

Excellence  
Awards

# People & Projects Awards 2022

Entrants' handbook

## About the Engineers Australia Excellence Awards

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The Excellence Awards offer a range of national awards, medals and scholarships that highlight contributions to the various areas of engineering, which we support and promote.

The Excellence Awards Program seeks to reward outstanding achievement and eminence in the practice of engineering, and standout service to the profession. It plays an important role in promoting engineering excellence and the significant contribution engineering makes to the community.

## About the Project Awards

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The project awards recognise Australia's top engineering projects and the teams behind them. They inspire and encourage engineering distinction through teamwork, innovation, and technical excellence.

The national award program first began in 1988 after a decade of celebrating local projects.

Today, there is a local submission and assessment project awards process. Up to six finalists are selected per location, of which the winner will go on to be a finalist for the Sir William Hudson Award.

The Sir William Hudson Award is the highest honour that an engineering project can receive from Engineers Australia, and it will be presented at the 2022 Engineers Australia Excellence Awards in October.

## About the People Awards

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The Engineer of the Year (People) Awards recognises outstanding engineers who show innovation and resourcefulness in their work.

### Awards Categories

- Professional Engineer of the Year
- Engineering Technologist of the Year
- Engineering Associate of the Year
- Young Professional Engineer of the Year
- Young Engineering Technologist of the Year
- Young Engineering Associate of the Year

# Project Awards

## Community models for deploying and operating distributed energy resources

### ANU Battery Storage and Grid Integration Program

Neighbourhood batteries are a nascent technology poised to contribute significantly to energy system transformation in Australia. This medium form of energy storage complements household and utility-scale batteries with power capacities ranging from 1 - 5 MW. A wide range of stakeholders are interested in neighbourhood batteries as they potentially can unlock the value of battery storage to all energy users including vulnerable families, those who rent and those who do not own their own solar panels.

Energy network operators, energy retailers, market operators, consumer groups and governments are all interested in the range of benefits neighbourhood batteries can offer. This project consisted of an Australia-wide analysis of neighbourhood batteries from a technical, regulatory, economic, and social perspective, identifying a range of possible ownership and operation models.



# Evolve: smart software for the orchestration of 21st century electricity systems

## ANU Battery Storage and Grid Integration Program

The evolve project was the largest collaboration of electricity network providers, technologists, aggregators, academia, and government departments ever assembled. Through the cost-effective development of smart software, in particular the use of dynamic operating envelopes, 250 per cent more energy can safely flow through the same wires. Crucially, the evolve project paved the way for the development of a set of Australia-wide guidelines for the management of distributed energy resources in the electricity system, that are now in the process of standardisation through Standards Australia.



## Whitlam Stage 2

Calibre Professional Services  
Suburban Land Agency

Whitlam is the newest suburb in the ACT, and brings together the best aspects of civil engineering, planning and project management. Whitlam Stage 2 provides residents with high-quality amenities, multiple open spaces and promotes active travel through its multiple linking pedestrian and cycling paths to the surrounding playgrounds, future schools and shops. The development provides residents with maximum solar benefits to improve the energy efficiency of their houses, and through the construction phases has reduced the projects impact on the environment due to the use of recycled materials



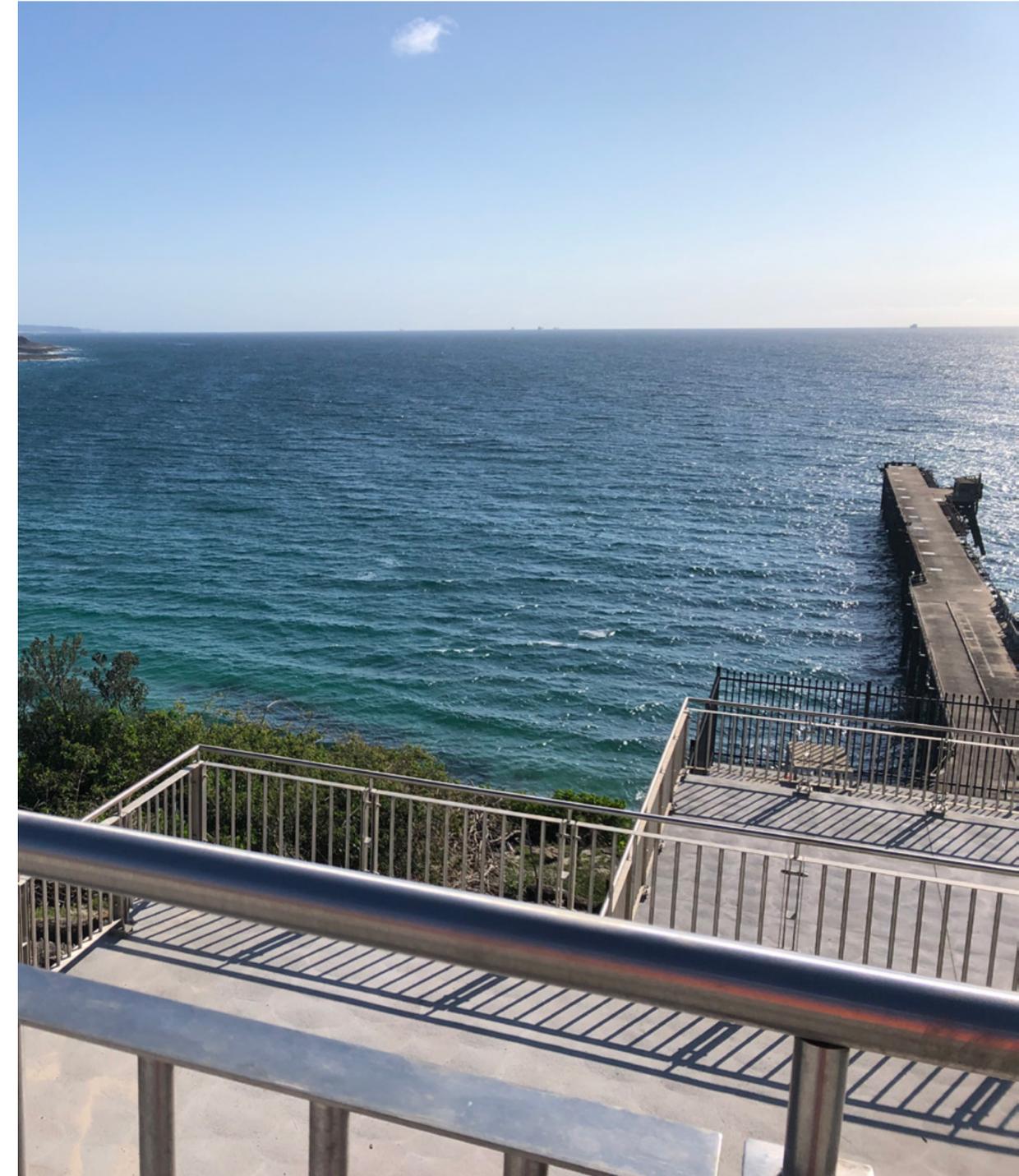
## Catherine Hill Bay Coal Bin Adaptive Re-Use as Public Viewing Platform

**Northrop Consulting Engineers**

Northrop provided structural engineering services for the adaptive re-use of the former coal bin into a multi-level public viewing platform.

The works involved filling the 28m deep bin with approximately 17,500m<sup>3</sup> of material. To minimise cost and limit construction traffic through the neighbouring residential area, the existing concrete and bitumen pavements within the former mine site were crushed and used as fill material. The recycled concrete and bitumen were bound together with a cementitious grout using fly ash; a waste product from a nearby power station. The use of recycled waste materials significantly reduced the environmental impact of the works. It also achieved a project cost saving of more than 50 per cent.

Once the redevelopment of the former mine site into a residential subdivision is complete, the new viewing platform will be an outstanding community facility, and likely a very popular spot for dolphin and whale watching.



## Cowra Lines Reopening Concept Design

**SMEC Australia**

**On behalf of Transport for NSW via John Holland Rail and Subcontractors – Monteath & Powys, Diospatial, AAM**

Transport for NSW engaged SMEC via John Holland Rail to undertake condition assessments of the 135-year-old Cowra Lines and develop a concept design of track, civil, structural, and signalling disciplines to reinstate operations on the Blayney to Demondrille rail line from its current non-operational state.

SMEC proposed an all-inclusive data collection initiative that presented comprehensive information for current and future stages of the design. This included UAV aerial imagery, fixed-wing flight Lidar survey and a bespoke in-house Asset Data Collection System to record key items during physical inspections along the entire 180km line. Additionally, field teams could simultaneously capture 360-degree data during inspections without adding any additional inspection time

The data collected was accessed by designers, clients, and stakeholders to resolve options throughout the design process, enabling users to virtually experience the location and condition of assets and access routes over the 180km rail line.



# Farley Wastewater Treatment Works Upgrade

**GHD**

**Hunter Water, Project principal/ asset owner and John Holland, Construction Contractor**

Hunter Water's \$70 million Farley 'Stage 3B' Biological Nutrient Removal treatment plant upgrade was designed by GHD, as the lead designer, and constructed by John Holland using innovations to solve significant challenges and providing a benchmark for future, similar projects that seek to improve effluent quality and wastewater services and improve water sustainability.

The technology innovations delivered by the project featured a combined structure on a single pour post-tensioned concrete base slab. The upgrade caters for future growth and improves the reliability and performance of the plant, supplies recycled water to the nearby suburb of Gillieston Heights. The project supports the predicted population growth in the catchment leading to local socio-economic benefits.

The plant was upgraded to address the identified process limitations and to extend Environment Protection Licence compliance to year 2032, with future focused provisions for year 2042, to the limit of best available treatment technology.



## New England Highway Upgrade at Bolivia Hill

ARCADIS

Transport for NSW

Located 59km north of Glen Innes and 33km south of Tenterfield in New South Wales, the Bolivia Hill New England Highway Upgrade included 2.1km of road realignment and a 316m cast in situ balanced cantilever bridge. The three-span balanced cantilever bridge, with a main span of 150m and end spans of 80m and 86m, was vital in overcoming the site challenges. The main span of 150m is the second longest span for this bridge type in New South Wales.

The bridge span configuration maintained an exclusion zone for the endangered Bolivia Wattle and provided connectivity for fauna, including the endangered spotted-tail quolls. The end spans of the superstructure were designed to be constructed through cantilevering off the abutments, eliminating the requirement for traditional temporary falsework on the steep terrain.

The project delivered an improved road alignment that provides safety and time benefits to all road users.



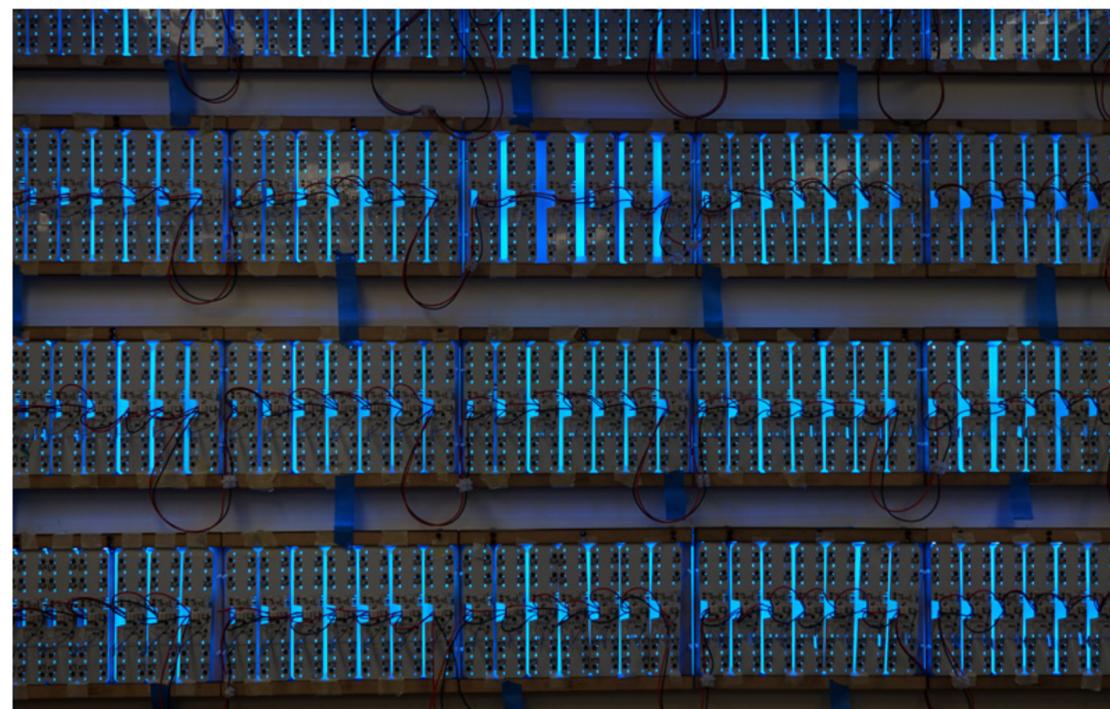
## Next-generation longwall lighting system, BurnBrite ISLEDi

ResTech

Burnbrite and Ampcontrol

IS LEDi – Next Generation Longwall Lighting System has been designed specifically for use in underground coal mines, key components of the IS LEDi system are IECEx certified Ex ia for Group I applications.

The system comprises three main components: the intrinsically safe light, a Bluetooth gateway device, and an interface module. Each light on the system is individually controlled using a Bluetooth mesh network. The lights can display seven colour variations, a variety of flash sequences and brightness levels, all controlled by the mine automation system.



## Rye Park Wind Farm—Design Optimisation

Zenviron

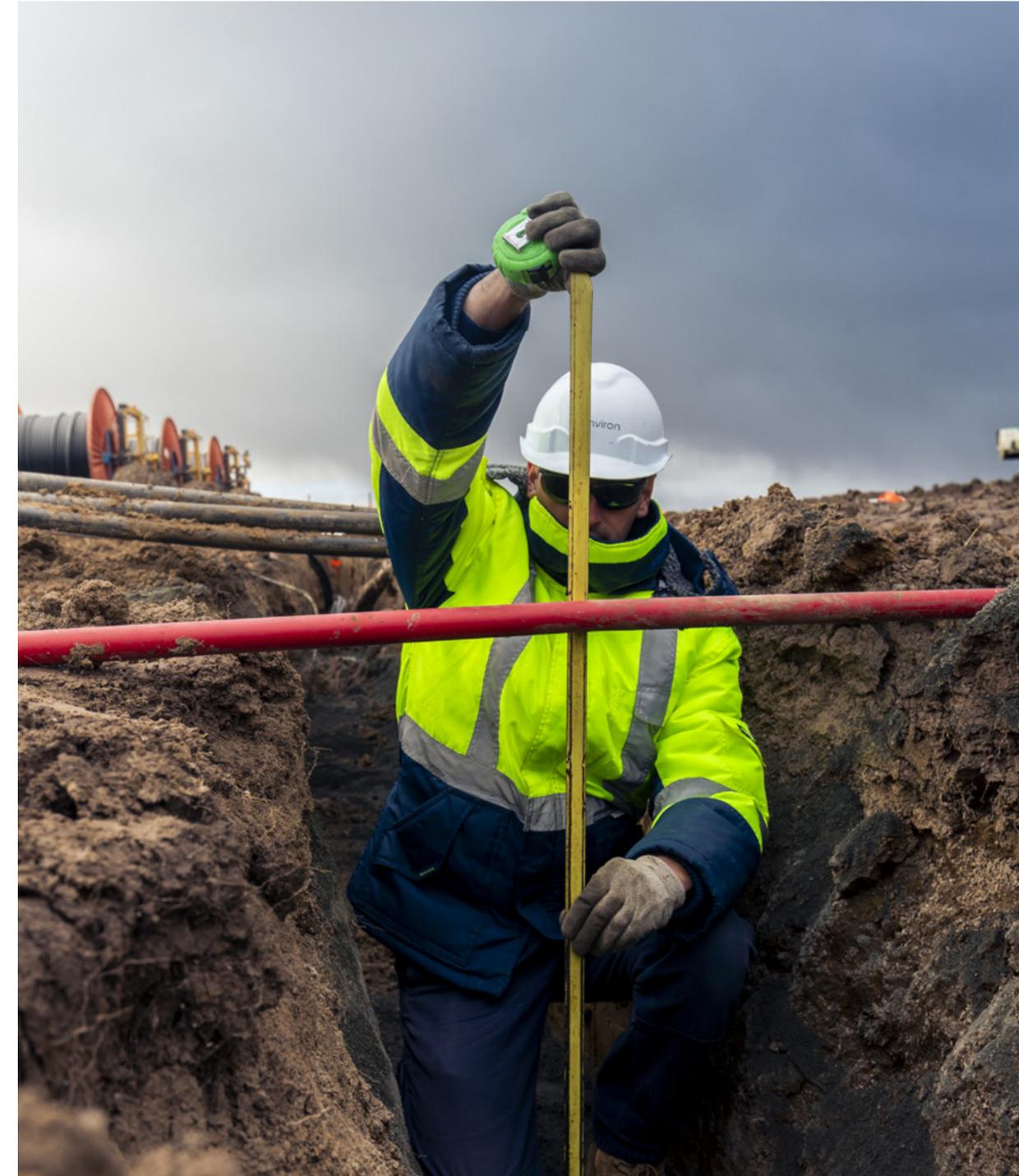
Tilt Renewables and I3 Consulting

Owned by Tilt Renewables, the Rye Park Wind Farm will be one of the largest wind farms in New South Wales. Once operational, the project would deliver an average annual energy production of 1,188 GWh being equivalent to powering approximately 215,000 homes.

Led by our Newcastle office and supported by our civil designer (I3 Consulting), Zenviron has played a significant role in optimising all phases of the works from initial engineering, through procurement and construction.

In optimising the footprint of the wind farm infrastructure, we have achieved a reduction of greenhouse emissions, whilst halving the impact to flora and fauna biodiversity compared to government approval limits.

In contributing to this project, Zenviron has supported a development offering immediate and long-term benefits to the community and the environment. The design optimisation utilised at RPWF provides a performance benchmark, providing techniques and experience that can be rolled forward to optimise future wind farm projects.



## Solar Qube

Boundary Power

Ampcontrol and Horizon Power

Solar Qube is a self-sufficient power generation unit that incorporates solar photovoltaic panels, inverters, battery storage technology and a backup generator.

Solar Qube was borne out of the need to address mounting concerns regarding aging power distribution infrastructure across Australia. These systems are designed to replace traditional 'poles and wires' grid connection and provide a continuous, reliable power supply to customers.

Design consideration was also given to developing a solution that responded to the growing needs of utilities and communities for a reliable off-grid power system to support the rapid response and longer-term recovery efforts following catastrophic natural disasters, such as bushfires. Solar Qube's development in alignment with these criteria was ultimately critical to its viability.



## Woolgoolga to Ballina Pacific Highway Upgrade

**Pacific Complete is a Joint Venture between Laing O'Rourke and WSP Australia, in partnership with Transport for NSW.**

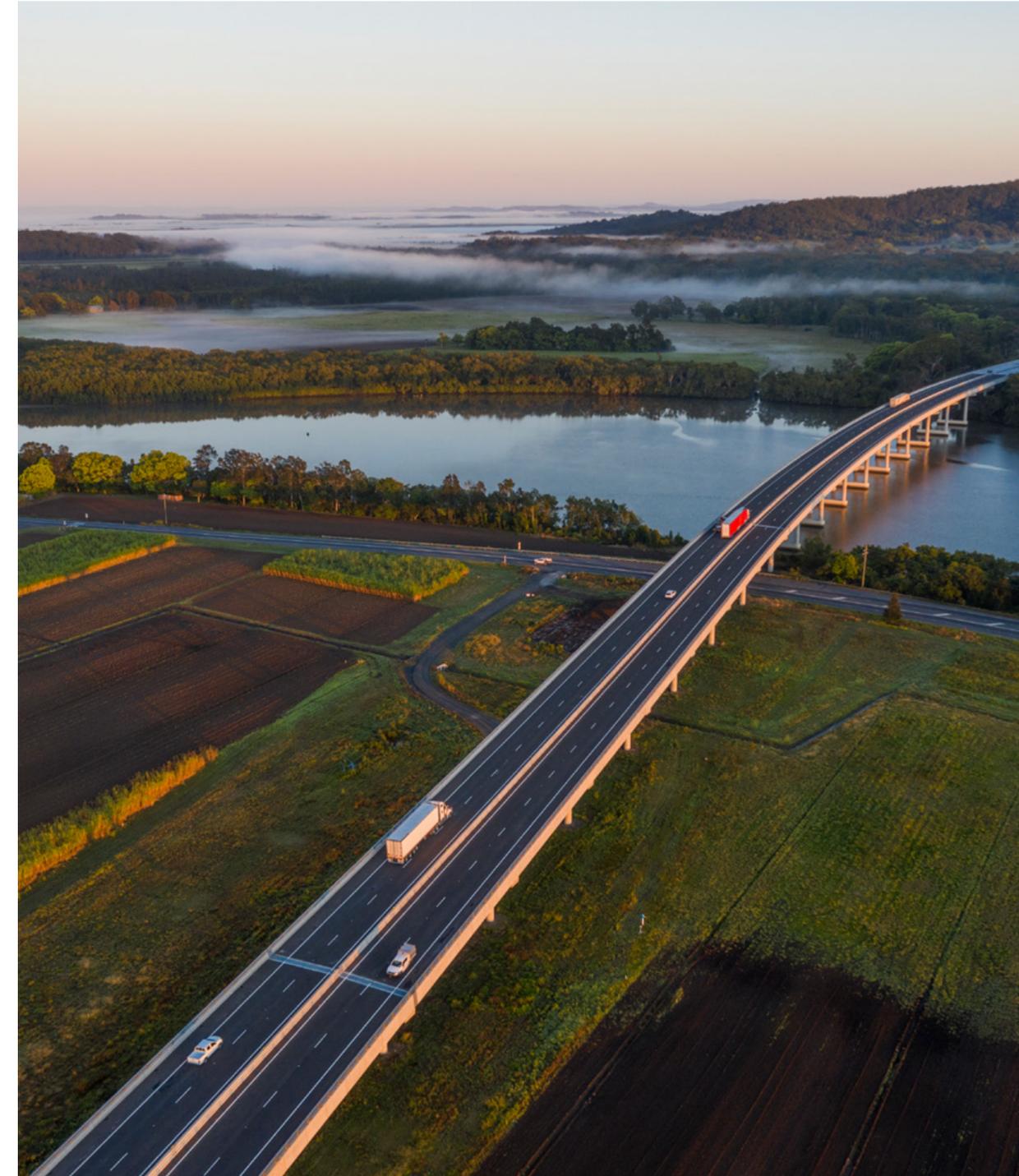
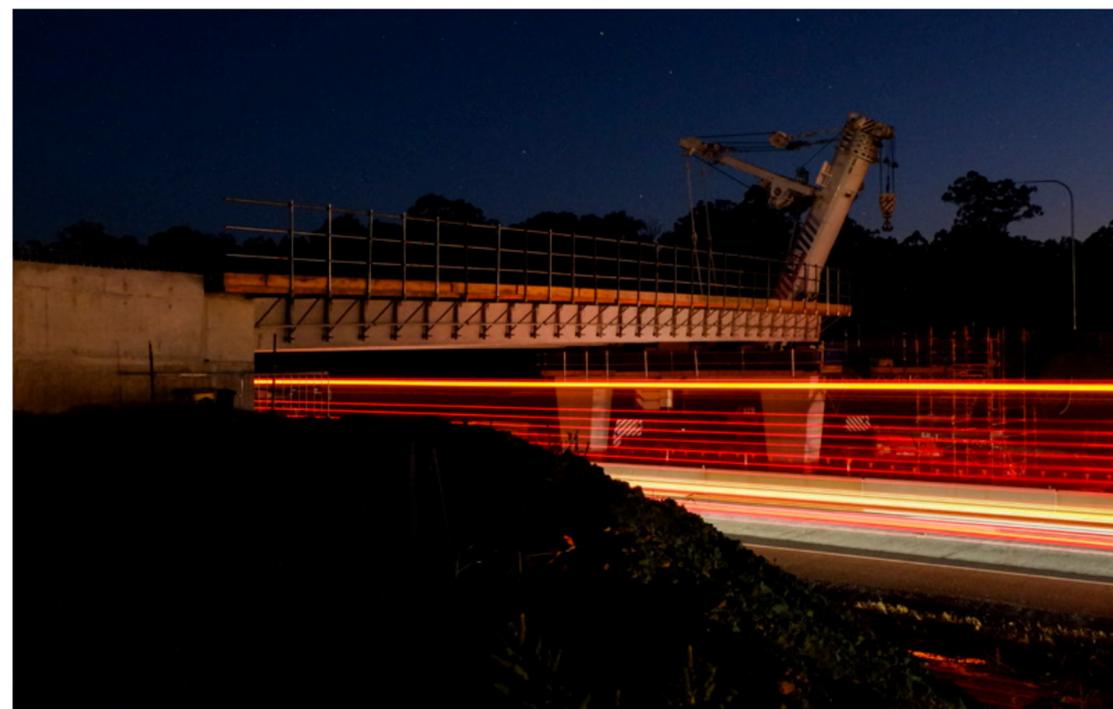
The Woolgoolga to Ballina Pacific Highway upgrade was the final link in upgrading the Pacific Highway to four lane, divided carriageway between Hexham and the Queensland border.

The project traversed diverse and challenging environments including two major river catchments, floodplains, significant areas of soft soil, threatened species habitat, and sensitive heritage areas.

Opening the 155km project to dual carriageway by December 2020 has provided:

- safer travel
- reduced travel times with improved transport efficiency
- more consistent and reliable travel
- improved amenity and connectivity for local communities.

The size, scale, delivery approach and complex nature of this project provided unique challenges to the project team, which required innovative solutions to achieve the required project outcomes and ultimately leave a positive economic, social, and environmental legacy.



## City Deals Austin Lane Activity Node

ADG Engineers (Aust) Pty Ltd

Clouston Associates – Landscape Architect

Northern Territory Government, Department of  
Infrastructure, Planning and Logistics,

City of Darwin

NTBS – Electrical Engineers

The Austin Lane project has seen the Austin Lane transformed from a derelict laneway, which attracted anti-social behaviour, to a new and vibrant precinct within the heart of Darwin CBD. The upgrade of the laneway is now a destination for nightlife. Graffiti and anti-social behaviour have been replaced with street art and new trendy hospitality venues opening onto the laneway. The transformation of the laneway into a shared zone was achieved through innovative design solutions that promoted safety while also achieving the desired performance characteristics. The innovative engineering design applied to this project has been key to its success.

Creating an inclusive environment has opened the laneway to host public events and street festivals. The project has provided many social, environmental, and economic benefits to the local community and will continue to do so. The laneway is continually used for events and evolves with the growth of the city.



## Manunda Place

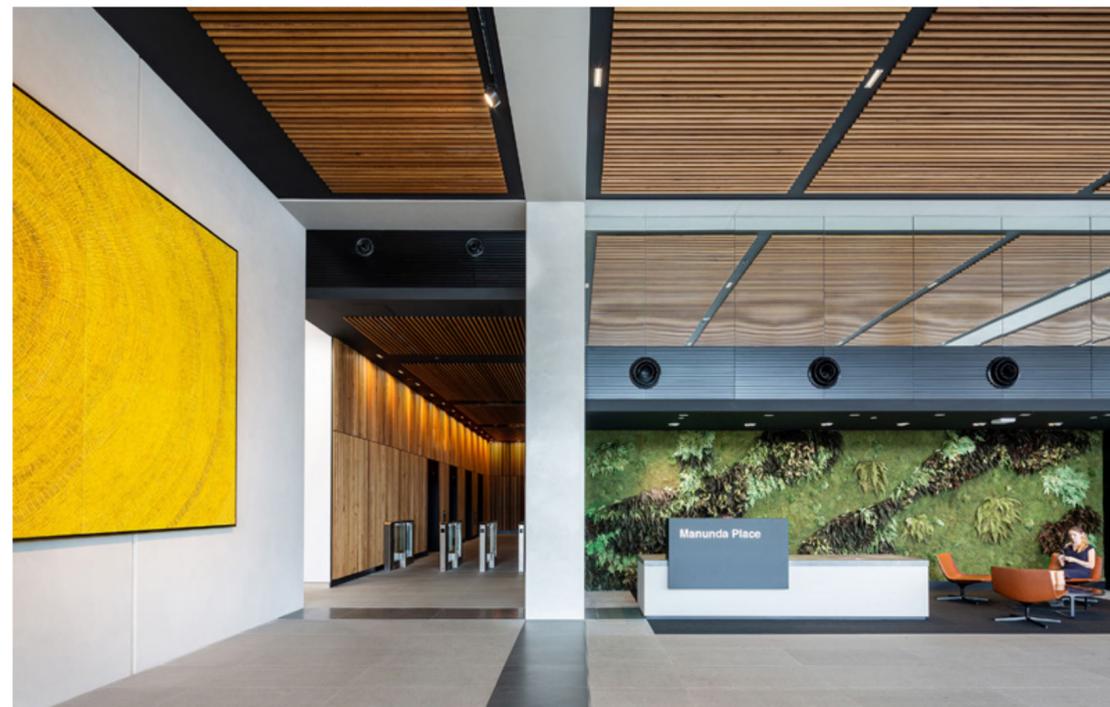
ADG Engineers (Aust) Pty Ltd

Sandran, Sissons and Hutchinson Builders

The Manunda Place building has replaced a dilapidated and dated building with an elegant, bold, and distinctive commercial office building. The ground level enhances the streetscape to Cavenagh, Knuckey and Litchfield Streets, activating the space by connecting the public domain with the grand lobby/gateway to the upper floors.

