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AUSTRALIAN MADE

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About the Cover

L-R: City of Gold Coast Director Lifestyle and Community, Mr Alton Twine, and Gold Coast Mayor, Tom Tate, on a recent visit to the City's new Greenheart site. Situated between the Gold Coast's idyllic beaches and hinterland, Greenheart is one of the largest parkland projects ever undertaken in Australia.

▶ **Turn to Page 10 for the full story.**

REGIONAL HOUSING AVAILABILITY...

Encouraging a shift from short-term to long-term affordable rentals

Dear Readers,

As most of you would be aware, Australia is in the midst of a housing crisis... and unfortunately, not only is it a crisis in the true sense of the word (e.g., not merely a case of over-sensationalising a minor issue), it is a major crisis on a number of levels.

While I do not wish to diminish the problems relating to public housing, secure housing for those in need and affordable housing in our major capitals, for the purpose of this editorial I wish to focus on an area of the current housing crisis which is a very real threat to many regional economies. In particular, those regional economies which rely on tourism and/or a seasonal itinerant workforce to survive.

An ever-increasing number of communities in regional, rural and remote areas, have a chronic shortage – or in some instances, a complete lack of availability - of affordable medium to long-term rental properties. Unfortunately, for many of these communities, this lack of affordable rental accommodation has serious consequences, that extend far beyond the people looking for somewhere to live.

Indeed, in many of the towns and regions, the lack of affordable accommodation has not only resulted in shortages of retail, hospitality and agricultural workers (which in some instances have resulted in business closures), it is also impacting the availability of essential workers including nurses, teachers, and other front-line workers.

Now, before I continue, I do want to make it clear that:

a) my grasp of economics does extend to the realities of cost vs. demand vs. availability (I also understand that the market generally sets its own prices for every location);
b) I believe that people should have the right to choose how they invest their money, and if they choose to invest their money in residential property, the question of whether or not they offer that property up for long-term rental, short-term rental or, for that matter, choose to leave it vacant, should be largely up to them;
c) setting arbitrary rules for investment properties must not be done on the basis that *'all people who own investment properties are wealthy and can therefore afford it'*; and
d) there is nothing fundamentally wrong with short-term holiday rentals, and that they do bring many thousands of tourists to areas that they may have otherwise never visited.

That said, it is clear that something needs to be done – and done quickly – to overcome the current rental accommodation crisis.

While I feel relatively certain that most would agree that the only way to truly overcome a lack of accommodation is to build more houses, apartments, etc. - and for that to happen, more land needs to be made available for that purpose – that is a long-term solution which will not help the current crisis.

The next option is to 'free-up' some of the existing short-term/holiday rental stock (such as those being offered through Airbnb, Stayz, etc.) by somehow banning properties from being offered, or mandating that they be made available. As attractive and 'obvious' as this option may sound to anyone looking for affordable rental accommodation, being arbitrarily 'banned' from participating in a legal activity that may indeed have formed part of the owners' calculations when purchasing the property is fraught with problems.

While I do agree that we should seriously consider limiting the number of properties being offered for short-term holiday accommodation for each geographic area, the problem lies in getting from where we are now, to where we need to be in terms of reducing the numbers.

With that in mind, I might suggest that rather than starting with a punitive approach that imposes additional costs and levies to discourage owners, it might be worth considering a system where investment property owners are encouraged to offer their properties up for long-term affordable rental with rewards such as free rental insurance, reduced rates, tax concessions, etc.

Food for thought?

Anthony T Schmidt
Managing Editor

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NEW $600 MILLION STATE-OF-THE-ART PRECINCT TO RECENTRE WESTERN SYDNEY'S FOCUS ON LIVERPOOL

A new focal point for Western Sydney's accelerating economy is set to emerge in Liverpool, as the first stage of the city-shaping $600 million Liverpool Civic Place mixed use precinct tops out today.

The new *fjcstudio* designed precinct will create a new commercial and community hub in Liverpool, including 35,000sqm of A-Grade commercial office space across two towers, an 80-key hotel, a state-of-the-art library, art gallery, council chambers and offices.

