VISION

Cliffhanger

Scenic World,
Katoomba

Dark Star

Automotive Centre
of Excellence (ACE)
Docklands

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CLIFFHA

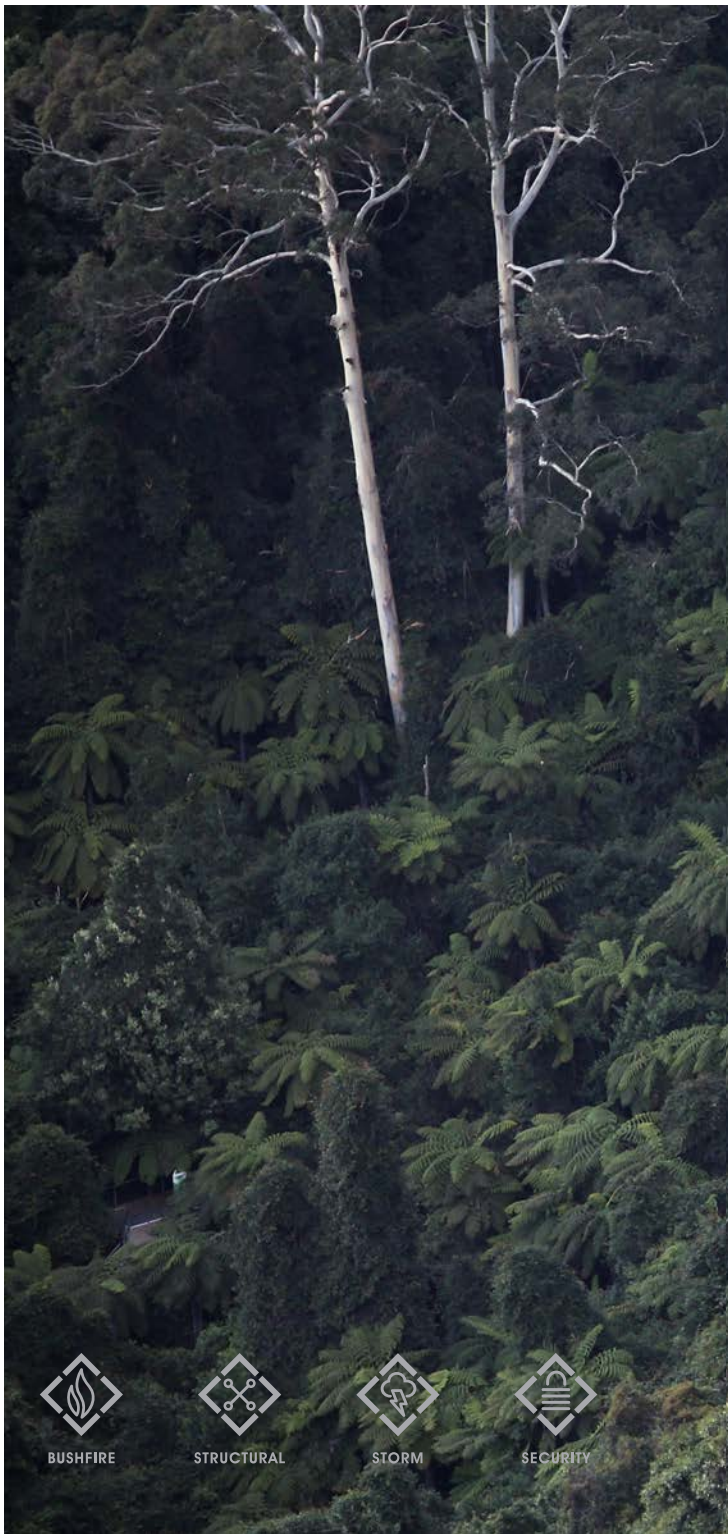
A $30 MILLION UPGRADE OF THE HISTORIC SCENIC RAILWAY AT KATOOMBA'S SCENIC WORLD, TRANSFORMS AN ICONIC TOURIST ATTRACTION INTO A FACILITY THAT BETTER REFERENCES ITS HERITAGE.

Scenic World,
Katoomba, NSW

Principal glazing resource:
Viridian 17.52mm VLam™ custom laminate –
incorporating Renew™ and Seraphic Design™

Architect:
pmdl architecture and design

Text, Images: Peter Hyatt
and Jennifer Hyatt



CORE PRODUCTS ENERGY NOISE CLEAR VISION DECORATIVE

BUSHFIRE STRUCTURAL STORM SECURITY

NGER

Above & Right
Scenic Railway's lower station is a light-weight addition of steel and leaf patterned glazing.

In a diminishing natural world, eco-tourism is finding reward with the low environmental impact statement. Scenic World in Sydney's World Heritage Blue Mountains can't claim to leave the landscape untouched, but its response is an exemplar of Green good manners.

The Australian Aborigines' songline to 'touch this earth lightly' championed by Glenn Murcutt, presents a compelling mantra for all tour operators and developers who wish to 'improve upon nature'.

A $30 million upgrade of the historic Scenic Railway at Katoomba's Scenic World, transforms an iconic tourist attraction into a facility that better references its heritage. A new Swiss-designed train and equally prismatic platform canopies, heighten the experience of place. Situated on the escarpment and nestled deep in the Jamison Valley, 310 metres below, the glazed canopies rest beautifully within their settings.

A NEW SWISS-DESIGNED TRAIN AND EQUALLY PRISMATIC PLATFORM CANOPIES, HEIGHTEN THE EXPERIENCE OF PLACE.

Troy Diamond,
pmdl architecture and design

With more than 850,000 tourists annually, Scenic World is the most visited, privately-owned attraction in Australia. It also boasts NSW's largest gift and souvenir shop. This could suggest a crass trampling of the very attraction upon which it is created, yet, contrary to such pressures, the design celebrates its setting with an acute touch.