The lobby houses a public café, providing an opportunity to meet and collaborate while providing a further connection to the public. It is also home to the remarkable Wupun, Sun Mat, artwork by Regina Pilawuk Wilson, which was commissioned for the project.

The upper floors provide a-grade office space for the Northern Territory Governments Department of Health, achieving sustainability initiatives that exceed the minimum and set a benchmark for the area. The building was designed using post-tensioned slabs and pre-cast concrete walls, providing larger spans and open floor areas while reducing waste and material, and providing value for money for the developer and Northern Territory Government.



## 1GW Wind Energy Complex Study Phase

APD Engineering

The project involved development of two windfarms that will offset approximately three million tonnes of carbon dioxide each year, with a common connection point known as the 'windfarms complex project'. At over 1000 million Watts, the project is a significant engineering development.

Each windfarm is a geographically large development, and the electrical and operational interaction between the windfarms is complex. The windfarm complex project involves a total of 180 individual wind-turbine generators and best practise engineering that integrates the latest technology with state-of-the-art wind generation turbines.

APD entered a collaborative Alliance arrangement with all of the parties involved in the development—the proponents for the wind farms, the wind generator supplier, the balance of plant designers, and the Statcom supplier.



## Andrew N. Liveris Building

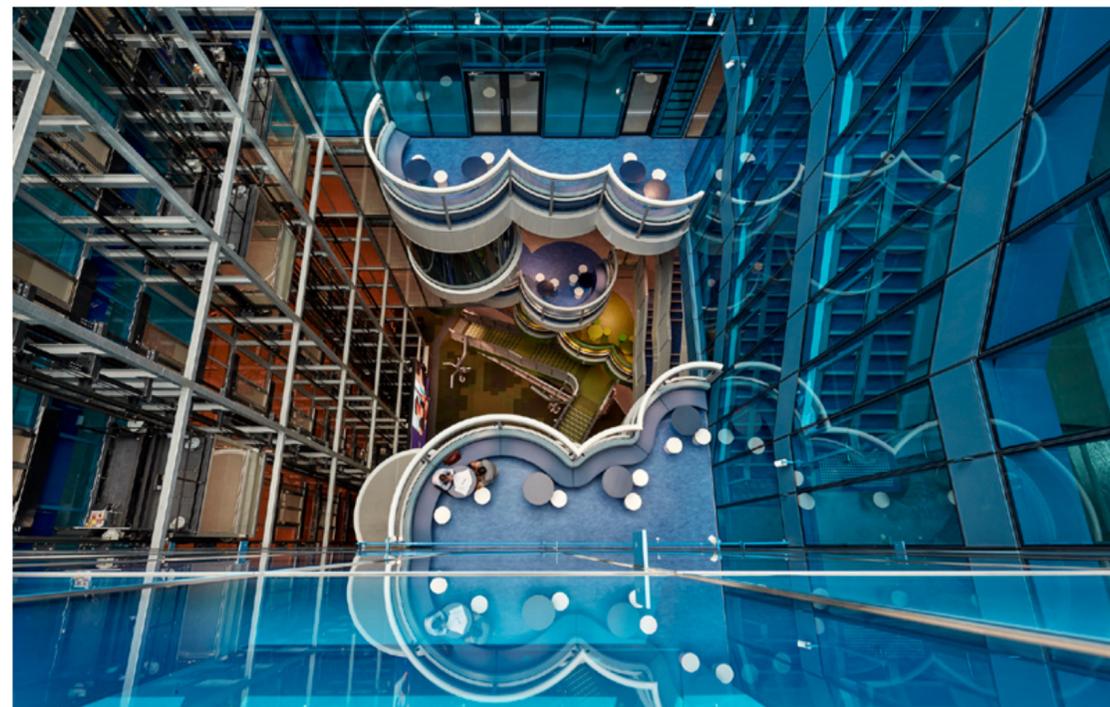
**AECOM Australia Pty Ltd**

The Andrew N. Liveris Building will be the University of Queensland's flagship platform to integrate innovative, industry and research-embedded learning with interdisciplinary and global solutions-focused research in areas such as energy, water, resources, consumer products and sustainable engineering.

The building is the new home for the School of Chemical Engineering and the recently founded Andrew N Liveris Academy for Innovation and Leadership. Located at the St Lucia campus the building will provide a substantial campus-wide contribution.

The principal brief for the new building was for a safe, state-of-the-art teaching and research facility whilst focused on being flexible, adaptable, accessible, scalable, visible, and collaborative.

The ambition of this building and its inhabitants is to galvanise students with our collective expertise, courage, and perseverance in the hope that they will drive profound changes across government, industry, and society at large.



## Australia's first biosolids gasification facility

Logan Water

Downer

WSP

Cardno now Stantec

ARENA

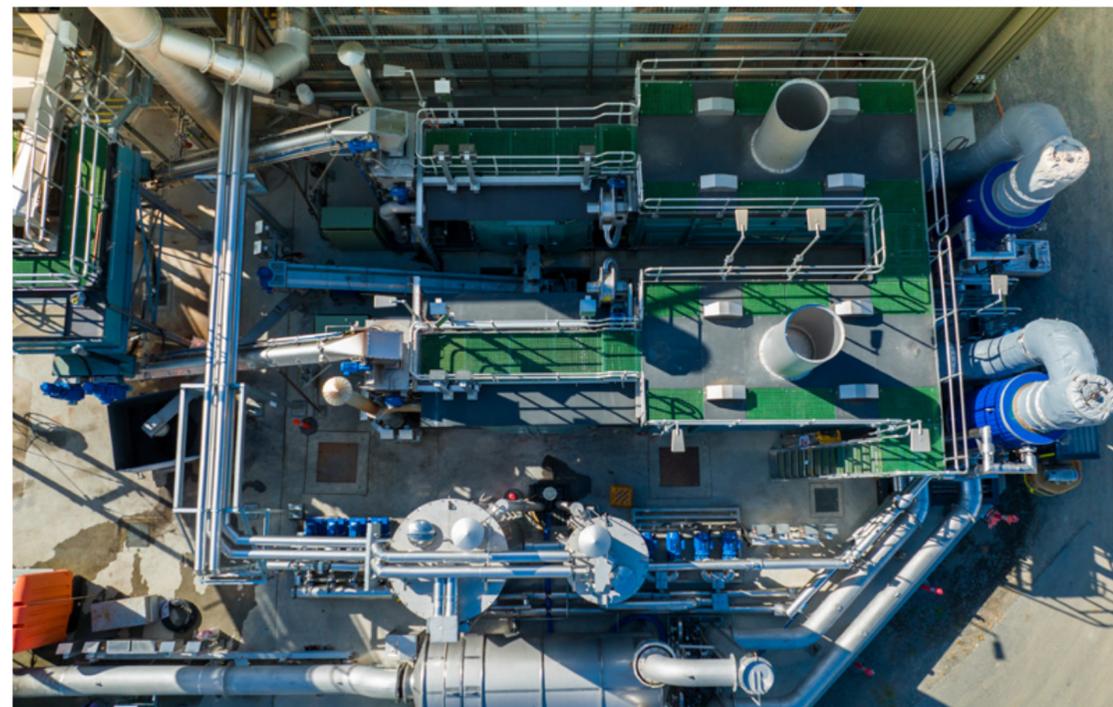
Logan City Council's Logan Water has pioneered an Australian-first—a facility that transforms human waste, or biosolids, into renewable energy and a sustainable product called biochar.

Biosolids gasification destroys chemicals in biosolids like persistent organic pollutants, and micro and nano-plastics. Carbon emissions will be reduced by about 6,000 tonnes a year.

Operational cost savings and carbon credits will return almost \$1M a year to the City of Logan, and a new revenue stream will be created from biochar sales.

Biochar contains nutrients like those found in commercial slow release fertilisers, making it great for healthy soil and plants. Biochar can also be added to soil, asphalt, concrete and bricks to sequester carbon for thousands of years.

Our \$28M project was completed in April 2022. It was funded by Council with a \$6.2M grant from ARENA. [Watch the video.](#)



## Bruce Highway Upgrade – Caloundra Road to Sunshine Motorway

Fulton Hogan Seymour Whyte Joint Venture

Arup Jacobs Design Joint Venture

Queensland Department of Transport and Main  
Roads

Setting new standards of interchange design for road safety, the Bruce Highway Upgrade between Caloundra Road and Sunshine Motorway is a \$932M highway improvement project that provides safer and smoother journeys for transport customers through the creation of additional highway lanes and extensive local road upgrades. The crowning jewel of the upgrade is Australia's first Diverging Diamond Interchange (DDI), which required highly-complex construction sequencing, temporary works and traffic management.

This project is more than just a simple upgrade of infrastructure. It brought significant innovation to the civil infrastructure industry with the engineering ingenuity of the DDI and award-winning environmental solutions—with these lessons shared with home organisations, TMR and industry partners. The CR2SM project team truly exemplified the behaviours of a collaborative contract, ensuring engineering excellence every step of the way.



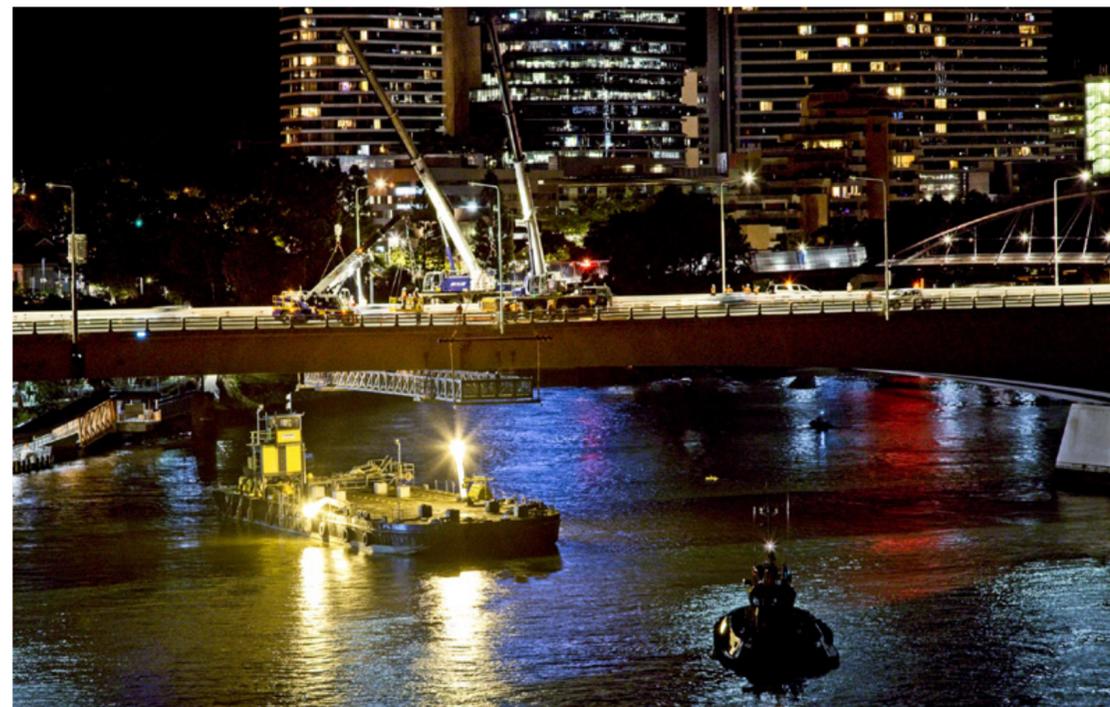
## Captain Cook Bridge Rehabilitation Project

Queensland department of transport and main roads  
AECOM

The iconic Captain Cook Bridge (CCB) opened in 1973 and is Queensland's most trafficked bridge. Carrying over 150,000 vehicles daily and forms a vital road link for Queensland's community, supply chains and economy. The CCB Rehabilitation project replaced distressed bearings and strengthened all 48 halving joints to ensure the bridge meets Brisbane's evolving transport needs and economic development.

Undertaking these works on a 50-year-old bridge, presented significant complexities and challenges. These were overcome by applying core engineering fundamentals, combined with innovative and world-leading technological advances in design solutions, instrumentation and monitoring methods, materials, and construction methods.

The project's successes are a testament to a combined team of industry leaders (including technical designers, materials specialists, and constructors) collaborating and working together to overcome complex challenges. The initiatives developed in this project have set new benchmarks in infrastructure engineering, and minimising commuter disruption when undertaking complex and invasive works on existing structures.



## Coal-fired Power Station Flexible Operation via Combustion Optimisation and Control Software Changes

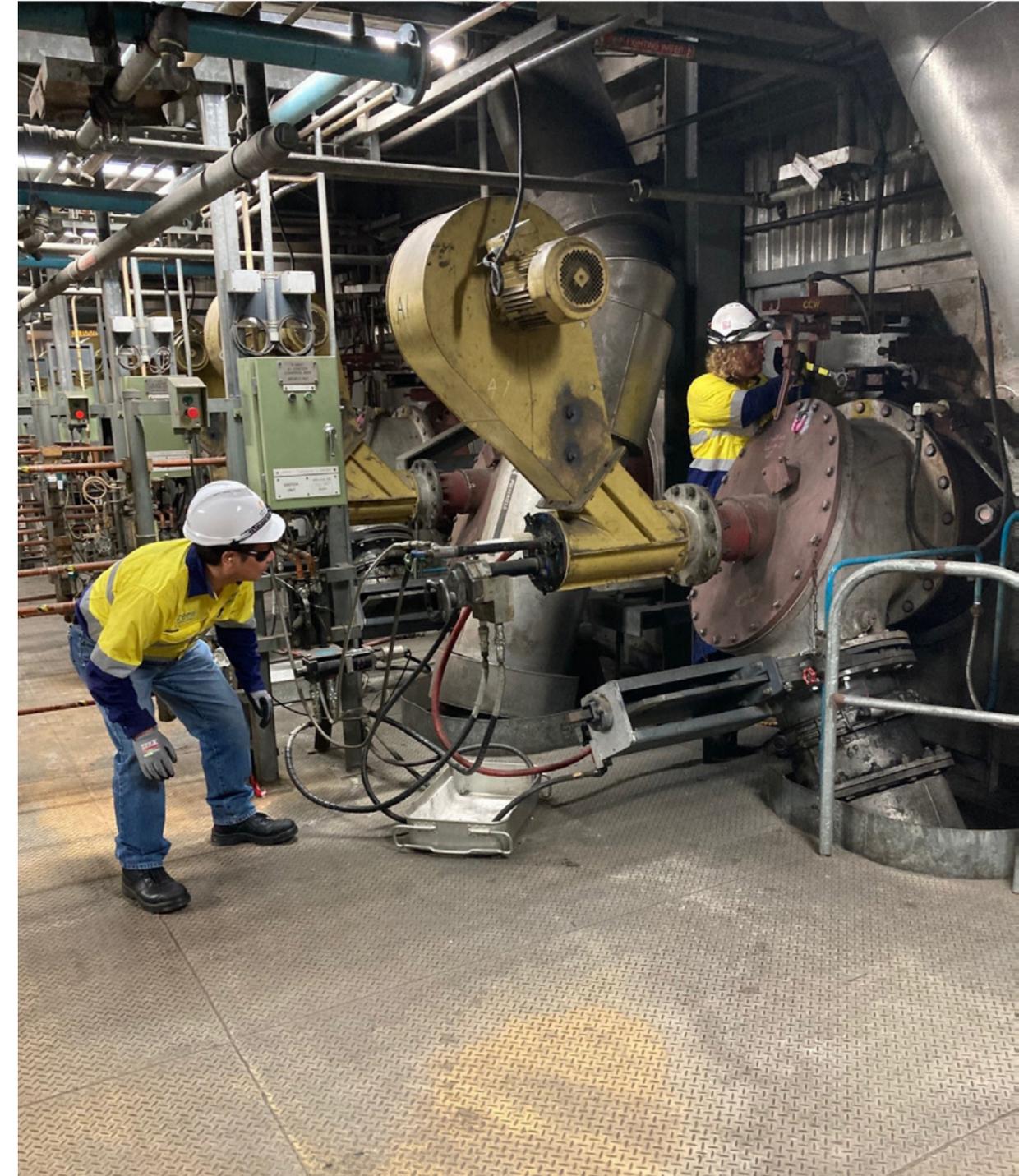
**Stanwell Corporation Ltd – Stanwell Power Station**

This submission is to recognise exceptional contributions that Stanwell Power Station's (SPS) Flexible Operations Team have made to allow SPS (Queensland) to reduce its turndown minimum load from 40 per cent to 26 per cent.

The exceptional technological innovations delivered significant increases in turndown capability whilst also providing improvements to thermal efficiency, fuel savings, reduced air emissions, improved reliability and flexibility, improved process safety and plant life.

The technical approach is world-leading and the delivery was exceptional.

The project provides significant contributions to the public with cleaner, more reliable, and economical electricity supply, and to the engineering community. It can be readily implemented across other coal power generators to drive improvements and make the transition to renewables more efficient, reliable and economical, whilst also providing essential grid stability services.



## Inner Northern Busway underpinning at Roma Street station

**CPB Contractors, BAM, Ghella and UGL Joint Venture (CBGU JV)**

The Inner Northern Busway (INB) underpinning is a design and construction method developed for Roma Street station as part of Cross RiverRail (CRR) – Tunnel, Stations and Development Package. The project was delivered by CIMIC Group Ltd companies CPB Contractors, Pacific Partnerships and UGL in a JV with Bam and Ghella (CBGU JV).

Underpinning the INB foundations was required to enable excavation of three adit tunnels linking the Roma Street station cavern to the station building.

The solution involved propping, jacking and transferring the load to a structural steel collar that vertically articulates the INB during excavation of adits below, while also providing permanent support after settlement resulting from excavation.

The underpinning represents a milestone for engineering innovation that combines several traditional methodologies into a complex, multistaged design. The solution eliminated impact on 19,000 commuters using the busway each weekday, by enabling work to be completed while operations continued overhead.



## Jubilee Place. An iconic history. An inspiring future.

**Robert Bird Group**

Jubilee Place combines challenging structural engineering, functionality, and architectural beauty in the form of a state-of-the-art 14-storey commercial office tower. It is Brisbane's first pure diagrid structure and the tallest of its kind in Australia. It is an iconic example of a steel diagrid structure being used both structurally and architecturally to its full potential.

The building's unique structural engineering solution was developed to unlock the potential of the heavily constrained site. The diagrid allows a 14m cantilever over the heritage listed Jubilee Hotel below, resulting in a visually striking interaction between old and new.

Jubilee Place has achieved a 6-Star Green Star Design and As-Built rating, representing world leadership. This holistic sustainability recognition will be supplemented by pursuing a Gold WELL Core and Shell Certification focusing on human health and wellness, 5-Star NABERS Energy and 4-Star Water ratings.



# Monterey Apartments

Aurecon

Gardner Vaughan Group

The Monterey Apartment building in Kangaroo Point is Brisbane's first engineered timber residential tower. The 12-storey building features an innovative hybrid superstructure of reinforced concrete and mass engineered timber (MET) and is the first of this size in Australia.

The innovative use of timber for the superstructure is the hero and sets itself apart from other developments of this style. The site is situated over the top of the city's Clem 7 tunnel with restrictions on loads that can be imposed from above. Traditional construction methods only allowed for a five-storey building before the load requirements were exceeded, which was not economically viable. To unlock the true benefits of the site, the weight of the structure was reduced through the innovative use of MET products including glue-laminated and cross-laminated timber.

The timber used in Monterey is from 100 per cent renewable resources. It is an Urban Development Institute of Australia accredited EnviroDevelopment.



# Tunnel Condition Assessment

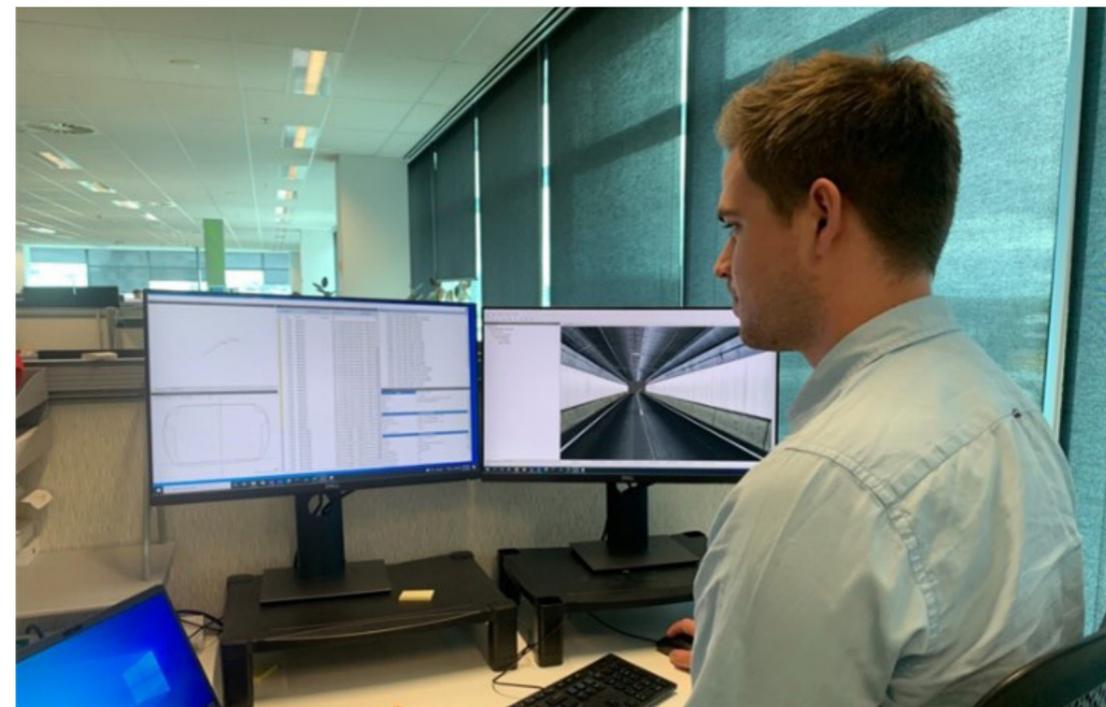
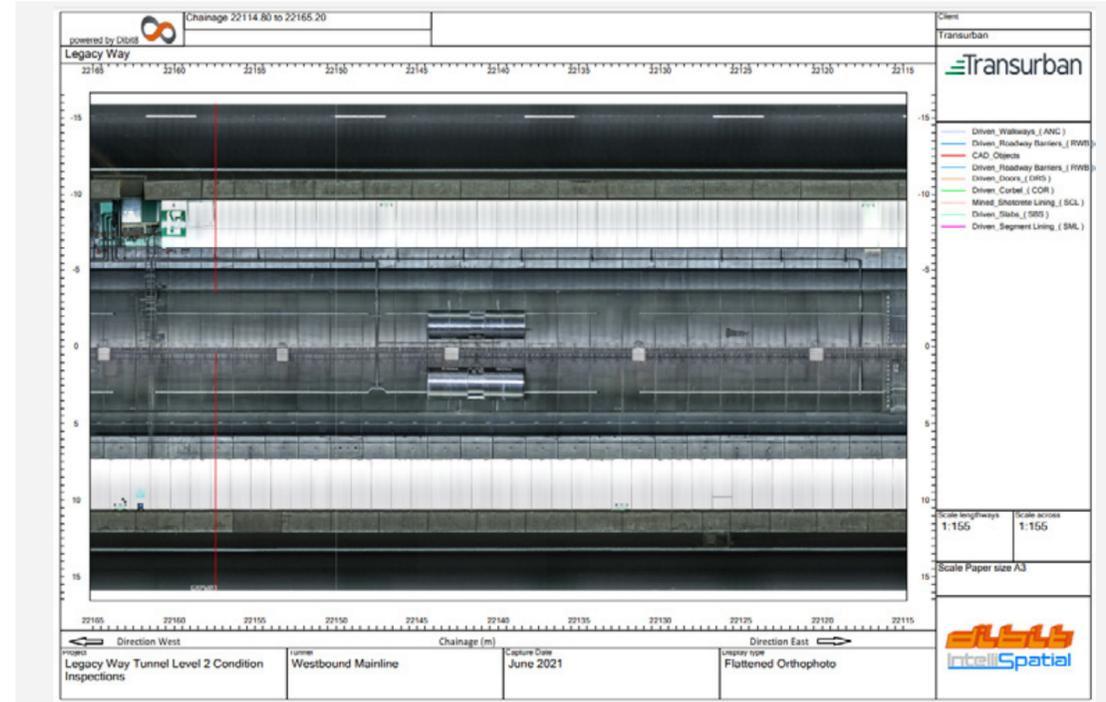
Transurban Queensland

Intellispatial

AECOM

Structural condition inspections and reporting of tunnels and their components are traditionally carried out manually. This can be expensive, time consuming, inconsistently captured, and difficult to cross reference over time. Formal reporting of tunnel condition relies on assessors finding, categorising and articulating changes in condition, which are reliant on being able to assess previous condition metrics. There are also constraints due to tunnel closure time frames, safety, risks, and costs due to working at heights and within confined spaces.

The project team identified and developed an innovative 'best of industry' process, capturing and managing structural assets, then streamlining data into physical reporting and Maximo. The project has formed the base layer of a 'Digital Twin' and can be used to identify deficiencies and features, detect changes year-on-year and enable data-driven decisions for operation, maintenance and engineering activities to deliver operational efficiency over the life of the tunnel.



## Flinders Link Project

Jacobs

The quality of the urban and engineering design solution of Flinders Link in Adelaide has been critical to the project's success and the outcomes are exemplary. The infrastructure is both useful, appealing and encourages public transport usage and participation.

Flinders Link is considerate of its surrounds and balances the needs of the stakeholders and community. The design embodied several technical complexities such as the 430-metre elevated viaduct and the highly constrained nature of the project site that dictated its horizontal curvature being held to a tight, 237-metre radius, and construction above major roadworks.

The \$141m project was funded by Federal and State Governments and implemented by the Department for Infrastructure and Transport. Jacobs was Lead Design Consultant for the project, engaged by the Gateway South Joint Venture (Fulton Hogan and Laing O'Rourke).