It will also create Western Sydney's newest public square which will provide a focal point for major events, festivals and community activities, reflecting the cultural diversity of Liverpool.

Speaking at the topping out ceremony today marking the completion of the first tower's top floor, Liverpool Mayor, Ned Mannoun said Liverpool's emergence as an economic powerhouse and Sydney's third CBD has driven $13 billion in transport and infrastructure investment into the city.

"South West Sydney is one of Sydney's fastest growing districts and the opening of the Western Sydney International Airport and Aerotropolis has catalysed investment in a wide range of knowledge-intensive industries that will also generate significant employment and economic opportunities for the south-west region," Mayor Mannoun said.

"Liverpool will be at the centre of this growth and will strategically connect businesses from east to west. It will also be home to one of the city's fastest growing and most inclusive populations which is expected to double to half a million people in the next 20 years. It represents the modern face of multicultural Australia with more than 40% of our residents born overseas and half of our population speaking a language other than English."

Importantly, the precinct's development is not a future vision, but already sees construction well advanced with the first stage of commercial office to be completed later this year and ready to meet the specific needs of A-grade tenants.

Stage one will also include the opening of the new council chambers and offices, public library and art gallery, and new highly identifiable multi-function public square, which will take full advantage of the city's multicultural community and culinary scene to stage major events, festivals and community celebrations.

Jono Cottee, Development Director for Built, the precinct's development and construction partner, said stage two of the precinct will start shortly and include a 9-storey hotel and a 20,500sqm state-of-the-art commercial tower that will be the city's most sustainable building and operate net zero of carbon emissions from day one.

"Companies looking to make their mark in what will become Western Sydney's future engine room will be in a good position now to establish themselves and build a business network from ground level up. There is a first mover advantage for a range of business and knowledge-based industries such as health and education, that will be first to attract and retain Liverpool's globally skilled and highly-educated workforce," he said.

"Liverpool Civic Place will also be one of Greater Sydney's most connected precincts offering just a 30-minute connection to Sydney Airport and the new Western Sydney International Airport, less than four minutes' walk to Liverpool train station and direct access to the M5, M7 and new M12 motorway connection to the new airport."

Liverpool City Council and Built will launch a new campaign in coming months to promote Liverpool as Western Sydney's emerging powerhouse, multicultural epicentre and a strategic location for both Australian and international businesses. The campaign will be rolled out across a range of media channels. It will also feature a range of events and initiatives designed to showcase Liverpool's potential as a world-class city of the future.

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COMMENCEMENTS OF DETACHED HOUSES CONTINUE TO DECLINE

"Australia commenced 26,265 new houses in the first quarter of 2023, down by 16.4 per cent on the same quarter last year and 39.1 per cent fewer houses commenced than during the peak in the June Quarter 2021," stated HIA Senior Economist, Tom Devitt.

The ABS recently released its building activity data for the March Quarter 2023. This data provides estimates of the value of building work and number of dwellings commenced, completed and under construction across Australia and its states and territories.

"This decline in detached housing commencements is part of the ongoing cooling of the market that is expected to continue well into next year," added Mr Devitt.

"New home sales have declined sharply since the RBA started increasing interest rates last May. This is compounding the high volume of earlier projects that are being cancelled across the nation as home buyers struggle to secure finance in the face of ballooning home building and finance costs.

"This produced the first quarter in almost three years that Australia has completed more houses in a three-month period than it has commenced. Unfortunately, this was driven by the decline in commencements, not a pickup in completions.

"There were only 28,094 detached houses completed in the first quarter of 2023, 9.6 per cent fewer completions than in the same quarter last year.

"Ongoing labour constraints continue to make it very difficult for builders to complete the significant volume of work taken on during the pandemic.

"There remains almost 104,000 houses under construction in the first quarter of 2023. This has been a broadly stable volume over the last 18 months and almost double the 57,500 that were under construction heading into 2020.