Viridian VLam™ custom laminate, incorporating Renew™ self-cleaning glass are two key elements in the design solution. Project architect Troy Diamond of pmdl architecture and design discusses the firm's strategy with Vision's Peter Hyatt:

This could be considered the dream project because of its extraordinary setting. Was that your firm's experience?

Yes we have very trusting clients who valued our input into every aspect of the project's design and function. With that comes the responsibility of maintaining the heritage and setting of such a unique site.

How difficult was it to overhaul and incorporate existing structures, yet define a new identity and building language?

The main challenges were the extremely steep nature of the site, as well as keeping the Scenic Railway in operation for most of the duration of the works. The main structure hangs off the cliff and that created issues unknown on most construction sites.

Was there a standout obstacle or difficulty?

From a design point of view, the main challenge was making sure the parts of the project fitted together within the acceptable tolerances. There are certain standard architectural tolerances that are generally accepted in the industry. With moving machinery, there are certain absolutes that come into play, and the norms go out the window. The train carriages, their related machinery, and train rails between platforms, were built in Switzerland and sent via shipping container. Top and bottom station platforms were built locally, with the support towers air-lifted into place.

What do visitors experience now that was previously missing?

The upgrade of the last of the three moving attractions makes for the completion of the procession that is the Scenic World experience. Previously the tall, stone-blade facade was installed to hold the prime view back from patrons as they arrive. Once passing through the mineshaft entry tunnel, the patron is ushered into Scenic World

RATHER THAN SHOW ONE STRONG VIEW, WE CONTRAST THE STRONG WITH THE GENTLE; TO TEASE AND TO WOO THE PATRON.

Troy Diamond, pmdl architecture and design

Above
Top station of Scenic Railway contributes to unfolding and glimpsed views towards the iconic Three Sisters.

and its various functions. Moving through this space you are thrust up and out, onto the top railway station's viewing platform for the grand reveal, which hangs away from the cliff edge, to create the sense of almost touching the Three Sisters.

Why have you chosen to tease out the experience with the gradual reveal?

To create an unfolding journey. Rather than show one single strong view, we contrast the strong with the gentle; to tease and to woo the patron. Each location has its own delight and story to tell whether the full celebration view of the Jamison Valley and the Three Sisters from one of the open platforms; or part view glimpses through the various tunnels.

The alternative approach to Scenic World via sky gondola from the eastern cliff-top of the Three Sisters is the fully dramatic gateway. Doesn't this overturn your idea of the gradually revealed view presented by the main top station?

Although this is one of the 'wow' experiences, these views are very different to those from the valley. The Skyway cable car provides a huge range of vantage points from which to view the Three Sisters, the waterfalls and the local flora of the valley floor. The location is simply too great and too nuanced to fully comprehend. And so, each spectacular location builds into the next.

You create a strong sense of light and shade throughout the journey. How does glass help achieve this?

Glass provides an unimpeded view and reinforces the locations the patrons find themselves in. In a way, the design ceases to matter. It becomes about the experience. We're creating spaces rather than architecture and it's in those spaces, and movement between those spaces that the real delight occurs.

The site's difficult coal-mining history lends a certain poignancy and gravitas. How do you balance this history with modern comforts?

The train platform's strong structural elements celebrate an historic mining language. Its roof glazing provides a transparent canopy, reflecting the forested location and weather extremes where temperatures can vary from sub-zero and snow, up to 40 degrees C. While the upgraded top and bottom station platforms and new carriages provide some weather protection, great effort has been taken to retain the experience of the original train. The heroes are still the historic train ride and setting within a World Heritage-listed location.

Apart from the exhilarating railway incline and high-wire glass gondolas, how else do you 'keep the experience real'?

We definitely wanted a mining vernacular, rather than pristine European ski-lodge appearance. This is the fifth version of the Scenic Railway and we wanted to retain the essence of the original train. It's about contributing to the excitement rather than hermetically sealing off visitors from the experience of place. The language of the glass-covered platforms is also consistent with the language of the rail cars and gondolas. It's a subtle but important consistency.

Why so much emphasis on the authentic experience when a lot of people prefer air-conditioned comfort?

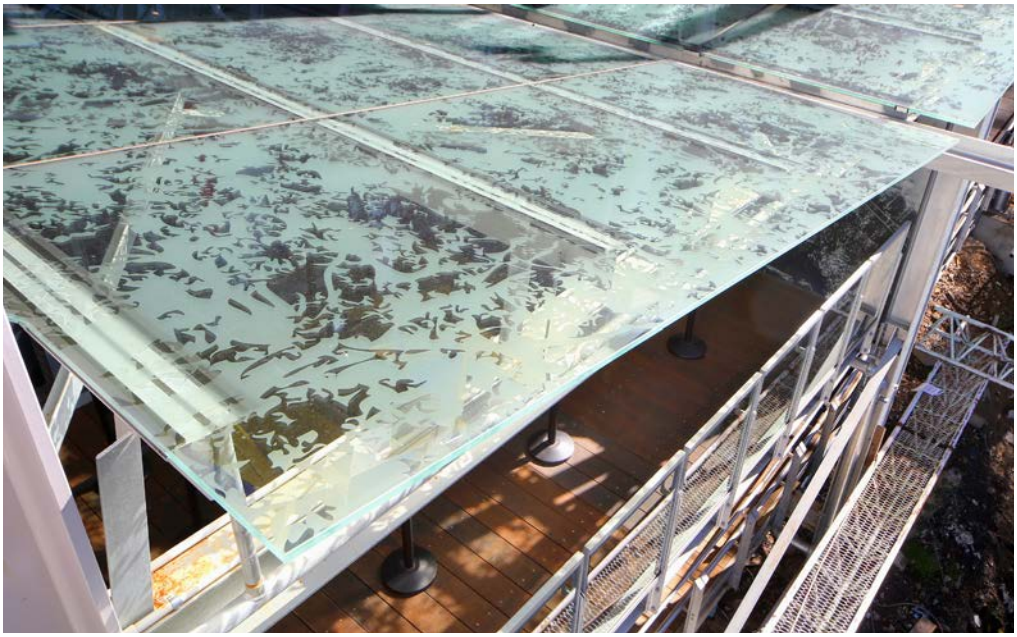
We never could, or ever wanted to entirely shut out the weather in the train or on the platforms. If it is raining, when they reach the valley floor, visitors are more than likely going to get wet. The glass gives some protection from rain and summer sun, while providing warmth on cool days. The Seraphic glass for instance has a 60% cover that balances winter light and summer shade. And the stepped roof faces mean there is always airflow around the platforms. That is all part of the experience in this encounter with nature.