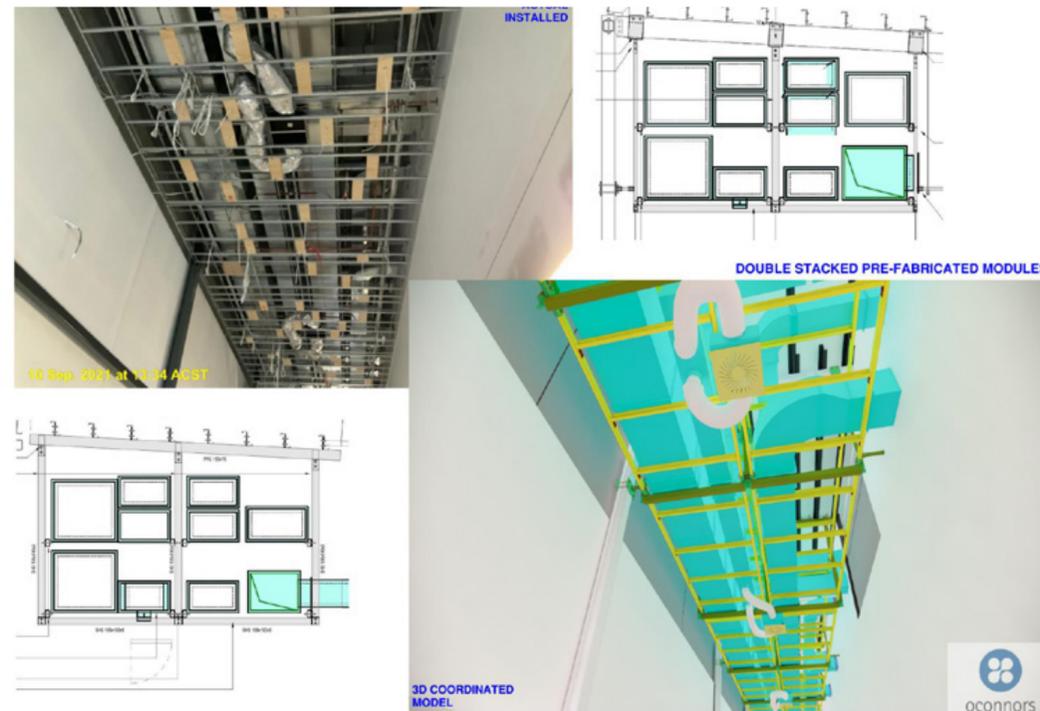
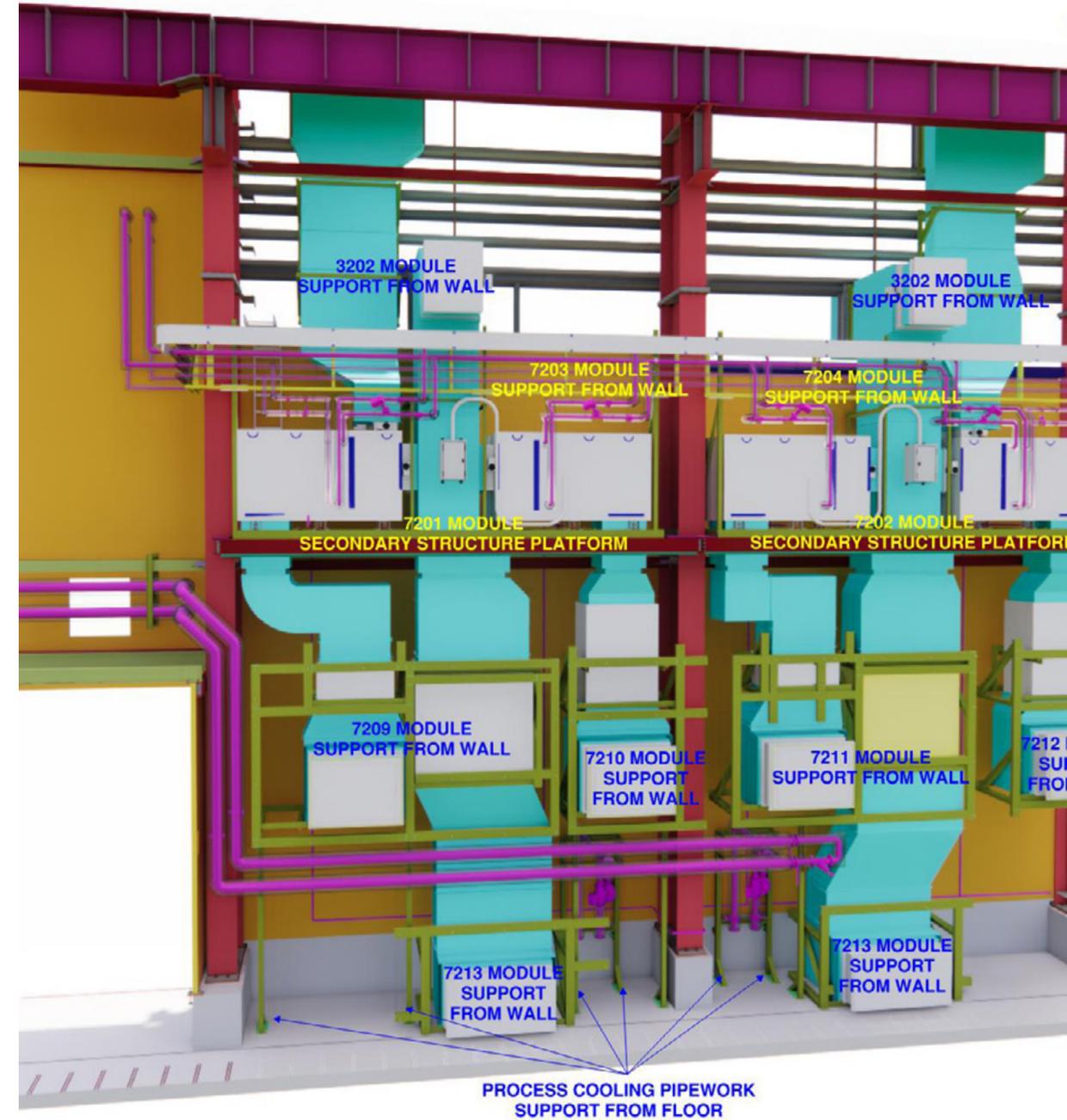
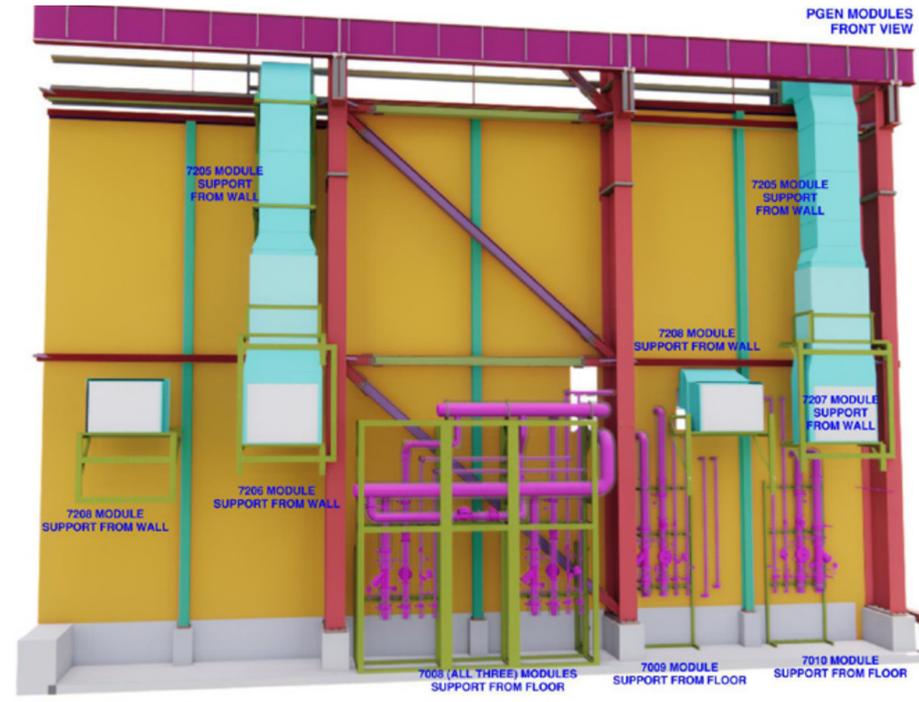
# Osborne Naval Shipbuilding Precinct (Future Submarine Program) Infrastructure Development Phase 1

A.G. O'Connor Pty Ltd

Laing O'Rourke, KBR, Walbridge Gilbert Aztec,  
R2 sheetmetal and fabrication and  
RYS fabrication

Osborne Naval Shipbuilding Precinct (Future Submarine Program) Infrastructure Development, mechanical services prefabricated modules, is a collaborative and innovative approach to overcoming challenges presented to engineers in construction. Excellence is achieved by overcoming time and spatial constraints with a process of detailed risk assessment and clearly objectifying successful outcomes. The engineering process produced a series of prefabricated services modules which ensured detailing, coordination, safety, constructability, commission ability and maintainability where all paramount in engineering to deliver successful project outcomes.

Achieved objects include maximising the collaborative use of technology to coordinate and communicate across multiple trades, detailed fabrication conducted in the safest, most efficient and most accurate manner and a product that is produced within the construction tight construction and spatial constraint, to ensure end users get full functionality and utility out of the services provided.



# SA Water's Zero Cost Energy Future Program

SA Water

SA Water's industry leading Zero Cost Energy Future is a highly innovative approach to the optimisation of energy generation and use.

Solar PV and battery storage at multiple locations works with sophisticated technology that manages the use and export of electricity to reduce operating costs and improve the sustainability of services.



# Whalers Way Orbital Launch Facility Development Application and Environmental Impact Assessment

**SouthernLaunch.Space Pty Ltd**

The Whalers Way Orbital Launch Complex will be Australia's first private rocket launch facility to be developed and constructed, and it is of strategic importance to Australia.

The development application and associated environmental impact statement are unique studies that required the involvement of over 30 subject matter experts. It required the development of testing and research methodologies, which have never been used in Australia before.

The level of complexity was very high because there were no previous similar projects to inform the assessment process. The resulting study is a 3,500 technical document which is a first for Australia. The resulting launch facility will be of high strategic importance to Australia.

Through its facilitation of getting satellites into space, it will benefit the Australian public at the local, state, and federal levels.



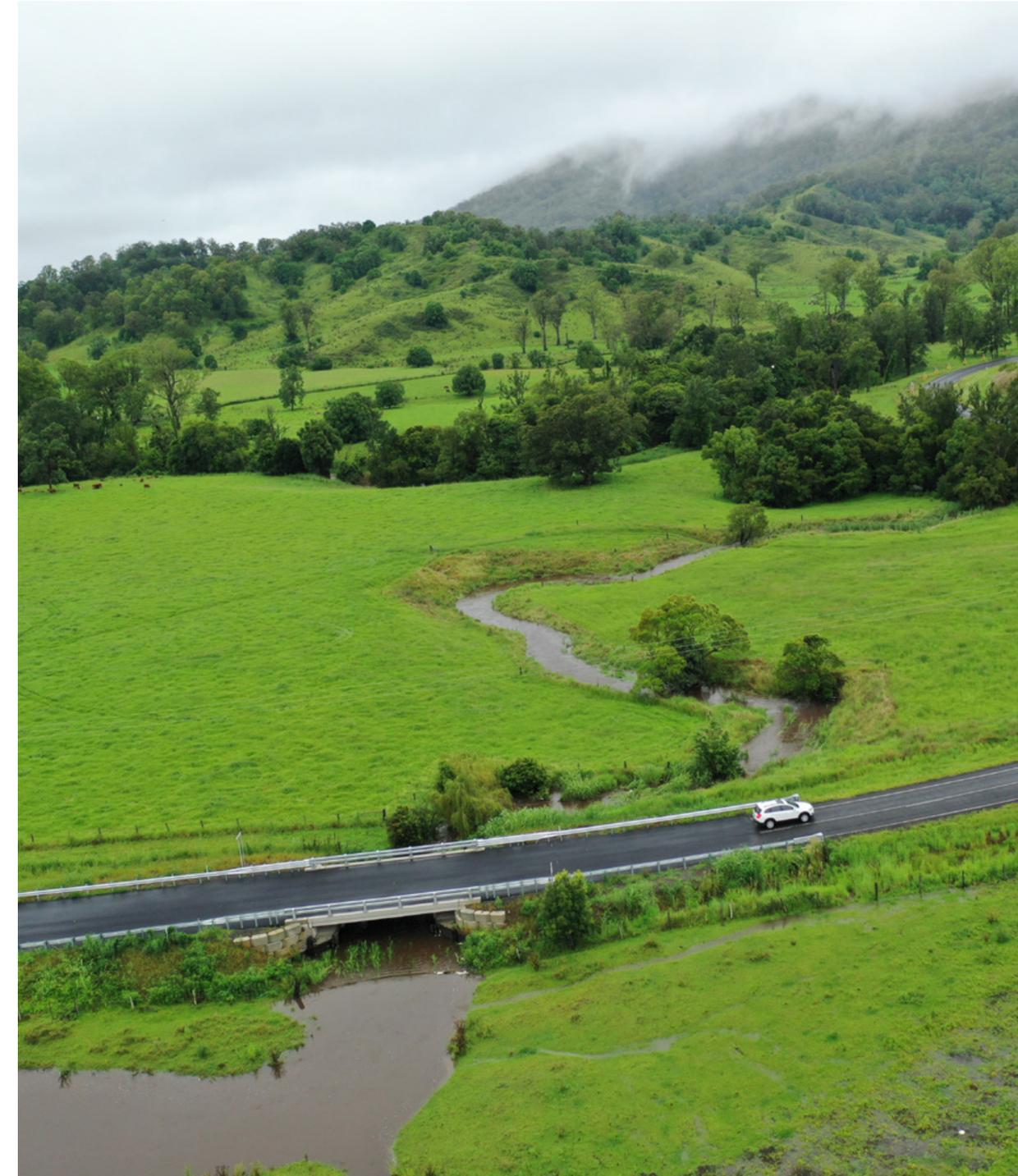
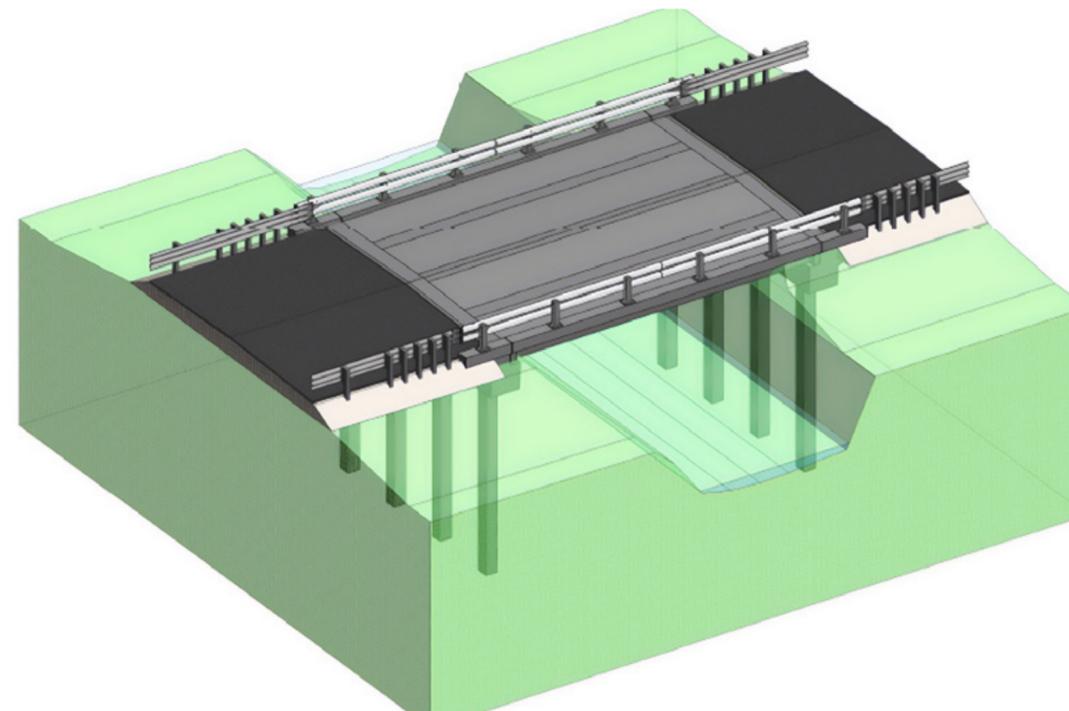
## A-Bridge: Timber Bridge Replacement Innovation

Aurecon

There is estimated to be over 11,000 timber road bridges in Australia. Studies show that 30 per cent urgently require replacement and most are deteriorating faster than local councils can replace them.

During fire and flood, these bridges are often the only means of escape and access for emergency vehicles. They are critical infrastructure. To date, all designs to replace timber bridges are high maintenance, unsuitable for high speeds and loads and/or require road closures of 4-6 months. Overflooding is an issue for current concrete bridge designs, as they can deteriorate rapidly or lose structural integrity after being flooded.

Aurecon's A-Bridge design overcomes all these issues. The 'A-Bridge' replaces these bridges in a uniquely durable, sustainable, low maintenance, cost-effective, safe, and non-disruptive manner.



## Australian Museum Project Discover

**D'Ambrosio Consulting Pty Ltd**

Australian Museum Project Discover included the transformation of the Museum's public and exhibition spaces, adding more than 3000sqm of new public space, created new educational facilities, a new museum shop, a second café, an expanded member's lounge, new cloak area, and new accessible amenities.

New expansive exhibition spaces were created, and new access paths were added to improve the movement of people within the new exhibition spaces. An extension of the recently built Brian Sherman Crystal Hall entrance plaza was included with new openings and links into the Parkes Farmer building. A key showpiece of the project was the new north atrium stair; a steel framed bespoke architectural highlight.

The new multi-level stair, new accessible facilities and routes, educational facilities, and improved interface with public transport facilities have all resulted in a truly remarkable building befitting of the status as one of the most significant Heritage assets in NSW.



## Christopher Cassaniti Bridge

Arup Australia Pty Ltd

KI Studio (Architect)

Landcom (Client)

Arengo Daracon Joint Venture (Contractor)

Honesty and elegance are hallmarks of any great bridge structure, and two attributes that the Lachlan's Line pedestrian and cycle bridge proudly flaunts.

Through structural ingenuity, advanced parametric analysis, and sheer determination, the design and construction team delivered a stunning, multi-span, materially efficient bridge structure in direct response to its site and functional desires.

Its structural system, legibility, and boldness resonates with any engineer, whilst its inherent open scale helps the community retain strong links to their surrounding ecosystems.



## Crown Sydney Hotel Resort

**Robert Bird Group**

Crown Sydney is located within Barangaroo South, one of three prestigious precincts on the foreshore of Darling Harbour, on the western edge of the city's CBD. The project consists of a six-star hotel and members-only casino taking in views of the Sydney Opera House and Sydney Harbour Bridge.

The tower accommodates a total of 350 hotel rooms, with the addition of 80 luxury residential apartments. The podium will contain a mix of restaurants and bars, retail outlets, function rooms as well as a Crown-branded VIP gaming experience.

Robert Bird Group have been involved in the project since 2013, bringing their global expertise in tall tower projects with a top down jump start construction technique. It is a first for Sydney and a technique that provides significant programme savings.



## Crows Nest Station Design

SMEC Australia

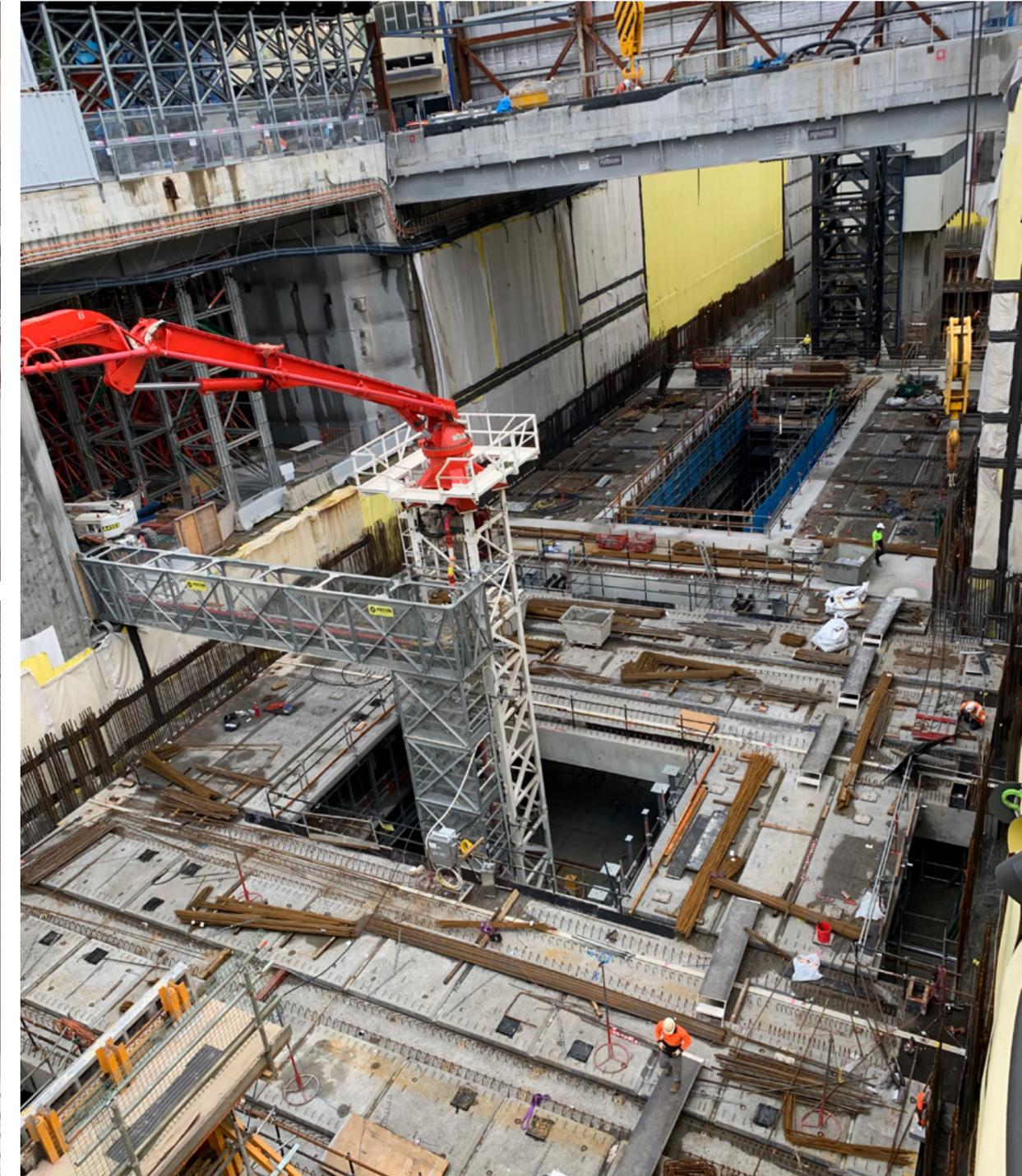
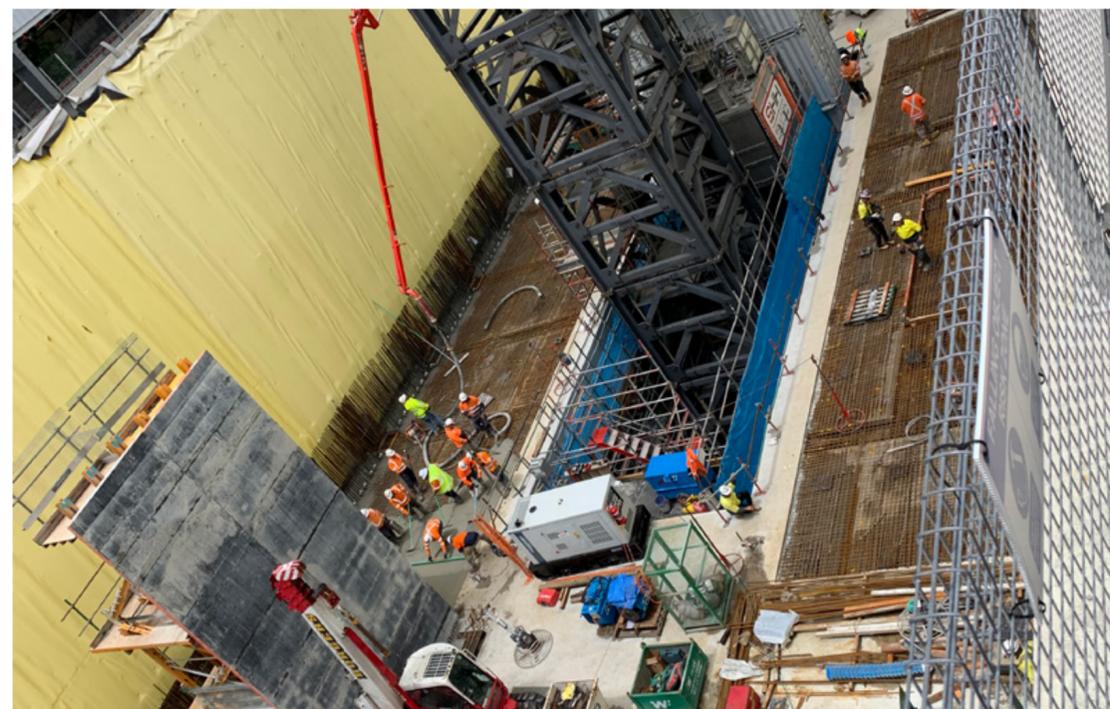
Sydney Metro

Crows Nest Design Consortium

SMEC was engaged as the lead consultant and safety assurance manager on the Crows Nest Design Consortium, with partners Woods Bagot, Robert Bird Group, Norman Disney Young, and Oculus. SMEC worked directly with Sydney Metro to lead the delivery of the design for the station, with considerable achievements in structural design efficiency, collaboration, and sustainability.

SMEC developed an innovative design solution for the station, which involved combining prestressed and post-tensioned bridge elements into a hybrid structural system. This solution eliminated the need to introduce steel hangers, a more traditional formwork approach, and enabled the structure to follow a bottom-up construction method. This allowed clear space to enable mechanical installation to progress in parallel with concrete construction.

The Crows Nest Station is an outstanding example of how the combination of technology and collaboration between client and consultants can lead to innovation and sustainability outcomes.