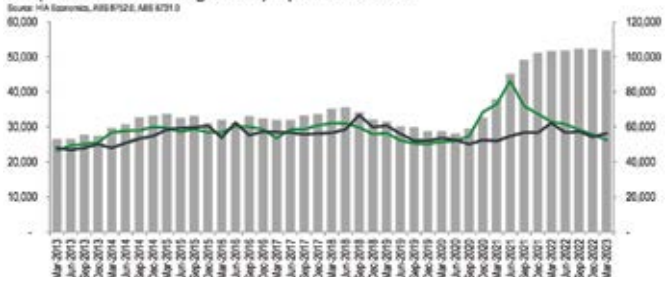
"Costs and supply uncertainties are also holding back the multi-units sector.

"Just 19,981 multi-units were commenced in the first quarter of 2023, and 17,266 completed. This is a long way down from the 25-30,000 multi-units that were commenced each quarter during the 2015-2018 apartment boom.

"There are still 136,000 multi-units under construction around Australia. These need to be completed in order to help accommodate the rapid return of overseas migrants, students and tourists that Australia has seen since it re-opened its borders in late 2021.

"Incredibly tight rental markets around the country require concerted efforts to increase the supply of housing," concluded Mr Devitt.

Snapshot of the Building Activity Pipeline - Houses



PERI 3D CONSTRUCTION STARTS EUROPE'S FIRST 3D PRINTED PUBLIC BUILDING: A TWO STORY FOOTBALL CLUBHOUSE

Leading the charge for using innovative building technology in the form of 3D construction printers, PERI 3D Construction is set to create Europe's first-ever 3D printed football club facility and public building. This initiative, located in Nordkirchen, Germany, exemplifies the transformative shift towards 3D construction printing in various sectors beyond residential construction.

Utilizing the largest printer configuration to date by PERI 3D Construction, a COBOD BOD2 model measuring 25 meters long, 15 meters wide, and 10 meters high, the future SC Capelle football clubhouse will boast a usable floor space of approximately 330sqm. The estimated completion time using 3D printing technology is projected to be only approximately 140 hours, highlighting the technology's potential for rapid, efficient, and sustainable construction.

Dr. Fabian Meyer-Brötz, Managing Director of PERI 3D Construction, stated: "In the face of significant challenges such as a skilled worker shortage and stagnating productivity in construction, 3D construction printing offers an urgently needed solution to build faster, cheaper, and with less material usage."

The unique design for the building is the creative work of Steinhoff Architekten, an innovative architectural firm known for embracing forward-thinking construction methods. The clubhouse will be used by SC Capelle playing in the third division in Germany.

Echoing PERI's statement, Henrik Lund-Nielsen, Founder and General Manager of COBOD International, shared his enthusiasm: "This new project by PERI is a great example of how our printers can be used for more than just low-rise housing."

"The new 3D printed building will be the first-ever 3D printed football clubhouse and also the first public building that has ever been 3D printed."

"On top of the recently finished printing of the world's so far largest 3D printed building, a luxury horse staple in Florida of almost 1,000m^2, we are starting to see numerous examples of 3D printed non-residential buildings," Mr Lund-Nielsen added.

Mayor of Nordkirchen, Dietmar Bergmann commented on the project's significance,

stating, "...this initiative is a clear signal that small towns in rural regions can also drive innovations and future technologies."

"With the substantial financial support from the Ministry of Home Affairs of the State of North Rhine-Westphalia, and the expertise of our project partners, we are realizing a construction project in Nordkirchen that is attracting attention, not only locally but also on a broader scale," Myaor Bergmann said.

This ground-breaking project sets the stage for the continued evolution of construction methodologies, proving that 3D construction printing is a viable option not just for low-rise housing, but for larger, more complex structures across various building sectors.

CLIFF-HUGGING TASMANIAN HOME WINS NATIONAL HOUSING AWARD

Described by Housing Industry Association (HIA) judges as 'a once-in-a-lifetime build', a cliff-hugging home by Tasmanian builder Lane Group Construction has been named the *2023 HIA-CSR Australian Home of the Year* – the highest residential building award bestowed each year by HIA.

The winners of the 2023 HIA-CSR Australian Housing Awards were unveiled before 550 industry leaders at the prestigious awards ceremony held on the final night of the recent HIA 2023 National Conference.