How do you find the right balance between thrill-seeker and highly conservative types?

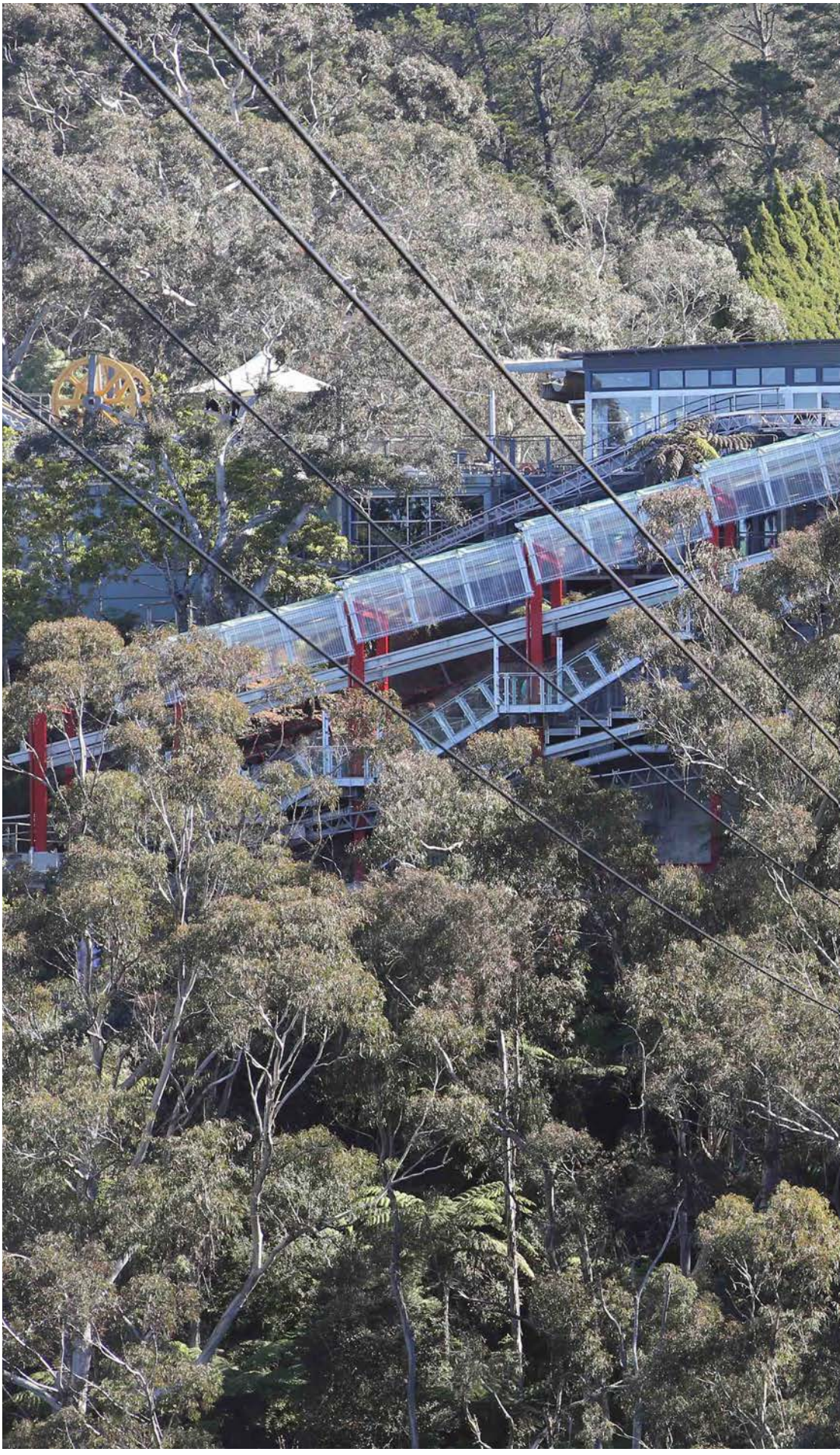
For some, they will find the top station premium class experience with its transparent stairs too much. Glass, rather than solid structure, is definitely a key to the thrill you experience but also the beauty you appreciate.

Above
Scenic Railway top station provides passengers filtered shade yet design remains essentially open to the elements and environmental prospects.

Right
Leaf patterned glass provides sympathetic canopy pattern.



Left
The main visitor's centre and Scenic Railway top station viewed from the Skyway Cable Car east station.



How does glazing assist?