## Glasshouse - Macquarie Square

Meld Strategies

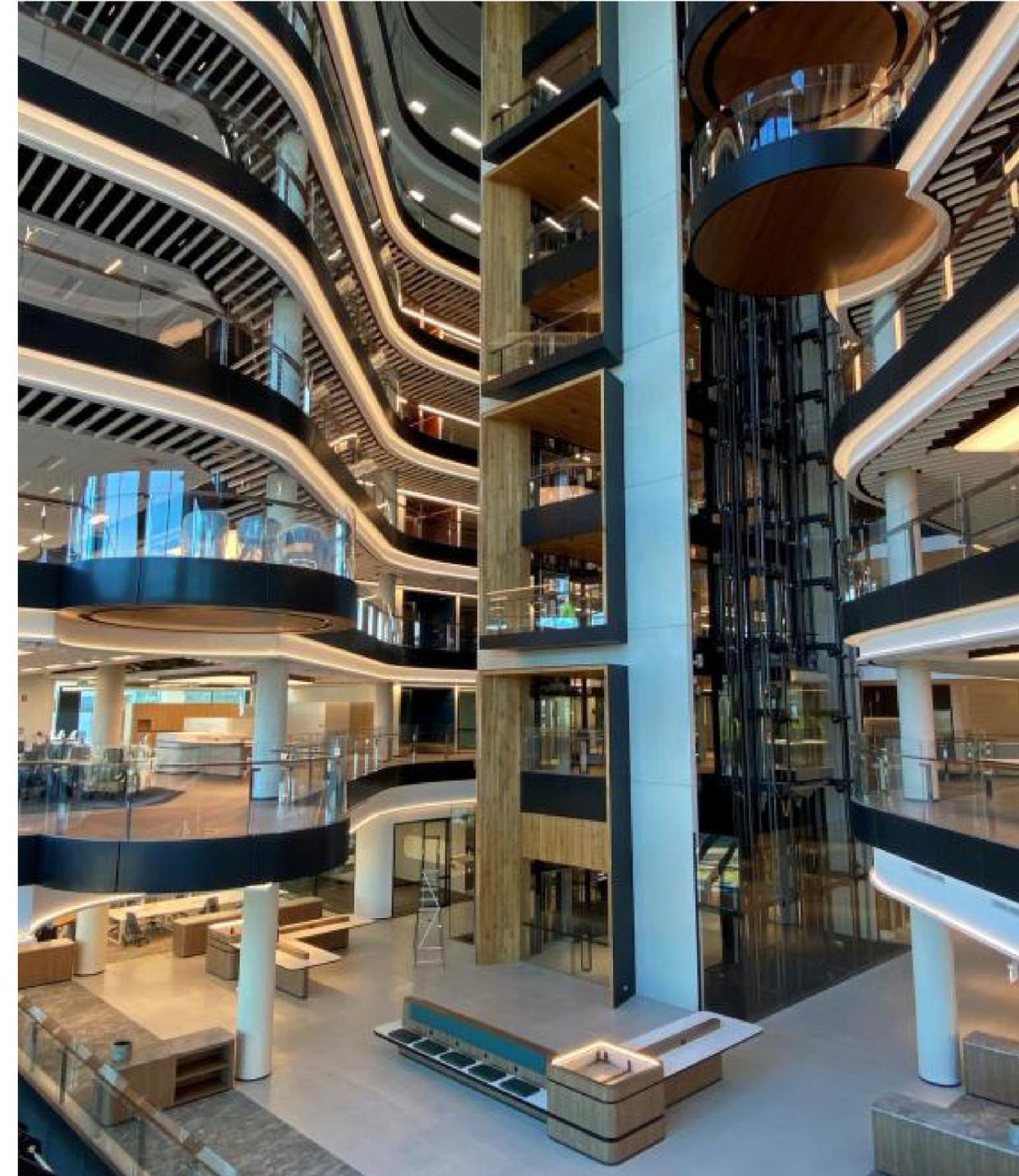
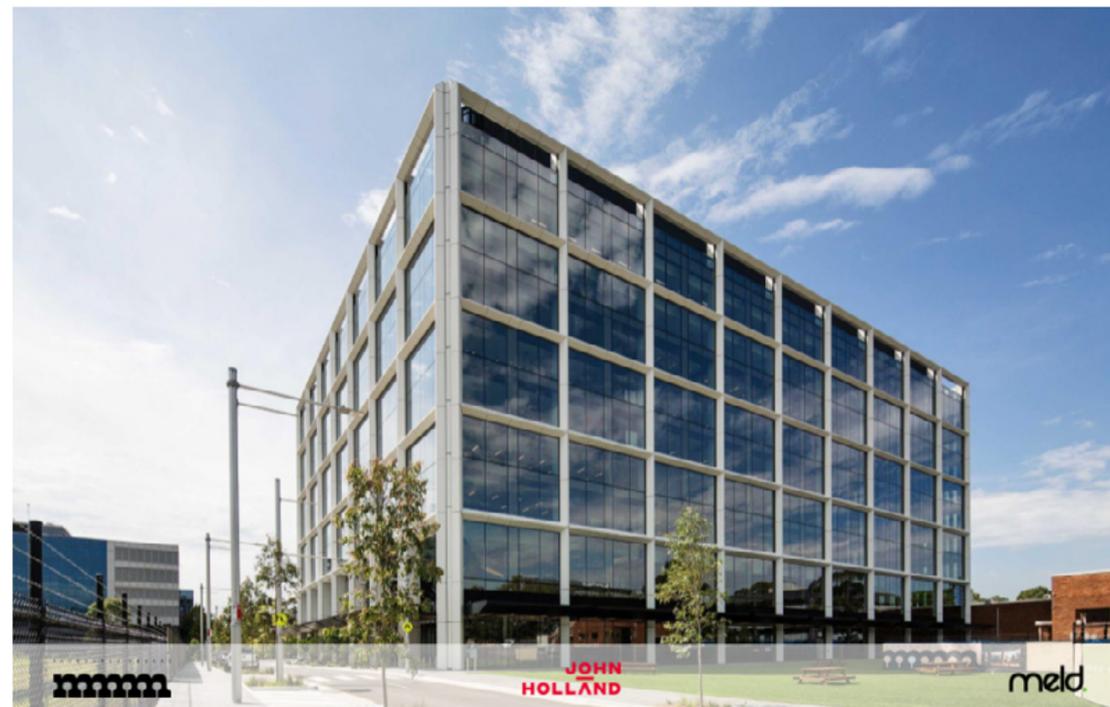
John Holland

Glasshouse is an exemplary Commercial Office Smart building that inspires the perfect balance of inspiration, creativity and productivity for tenants and optimised for operational efficiency.

Located near Macquarie Park Metro Rail, Macquarie Shopping Centre and Macquarie University, the Glasshouse is a progressive workspace designed to help tenants align to new ways of working. It has incorporated an extensive range of technology systems that supports the position of this office complex being one of the smartest buildings in Australia.

The building was conceived for collaboration and connectivity by Architectus, and the building's developer and constructor, John Holland. The design and construction process extensively utilised 5D BIM to coordinate the design of the building and associated building services.

Contained within the building are over 32 technology systems connected via a smart building systems architecture based on open standards and open systems with a focus on superior user experiences for occupants.



## Greenland Centre Tower, Sydney

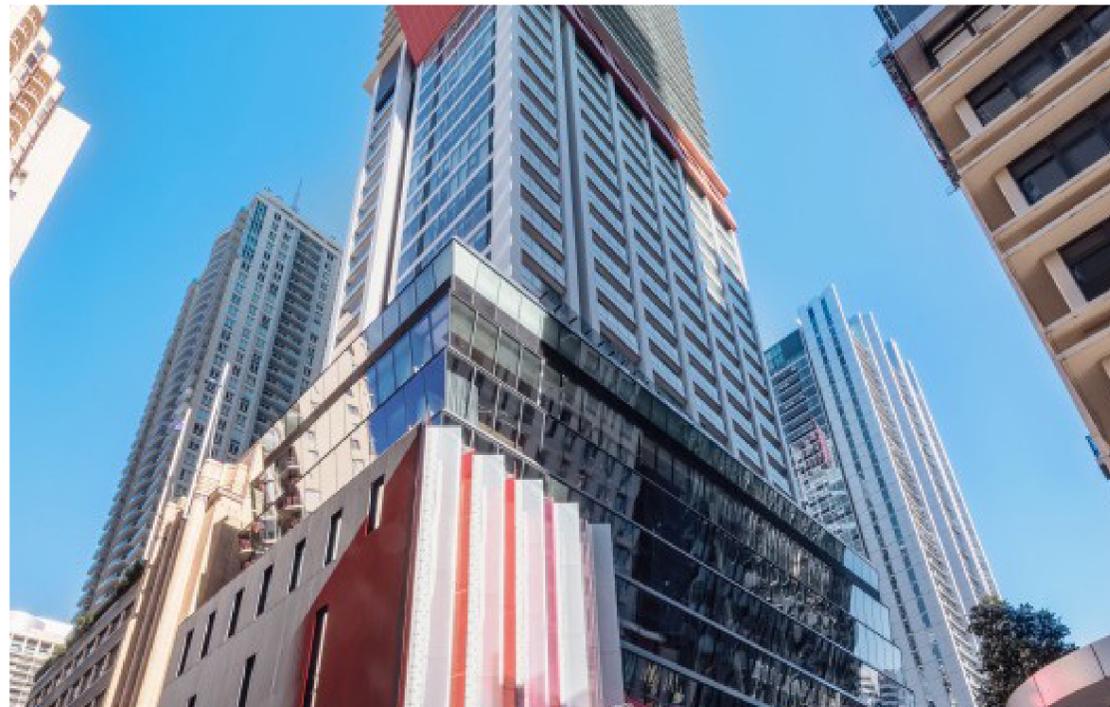
Arup

Positioned between Sydney's Town Hall Station and Hyde Park, the Greenland Centre, now the city's tallest residential tower, is an exemplar of adaptive reuse in our increasingly constrained urban environments.

Owner Greenland has converted an existing 27-storey, 1960s heritage-listed Sydney Water Board building into a 67-storey residential building with retail, and a City of Sydney creative hub.

Over 2000 tonnes (5000 tonnes CO<sub>2</sub>e) of steel and 700m<sup>3</sup> of existing concrete was re-used in the new building, while naturally ventilated 'Sydney verandahs' deliver residents panoramic harbour, city and parkland views from their own high-rise outdoors.

The project has successfully adopted reuse of existing steel structures and strengthening these reused elements on the tightly bounded site with CBD metro tunnels below. The regenerative sustainable design outcomes provide a great environment for residents, retail tenants and artists and sets the benchmark for repurposing assets as we move to decarbonise property and our cities.



## Incat Crowther 123 - Catamaran Ro-Pax Ferry 'Eleanor Roosevelt'

### Incat Crowther

The Incat Crowther 123m Catamaran Ro Pax Ferry, 'Eleanor Roosevelt' was designed and engineered by Incat Crowther, a ship design and engineering firm with its main office in Sydney, for construction by Astilleros Armon Shipyard at its shipyard in Gijon, Spain. The Eleanor Roosevelt is one of the largest aluminium catamarans ever built and is the first to enter service using reciprocating dual fuel main engines, capable of using liquid natural gas as a low emission fuel source. The Eleanor Roosevelt operates a daily return service between Denia, Spain and the Balearic Islands carrying up to 500 vehicles and 1200 passengers with each trip.



## Lord Howe Island Hybrid Renewable Energy Project

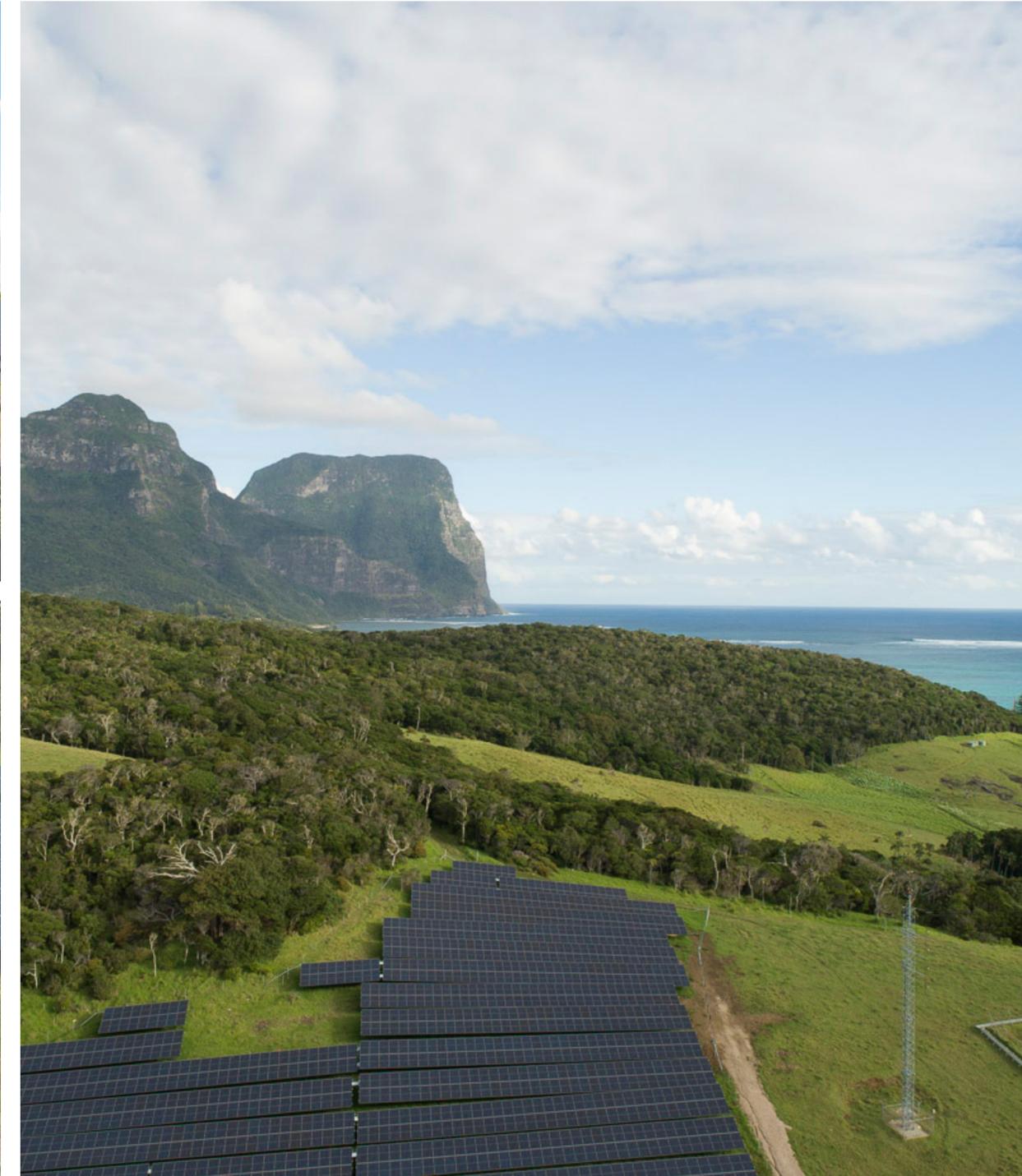
Lord Howe Island Board, Jacobs and Photon Energy

The Hybrid Renewable Energy Project could only be achieved through strong partnerships and cooperation executing an ambitious project on a tiny remote island with one shared vision: a sustainable future for Lord Howe Island.

Previously dependent on diesel for generating power, the island's residents now have access to clean energy.

The project team successfully met the challenges faced with delivery of a project of this scale, on a remote island, without a local construction industry and amidst a global pandemic. The innovative design and layout ensures the protection of the endangered Flesh-Footed Shearwaters who neighbour the site.

Today, the system is performing exceptionally well and exceeded expectations with a very high level of reliability.



## New England Highway at Bolivia Hill Upgrade

Georgiou Group Pty Ltd

SRG Global

In May 2018, Georgiou Group, in joint venture with SRG Global, were awarded the construction of a realignment of 2.1 kilometres of the New England Highway including construction of a new 320-metre long bridge, three span reinforced concrete box girder, balanced cantilever bridge.

Constructed on a 8.2 per cent grade, 42-metres high, the grade challenged the team to innovate from the traditional method of construction including critical fail-safe breaking controls for the formwork traveller systems, formwork recovery methods and concrete placement methods.

The project confronted a series of challenges including extreme temperature changes (-15 to +35 degrees) which impacted concrete composition, steep slopes with some of the hardest and most inconsistent strength granite found in Australia (circa 150MPa) and a raft of geotechnical complexities. Through outstanding outcomes in planning, design, engineering and construction, the project has set the benchmark for bridge construction in NSW.



## QuayQuarterTower

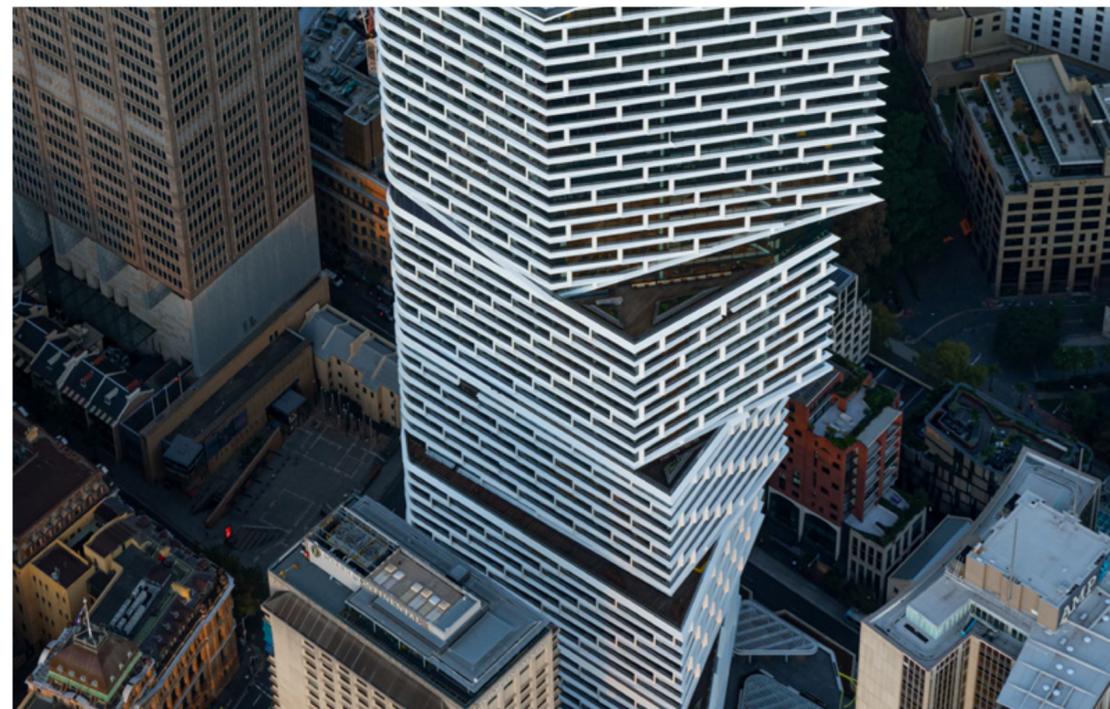
**AMP Capital**

**Multiplex, BG&E, Arup, Kasina Consultants,  
3XN architects, Architecture BVN**

Developer AMP Capital's radical sustainability strategy for QQT involved upcycling an existing skyscraper, retaining 65 per cent of the tower's beams, columns and slabs, and over 95 per cent of its existing core, resulting in an embodied carbon saving of over 12,079 tons.

Approximately 45,000 square metres of new construction were grafted on new floorplates to the existing slabs. The new structure optimises the structural grid span to increase views to the harbour. The façade's external sunshade hoods reduce the heat loads on the building, reducing energy loads while optimising views.

By upcycling an existing building into an exemplar of sustainability, QQT stands as a model for future construction, demonstrating that demolition need not be the favoured option for creating a world-class development. Unprecedented collaboration in this complex project involved design architects 3XN, Multiplex, structural engineering by BG&E, Digital Twinning and peer review by Kasina Consultants, and Architecture BVN as executive architects.

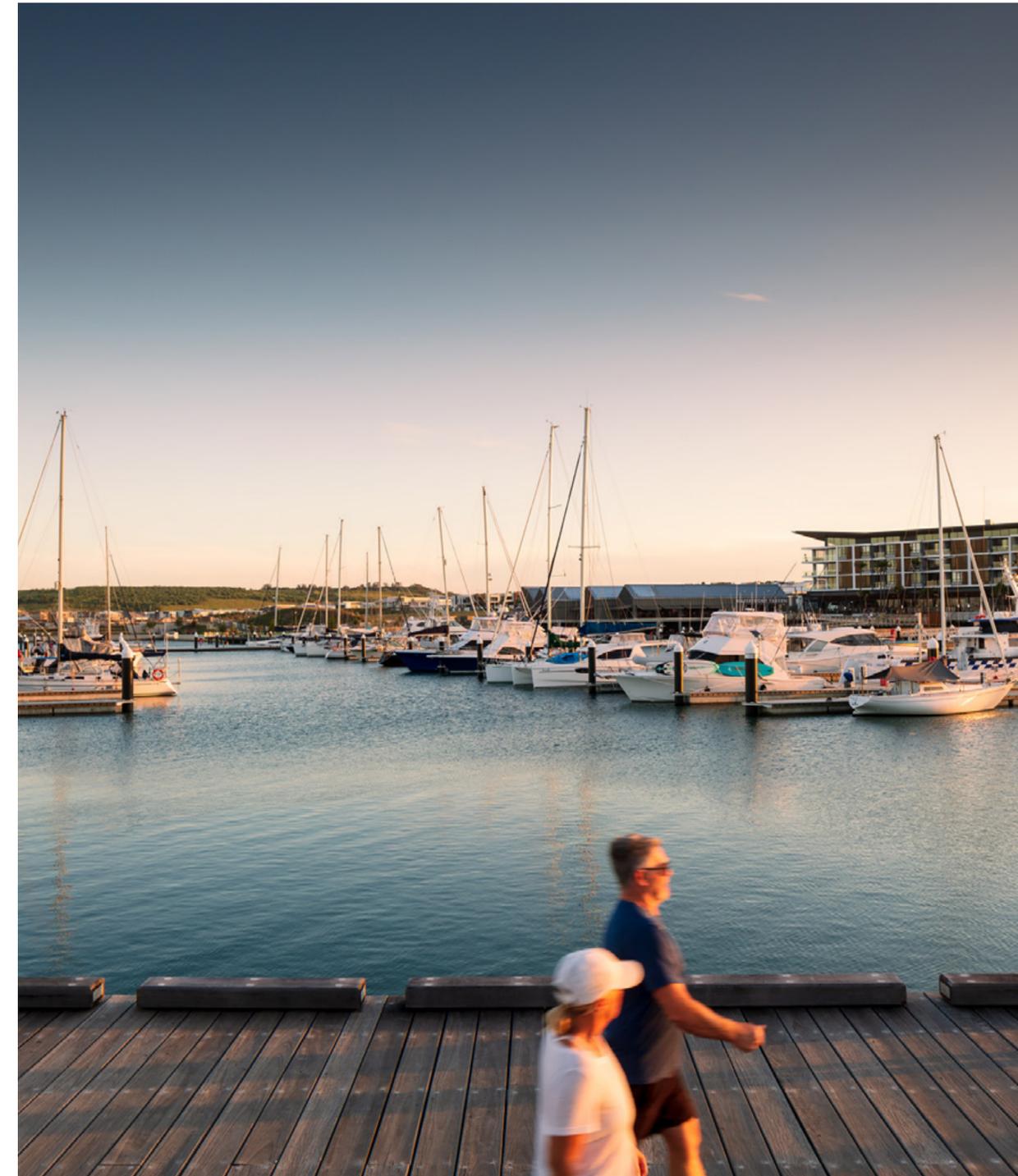
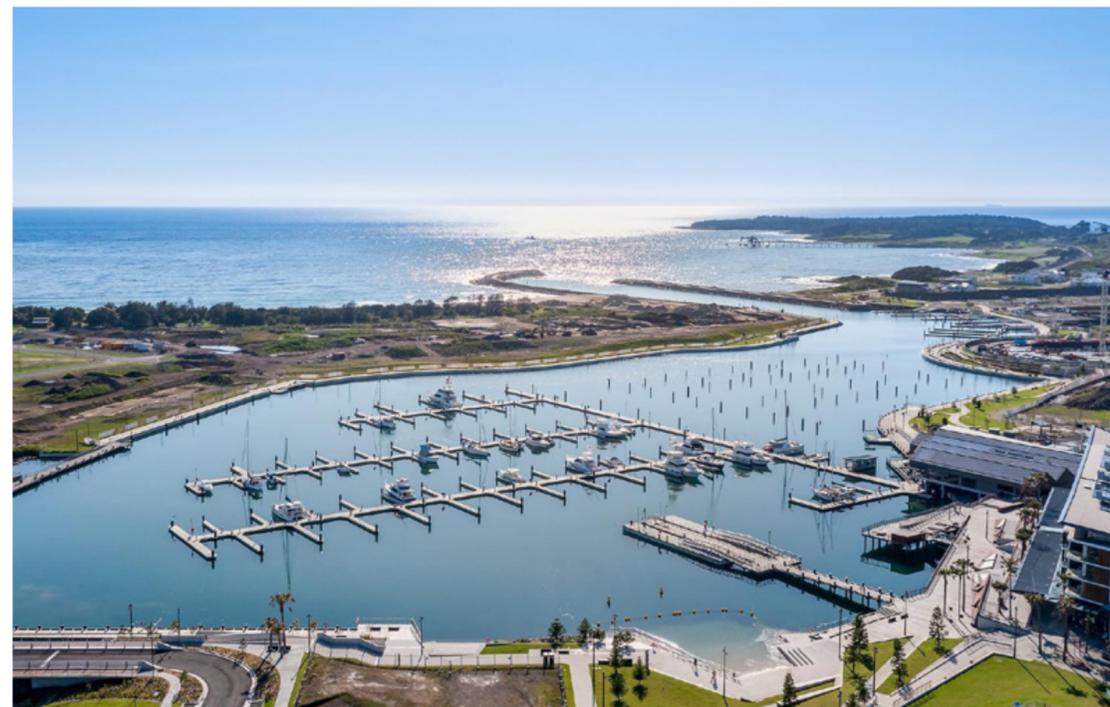


# Shell Cove Boat Harbour

## Advisian

The Shell Cove Boat Harbour is one of the most significant recreational boating facilities to be constructed on the NSW coast, located approximately 100km south of Sydney. The boat harbour development included dry excavation of a harbour basin bound by public promenade and boardwalk, and a trained entrance channel providing direct open ocean access. The harbour basin was flooded when connected to the ocean toward the end of the construction.

The project kicked off in 1977 when council purchased the 12ha site. Investigation and planning approvals progressed over the years with design commencing in 2003, followed by construction starting in 2013, and was opened to the public in October 2021.



## Theatre Royal

OMG!

Theatre Royal Sydney is one of Australia's most iconic theatres, established in 1827. The decision was made to conserve and revive the original architecture that has been a cultural asset to NSW for decades. OMG! were honoured to be appointed the signage partner, delivering a cost-effective and sustainable outdoor media solution which exceeds traditional advertising for a historic theatre and reduces carbon emissions.

Our cylindrical digital totems match the modernist architecture delivered by Piere Luigi Nervi who was inspired by European crafts. We delivered a solution that aimed at bringing art back into everyday life, becoming a 24/7 spectacle that would turn pedestrians into audiences. Our project highlights the on-going debate about the integration of modern technology with historic architecture, especially one of Australia's most historic theatres. In doing so, it attracts different generations into a prestige, yet modernised theatre that embodies a sense of significance through a shared experience.



## University of Sydney Engineering and Technology Precinct

Laing O'Rourke

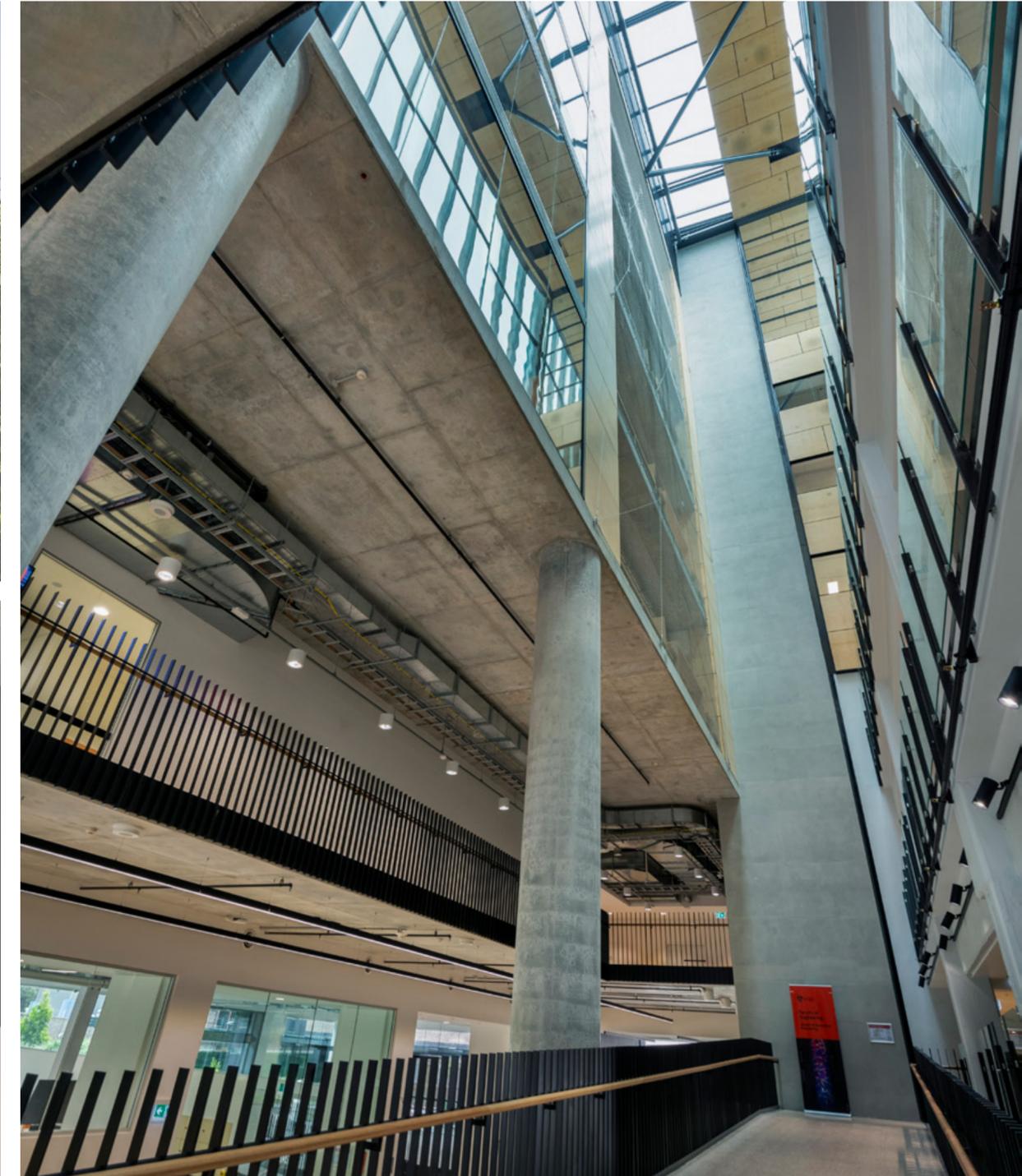
The University of Sydney's revitalised Engineering and Technology Precinct is a world-class facility to educate and inspire new engineers. Delivered by Laing O'Rourke under a design and construct contract, the project comprised a new 10-storey building, joining via a 35m-high central atrium to an extensively refurbished 1960s-vintage building.

