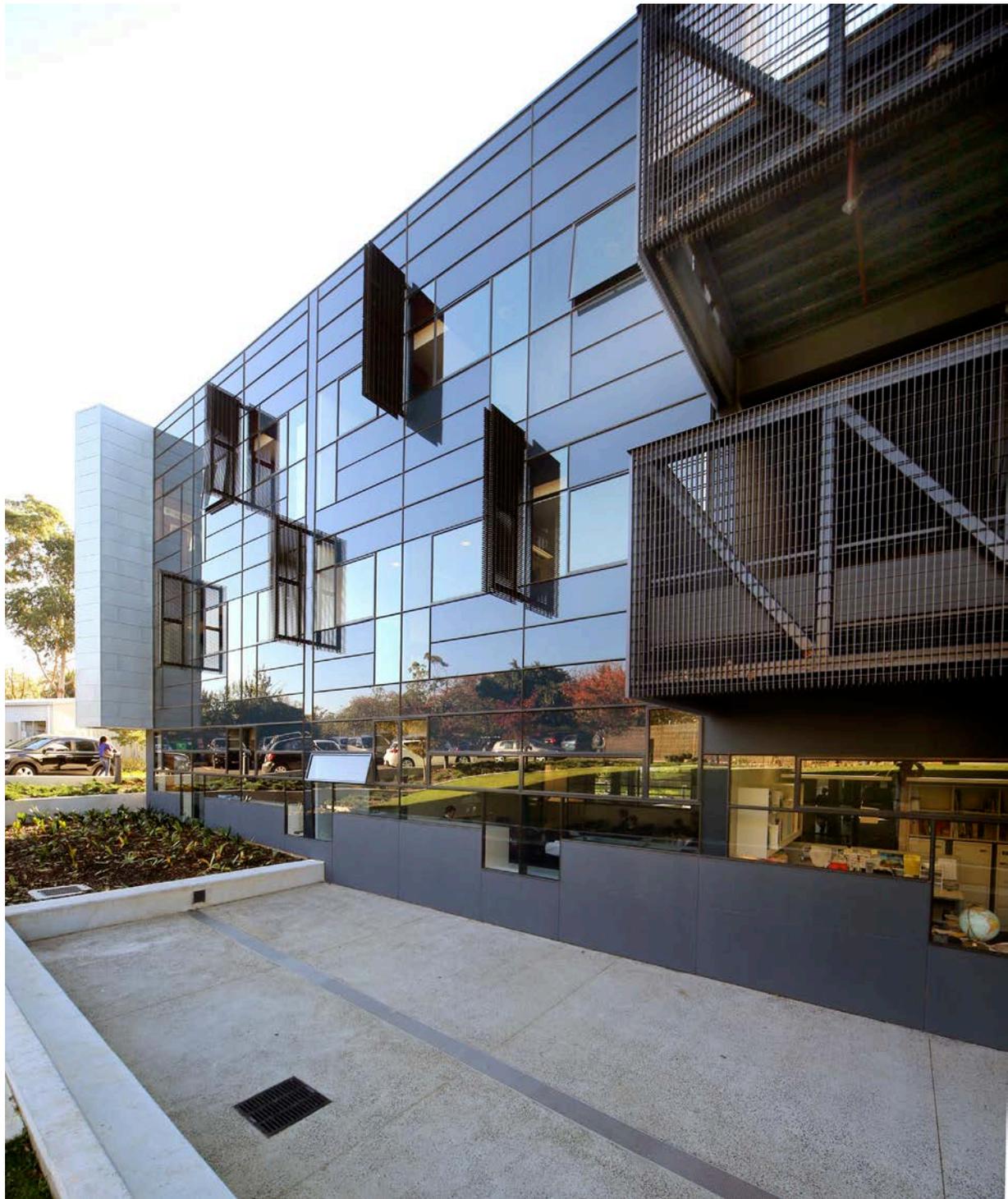


Left

Glass footbridge near the art studio continues a sequence of glazed buildings — part of the school's philosophy of non-monumental buildings.