Glass allowed us to define space and make those all-important connections larger and more intimate. It really freed us to create this quite ephemeral link to the setting. Viridian's Seraphic glass roof on the top and bottom stations provides a beautiful dappled shade. Because of the bush canopy there is a constant shedding of leaf and bark debris onto the glass. Self-cleaning glass is a great bonus in that regard. With the variable weather we wanted as much daylight as possible for people waiting on the platforms. The patterned glass alludes to the setting rather than being blatantly obvious. We could have had a heavier, more oppressive statement, but Seraphic glass provides an infinitely lighter, comfortable statement.

How did you transport and handle such sizable glazing on site?

It was transported by hand and assembled at the bottom station. Where we would normally crane glass, here it had to be reverse engineered so that it could be manhandled onto site, ensuring no design compromise.

The British architect Peter Cook is a great advocate of glass for its capacity to create 'shimmer, gleam and lustre'. Do you aspire to these qualities for Scenic World?

Linking glass to the mining vernacular of coal and seeing it in that geological sequence of carbon and diamonds is part of the design joy. It's where the excitement of the 'diamond' glass quality comes in to being. Glass definitely provides those qualities of shimmer, glimmer, reflection and transparency unavailable with any other product.

Credits

Project
Scenic World, Katoomba. NSW

Architect
pmdl architecture and design

Builder
Grindley Construction

Project Team
Peter Dodrell, Troy Diamond, Bill Shipman

Project Managers
Sinclair Knight Merz

Railway
Doppelmayr Garaventa Group

Glass Resource
Viridian

Glazing Contractor
Architectural Glass Projects P/L

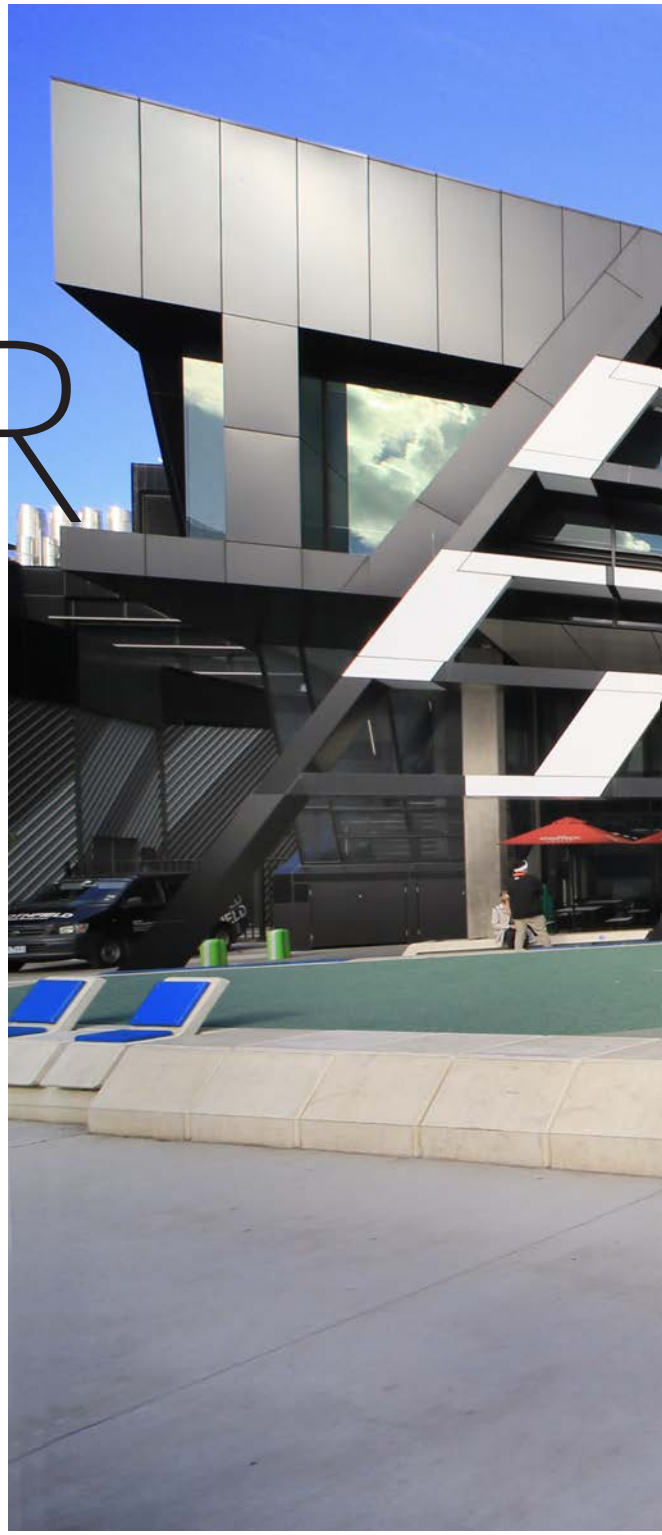
Visitor Platform canopy glazing
Viridian 17.52mm VLam™ custom laminate – incorporating Renew™ and Seraphic Design™

Budget
$30million

LINKING GLASS TO THE MINING VERNACULAR OF COAL AND SEEING IT IN THAT GEOLOGICAL SEQUENCE OF CARBON AND DIAMONDS IS PART OF THE DESIGN JOY.

Troy Diamond, pmdl architecture and design

DARK STAR



LIKE A PAIR OF SUPER-COOL SUNGLASSES, STAGE 2 OF KANGAN INSTITUTE'S AUTOMOTIVE CENTRE OF EXCELLENCE (ACE) AT MELBOURNE'S DOCKLANDS, PROVIDES A SAVVY ENTRÉE TO TERTIARY EDUCATION.