Visible through the Indigenous inspired, highly engineered façade, the university's goal to 'see what we teach and teach what we see' drove a transparent design and the overt expression of structural elements and laboratories.

The older building remained operational throughout the project, which introduced a number of innovations to minimise impact on the campus and community and in response to the COVID-19 pandemic.

These innovations included a 'smart infrastructure' footbridge, the virtual site tool BuiltView 360, and the rare use of Double Wall, a hybrid of precast and in-situ cast concrete labelling.

The project achieved a 4-Star Green Star Design rating.



# Windsor Bridge Replacement

Georgiou Group Pty Ltd

In July 2018, the State Government awarded Georgiou Group Pty Ltd the contract to construct the new 156.6-metre-long Windsor Bridge, consisting of five spans of incrementally launched bridge with reinforced concrete retaining walls. The construction method was carefully considered and integrated in the design, allowing the sequencing of the works to enable the construction of the new bridge and removal of the old bridge to be carried out whilst always maintaining vehicle and vessel flow in each direction.

Delivered by 120 personnel at peak, the project team utilised a world-first bridge demolition methodology and an innovative concrete curing regime to deliver the project on budget and to programme—despite experiencing two, one-in-100-year flooding events.



# Chimney Saddle Water Treatment Plant (WTP) Upgrade

TasWater  
IPD Consulting

The Chimney Saddle Clarifier Upgrade Project. This project used the local Contracting experience, innovative thinking, collaboration, and communication to ensure a successful outcome for the Tasmanian community.



## East Tamar Highway – Goderich Street Intersection Upgrades – Gleadow Street and Forster Street

**Hazell Bros Group Pty Ltd**

The Goderich Street Intersection Upgrades involved the remodelling and construction of two priority intersections, namely the Goderich–Forster Street intersection and the Goderich–Gleadow Street intersection. These intersections were identified in City of Launceston’s Invermay Traffic Masterplan and part of the ongoing commitment by the Department of State Growth to improve the Invermay road network including providing continue access for cyclists and pedestrians. The upgrades also address congestion issues outlined in the Tasmanian Government’s Launceston and Tamar Valley Traffic Vision.



## Exploring the feasibility of pumped hydro in Tasmania

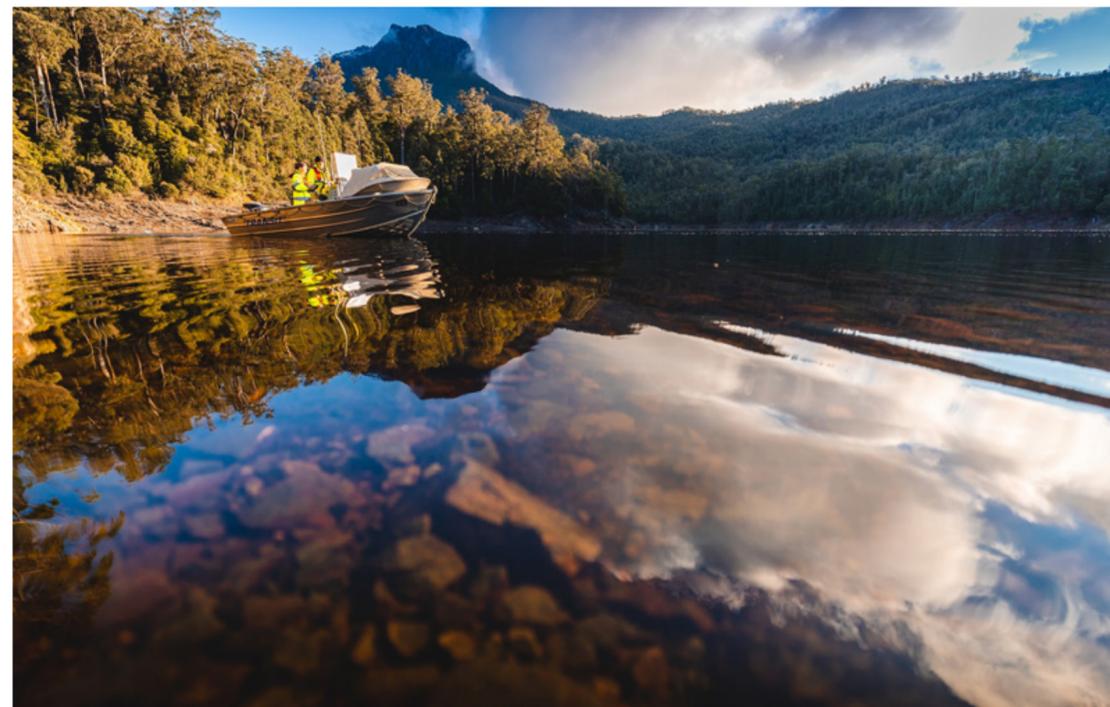
Hydro Tasmania

Entura

Hydro Tasmania's Battery of the Nation initiative is investigating the potential to maximise Tasmania's hydropower system capacity and add pumped hydro to better meet the needs of a transforming National Electricity Market. Extensive studies and investigations have identified feasible pumped hydro projects that can support Tasmania's renewable energy vision and provide the long-duration storage and dispatchable capacity needed.

To identify potential projects, the teams extensively explored technical, environmental, social, and economic factors and applied a risk-based multicriteria analysis. This involved detailed investigation and understanding of hydroelectric schemes, transmission options, technical complexity of construction and operation, environmental and community values, optimal and sustainable use of existing assets and water, and changing market dynamics, all within an overarching sustainability framework.

Hydro Tasmania and Entura's extensive feasibility investigations identified a preferred site in Tasmania's Northwest, with optimal storage capacity and flexibility, environmental and social sustainability, and greater technical and cost certainty.



## Huon Highway - Sandfly Road Intersection - Junction Upgrade

**Hazell Bros Group Pty Ltd**

The Huon Highway, managed by the Department of State Growth, is the main arterial road to the south of Hobart, serving the growing Huon Valley and Cygnet area as well as industries including aquaculture, fishing, agriculture, and forestry.

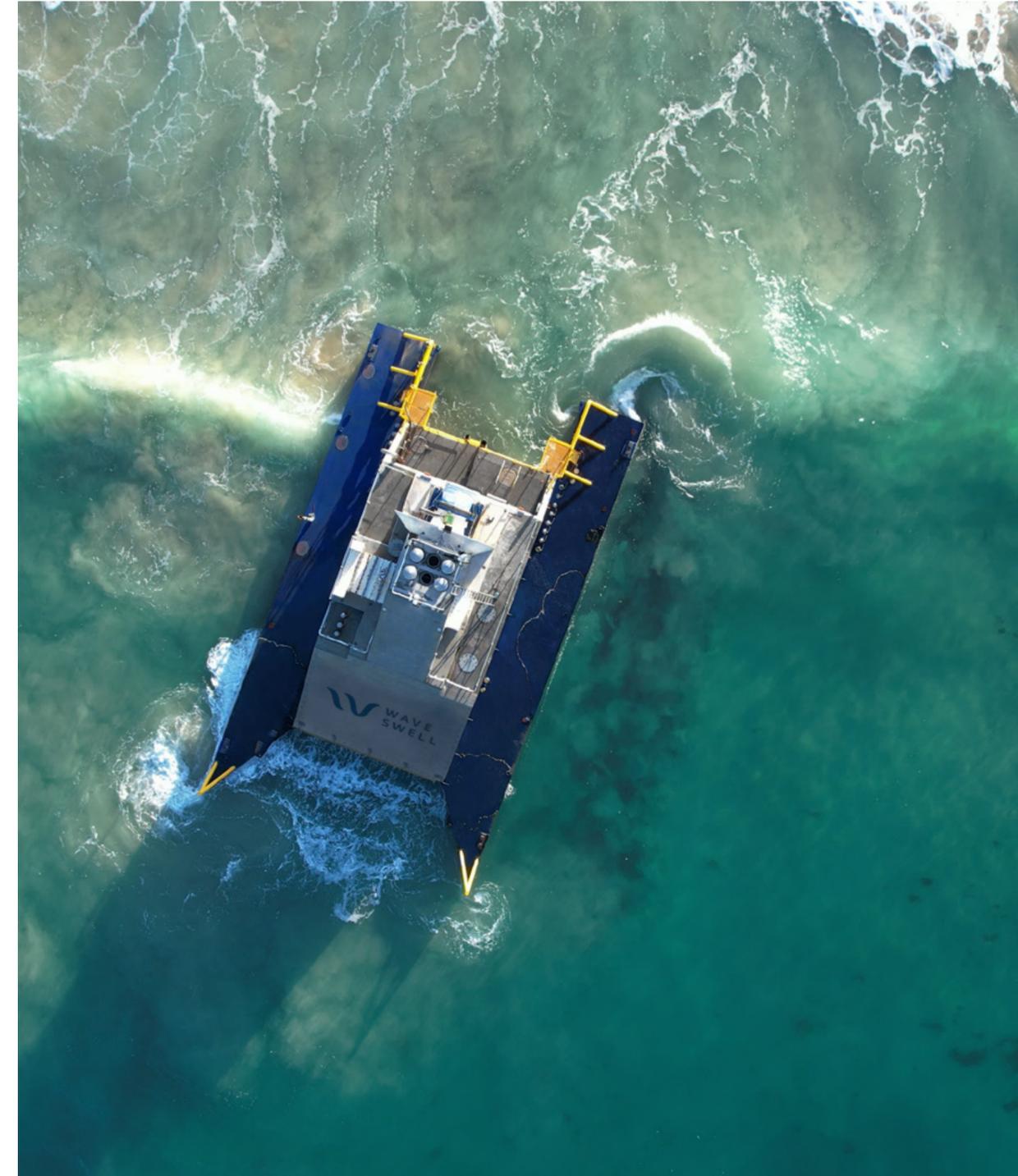
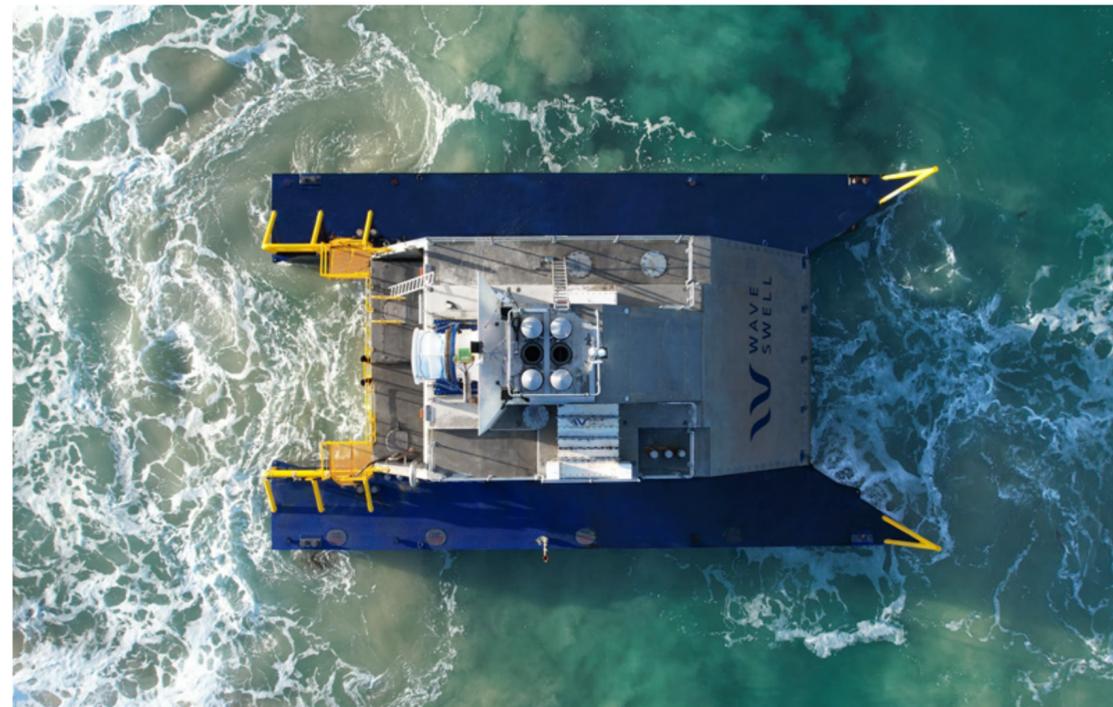
Sandfly Road is a busy rural style road serving as a link between Margate and the southern Kingston municipality, Longley and the Huon Highway. The existing intersection was high risk and high accident. The project built an entirely new intersection, in a first of its type in Tasmania: Elongated Wide Median Treatment. The new intersection simplified the requirements for drivers crossing traffic and provided fewer lanes of traffic to cross, delivering a safer experience for all road users.



# King Island UniWave200 Wave Energy Converter

Wave Swell Energy Ltd

The King Island UniWave200 Wave Energy Converter Project is a world-leading proprietary technology that demonstrates conversion of the energy in ocean waves into clean and emissions free electricity.



## Murchison Dam Safety Upgrade

### VEC Civil Engineering

The Murchison Dam Safety Upgrade was a once-in-a-lifetime project. Hydropower dams are comparatively rare engineering structures; even rarer is the need to perform large-scale structural alterations once a dam is complete. There were no relevant precedents to draw on and the project team had to employ creativity and innovation to complete the work.

The project aims to address a deficiency in the flood handling capacity of the dam for extreme rainfall events, when compared to contemporary engineering standards.

The worksite was remote, steep, narrow, and prone to inundation, presenting multiple access and safety challenges. The technical specification was demanding, requiring complex temporary works, intricate and unconventional formwork, and stringent concrete mixes to ensure freeze-thaw resistance.

The Stage 1 work helped increase the flood handling capacity of the dam to withstand very large rainfall events, reducing risk for communities and the environment.



## Paradise Gorge Buttress Stabilisation

pitt&sherry

Department of State Growth,  
Veris Australia, Stornoway

The Paradise Gorge buttress stabilisation removed 2,000 tonnes of rock above the Tasman Highway, which was at risk of falling onto the Highway. Following risk identification and a trigger weather event, the Tasman Highway was closed, and rock removal works were undertaken.

A collaborative team consisting of Department of State Growth, pitt&sherry, Stornoway, Veris Australia, Spidertech and Golder developed a strategy to remove the critical risks rocks safely and minimise disruption to road users. Within a six-week period, the road was partially reopened following the safe removal of boulders from the buttress.

Trigger Action Plans were developed and 30+ tilt monitors were installed to provide a long-term solution that delivered an appropriate risk level with an appropriate level of ongoing maintenance. It demonstrated how government, consultants & contractors, under pressure and public scrutiny, can collaborate, draw on individual technical excellence and utilise digital innovation to develop positive project outcomes.



## Peth Link Roads

VEC\_Shaw Joint Venture  
pitt&sherry

The Perth Link Roads project is the largest single project delivered under the Australian Government's and Tasmanian Government's Midlands Highway 10-Year Action Plan. It has delivered safety and efficiency benefits for the town of Perth, general road users, freight operators and regional communities.

The VEC-Shaw Joint Venture delivered a technically complex project, working collaboratively with its designer and its client to solve challenges, while effectively managing environmental sensitivities. The workplace culture was second to none, and there was a significant investment in training and skills development.

The local economy benefited from job creation and procurement in the region. The success of the project can be measured, in part, on its delivery 44 weeks ahead of schedule.



## Reconophalt: Using recycled materials in road surfacing in Tasmania

**Downer**

**Kingborough Council, Redcycle and Close The Loop**

Downer pioneered the use of recyclable material in road surfacing. Reconophalt™ is Australia's first asphalt product containing a high proportion of recyclable content derived from waste streams otherwise bound for landfill or stockpiling. Reconophalt was first used on Tasmanian streets in partnership with Kingborough Council and has been used in the municipality since 2018. The past two years have seen the product trialled by several southern Tasmanian councils.

This has resulted in a significant quantity of recyclable materials being diverted away from landfill and into a valuable product.

Roads surfaced using Reconophalt have a 15 per cent longer life than traditional surfacing material. Therefore, whole-of-life costs are significantly less when Reconophalt is compared to standard asphalt applied in the same environment.

Downer invested in its Hobart asphalt plant so it could produce Reconophalt locally and is developing a state-of-the-art asphalt plant in Launceston to increase production of Reconophalt within Tasmania.

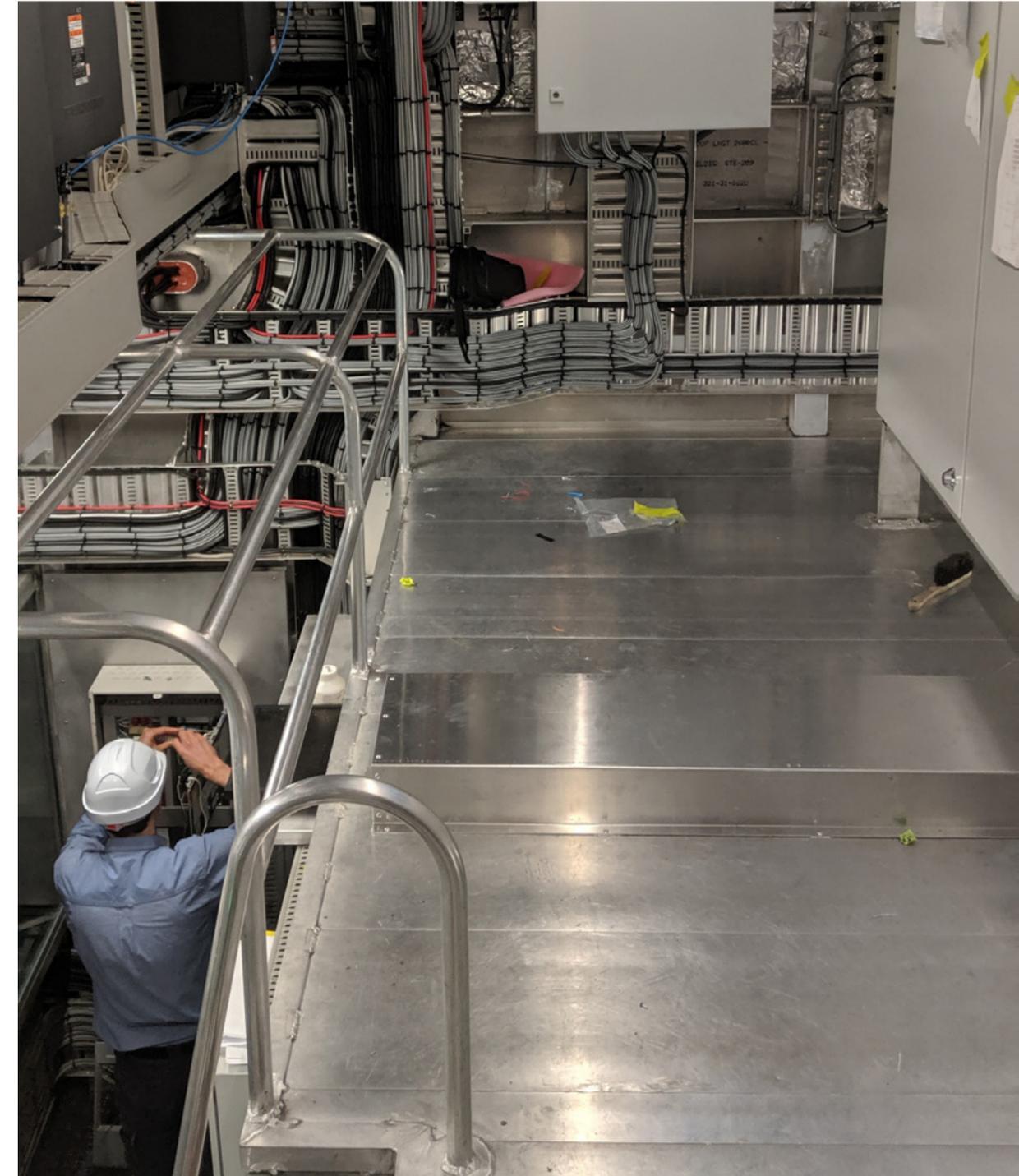
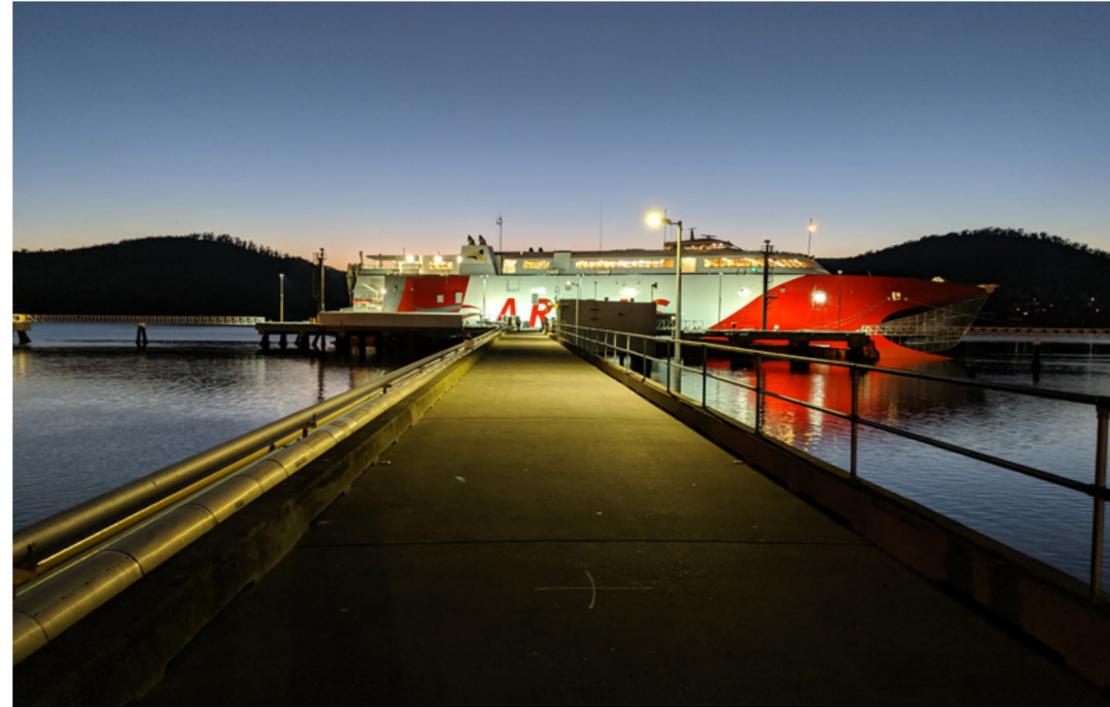


# Ship Information Management System (SIMS)

Cromarty

Incat

The project was to develop a DNV approved Ship Integrated Management System (SIMS) for Incat Tasmania to gather data from multiple systems on a high-speed catamaran. The data needed to be presented rapidly and in a consistent manner on touch screen operator workstations distributed throughout the vessel to allow operators to make informed operational decisions.



## 130 Lonsdale Street - Australia's Smartest Building and Heritage Precinct

### Meld Strategies Charter Hall

130 Lonsdale Street, Melbourne, is a highly innovative commercial office that is the jewel in the crown of the 1.1-hectare CBD site, known as Wesley Place. This unique smart building is located on the heritage precinct of the Wesley Church built in 1858 and four other significant heritage buildings.

In supporting Charter Hall's investment objectives to 'create a sustainable future for investors, tenants and communities through smart property decisions' the 130 Lonsdale development aimed to achieve exemplary sustainability and technology outcomes and to uphold the vision to create Australia's Smartest Building.

130 Lonsdale embodies the spirit of Engineering Excellence both for its comprehensive holistic technology design consisting of over 90 different technology scope items and 40 different technology systems that communicates to over 4,500 field devices as well as the extensive consideration applied to the buildings occupants from a safety, security, wellbeing, sustainability and user experience perspective.



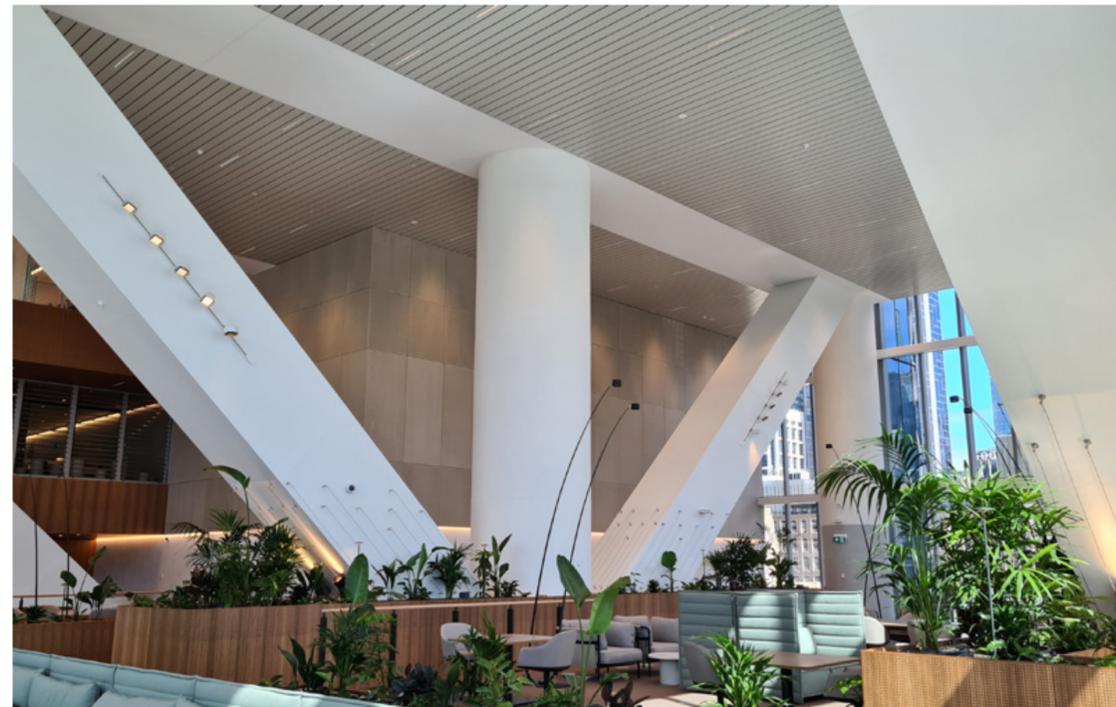
## 405 Bourke Street Redevelopment

Robert Bird Group

405 Bourke Street is a new commercial development located in the heart of the Melbourne CBD. The project features a 40-storey, 180-meter building combining office and retail spaces.

The tower was built in and around the constraints of the site's existing car park structure, light easements, 399 Bourke Street building, and the existing east retail and car park areas which all provided constraints to its design and constructability. The tower cantilevers over the existing 399 Bourke Street building via the use of three mega trusses. Each mega truss, approximately 28m long x 12m deep, consists of 1.3m x 1.3m steel sections with composite concrete-filled tubular columns that form a distinctive feature of the building.

Extensive works and re-planning within the existing retail zone were required by the design team to ensure the structural integrity of the existing structure was maintained and the client's expectations realised.