Below

Simple metal screens help modulate late summer sun and further animate the exterior.



HEAVY HANDED-FACADISM IS STUDIOUSLY AVOIDED AND THE RESULT IS A STACCATO BRILLIANCE RENDERED IN STEEL AND GLASS.

In an ideal world all secondary schools would have facilities the equal of Camberwell Grammar School. Situated in the leafy borough of the same name in Melbourne's generally prosperous south-east, the school is a handsome marriage of old money and new.

Many suburbs are under stress from super-sized Georgian and Tuscan reproductions on allotments never intended for such scale. These displays are reminders that big budgets might deliver quantity, but rarely quality, and it's why we can marvel that the funding for CGS's new Wheelton Centre is so well targeted.

The school can be well pleased that its architects have pursued a Modernist strand in their pursuit of streamlined elegance. The centre, for senior school students, embraces a tired, mid-'90s building, with sculptural, surgical reinvention.

Heavy handed-facadeism is studiously avoided and the result is a staccato brilliance rendered in steel and glass. The result continues a design philosophy established when Peter Crone Architects was appointed to the school eight years ago.

Respect for adjoining residential properties, the new three-storey addition comprises a tiered arrangement to create a vibrant relationship with the existing buildings and grounds. The new facility boasts 21 general purpose classrooms, video conference/lecture theatre and art studios.

Right

Rather than treated as dead, dumb space, staircases at either end and internally are fully connected daylight filled.

Project architect Robert Tedesco of Peter Crone Architects discusses the art and science of immersive learning.

How complex was it to absorb an old building into the new without the result appearing makeshift?

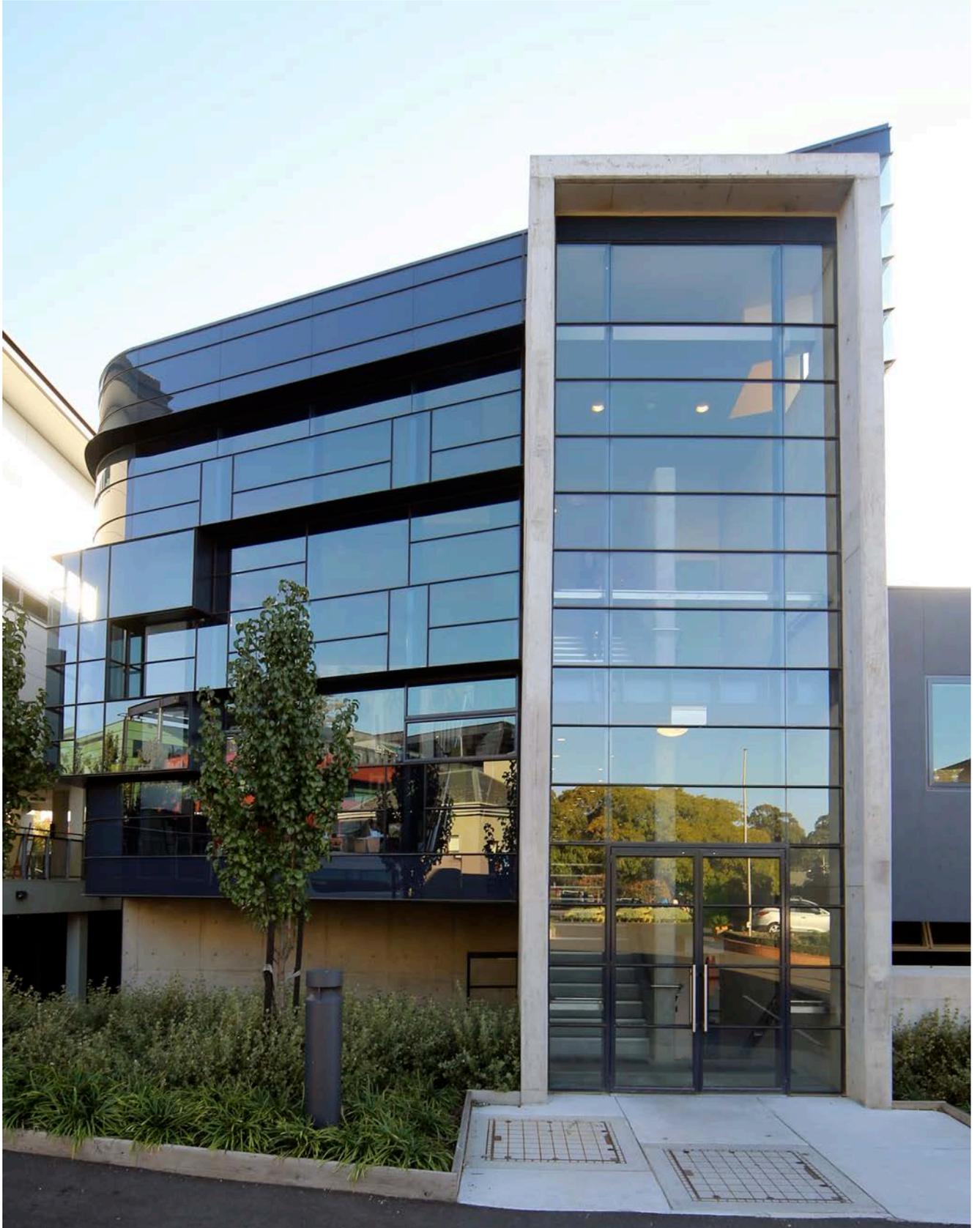
Inserting a new building into a large existing one is difficult when you set high standards. We wanted to seamlessly integrate and use a central corridor, or streets, across the three levels. This forged a tight connection with the existing building on the north to the new classrooms on the south. In essence we've linked so much of that building through a main corridor that is entirely glazed for transparency. That has paid huge dividends and the client is delighted with the outcome. Flexibility is its hallmark. Flexible spaces can be utilized to provide the options of classrooms, laboratories or studios. There's flexibility in-built, but it's still driven from a very classic understanding of such spaces.