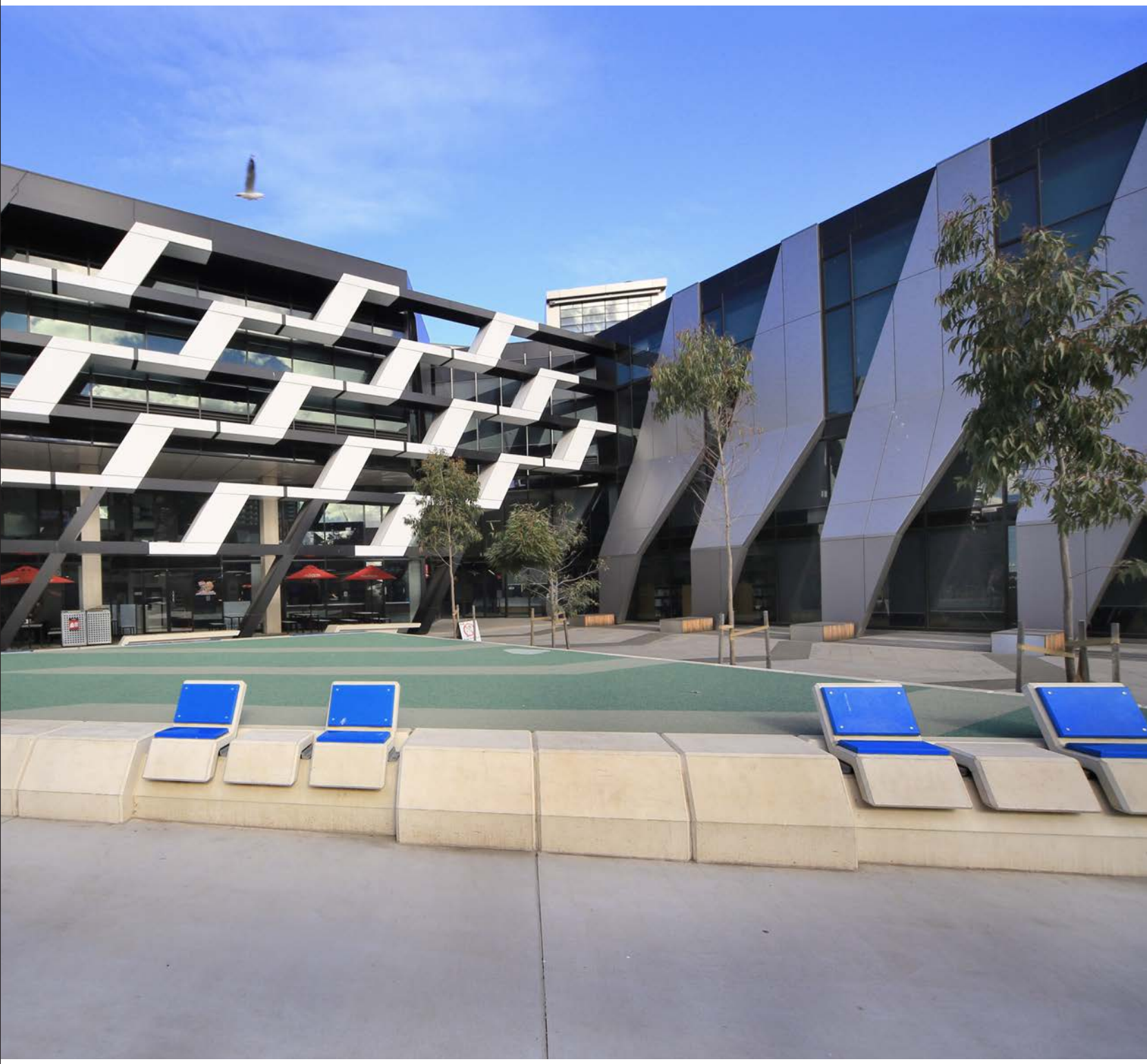
Kangan Institute Automotive
Centre of Excellence Stage 2

Dockands, Melbourne, VIC

Principal glazing resource:
Comfort Plus™ Neutral 59, Comfort Plus™ Clear 82
ThermoTech™ IGU with low E Seraphic™

Architect: Gray Puksand Architects

Text, Images: Peter Hyatt
and Jennifer Hyatt



The design universe loves black. It's emphatic. There's no avoiding energized black among the beige. At least it appears the philosophy behind this recent project by Gray Puksand Architects.

Architecture's love affair with the dark side has been around at least since Henry Ford decided customers of his T-Model could choose any colour so long as it was black. Ford's preference for the enamel with the fastest drying time is relevant in the context of ACE's emphatic automotive learnings. Yet, unlike Ford's fast-track production line, this is every inch the bespoke model. It also proves sustainable architecture and engineering need not appear clichéd in search of high environmental performance values.

An origami of sheet metal, mostly charcoal-toned, with leaves of contrasting white and muted silver, produces a strong industrial art-form. Integrated in the manner of a vehicle sunroof and windscreen,