## 627 Chapel Street - Melbourne's Smartest Building

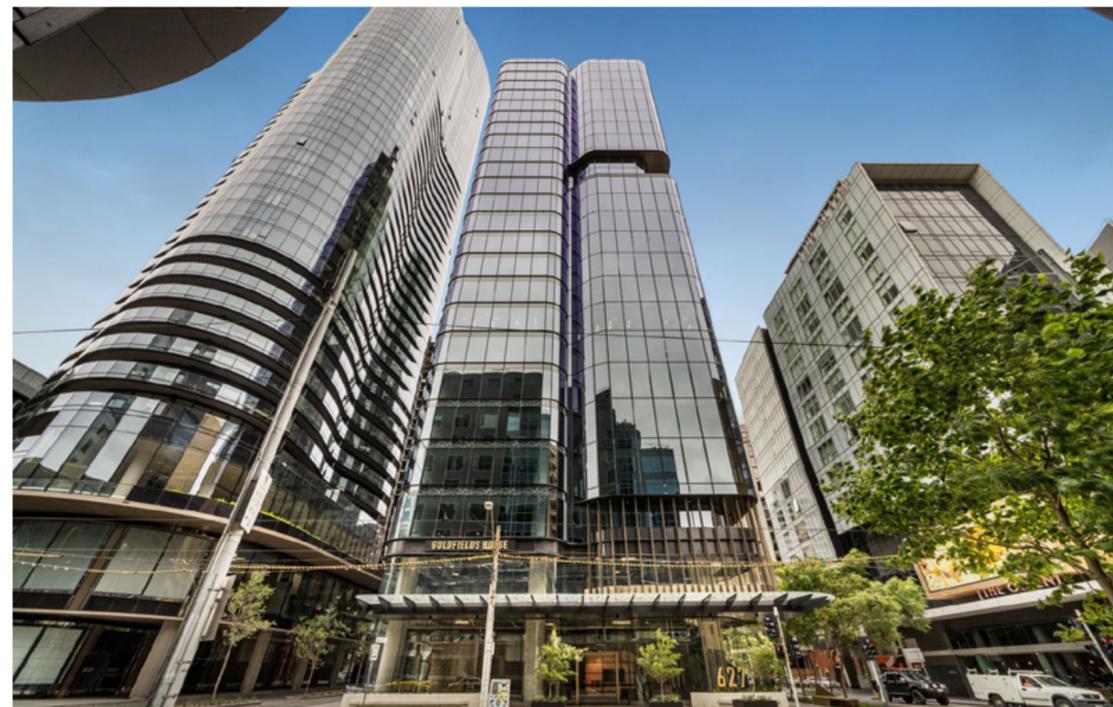
Meld Strategies

Goldfields Group

Goldfields House at 627 Chapel Street is a landmark commercial office tower that heralds a new level of sophistication on the South Yarra skyline. Transforming the local landscape, Goldfields House incorporates an intelligent workplace design, and a coveted position in the heart of Melbourne's most fashionable locale. Goldfields House is destined to become the city's most desirable address and become known as one of the smartest buildings in Australia.

Conceived as a Smart building from inception, 627 Chapel street is the first building in Australia to provide 'mobile only' access control for occupants and is the first in Australia to have a lift control system connected to a highly cyber secure IP network backbone for destination control, monitoring and communications purposes.

Over 30 technology systems in the building are connected via a smart building systems architecture based on the use of open standards and open systems.



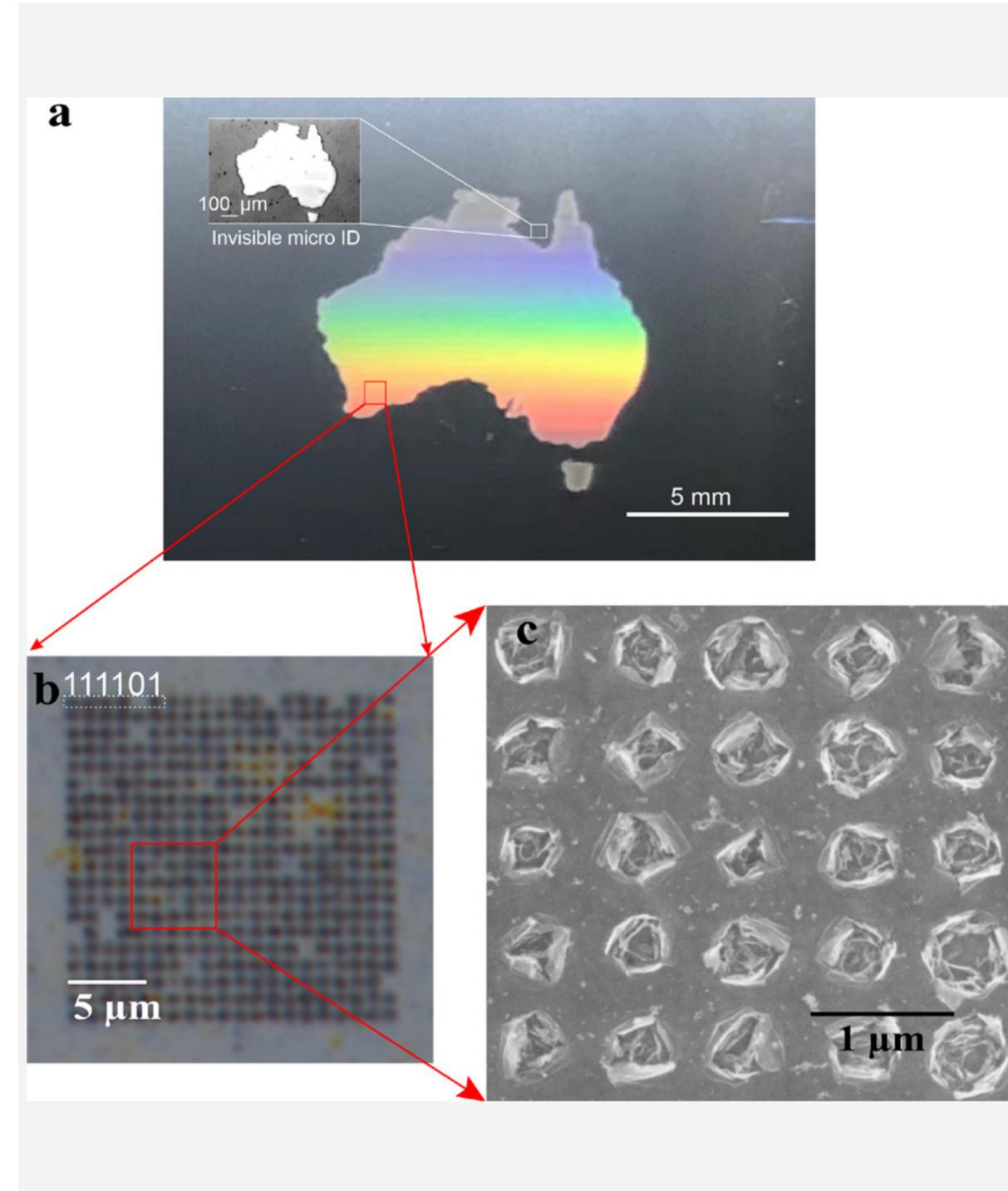
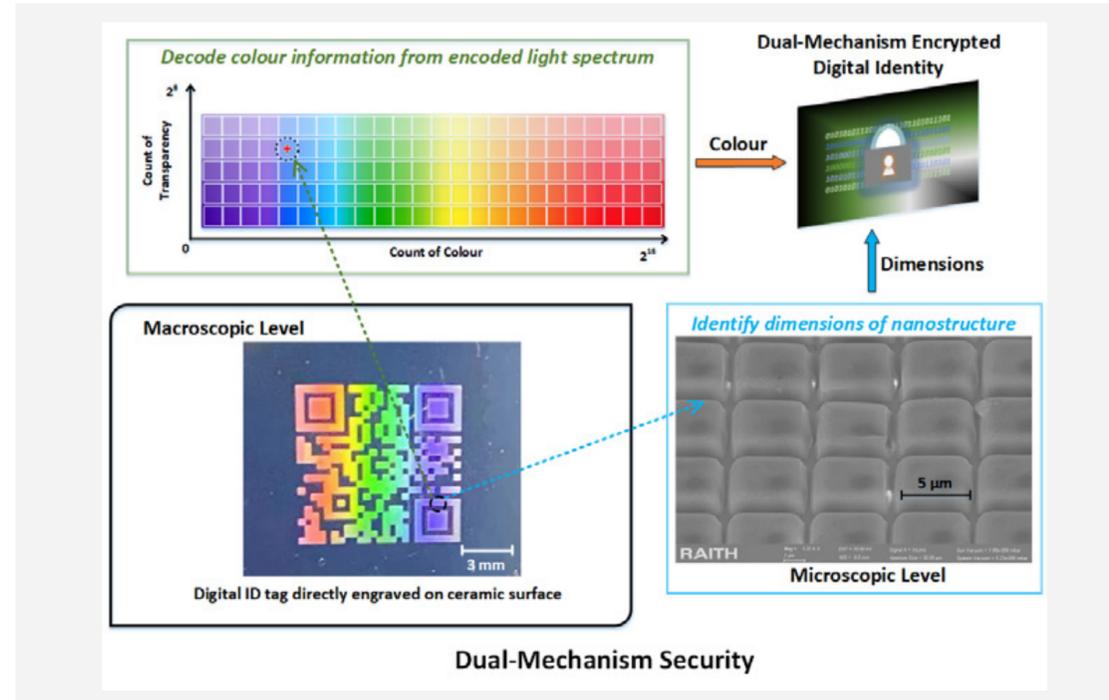
# A Highly Encrypted Laser Nanofabrication Method for Engraving Colourful Digital ID Tags

**Innofocus Photonics Technology Pty Ltd**

Our project designed and developed an innovation of nano-structural colour-printed tags. The Nano Colour Digital ID, enabled by a state-of-the-art ultrafast-laser nanofabrication system Innofocus developed. Based on Innofocus' understanding of intelligent manufacturing in the fields of nanofabrication, properly designed nanostructures with embedded large volume of ID information are directly and permanently engraved into products, which fundamentally differentiate them from any other digital IDs have been used so far.

The project aims to revolutionise existing digital ID technologies and address data security and provenance of digital commodities, delivering top-notch Australian engineering excellence, establishing Australia's lead position in intelligent manufacturing in the accelerating global digitalisation.

Established in 2018 at Melbourne, Innofocus Photonics Technology Pty Ltd has been dedicated to technology innovation and translation of engineering excellence into valuable business solutions, to create a smarter, greener, and happier future.



## Additional Works Package 1 - Cheltenham and Mentone

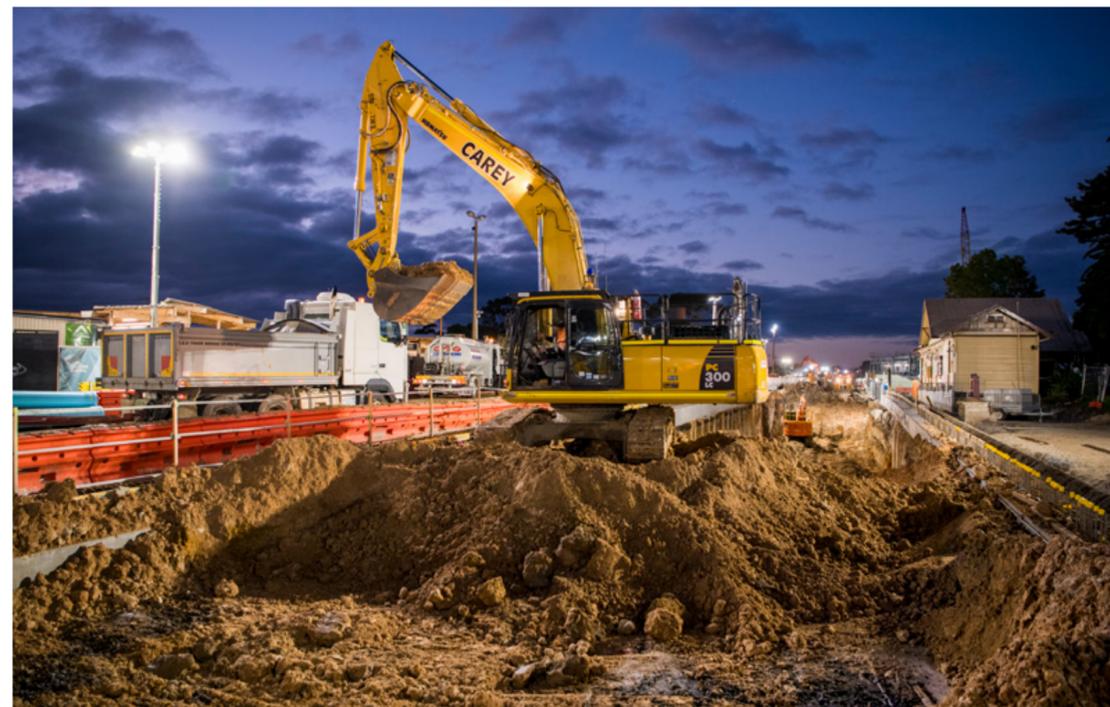
### Southern Program Alliance

The Victorian Government is removing 85 of Melbourne's most dangerous and congested level crossings by 2025.

The Southern Program Alliance comprises of ACCIONA, Coleman Rail, WSP, Metro Trains Melbourne (MTM) and the Level Crossing Removal Project.

SPA was awarded the Additional Works Package 1 (AWP1) to remove three level crossings in Cheltenham and Mentone. Previously, more than 200 trains and 38,000 vehicles passed through these crossings every day. Boom gates were down for up to 40 per cent (49 minutes) of the 7am-9am morning peak. Pedestrians were at risk, local emissions were high due to idling vehicles and signal faults were common.

The purpose of AWP1 was to improve vehicle and pedestrian safety by constructing two rail trenches under new road bridges and two state-of-the-art stations with improved safety and sustainability, revitalising the Mentone and Cheltenham communities with new public spaces, and engaging with local stakeholders such as schools and traders.



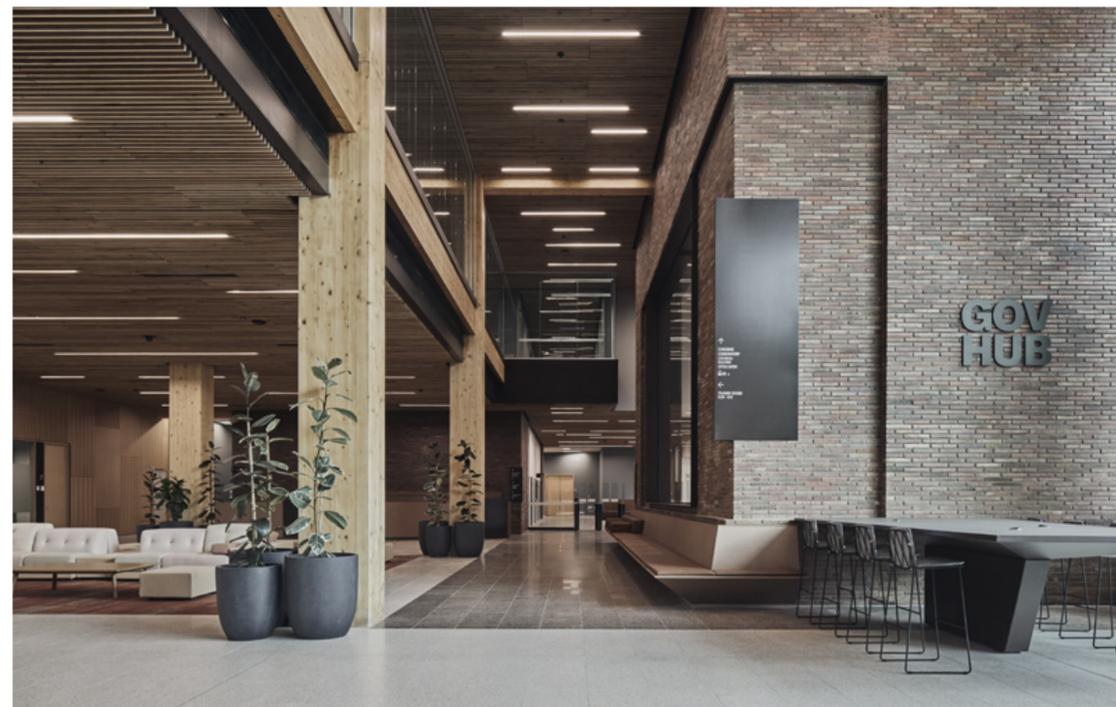
## Ballarat GovHub

AECOM Australia Pty Ltd

The Ballarat GovHub is a \$100 million, 15,000m<sup>2</sup> five-storey mass timber office building and is the government's first mass timber commercial building in Victoria. The vision for the Ballarat GovHub was to provide a state-of-the-art community asset and workplace, supported by sustainable solutions that would lower operational running costs, improve environmental outcomes, and provide a building that provides wellness benefits to the users.

The architectural design features several challenging elements requiring non-standard engineering solutions as well as adopting a new design process, breaking from the efficient but prescribed business-as-usual approach in the local market to support the design of a unique building using a material that was still novel in this application.

As the first major timber commercial building in Victoria, the project will stand as the first of a new generation of buildings to underpin our efforts to address the current climate emergency.



## Bell to Moreland Level Crossing Removal Project

### North Western Program Alliance

The Bell to Moreland Level Crossing Removal Project involved the removal of four dangerous level crossings, the construction of a 2.5km elevated rail structure and two new train stations, the restoration of two heritage stations and the delivery of new open spaces.

Situated in a highly constrained corridor in Melbourne's busy inner north, the project presented one of the most complex level crossing removal projects undertaken at that time.

The project not only improved road travel times and safety, but transformed the liveability of the area by creating two MCGs worth of new community space.

The project's sustainability outcomes have been rated amongst the highest ever by the Infrastructure Sustainability Council and Green Building Council of Australia.

The Project overcame logistical barriers by challenging traditional methods, to set new benchmarks for the industry, deliver new rail infrastructure and safety improvements and ultimately, improve quality of life for commuters and community.



## Former Fitzroy Gasworks Remediation

**Enviropacific**

Enviropacific was engaged by the Victorian Government as Principal Contractor to remediate the former Fitzroy Gasworks located in the inner Melbourne suburb of Fitzroy North. The project was one of the most significant urban renewal projects undertaken in Australia from both a historical and environmental perspective, unlocking the former legacy site to enable an extensive urban renewal project.

The project delivered excellence across a range of engineering and applied science disciplines, including the significant feat of recycling, or regenerating more than 90 per cent of the 170,000 tonnes of highly contaminated wastes excavated throughout the project.

“The Fitzroy Gasworks Project was initially seen as a high-risk project with its confinement within a high density, urban setting, but Enviropacific has been able to manage these risks and consistently demonstrate to the community its ability to maintain a high level of safety and professionalism.” Adam Bradley – Senior Manager, Department of Treasury and Finance.



## High Temperature High Pressure Isostatic Composite Curing

Furnace Engineering Pty Ltd

XTek Limited

Furnace Engineering designed a high-pressure, high-temperature isostatic curing system for carbon fibre composites, in conjunction with XTek Limited, the end-user of the machine and the developer of the isostatic curing process. This project demonstrated a high degree of collaborative design and execution between the principal and contractor, and the co-development of a production machine to be used by XTek which has globally unique technology.



## Melbourne Park Stage 3 Redevelopment

**AECOM Australia Pty Ltd**

The Melbourne Park precinct has been providing entertainment to Victorians and visitors to the state since 1988. As host of the Australian Open, this precinct plays an important role in the sporting and entertainment life of the city. With the precinct reaching capacity, the Victorian Government provided a \$972 million redevelopment fund to secure not only the Australian Open until 2040 but also the precincts place on the world stage.

Undertaken in three stages, the final stage was completed in early 2021 by AECOM and its partners. AECOM was engaged for the design delivery of Stage 3 of the Melbourne Park upgrade which included the civil, structural, facades and traffic engineering a number of key elements including a new 5,000-seat multipurpose Kia Arena, Function and Media Centre, expansion of the interlinking concourse plaza, outdoor match courts, improved central logistics hub and broadcast compound.



## Melbourne's Bigger, Better, High Capacity Metro Trains – the first new train design in nearly 20 years

Department of Transport  
Evolution Rail

Following a competitive tender process, the Evolution Rail Consortium partnered with the Victorian Government to manufacture 65 High Capacity Metro Trains (HCMT). The HCMTs have been designed to offer both increased service frequency and train capacity, through the single largest order of trains in Victoria's history.

The HCMTs are the first new train design in Victoria for nearly 20 years and demonstrate a step change in public transport. They are larger, safer, more accessible, and more comfortable for passengers. The HCMTs provide a dramatic 20 per cent increase in capacity from the existing fleets, carrying up to 1380 passengers.

The first HCMT began operating in December 2020, providing passengers with a smoother, quieter, and more comfortable journey. Longer term, they will run through to Sunbury following the opening of the Metro Tunnel.

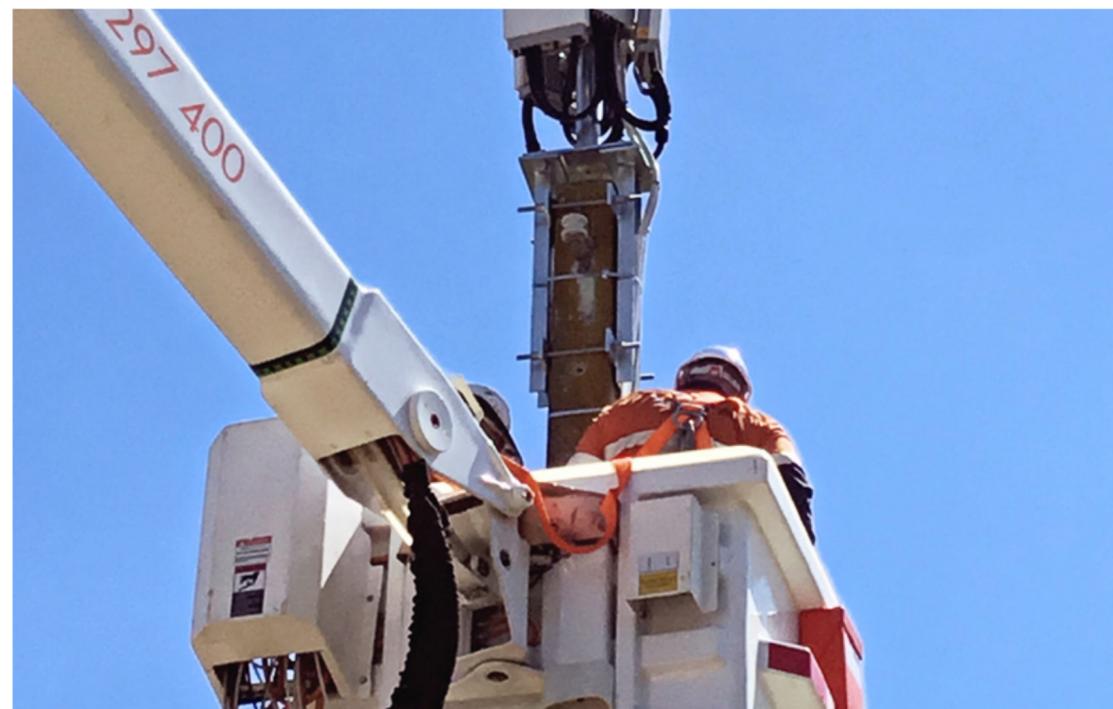


## mmWave 5G Rollout

### APD Engineering

The project entailed engineering, prototyping, fabrication, construction, installation and testing of mmWave 5G infrastructure in Melbourne. mmWave 5G unlocks greater levels of productivity for subscribers, and further enriches the quality of life for those that have access to the technology in multiple ways. In essence, mmWave 5Gs greatest contribution to-date has been its ability to compliment and act as a catalyst for countless other technologies.

With significant improvement in latency, the technology unlocks extraordinary potential with the Internet of Things, making this one of the truly remarkable evolutions of the Fourth Industrial Revolution (Industry 4.0).



## Pakenham East Depot – supporting Melbourne’s safe, accessible, reliable and comfortable HCMTs

Department of Transport  
Evolution Rail

The Victorian Government and Evolution Rail Consortium are delivering 65 new High Capacity Metro Trains (HCMTs) and a range of ancillary activities to support the maintenance and operation of the HCMTs.

A critical component of this city-shaping project is the new train depot in Pakenham where both testing and maintenance occur. The Pakenham East Depot is the largest state-of-the-art rolling stock maintenance facility in Australia and will provide the necessary flexibility to cater to the future needs of Melbourne’s evolving network.

With the construction of Pakenham East Depot completed in July 2020, Evolution Rail Consortium and Department of Transport have seen two years of the rigorous testing and commissioning program, which has put 20 trains into passenger service.



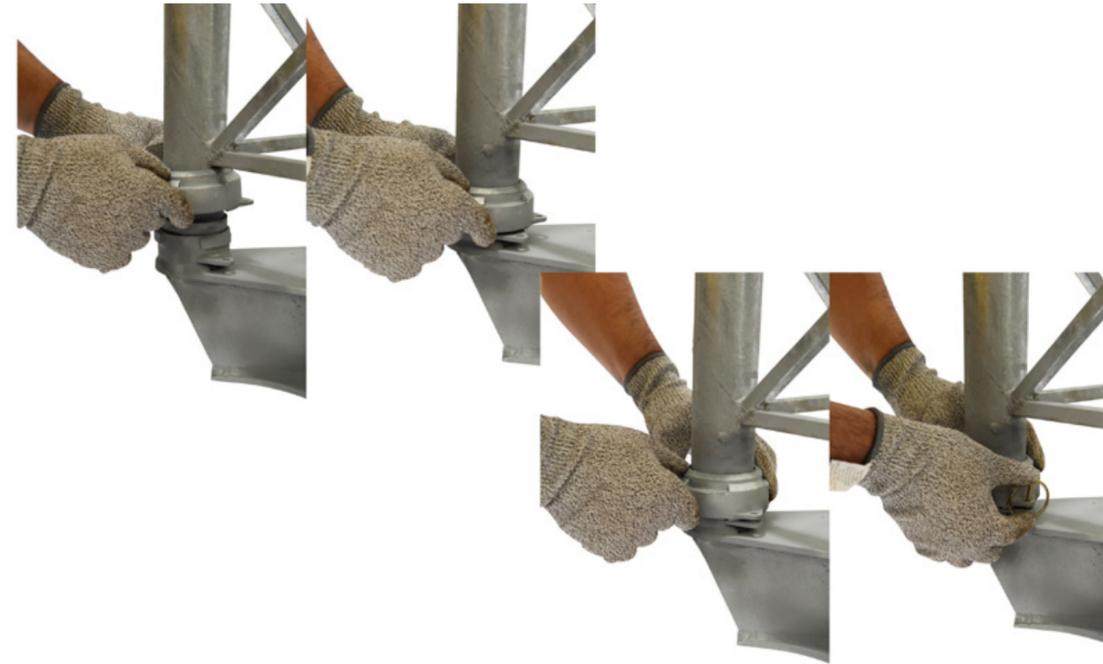
## Quadshore: The world's most sustainable propping solution for temporary construction works

Monash University

Coates Engineering Solutions

Completed through a collaboration between Monash University and Coates Engineering Solutions and certified in January 2022, Quadshore systems have disrupted temporary works arena due to their revolutionary design using lightweight, high-strength structural elements, as well as boltless module-to-module connections that render consumables obsolete.

The working load limit to weight ratio of a three-metre Quadshore propping system is at least 1.4 times higher than conventional propping systems. Moreover, the assembly/disassembly time of Quadshore is at least 40 per cent quicker than conventional systems. As a result, the patented Quadshore promises to make construction sites more efficient and safer, while also reducing labour, handling, storage, assembly/disassembly costs, saving construction companies both time and money. In addition to the economic benefits, the high capacity-to-weight ratio of the Quadshore systems means energy consumption for transportation, installation and de-installation is significantly reduced, resulting in a lower carbon footprint and more sustainable environment.