What is the chief function of the new wing?

It's primarily a classroom complex for senior students years 10-12. It incorporates staff areas, science laboratories, common areas, a new common room, an IT room, a senior art studio and large video/conferencing theaterette.

Is there a key influence?

We wanted to continue the school's recent design language. It's a very classic architecture using a lot of glass. And we continue that language. It was also to be seen as a very distinctive and elegant building that helps set the senior students apart from the rest of the school and prepares them for the next phase of their tertiary education.





Modernist School

Left

The zinc clad undercroft/walls and steel framed glazing system of the north-facing new structure deliver a filleted effect of education as open learning.

Right and below

Clerestories and voids reflect a keen language of parts — from luminous steel sheeting to stippled Viridian glazing as high-performance mediator against full summer sun.



One of the big challenges for educators is to humanize rather than institutionalize, and to that extent glass increases the potential for this to occur with a language of such transparency.

It offers this extraordinary design flexibility with the types of glass and colours. Internally we've always been great believers in high transparency rather than intense privacy. Such a long, relatively narrow building meant it was easier to introduce natural light through clerestories and across the section with extensive external and internal glazing. Taking this idea even further, glass-walled staircases at either end and the main central staircase have natural light washing into those areas. Of course there is feature glazing along the south facade with beautiful views into the landscaped garden and amphitheatre.

Many school buildings are informed by a tough, Brutalist vernacular that are almost hose-outs rather than inviting any sort of learning quality, or pleasure. Yours may appear a less robust environment at first glance, but in reality, it's pretty robust isn't it?