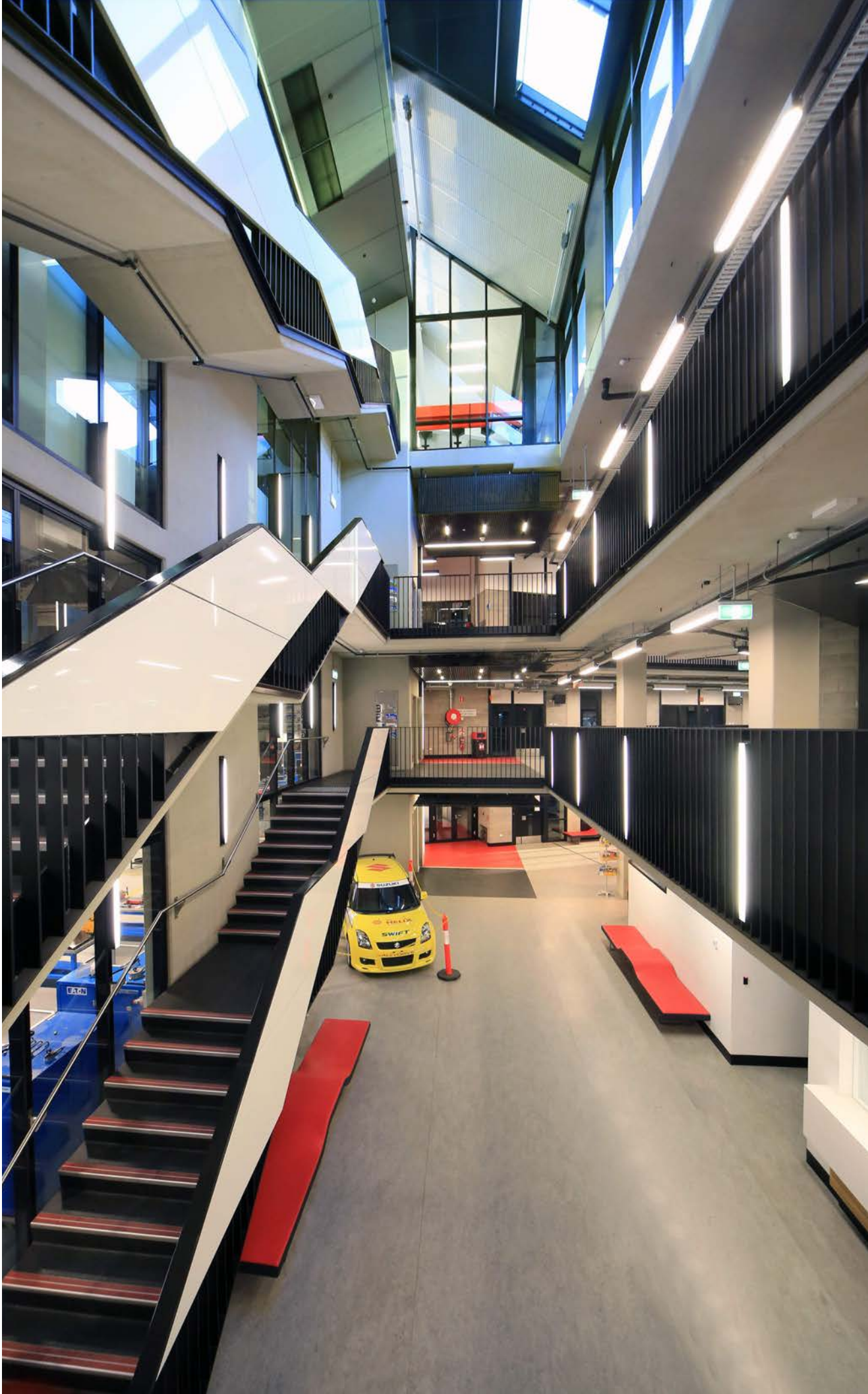
THIS LOW-RISE INSTITUTION EMERGES AS ONE OF THE STARS IN A PRECINCT OF LARGE STATEMENTS

Viridan high performance glazing is key to an astonishingly light, airy ambience. This low-rise institution emerges as one of the stars in a precinct of large statements. Capped by planning regulations to a mere 20 metres - odd given the neighborhood's soaring towers – the four-storey structure works overtime to overcome its restrictions.

Docklands has run red-hot with investment and construction during the past decade. Kangan's ACE Stage 2 is a low-rise standout among the forest of banks, insurance companies and apartments.

Below
The shading strategy combines various projections and performance glass to deal with the north west orientation while showcasing Kangan's workshops and lecture spaces.

Right
The central void acts as thermal chimney and visual vortex from which most major learning spaces are viewed or accessed



Peter Hyatt speaks with design architect Mark Freeman of Gray Puksand about the evolution of a special education environment:

What was your biggest design challenge?

We had to work around the earlier Lyons design completed in 2007 and expand upon this in a way that respected the original, yet created something fresh and adventurous.

How did you deal with that restrictive 20 metre height limit and deliver so many highly focused learning spaces?

A very lengthy and detailed briefing process helped us prioritize. We brought various parties/users to the table and effectively had to understand the actual needs. Once we drilled down, we discovered that we could free-up 30-40 percent of the building's real estate for uses other than what the client realized was possible.

What about all of the urban and environmental conditions such as traffic noise and climatic concerns?

Those were real tests. It's a complex site with multiple aspects/orientations with very large facility areas and a demanding program. Most of these spaces had never been assembled in the one building before in Australia, let alone the southern hemisphere. We wanted natural spaces where possible, where people felt connected to each other and their environment. It responds on every elevation to environmental conditions.

It's deceptive – dark and complex externally, yet surprisingly alive and light within.

There's a strong social aspect to learning. Learning is always on centre stage with a seamless flow between technology-rich settings and double-height training spaces. The loggias provide shelter and fragmented edge spaces. The hero facade peels away to reveal the chassis, crafted moving parts, electronic elements and references future technologies. It allows controlled daylight into the building, yet maintains transparency and permeability.

The quality of experience in the void is as successful as the external window edges.

That central void is a kind of vortex that promotes people circulation and fresh air movement. And learning is always on centre-stage with a seamless flow between resource commons, a variety of technology rich settings and double-height training spaces. The old notion of an automotive workshop is gone. The industry is taking its inspiration from the laboratory. Testing and diagnostic training is now a collaborative learning activity involving international industry partnerships.