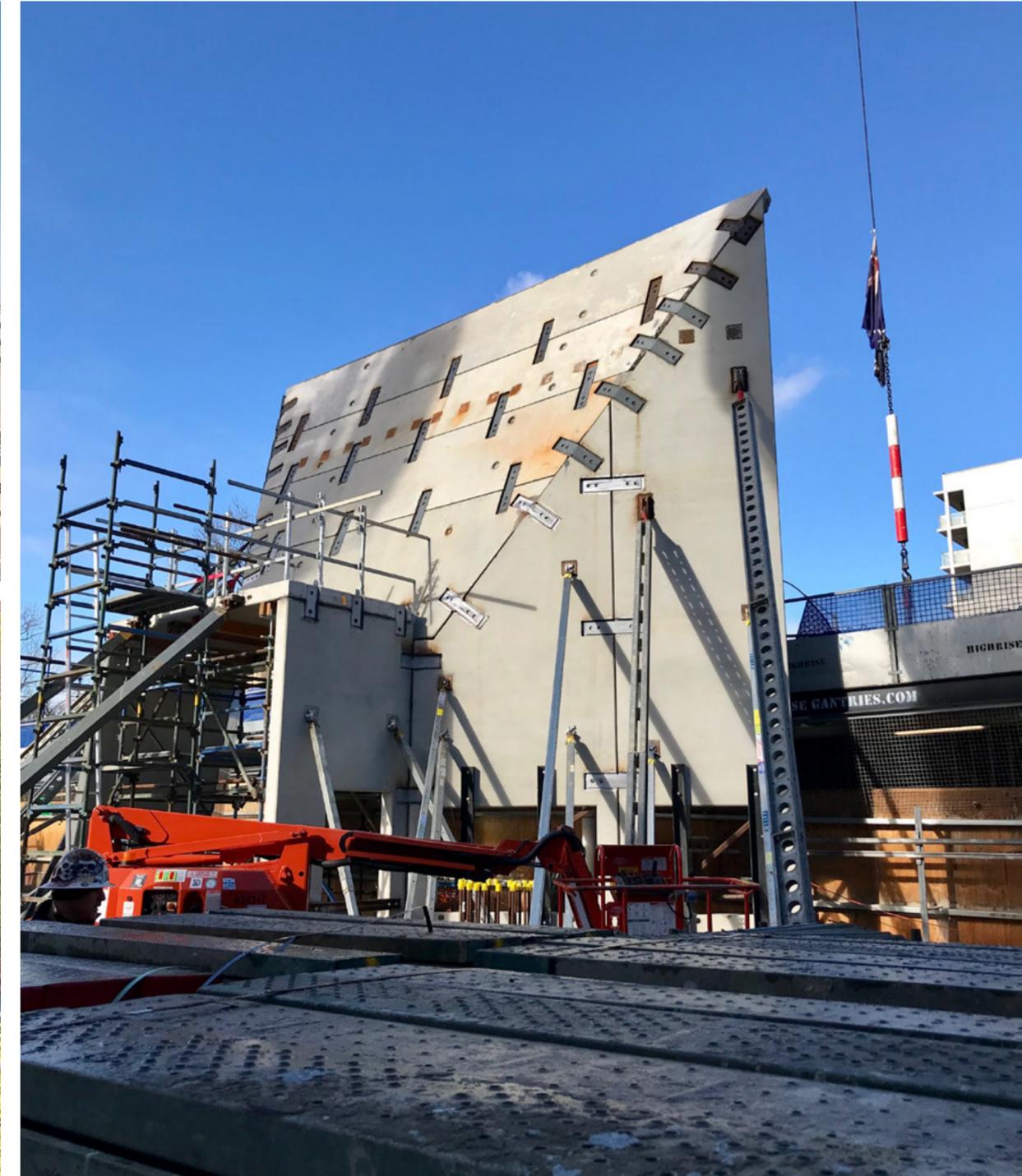
## Resolving Melbourne Connect's challenging façade issues

**Miglic MacLeod**

Designed by Woods Bagot and Hayball, Melbourne Connect is a visionary University of Melbourne project delivered in partnership with a Lendlease consortium. This flagship innovation precinct co-locates industry and researchers to generate diverse technological, social, and economic outcomes.

To resolve original structural design and cost issues, Lendlease contracted Miglic MacLeod to assist in the value management and redesign of the structurally challenging façade and entrances on Swanston and Grattan Streets. These define the approach and public ground plane interaction to Melbourne Connect.

Consisting of inclined brick walls interspersed with digital activation glass bricks that screen media, the façade overhangs pedestrian walkways on Swanston and Grattan Streets and posed a high level of risk. It needed to be designed with a clear focus on strength and safety. Our solution optimised the use of steel throughout to support value management and pioneers the use of precast concrete panels as the portal structure.



## Armadale Road to North Lake Road Bridge Project

Laing O'Rourke

BG&E

Main Roads WA

The Armadale Road to North Lake Road Bridge project transformed the increasingly congested Cockburn Central area with free-flowing road configuration. Delivered by Laing O'Rourke, BG&E and Main Roads WA as the Armadale Access Alliance, the project constructed Western Australia's first duck and dive road alignment with two grade separated roundabouts on Armadale Road at Tapper Road and Solomon Road. The project also delivered a new bridge over Kwinana Freeway, new collector distributor roads on Kwinana Freeway, and upgrades to Armadale Road and parking at Cockburn Station.

The success of the project is the result of a highly effective alliance culture that placed public participation at its heart, achieving outstanding results in indigenous participation, sustainability and stakeholder and community satisfaction by being adaptive and responsive. The project was delivered on time and within budget despite impacts from the COVID-19 pandemic.



## Assembly Hall

Civmec  
GHD

This project came into existence as part of a vision for manufacturing and heavy engineering capability in Australia at a time when the trend was to offshore. Civmec believed a world-class manufacturing asset could be developed in Australia, to not only compete with offshore supply chains but provide a superior service offering.

This vision along with the determination of its workforce has been one of the key aspects of the company's growth and success of this project. Privately funded and delivered, today the vision has transpired through design and construction into a world-class facility and a strategic asset for Australia. Through the design and efficiencies, the Assembly Hall provides quality assurance, cost competitiveness and delivery certainty to a range of clients.

The underlying reasons for this success lays in the engineering excellence achieved by the Civmec and GHD integrated design and construction team.



## Cape Lambert Dolphin Head Life Extension Project

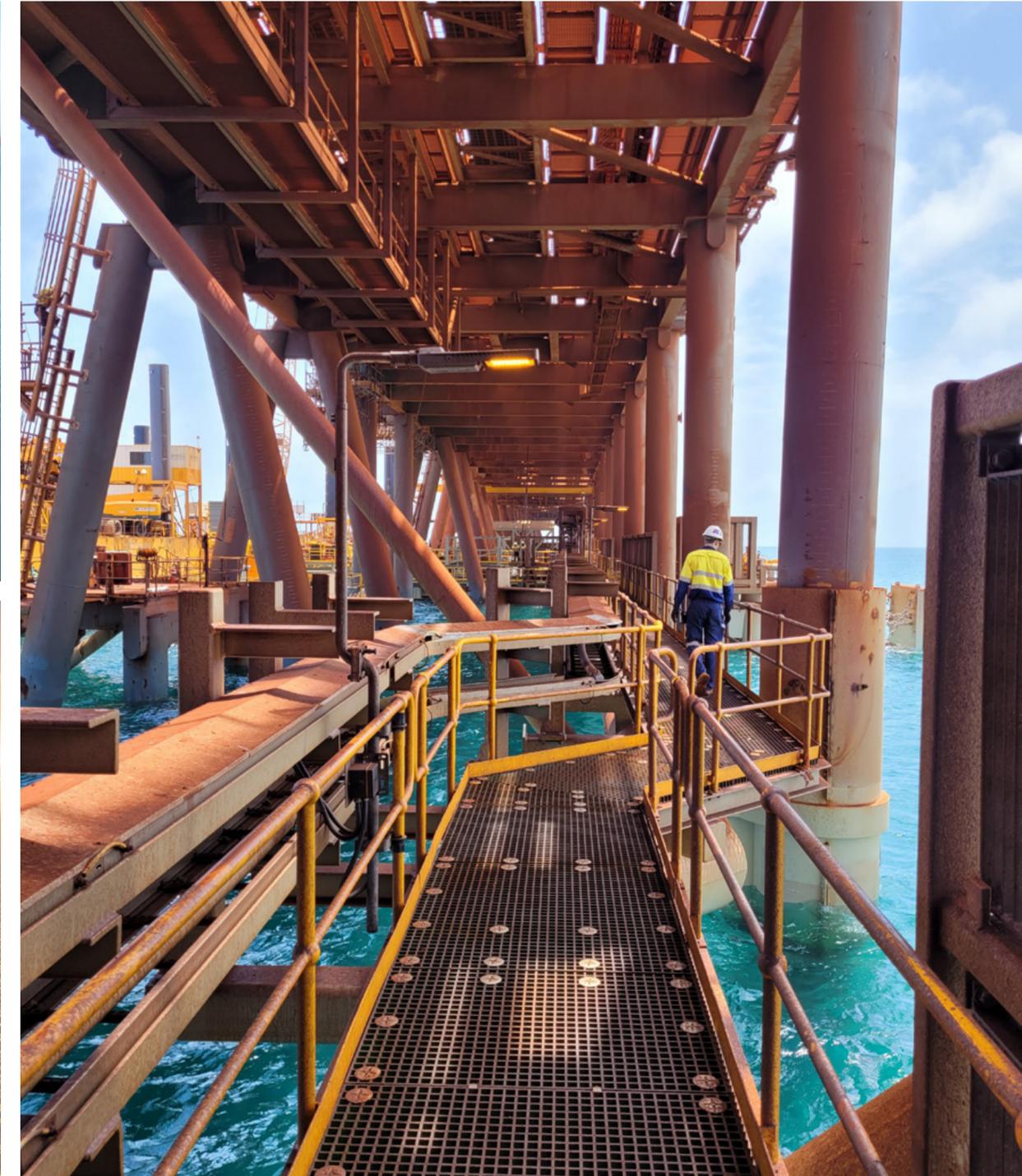
**Aurecon**

**Rio Tinto**

Cape Lambert is a port facility operated by Rio Tinto Iron Ore in the Pilbara region of Western Australia. By developing a 3D digital twin and completing digital surveying in the early design of the replacement of dolphin structures, a complex sustaining capital project, upfront construction cost risks for Rio Tinto Iron Ore were reduced by approximately A\$80million. The approach meant risks were identified and addressed early to manage spatial integration with existing structures and hazards before onsite construction commenced.

Dolphins are critical infrastructure used to berth and safely moor vessels alongside the wharf for iron ore outloading. As a result of this project, the access to dolphins has significantly improved with a newly installed network of walkways and stairs.

The strengthened jetty also updates the existing design to current Australian design standards, which require strength and resilience to one-in-500-year cyclonic events.



## Capital Square 2

Arup

Looking at the Capital Square precinct now, it would be difficult to imagine that such a large piece of the CBD was once a redundant site. Capital Square Tower 2 is the second of three commercial towers to be constructed in the Capital Square development and contributes to the expansion of Perth's business district in the west end of the CBD.

Embodying engineering excellence, challenging convention and embracing change, clever design thinking was prioritised. Many site and design constraints of the project challenged the traditional approach to commercial office design and traditional conceptions of efficient spans and depths, and efficient construction sequencing.

Working with the significant slope of the site, reusing existing piles from a previous scheme, and providing dual level lobbies of equal majesty, the result is a visually subtle office building that complements its external environment whilst providing dramatic column free flexible space to its tenants.



## Karel Avenue Upgrade

Georgiou Group Pty Ltd

Georgiou Group were appointed by Main Roads WA and the Public Transport Authority to undertake the design and construction of the Karel Avenue Upgrade project. The project involved the widening of Karel Avenue, over Roe Highway and Freight Railway, to create a dual carriageway, from Farrington Road to Berrigan Drive.

A top-down construction system was chosen for the new Karel Avenue Bridge to reduce the impact on the existing bridge structure, on the existing rail underneath and to reduce the construction programme and costs. A two-stage construction system was implemented to avoid disruptions to the road traffic and sprayed concrete technology was used for the north abutment for soil retaining and to strengthen the abutment structures for rail collision load. This project was one of the first to use sprayed concrete for MRWA bridges in an urban environment.



## Karrinyup Shopping Centre Redevelopment

**Pritchard Francis Consulting Pty Ltd**

The Karrinyup Shopping Centre expansion was the largest commercial building project underway in Western Australia at the time of construction. Pritchard Francis were engaged for structural and civil engineering for the major redevelopment, encompassing a rapid construction program and a doubling of floor space to over 109,000m<sup>2</sup>.

The Pritchard Francis team worked collaboratively with the consultant team and lead contractor Multiplex, to provide innovative and efficient design solutions to numerous complex challenges. Creative thinking and detailed analysis produced large column free spaces throughout the centre, delivered complex connection points between the new and existing structure, and minimised the materials required through efficient slab design and unconventional joint layouts.

The Karrinyup Shopping Centre redevelopment proves even the biggest, most complex projects can be sustainable and efficient with smart design thinking.



## Koolangka Bridge, Perth Children's Hospital

**AECOM Australia Pty Ltd**

The visually stunning Koolangka Bridge (Koolangka meaning 'children') in Noongar offers safe and direct access to the Kings Park bushland from the Perth Children's Hospital. Suggested more than 10 years ago by the Perth Children's Hospital Foundation and a group of children who thought that a bridge crossing would provide respite and a distraction from their treatment.

The bridge was envisioned to be a unique structure providing a playful experience for the community as they pass across it, reflecting the purpose and theme of the bridge, being for children and their families.

Key features of the bridge include the serpentine shape which snakes through Kings Park across to the hospital campus, the multicoloured deck and interactive sounds, offering the users an experience filled with beautiful vibrant colours, long open spans, large cantilevers, and inbuilt speakers amplifying nature sounds that lead to Western Australia's most popular and iconic tourist destination.



## Koora-Yeye-Boordawan-Kalyakoorl (Past-Present-Future-Forever), Wadjemup (Rottnest Island)

**Airey Taylor Consulting Engineers and Scientists**  
**SCAPE-ISM (Artists and Fabricators; featuring**  
**artists Jahne Rees and Sharyn ) and Rottnest Island**  
**Authority (Department of Biodiversity, Conservation**  
**and Attractions; Government of Western Australia;**  
**Project Owners)**

This striking nine-metre-high monument stands at the landing point of Thomson Bay at Wadjemup (Rottnest Island). It serves to welcome all visitors and to bridge the ancient and recent history of the Island towards a hopeful and positive future. Engineering solutions adopted included glass fibre reinforced polymer rods as reinforcement for the concrete throughout the piece and temporary post-tensioning of the form for fabrication, handling, transport, and installation.

These solutions achieved the artist's vision of a narrow and curved limestone aggregate concrete form directly on the beach, which will endure for future generations despite the highly corrosive environment. The resounding cultural significance of the piece for the Western Australian community is matched by the technical significance of the project as a durability benchmark for all coastal projects using concrete around Australia.



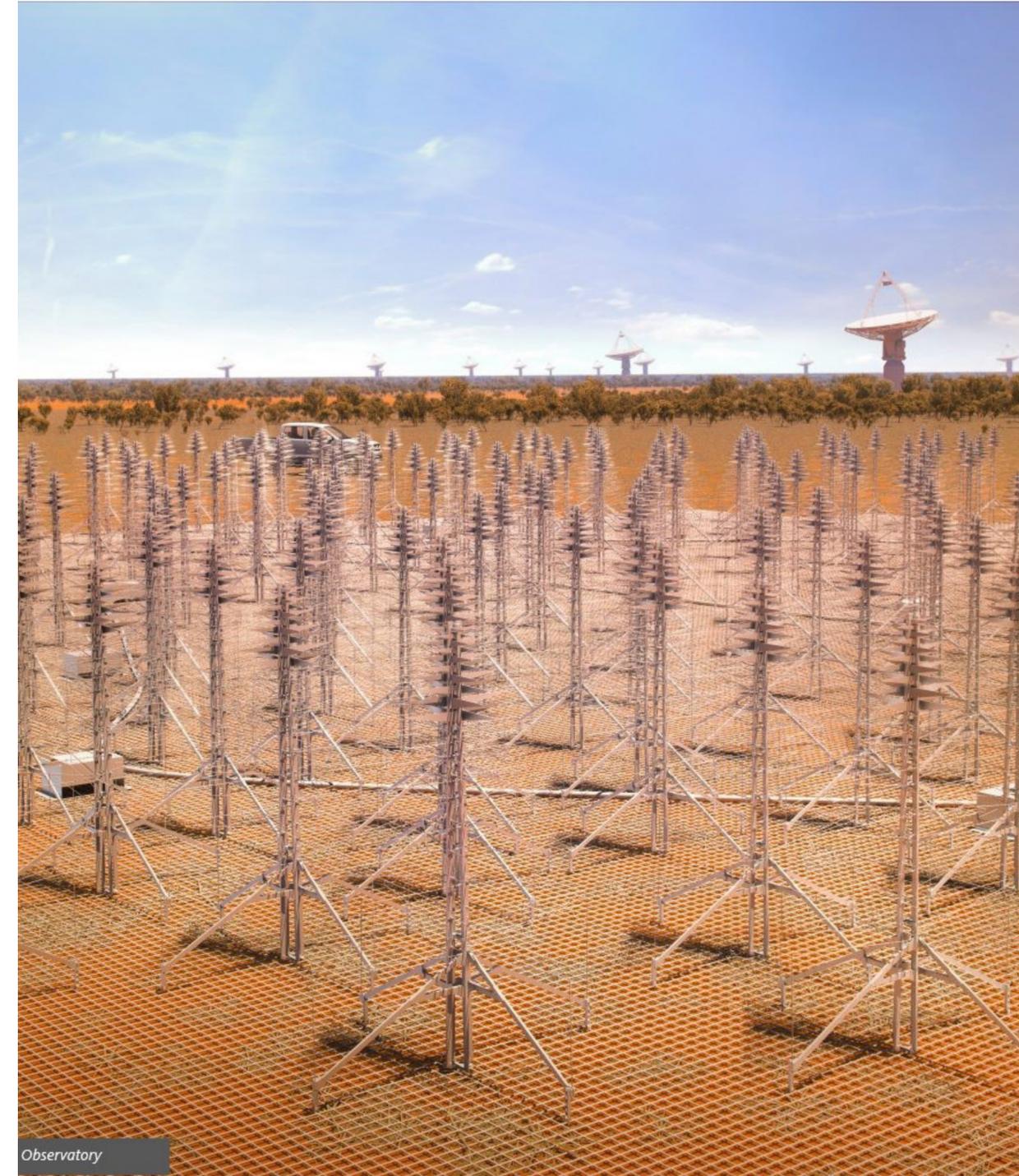
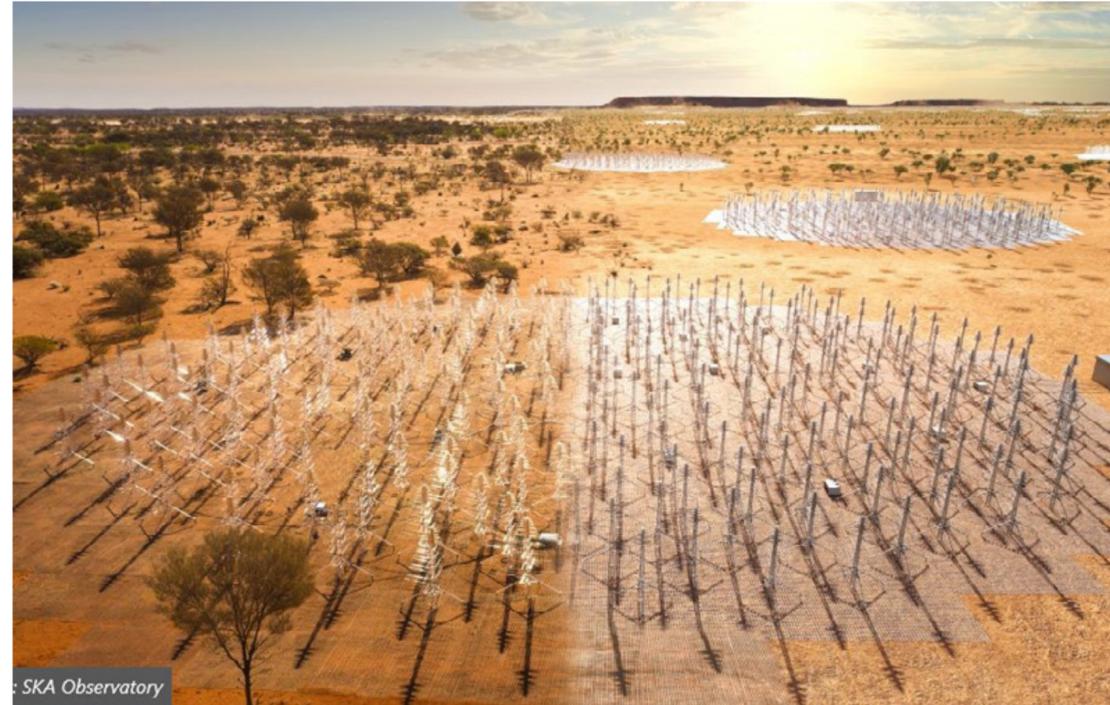
# SKA Telescope

Aurecon

The SKA is a global science and engineering project overseen by the SKA Observatory (SKAO) to build two of the world's largest radio telescopes in Australia (SKA-Low) and South Africa (SKA-Mid).

Aurecon, in partnership with Australia's national science agency, CSIRO, formed the Infrastructure Australia consortium for design management of the site infrastructure, power distribution, and on-site computing buildings for the SKA-Low Telescope, to be located on Wajarri Yamatji country in the mid-west region of Western Australia.

The project's mission is to build and operate cutting-edge radio telescopes to transform our understanding of the Universe and deliver benefits to society through global collaboration and innovation. At the Western Australia site, 131,072 low frequency antennas (each about 2m high) are planned to be installed over a 40km radius area. Astronomers from around the world will use this telescope to study the histories of distant galaxies.



## The MWAX Correlator: A new high speed, high volume signal processing engine for the Murchison Widefield Array radio telescope

Curtin University

The signal processing operations of the Murchison Widefield Array (MWA) telescope are a massive computational effort, the bulk of which are achieved by the onsite correlator. A new correlator, dubbed 'MWAX', was designed with increased functionality to remove arbitrary limits and support more flexible observing modes and the expansion of the telescope.

The replacement of the MWA's decade-old correlator is an important development case study for the future SKA project, the world's largest radio telescope. The new MWAX correlator supports both local and international astronomy efforts and science goals and is an important engineering success story in the growing Australian space industry.



# Warradarge wind farm transmission connection

APD Engineering

The project entailed power system modelling, engineering, and construction management of the Warradarge Windfarm 330kV transmission connection point to the Western power Transmission network. Real world design and construction of these types of projects usually takes 24-30 months to energisation, but in this case, it was materialised in an enviable 17 months. The project was an overall major success. Risk mitigations were found to have been correct and well thought-out, and the end client was in ore of this major engineering achievement.



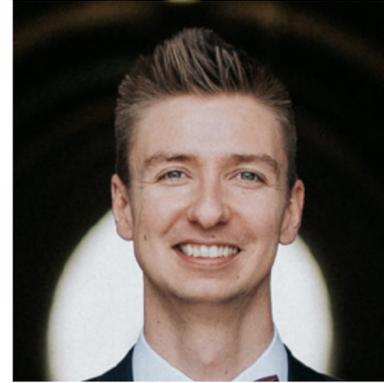
# People Awards



## Bryce Cronin

GradIEAust

Bryce Cronin is an international award-winning engineer and designer who has been recognised as an emerging leader in the Australian technology sector. He's passionate about harnessing technology in innovative ways for social good and for the promotion of STEM education. He's created robots, developed apps, and has founded Hackathons.com.au to promote tech events happening around Australia. In 2021, Bryce was a Young Canberra Citizen of the Year Finalist. In 2022, Bryce created the Access3D.org initiative to design and ship 3D-printed accessibility devices to Australians in need.



## James Dean

MIEAust CPEng NER

James is a professional engineer with experience in modelling and simulation, and software engineering. He has a passion for coaching junior engineers to achieve engineering excellence in their careers, and a passion for helping businesses improve their systems to achieve previously unobtainable outcomes.

Through more than eight years of engineering experience, James has led small, distributed teams in software intensive environments to deliver quality outcomes for clients, demonstrated strong communication skills through extensive public speaking experience, and delivered projects across the defence, space, and oil and gas industries.



## Steve Adamthwaite

MIEAust

Steve Adamthwaite is passionately committed to Australia's infrastructure sector and shifting how it achieves resilience and security long term. He represents the next generation of leaders and innovators driving change, leading projects and growing skills that will underpin a sustainable future for sector, the people within it and the communities that rely upon it.

Currently leading Arup's NSW/ACT Water Business, Steve drives water strategies centred on implementing sustainable, community-oriented solutions and delivering the best levels of service and infrastructure for the community and industry.

Steve also shapes the sector beyond project delivery—he is actively involved in shaping future strategy through leadership positions with WaterAid NSW (Deputy Chair), Australian Water Association (Vice President NSW) and Engineers Australia (Deputy Chair, National Young Engineers Committee, Shadow Board).



## Gareth Evans

MIEAust CPEng NER

Gareth Evans completed his high schooling and upbringing within the Coffs Harbour region. Gareth delayed his study commencement to undertake a year of work as a concrete batcher in 2010 for Boral, and continued to work as a batcher throughout his engineering studies. Gareth completed his university practical experience through the Boral Technical department, employed as a technical assistant/undergraduate engineer. Gareth then started with Northrop as an undergraduate structural engineer in 2014 and graduated from the University of Newcastle the following year. Gareth began working at the Newcastle office before establishing the Coffs Harbour office in February 2021.



## Willorage Perera

MIEAust

Will Perera is a Mechatronics Engineer who graduated from Monash University. He is working as a senior systems engineer/project engineer at Boeing Defence Australia. Before devoting his work to BDA, Will was a lead engineer and technical advisor to the Department of Transport VIC and NSW.

He is currently a chartered engineering candidate. He is the founder of the Engineers with Disability Australia community of practice. While he is passionate about engineering, he takes pride in providing the best volunteer work to impact society positively.



## Jim McKay

MIEAust CPEng NER

Jim is passionate about the opportunity for engineering to lead the change towards a decarbonised, sustainable future.

Jim has more than 20 years' engineering experience in the electricity supply industry gained across Australia and internationally. He specialised in protection engineering and has worked in asset management, major projects, power system planning and renewables integration in various roles, including Chief Engineer.

As the inaugural Executive Director of the Office of Sustainable Energy in the Northern Territory, Jim applied this engineering experience together with his leadership and management skills to reform energy policy and deliver the NT's first renewables-based system plan.



### **Fernanda Carrea**

FIEAust CPEng EngExec NER  
APEC Engineer IntPE(Aus)

Fernanda Carrea is passionate about technology and making a difference. She has developed her professional career contributing to companies and projects that put the consumer at the centre of all decisions.

Fernanda holds an Industrial Engineering degree from Universidad de Buenos Aires, and a double Master of Marketing and Supply Chain Management from Griffith University. She is a Chartered Engineer in information technology and electrical engineering, project management, leadership and management, and a Registered Professional Engineer Queensland.

In June 2017, Fernanda Carrea joined GroundProbe, part of the Orica group, and is now Vice President of Technology.



### **Shalendra Ram**

FIEAust CPEng EngExec NER  
APEC Engineer IntPE(Aus)

Shalendra is a professional engineer with Bachelor and Master of Engineering (Civil) from Queensland University of Technology. Shalendra is a Technical Director, Transportation at AECOM with private and public sector experiences spread across all phases of infrastructure projects. Shalendra is a Registered Professional Engineer of Queensland and a Fellow/Executive Engineer of the Institution of Engineers Australia. Shalendra is the Chair of the EA's Transport Australia society (TAs) National Executive and a member of EA's Civil College Board and a board member of the Infrastructure Association of Queensland. Shalendra is a senior executive with AECOM and has driven leadership and management amongst engineering professionals in Australia.



### **Leon Purton**

MIEAust CPEng NER APEC  
Engineer IntPE(Aus)

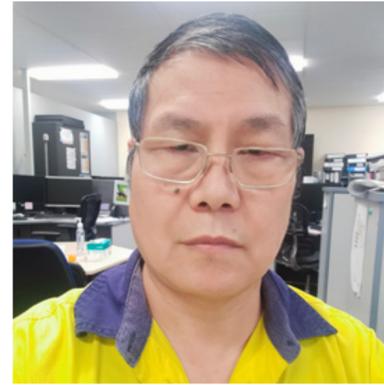
Leon Purton began working with Northrop Grumman Australia in 2020 and has enjoyed successes in two multi-million dollar program capture and execution projects. Leon is a military veteran, with over 20 years of service with the Royal Australian Air Force across various domains. Leon is a qualified Aircraft Mechanical Engineer, Electronic Engineer and holds a Master of Engineering in Aerospace through RMIT University. Leon is a leadership and personal development enthusiast, a writer of over 100 blog articles in this field. He is also a keen sports enthusiast. Leon is the father to two teenage children, Tahlia and Talan, and lives on the Gold Coast in Queensland with his fiancé, Laila.