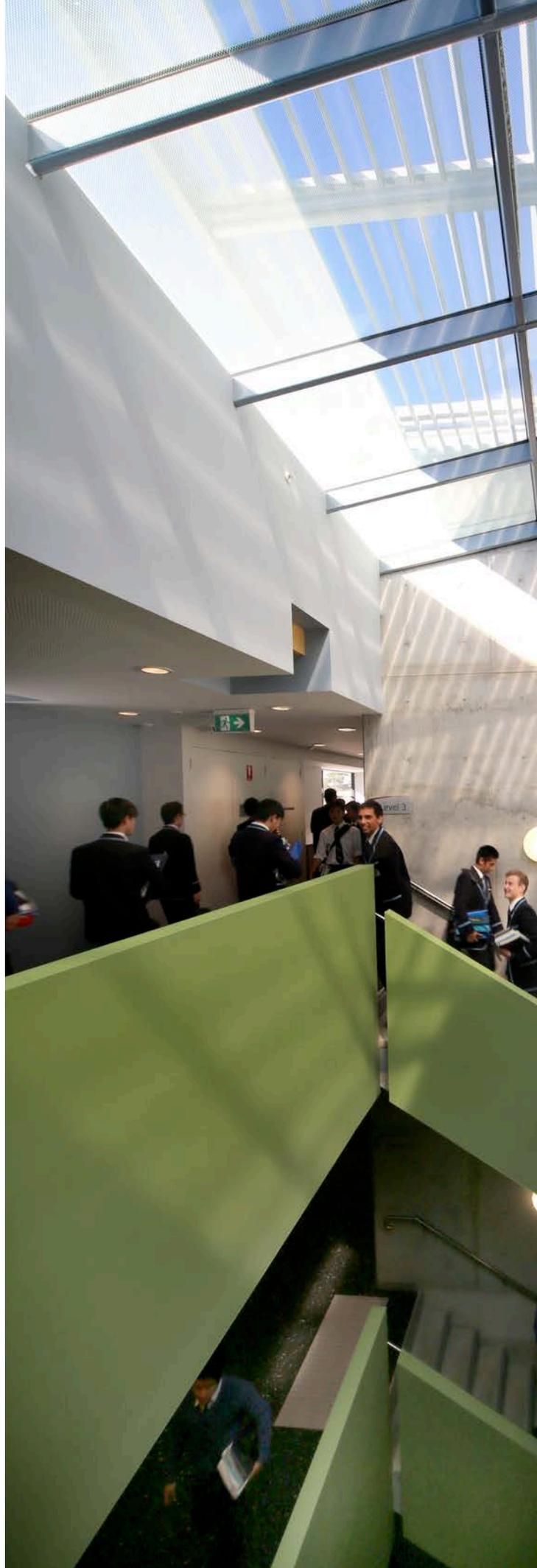
It is. This level of glass usage is not something we fear at all. We would like to glaze as many classrooms as possible in all of our education work. We were fortunate in this instance, that all of the classrooms enjoy this huge southerly aspect and it allowed a very soft light. Late summer sunlight rakes that façade and we address this with vertical louvres and articulation.

It's a quite alternative approach because until recently classrooms tended to be boxed-in with perhaps a sky view to minimize classroom distraction.

It's the complete opposite now. These students tend to be very focused, so the idea that views into the garden or sky might lead them astray and take their minds off their study couldn't be further from the truth.

There's no longer the sense either of needing to escape into the outdoors because this building does such a good job at opening itself up.

That's true and we built it around a magnificent quadrangle with beautiful links to the landscaping historic buildings and beautiful vegetation. That's a pretty good adjunct to the learning experience.





What else does it say?

One of our practice traits is a history of timeless, utilitarian buildings. Hopefully this building is part of that family. You see it in the materials – concrete, glass and steel. There aren't any flashy colours or elements and it's a direct response to the functional requirements of the school, yet maintaining a timeless design language.

There are some very sleek, slick details including your window frames and material finishes that really enrich that design.

Our detailing really flows from that philosophy. We go to enormous lengths to create details and those might not be immediately apparent to the user, or appear as a strong element in every photograph, but there is a pleasure in resolving all of that complexity in a very minimalist, elegant way.

Many organizations are risk-averse to every imaginable issue - from maintenance, to running costs and breakages that this sort of innovation never sees the light of day. How do you convince the doubting Thomases?