How did research influence the result?

We visited automotive companies such as Mercedes and BMW in Germany. We adapted the best of their training facilities. That high-end work really informed our proposals and the client team was very receptive.

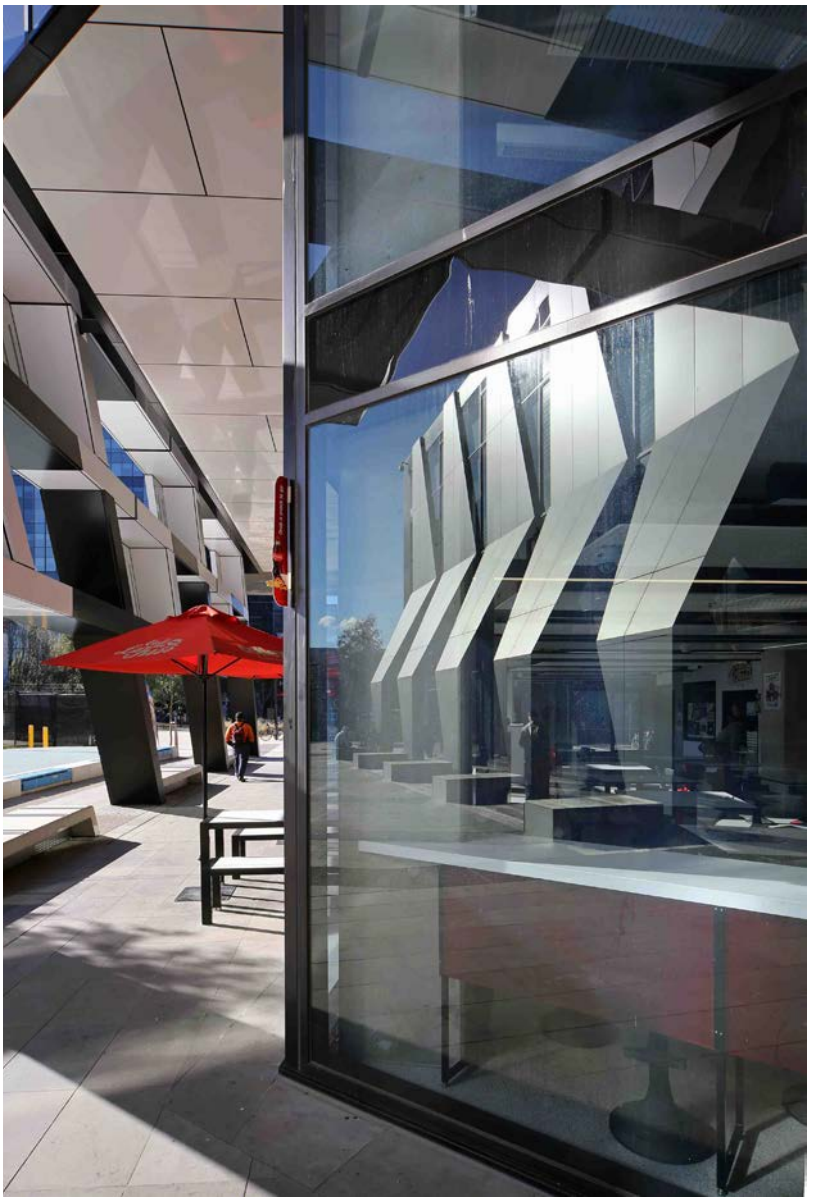
Is the design primarily a response to place or function?

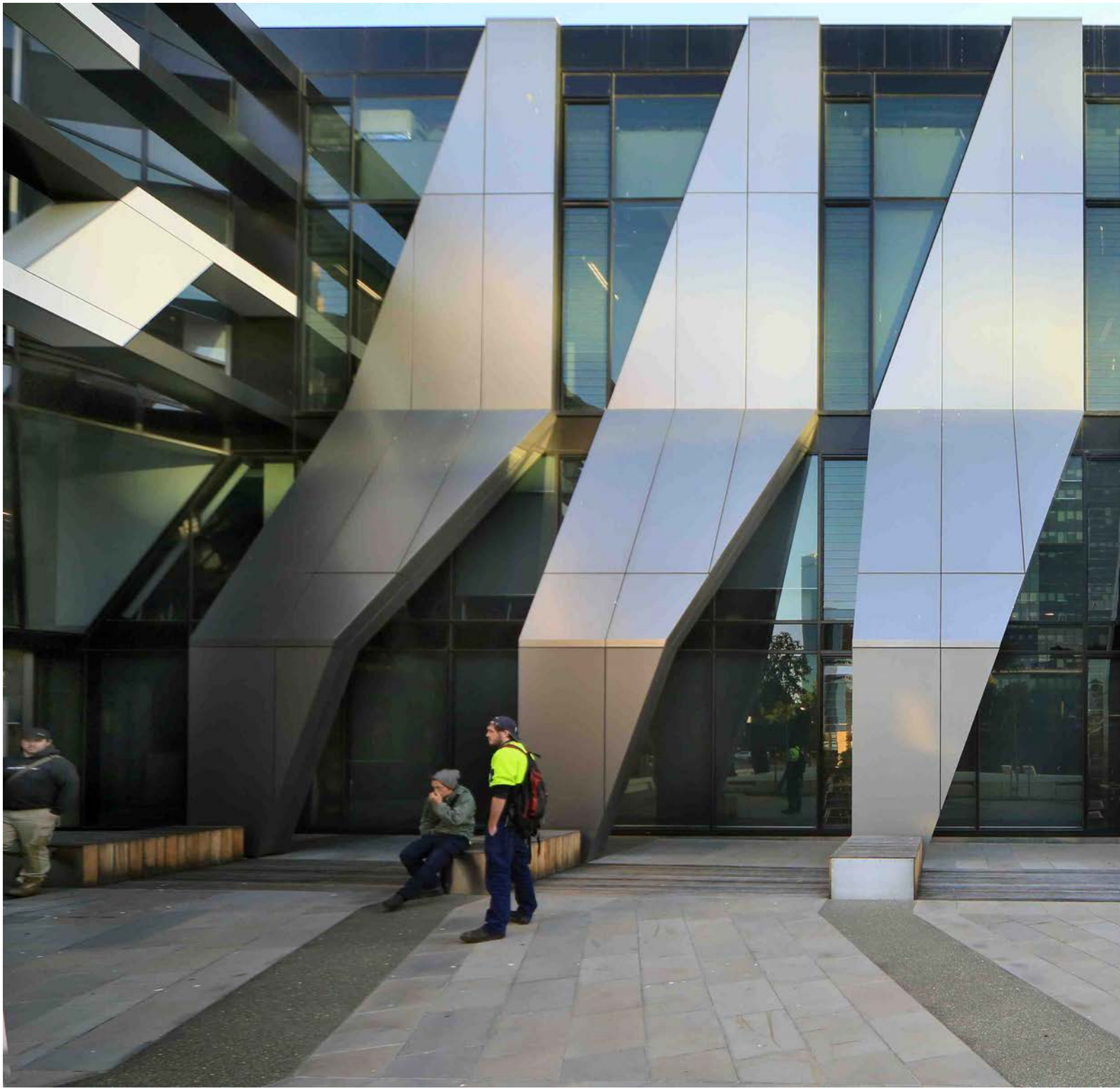
There's inspiration from the automotive industry and that merging of process, material and assembly. The orientation was also a key factor and every façade required a different solution and is influenced by the changing demands of such issues as solar loads, outlook, courtyard and planning codes.