## Xuli Meng

MIEAust CPEng

Xuli is an experienced civil and environmental engineer with over 15 years' industry experience specialising in drainage design/modelling, water sensitive urban design (WSUD), flooding assessment, open channel, and waterway design/assessment; also specialising in site investigations and environmental management. Xuli has extensive experience in conducting, preparing, and leading a variety of design and investigations, including civil design, civil drawing, design brief, construction brief, fee proposal, procurement files and preliminary/detailed site investigations reporting. Xuli has strong field and reporting skills for pavement, stormwater infrastructure, WSUD, soil, surface and groundwater investigations and electronic data collection and management.



## Jiping Zhou

MIEAust

Jiping Zhou is a Professional Engineer currently working at Stanwell Power Station. His focus has been on plant activities to improve thermal efficiencies and reduce emissions. Before joining Stanwell, Jiping worked for HRL Technology/ETRS as consultant engineer on performance testing, condition monitoring, NDT and asset management services.

Prior to immigrating to Australia, Jiping worked as assistant engineer and turbine engineer at China North West Electric Power Corporation. Jiping has degrees in mechanical engineering and a Master of Engineering Science. He is Register Professional Engineer of Queensland and Member of Institute of Engineers Australia.



## Andrea House

FIEAust CPEng NER APEC Engineer IntPE(Aus)

Andrea graduated from Embry-Riddle Aeronautical University in 1995. She began her career in the US with Lockheed Martin working on the Atlas Launch Vehicle program before moving to Australia in 2000. Andrea has more than 25 years of experience as an engineer and engineering manager in the Aerospace Industry in the USA and Australia. She has worked with US and European OEMs and has experience across multiple aircraft platforms including ARH Tiger, MRH90, P3, C-130J, F-35, A310 MRTT, G250, G650, A380 and Nomad. In 2021, Andrea was accepted into the Airbus Aircraft Architecture Development Path in 2021. Andrea is part of the Airbus mentoring program and is an active member in her softball community.



## Shane Midgley

MIEAust CPEng NER

Since joining Airbus in 2008, Shane has been actively involved in all aspects of Airworthiness risk management. Within Airbus, he has managed significant changes regarding risk management, which includes regulatory changes, the introduction of WHS Legislation, and company integration across Fixed and Rotary Wing aircraft types. Throughout Shane's career, his skills have been developed and used in support of the Australian Defence Force, over four different aircraft types. Shane continues to work in Airworthiness risk management, mentor and develop his colleagues and is considered by the customer to be an expert in Airworthiness risk management.



## Abel Immaraj

MIEAust CPEng EngExec NER APEC Engineer IntPE(Aus)

Abel applies his deep experience of systems in water governance, planning, management, operations and audit in advising public, private, and not-for-profit sectors across Australia and New Zealand. Abel is building capability in developing strategy, planning and decision making in deep complexity. He has co-designed strategy, translating strategy into implementation plans to ensure benefit-realisation, and has co-delivered innovative solutions and managed programs and projects for the benefit of communities.

His track record spans national, state, and local scale water and wastewater services, environment; nature-based solutions; institutional, market and structural reforms; built and natural assets, asset management planning; and economic instruments.



## Arne Nilsen

FIEAust CPEng NER APEC Engineer IntPE(Aus)

Arne Nilsen is a Chartered Professional Engineer, Principal and Design Director - Ports and Marine, at Aurecon. In his roles, he provides technical leadership across all markets, guiding multiple teams to deliver special outcomes across a broad range of infrastructure projects.

Arne holds a Bachelor of Engineering (Civil), Hons 1 from the University of Queensland. He is a highly regarded professional within the industry as an individual that has contributed to the majority of port developments in Australia.

He expertly manages complex issues to identify critical risks and realise compelling opportunities for the future of Australia's maritime transport and industry.



## Brody Clark

MIEAust CPEng NER

Brody is currently the acting Pavement Team Lead for WSP based on the Sunshine Coast, Queensland. He graduated from QUT in 2014 with his Bachelor of Engineering and went on to complete his PhD in 2018. In 2019 Brody acquired his chartership in civil engineering by Engineers Australia and subsequently became an RPEQ.

Brody is the youngest known person to acquire both a PhD and chartership in the civil engineering field in Australia. Dr Clark has authored several peer-reviewed articles, authored the updated Austroads Guide to pavement Technology Part 4E and has presented his research at international conferences.



## Steven Bondio

MIEAust CPEng NER APEC Engineer IntPE(Aus)

Steven is a dynamic chartered professional engineer, passionate about decarbonisation and sustainable asset transformation to provide clients and communities a brighter future. Steven has advised government and industry across the energy supply chain with internationally significant projects.

He advises on renewables, hydrogen, microgrids and storage projects, expertly managing complex issues and diverse stakeholder groups to identify critical risks and compelling opportunities to shape the future of Australia's energy ecosystem. Through both his professional and voluntary work, Steven is making significant contributions to the decarbonisation of Australian businesses and the wider community.



## Priyank Menezes

MIEAust

As a child, Priyank was fascinated by aircraft and air shows, which has translated to a passion for Aerospace Engineering. Priyank graduated with a bachelor's degree in mechanical and aerospace engineering and started his graduate career with Airbus Australia Pacific in 2017. He then completed his masters in systems engineering and has delivered significant weapon capabilities as an Armaments Engineer.

He is currently the Team Lead for Dynamic Systems which manages safety critical components on rotary wing platforms. Priyank also volunteers with the Australian Air Force Cadets and is a committee member with the Australian Industry and Defence Network Queensland.



## Jason Ryan

MIEAust CPEng EngExec NER APEC Engineer IntPE(Aus)

Jason is a Chartered Professional Engineer (Civil & Structural) as well as an Engineering Executive.

He has had significant experience in the strategic management of infrastructure in large commercial environments across Australia. Jason has been deeply involved in all infrastructure life cycle phases including planning, design, construction and asset management.

He is the founder of 'JJ Ryan Consulting' and 'EngiSeek'. Jason has grown these companies to employ 100+ people across three countries. Jason's experience in the infrastructure and building sectors has allowed him to branch into software product development to revolutionise these industries and to keep engineering awesome.



## Stephen Forbes-Wilson

MIEAust

Stephen grew up on a small farm in regional Victoria and this agricultural upbringing offered unique experiences that developed an aptitude for all things mechanical. When faced with the challenge of deciding on further studies, this mechanical aptitude and keen interest in technology led him to study engineering and, more specifically, major in Mechatronics and Robotics.

After spending his formative years in Victoria, Stephen and his wife have had the pleasure of raising their son, who is almost two, in Brisbane. A son who Stephen is most pleased to advise and shares his interest for anything with wheels, wings, or an engine.



## Alice Twomey

MIEAust CPEng

Alice Twomey is a Postdoctoral Research Fellow in the School of Biological Sciences at The University of Queensland, developing interdisciplinary nature-based solutions to complex flood and coastal engineering problems. By combining the fields of coastal engineering and marine ecology, Alice is pioneering the way towards developing engineering design solutions which provide co-benefits for society and the environment.

An award-winning science communicator, Alice shares her passion for engineering through her role as a Queensland Flying Scientist and participating in Outreach events including the World Science Festival to promote the profession and highlight current and future problems engineers are solving using creative nature-based methods.



## Allissa Li

GradIEAust

Allissa Li holds a Bachelor of Engineering (Hons) and Bachelor of Science, majoring in mechanical, materials systems and chemistry and is currently an Aircraft Structures Engineer at Airbus. Allissa has worked on innovative repairs and fleet-wide changes that enhance the operations and capabilities of the MRH90 Taipan and ARH Tiger platforms.

Her current work has contributed significantly to the degradation management of the fleet by developing new methods to manage the life of critical structural components. In her spare time, she is a committee member of the Young Engineers Australia Queensland and National branches.



## James Ghent

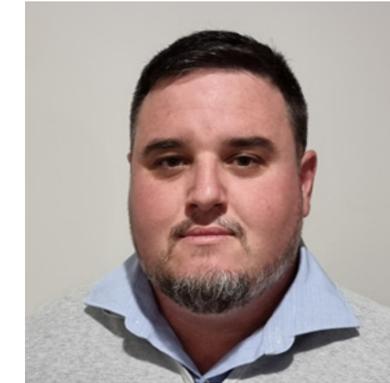
MIEAust CPEng NER

Chartered Engineer and Australasian Sustainable Development Taskforce Project Manager, who has worked on and managed a variety of planning, detailed design, asset management, and sustainability projects. James combines his extensive engineering experience with sustainable development interventions to deliver projects that are meaningful and excellent.

James is passionate about outcome-led design at all stages in the project life cycle, from conceptual planning stages through to delivery. He has led several strategic planning workshops, that align with the UN Sustainable Development Goals.

Served seven years in the Royal Australian Navy (RAN), managing large teams under high pressure situations. Routine maintenance tasks and forecasting were paramount to effective task delivery.

Constantly looking to improve the built environment and apply sustainable initiatives to all aspects of both my professional and personal life.



## Kyle McMillan

MIEAust CPEng NER APEC Engineer IntPE(Aus)

Kyle joined Airbus in 2012 in the MRH90 Avionics and Electrical team, before spending time as Senior Avionics Design Engineer and Team Lead at Sikorsky Australia, gaining strong civil and military design and certification experience. Kyle re-joined Airbus in 2019 in the Brisbane Avionics In-Service team and quickly obtained CVE delegation.

He has been mentored by the current MRH Type Certificate Manager throughout 2020 as part of internal succession and development activities and is a natural fit into his new position as MRH90 Deputy Type Certification Manger. Kyle is now responsible for the initial and continued Airworthiness of the MRH90.



## Margaret Gayen

MIEAust

Margaret is a Mechanical/Project Engineer at GPA Engineering, an athlete, and an industry-leading change maker. Her engineering career has spanned high-tech manufacturing to heavy industrial design consulting. Her achievements include the design of leading-edge medical technology, the publication of new research for the emerging hydrogen industry, and the representation of Australia at the Commonwealth Games.

Valuing attention to detail and systems-based problem solving, Margaret stands out as a reliable and capable leader and engineer. She is now applying these skills as an advocate for women in industry and is pushing for improved gender equality.



## Ben Howell

MIEAust

Ben has gained extensive experience across a number of significant South Australian civil infrastructure projects since 2010. His cross disciplinary experience on major road and urban infrastructure projects, critical high voltage power infrastructure projects as well as both pump station and associated pipeline projects has led to a multifaceted knowledge base and the ability to deliver challenging civil solutions at the highest safety and quality standards.

Having spent time in a managerial position within the United Kingdom, Ben has since returned to a pure project management role with his continued progression and technical learnings seeing him successfully oversee several high-profile civil transport infrastructure projects.



## Oladimeji Benedict Olalusi

MIEAust CPEng NER APEC Engineer IntPE(Aus)

Dr Benedict Olalusi is an award-winning Chartered Professional Engineer and a Senior Lecturer. He is currently a Senior Forensic Engineer with Sedgwick Australia. His work and research specialise in forensic engineering, structural reliability/safety and risk assessment, sustainable concrete materials, code/standard development and applied artificial intelligence. He currently serves as a technical committee member for the Concrete Institute of Australia and the International Federation of Structural Concrete (fib).

He is a Board member of the fib Young Member's Group and an Academic Editor for the Journal of Advances in Civil Engineering. He has supervised many PhD and MSc students in a variety of topics in structural engineering. Benedict has published over 60 quality technical publications in structural engineering and received numerous national and international awards.



## Jaya Sudarpa

MIEAust

Mr Jaya Sudarpa is a Systems Engineer practising advanced digital engineering methods on some of the nation's most strategically significant defence programs. With a background in mechatronics, he is an adaptable engineer, demonstrated by practical experience in wireless communication, UAVs, statistical analysis, embedded software development, and of course, systems engineering.

Jaya is also passionate in supporting early career engineers, taking his role beyond the technical domain. He has volunteered as a university mentor, coordinated his organisation's nationwide University Engagement Program, and holds the role of Early Careers Lead, responsible for more than 30 engineering, integrated logistics support, and finance graduates.



## Annabella Dao

MIEAust

Annabella Dao is a Civil Engineer with six years of experience in delivering some of Australia's most complex major transport infrastructure projects including Sydney Metro City and Southwest. She enjoys contributing to Australia's future landscape as a Design Manager for MCE Australia and gets a thrill out of leading multidisciplinary teams towards a socially beneficial outcome.

Annabella holds a combined Bachelor of Engineering (Honours) and Bachelor of Commerce from the University of New South Wales. She is actively involved in professional bodies and volunteering pursuits, having presented at the 2019 World Engineers Convention on methods to diversify the engineering workforce.



## Mark Jay Gregorio

MIEAust

Mark is a simple, humble, and quiet man whom you'll easily get along with. He's a true gentleman, especially to his family and friends. As per Cardinal John Henry Newman definition of a gentleman, 'he is mainly occupied in merely removing the obstacles which hinder the free and unembarrassed action of those about him'.

A true confidante, he's remembered by his friends as being approachable and dependable. He knows and accepts his mistakes and weaknesses, and he strives to make himself better. He always puts the interests of others first before his.



## Deanna Hood

MIEAust

Deanna Hood is the Senior Robotics Engineer on Inventia's 'skin-printing robot' Ligō, working with burns surgeons to reduce the lifelong impact that scarring has on bushfire, bombings, and other widespread-burns survivors. Since her first internship at age 17, she's been driven to apply engineering to society's most exciting and rewarding challenges.

She pioneered the CoWriter robotic partner, which allows children with handwriting difficulties to benefit from learning-by-teaching, and was a core Software Engineer on ROS 2, now used in NASA's VIPER mission. Her firmware contributions to the RASTRUM 3D bioprinter support cancer researchers leveraging RASTRUM's precision engineering to advance the treatment of disease.



## Vivek Ramakrishna

GradIEAust

Professionally, Vivek is a driven engineer and an invaluable member of the team at Merunova as quality manager. His work has included setting up and running our quality management system and being a key part in receiving grants totalling over a million dollars from MTPConnect's BioMedTech Horizons (BMTH) program.

At UNSW, he is completing his final year of a PhD in Mechanical Engineering focusing on spine biomechanics with the Spine Labs. His research makes use of FEA, an innovative modelling method in biotechnology targeted towards real medical problems (low back pain).



## Vikrant Sharma

MIEAust

Vikrant Sharma, MIEAust with Engineers Australia based in Sydney. Graduated with a Bachelor of Engineering (Hons) majoring in Electrical and Electronics Engineering. Experience spans across telecommunications, aviation, and energy sectors. He is passionate about sustainability, decarbonisation, energy transition, digital transformations, and helping individuals and communities.

Vikrant holds four innovative patents which are tools that are aimed to assist emergency response teams and individuals take appropriate actions in situations and minimise losses to lives and infrastructure. Vikrant is currently employed with Worley as the Renewables Performance and Reliability Engineer and Director and Co-founder of Renewable Innovations (REIN) Pty Ltd.



## Megan Wheeldon

MIEAust

Megan Wheeldon is a process engineer embedded in Aurecon's Sustainability and Climate Change team. She specialises in hydrogen production, industrial decarbonisation, and the transition of incumbent energy businesses to future fuels. Megan has significant experience across the hydrogen value chain, including techno-economic assessment and engineering feasibility studies.

Her early career in private oil and gas combined with her hydrogen project experience and postgraduate studies in sustainable energy have left Megan with valuable insights into the technical, commercial, and cultural changes required for companies to succeed through the energy transition.



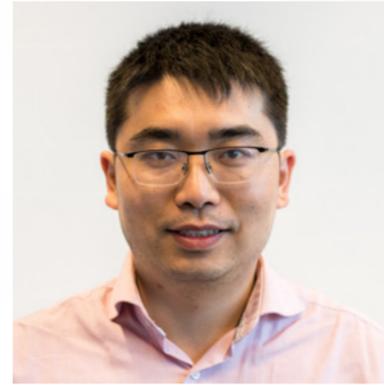
## Firas Shawash

MIEAust CPEng NER

Firas is an accredited certifier, a chartered professional engineer, and a national registered engineer (NER) in fire and mechanical engineering. Firas is the technical manager of i-Fire Engineers (NSW) where he is leading multi-million-dollar projects. Firas holds a master's degree in fire engineering.

In 2019 Firas was named the Fire Protection Industry leader by the Fire Protection Association of Australia. In 2021 Firas was awarded the Barry Lee Technical Excellence award.

Firas serves as a committee member for three of the most important standards committees in the fire industry, viz. FP-002-Fire Detection Systems, FP-003-Fire Extinguishers and ME-062-Ventilation and Airconditioning.



## Qilin Wang

MIEAust

Qilin Wang is a Professor and Australian Research Council Future Fellow at University of Technology Sydney. He has developed a suite of award-winning technologies to revolutionise the practice and science of urban water management.

Qilin has received 40 awards including 2020 Australia's Most Innovative Engineer in Utilities (Engineers Australia) and 2020 Australian Museum Eureka Prize for Outstanding Young Researcher—the 'Oscars' of Australian Science.

He has published around 200 papers and is a paper handling editor for four top 10 per cent journals in the field. Qilin has promoted engineering profession via various outreach activities and media engagement. He has received two outreach and community engagement awards from both QLD and NSW.



## Karu Esselle

FIEAust

Distinguished Professor at the University of Technology Sydney, Karu Esselle is a world leader in Electromagnetic and Antenna Engineering, and a national leader in engineering technologies for defence, telecommunications, and space systems.

He is a Fellow of the Royal Society of New South Wales, IEEE and Engineers Australia, and a Director of Innovations for Humanity Pty Ltd. His engineering R&D, leadership and professional engineering activities have received a large number of international and national awards. Karu has provided engineering expert support to more than a dozen Australian and overseas companies.



## Robert Fenton

MIEAust

Rob has dedicated his career to delivering solutions and insights for military platform operators all over the world, with experience ranging from learning to manufacture parts during his apprenticeship, to carrying out repair design and complex engineering assessments as a lead engineer.

No stranger to challenges he will always find a way or make one with a commitment to aviation safety above all, he is always ready to help those around him.



## Samantha Chapman

GradIEAust

Samantha Chapman, an innovative Transport Engineer and Project Manager, joined GHD's Tasmanian business in 2016. Samantha has led and contributed to a range of projects in civil, transport, advisory, planning, stakeholder, and investment streams. She completed civil engineering at University of Tasmania (UTAS) and undertook honours research in partnership with GHD and Department of State Growth on the Impact of inner-city parking on the Hobart road network using mesoscopic modelling.

With work experience at GHD and UTAS, and volunteer work with AITPM and Engineers Australia (locally and nationally), Samantha is an active member of the Tasmanian engineering and transport communities.



## Ashley Dyson

GradIEAust

Dr Ashley Dyson is a Post-Doctoral Research Fellow in Civil and Geotechnical Engineering at the University of Tasmania's School of Engineering. Ashley has established a reputation in Tasmania for strong industry-aligned geotechnical engineering research, with contributions to computational geotechnics, particularly in the fields of slope stability and landslides.

His research seeks to benefit the local Tasmanian community, with a focus on debris flow and landslide risk mitigation measures, as well as offshore foundation systems for Tasmanian renewable energy and aquaculture projects. Ashley currently serves as the secretary of the Tasmania Chapter of the Australian Geomechanics Society (AGS).



## Beth Scott

MIEAust

Beth's engineering career has involved close to one decade of design engineering in the water and hydropower space, following a Bachelor of Science degree in energy studies and two master's degrees in civil engineering. She has experience in managing teams and projects and in complex engineering design. As a civil engineer and project manager, Beth has strong problem-solving skills providing innovative solutions.

She is a team player who enjoys learning from those around her to be successful. She hopes to continue to sharpen her leadership skills and build on her experience as a design engineer while building strong professional relationships.



### **Abrar Aziz**

MIEAust CPEng NER APEC Engineer IntPE(Aus)

Abrar Aziz is a highly qualified and decorated chartered electrical engineer with a career build working from 'where do I start?' through to project development, design, delivery, and commissioning of assets for multiple industries across Australia and Asia Pacific. He is a business leader, advisor to many infrastructure clients, chair of the Electric Energy Society of Australia's Victorian division, a strong advocate and role model of the role engineers play in delivering sustainable energy solutions.

Abrar was recognised as the Engineers Australia Young Electrical Power Engineer of the Year in 2019 for his contributions to our industry over the last six years.



### **Emily Harris**

MIEAust CPEng NER

Emily Harris is a highly motivated chartered senior civil engineer with engineering company Aurecon.

Emily's strong interpersonal and communication skills have enabled her to successfully deliver some of Victoria's key infrastructure projects. She is passionate about sustainability and is involved in initiatives to embed this within the transport sector. Emily is a strong advocate for her industry and passionate about creating positive change through increased female participation and sustainability-focused projects. Emily is driving this change through her involvement in mentoring programs and through volunteering on the Civil College Board at Engineers Australia.



## Shauna Moore

MIEAust

Shauna is among Victoria's most outstanding young engineers, with 11 years' experience in domestic and residential, landfill regeneration, windfarms, and major transport infrastructure. A confident and effective communicator, Shauna's known for her integrity, expertise, and ethical values. Shauna has completed four level crossing removals and is currently Station Manager upgrading fire systems in Melbourne's City Loop. Shauna's ability to understand project constraints and opportunities holistically from architectural aspirations to construction practicalities have contributed to innovative, sustainable, and economic solutions of essential public infrastructure throughout Melbourne.

Shauna is passionate about changing construction by innovating in sustainability and diversity, especially for women.



## Ari Hammerschlag

MIEAust CPEng

Ari leads the Built Environment Sustainability Team in Victoria for GHD. Ari has more than nine years' experience in the engineering and ESD consultancy industry. He is experienced in the design of sustainable buildings, precincts and infrastructure ranging from standard practice to beyond compliance. He has worked on a range of international, large scale master planning, design and construction projects as a sustainability lead, civil engineer, and project manager.

He has solid experience in developing and implementing sustainability frameworks as projects progress from planning to construction and operation stage. Ari has experience in developing sustainable solutions for built environment projects.



### **Andrew Chapman**

MIEAust CPEng APEC Engineer IntPE(Aus)

Andrew is an engineering leader who has influenced the direction of the Australian water industry over his 40-year career. He has driven transformational change and influenced policy whilst delivering long term benefit to government, water authorities, industry, and the community.

A long-term committee member of the Australian Water Industry, he received the 2014 Australian Water Association's Lifetime Achievement Award. He is a technical reference reviewer for the CRC for Water Sensitive Cities, universities and government. He is a committed mentor to several young water professionals and regular speaker on water issues to the community and industry.



### **Anthony (Tony) Barry**

FIEAust CPEng APEC Engineer IntPE(Aus)

Anthony Barry Tony is President of the International Federation of Consulting Engineers (FIDIC), senior consultant with Aurecon and a non-executive director. Awarded Sydney Professional Engineer of the Year in 2006, he was President, Association of Consulting Engineers of Australia 2004–2006 and an Executive Director of Aurecon 2000–2016, where he held senior positions as Managing Director Asia, Chief Executive Asia Pacific and Chief Business Development Officer.

He is a civil engineer, a Chartered Professional Engineer, Australia, a Fellow of Engineers Australia, a Fellow Australian Institute of Company Directors and a Fellow of the Australian Academy of Sciences and Engineering.



## Julia Gibney

MIEAust CPEng NER

Julia is a chartered engineer with more than 28 years' experience in the defence, aviation and rail industries. She is an enthusiastic safety professional who is self-motivated, capable and diplomatic.

Julia is an astute and versatile leader with proven system safety and assurance, human factors, regulatory compliance, quality and WHS experience, coupled with a strong academic background. She is extremely passionate about all aspects of safety, from design to delivery, operations, and maintenance, with postgraduate studies giving her an in-depth understanding of safety management systems (SMS) and human factors in operational and maintenance environments.



## Melanie Collett

FIEAust CPEng EngExec NER APEC Engineer IntPE(Aus)

Melanie has 24 years' experience in Water Resources and is Director of Technical Excellence for AECOM in Australia New Zealand. Melanie has extensive experience in water resources including hydrologic and hydraulic modelling, drainage design, floodplain management and, assessing flood risk and the impacts of climate change. She is experienced in undertaking environmental impact assessments for hydrology on large projects for proposed road, rail, and renewables infrastructure.

Melanie specialises in integrating surface water modelling and design, investigating climate change impacts on flooding and coastal erosion and the effects of mitigation and adaptation measures on the built and natural environment.



## Tze Liang Chow

MIEAust

Tze Liang has 10 years' experience in civil and structural engineering. He worked in Singapore for six years before relocating to Australia in 2018.

Tze Liang is well-versed in the design of port and marine structures, industrial structures, and underground structures. He is self-driven and has a strong passion for engineering. He strives to provide creative and efficient construction solutions. He is a keen adopter of latest technologies, such as digital analytical and design methods to solve engineering challenges.



## Ye Jia Lim

MIEAust

Ye Jia Lim is a Marine and Coastal Engineer with Aurecon, specialising in the delivery of major port and coastal infrastructure projects. Ye Jia's expertise in interface management, and remediation engineering, has been utilised within many projects.

She advocates for younger engineers, particularly in sustainable engineering practices. She is a graduate of the University of Melbourne with a Master of Civil Engineering and Bachelor of Environmental Engineering.



## Tynan Luzuk

MIEAust CPEng NER

Tynan Luzuk is an accomplished Project Director and a champion for design innovation. Since very early in his career, he has successfully led some of Western Australia's largest and most complex projects and is recognised across the industry for his rapid progression and technical ability.

An advocate for cross-industry collaboration, Tynan has a reputation for driving change through smart and sustainable design methodologies, delivering reductions in waste, cost, and time. Tynan is a natural leader with a passion and commitment to knowledge-sharing and industry development, being actively involved in research, education, and mentoring.



## Matteo Tirapelle

FIEAust CPEng EngExec NER APEC Engineer IntPE(Aus)

Matteo is a Fellow Engineer with almost 20 years of design experience in the Australian construction industry. A 40Under40 Award recipient and Fellow of Engineers Australia, he is driven by creativity, curiosity, and communication in the pursuit of engineering excellence. He has extensive experience in the structural design and project management of high-rise commercial and residential towers, hotels, industrial buildings, façades, long-span structures and complex temporary works.

After a number of years building his experience and quickly ascending to the senior ranks at a well-established engineering firm, Matteo saw an opportunity to branch out and elevate the level of service that can be expected from a structural consultant. The result is Hera Engineering, which became WA business of the year in 2021.



## Arun Mukhopadhyay

MIEAust CPEng NER APEC Engineer IntPE(Aus)

Arun has over 45 years' experience in engineering, maintenance, operations, and projects including reliability, plant integrity, operations readiness, and process safety. He has been involved in operations readiness programs for major chemicals, oil and Ggas, iron ore, alumina, manganese, and rail projects, and supporting OEMs in reviewing their designs and processes.

Arun is dedicated to supporting organisations by improving efficiency through operations and maintenance performance analysis. Enhancing maintenance efficiency requires a high level of OEM coordination and the deployment of a wide range of techniques, such as root cause analysis.

Arun has had the unique opportunity to be part of BHP's Global Maintenance Network since its inception, developing and implementing various initiatives such as 'Venture Maintainability Evaluation' (Operation Readiness), Operating Excellence, and others.



## James Flattery

MIEAust CPEng NER

James Flattery is a Chartered Structural Engineer with 15+ years of experience in the industry. He is an advocate for better sustainable building designs, and known for developing innovative design solutions for environmental and community benefits.

His commitment to sustainability has led him to develop a new state-of-the-art software, which automates the design, documentation, scheduling, and shop detailing processes. The development of the software has also created a range of new services within the engineering industry, which offers greater transparency and certainty to clients, generating economic value, delivering tangible benefit to the industry, and ensuring sustainability.



## Yu Jordan Zhao

FIEAust CPEng NER

A Chartered Professional Engineer with 18 years of industry experience in Australia. Yu has played a key role in successful delivery of large utility SCADA projects with his experience from his years working in water, power, transportation, environmental, and renewable industries.

Yu Zhao is passionate about implementing new SCADA technologies in Australia, believing that IIOT and Industry 4.0 will transform many industries by improving efficiency and reducing operational risks to businesses and communities. He has been active on social media with his education and inspirational videos, being driven by his passion to help young engineers grow and uncover their full potential.



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