We address each of those issues and learn more about the possibilities with glass on each project. Having said that, issues with maintenance and breakages for instance have never been a problem. Some might say: 'Too much light, heat or cold will enter the building'. We tend to control that with window furnishings as well as glass selection. That management typically forms part of our contract and the result adds a special layer of interest as well as the design development of our facades.

What counter-argument do you advance to placate such fears?

We're able to demonstrate to clients that the advances in glass with its thermal insulation properties and use of suitable shading devices easily out-perform the enclosed box. We're definitely about trying to create the very opposite effect with these classrooms that open, link and connect.

Left

Central staircase showcases a robust, yet warm, material palette.



View across void to senior students' common room. Glazing rather than artificial lighting provides key illumination across a relatively narrow waisted building.





What assistance did you receive from Viridian?

Their people visited our office a number of times and provided initial guidance on products and a thermal assessment of the glass as well as assistance with a number of window framing details. They offered technical assistance to support our design decisions and back-up support, rather than just sales. We've had a very good experience with Viridian for many years.

Given the extent and size of some of the glass you've used, were there any issues with size, weight, fabrication or cleaning?

Those concerns haven't been a problem in the past. The school has the exterior glass cleaned quite regularly and it wasn't an issue to fabricate or install. We use a steel framing system that's based on a very typical 600mm module so we tend to limit glass height to 600mm but use them in very long horizontal planes. That's meant we can be very flexible with the glass sizing module.

There are also those jewel, display-case like shop-windows within the corridors which are an almost ephemeral glass layer. Do they perform another role?

They really link the old and new and the focus of laboratories to the wider building user. They are like jewel-cases and places to stimulate wonder and represent a level of curiosity and investigation that occurs within the rooms themselves, so those glass shelves are very important 'miniatures' of the building.

The art studio on the eastern end enjoys a remarkable quality of light.

It does. It opens to the east and south and apart from very early morning, the studio is filled with a soft painter's light. That indirect light fills the studio which is kept deliberately open with the mezzanine.



Top left

Main passageway celebrates the role of science and high visibility to laboratory/classrooms.

Above

View from staircase and mezzanine level to section of art studio reveals generous indirect light source.

Left

Glazing as acoustic room classroom divider.





Credits

Project

The Wheelton Centre,
Camberwell Grammar School

Architect

Peter Crone Pty.Ltd. Architects

Builder

McCorkell Constructions

Structural engineering

Point 5 Consulting

Services Engineering

BRT Consulting,
Rimmington & Associates

Landscaping

Tract Consulting

Principal Glass Provider

Viridian

Principal Glazing

Viridian Comfortplus™
Neutral and Clear,
Viridian Seraphic™
custom spandrel,
Viridian Seraphic Design Dots

Budget

\$20 million



Why the three main clerestories?

Not surprisingly they usher a lot of daylight deep into the building – especially above the main areas of gathering and circulation, pushing light right into the voids. We used Viridian fritted glass to help modulate direct sunlight and once again that injection of diffused light via those openings is an important part of the building's success.

Can you explain your window framing system?

We've always been a great believer in steel rather than aluminium framing because of the embodied energy involved. We use a steel system with a very shallow profile. These don't lend themselves to double-glazed units. Viridian was really helpful by providing a single pane glass with very high-energy efficiency characteristics. This glazing and framing is such an important detail because of its shallow, fine steel frame profile. Aesthetically it's one of the project's most important details when you consider that glass represents more than 50 per cent of the facade.

Is there a simple post-occupancy test to establish how successful you have been?

It's always anecdotal, rather than a formal review. If clients approach you with a smile rather than a frown, or cold-shoulder, that's a good sign. It has to rest with the client and building user and they have been absolutely thrilled. They moved straight in without any hiccups. Students and teachers alike have been very positive and as an architect that is about as good as it gets. It validates that we have been able to extract the absolute maximum from the brief and lived up to our clients' expectations. Classroom teachers have said they love the new spaces and that acoustically they are better than any other building they have worked in. I know they have had other competing schools from the area coming around to see what all the fuss is about.

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