THERE'S INSPIRATION FROM THE AUTOMOTIVE INDUSTRY AND THAT MERGING OF PROCESS, MATERIAL AND ASSEMBLY.

Mark Freeman
Gray Puksand Architects

Above & Right
Stairs encourage student/teacher interaction.
The north and east elevations generate a robust aesthetic to the main entrance and library.





Dark Star

Left
Students wait between tutorials outside the library.

How did you distill the result for efficiency and economy?

We went for primary materials such as masonry, concrete, epoxy flooring, expanses of glass and exposed services. Everything is revealed. If anything needs repair it is visible and can be mended. There's a vast amount of mechanical services on show. It achieved a 5 star Green star energy rating, so it has a refined toughness and performance.

It's design has the highly sociable experience.

The openness throughout its 14,000m2 is almost unprecedented in a TAFE building, or most university buildings. It really takes its cue from the better commercial projects that enable staff and students to be very aware of what is taking place and to easily see and hear what is going on. Overall it celebrates transparency and human interaction. Glass is absolutely invaluable in the creation of this space and amenity.

Every 20-30 metres there are opportunities to take a flight of stairs, pass a lecture theatre or workshop, have a coffee or find a space to meet. That really breaks the monotonous corridor that typically runs through the middle of such buildings.

How else does glass inform the project?

We considered the assembly of vehicle shells and panels. Those moldings, crimpings and fittings were key to understanding this building. That interpretation made it a logical fit and even adds to its authenticity. The layering of materials flows right through to the Alpolic finish, glazing and dyno-shield fixing that replicates, to some extent, how a windscreen fits into a car.

What was your starting point for glazing?

We basically began with a transparent box. As you respond to the climate and orientation you start to shield and protect the glazing as you move around the building. We started from the point of wanting an honest and fully transparent building.

What research went into your glass selection?

We relied heavily on our ESD consultants and their understanding of what was required to meet energy efficiency to achieve a good, high-performing, robust building. They worked behind the scenes with Viridian directly to meet compliance. From an architectural viewpoint we wanted a suite of glass to deliver clarity where possible and to use tint or mirrored product where needed. We definitely wanted enough transparency to reveal what was occurring inside to the passerby.

What are some of the other principal benefits of glass?

Typically no-one sees what takes place inside what are usually big sheds, or pre-cast concrete boxes. Given its location in Docklands and requirements of the planning authority to respond to pedestrians on all frontages, we weren't allowed blank walls. This resulted in an active façade at street level. Glass was crucial in revealing the level of complexity of activity within the building.

What other techniques do you employ?

There's a huge amount of glass that allows daylight to pour in at a high level via the vent stacks, glass chimneys and clerestory. For most of the day artificial lighting is unnecessary.

Were there any fears or opposition to the use of so much glazing?

We fought to retain a lot of internal glass. When the budget is under pressure internal glazing is often eliminated in favour of solid walls. We resisted, knowing just how essential glass was to the project's success.

So glazing was transformational?

Students and staff typically come from pretty archaic warehouses and sheds. This building represents a whole new world that is light, bright and naturally ventilated. It's a building we hoped would surprise and delight and pleasingly, that's how it has worked out.

Credits

Project
Kangan Institute Automotive Centre of Excellence Stage 2

Architect
Gray Puksand Architects

Services Engineer
Proactive Consulting Engineers

Structural Engineer
Robert Bird & Partners

ESD Consultant
SBE

Builder
Probuild

Glazier
AGI

Principal Glass Provider
Viridian

Principal Glazing
Comfort Plus™ Neutral 59
Comfort Plus™ Clear 82
ThermoTech™ IGU with
Low E Seraphic™

Construction Budget:
$54 million

Total Budget
$85 million

Above
South elevation towards busy Wurundjeri Way provides another showcase view of the TAFE's work.

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