The spectacular single-level winning home is anchored to its windswept, bushland location by a series of heavyset stone pavilions. An abundance of floor-length glass windows create a serene atmosphere for the owners and their guests to enjoy, connecting them to the magnificent, rugged coastline of the Derwent River from all public and private living areas.

Burnished caramel concrete floors and spotted gum timber cladding serve to perfectly match the earthy tones of the expertly wrought stonework featured so prominently in the home, while the cantilevered indoor/outdoor infinity pool, spa and sauna are an indulgent addition to this entertainer's domain.

The home also won *HIA Australian Custom Built Home*, partnered by ActronAir.

HIA's Managing Director Graham Wolfe said the HIA-CSR Australian Housing Awards recognise the best in Australia's residential building industry.

"HIA is committed to recognising the outstanding achievements of our members. The HIA-CSR Australian Housing Awards allow us to acknowledge their skill and their commitment to quality in design, material selection and construction. Our Awards program brings together members who excel in building exceptional homes, kitchens and bathrooms and run highly successful businesses.

"HIA Award winners build with exceptional workmanship; demonstrated in projects that push the boundaries in design and innovation. It is my absolute pleasure to congratulate each winner for their hard work and commitment to excellence," Mr Wolfe added.

The HIA-CSR Australian Housing Awards recognise exceptional projects, businesses and people from all around Australia.

Apprentice Bethany Mercieca from NSW was named the *HIA Jim Brookes Australian Apprentice of the Year* for a strong work ethic and dedication to her craft. She has built meaningful relationships with co-workers, suppliers and clients through excellent communication. The category is partnered by Stratco.

A sophisticated restoration and addition of a heritage-listed bluestone residence by Victorian builder BCG Constructions won *HIA Australian Renovation/Addition Project*, partnered by COLORBOND steel. The home is a breathtaking fusion of old-world glamour and ultramodern elegance.

Western Australia's Ultimo Constructions was named *HIA Australian Professional Small Builder/Renovator* for the fourth time, reinforcing their reputation for offering personalised service, expert advice and a partnership approach to the building process. The category is partnered by Companion Systems.

Craig Linke Bespoke Building from South Australia took out *HIA Australian Kitchen of the Year*, partnered by Robam Kitchen Appliances, for a stunning kitchen finished in a symphony of aged brass, granite and exotic marbles, with a custom brass canopy.

Hunter builder Greenbuild Constructions won *HIA Australian Bathroom of the Year* for a moody aesthetic master bathroom that feels luxuriously spacious and light. The category is partnered by HIA Business Solutions. Greenbuild Constructions also won the consumer-voted *HIA-CSR Australian People's Choice Home*

The HIA-CSR Australian Housing Awards are the ultimate platform to showcase the talents of the nation's top builders and designers. Winners are selected from state-based finalists, with awards in 23 separate categories including Professional Builders, display home, apprentice, bathrooms and kitchens. The Awards are partnered by leading building products company CSR.

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BUILDING FOR A SUSTAINABLE FUTURE

Greenheart has the potential to enhance the ecology and environmental value of the Gold Coast for future generations.

Situated between the Gold Coast's idyllic beaches and hinterland, Greenheart will be the largest open space destination on the Gold Coast, and one of the largest parkland projects ever undertaken in Australia. The 241-hectare site is two-thirds the size of New York's Central Park and will be an immersive, integrated, and multi-layered parkland offering a diverse range of active and healthy lifestyle opportunities, with an array of sporting, recreational and cultural experiences for visitors of all ages and abilities.

The development of Greenheart is a direct response to significant population growth on the Gold Coast and the City's goal to provide high-quality parks, sports assets, infrastructure, and improved environmental outcomes for the community.

Sustainability will be at its heart. The Greenheart vision is underpinned by a commitment to sustainable design and construction practices and the protection of our environment, recognising the critical importance healthy natural environments play in shaping a strong and sustainable future. The Greenheart project provides the opportunity to deliver several environmentally sustainable initiatives.

Greenheart has the potential to enhance the ecology and environmental value of the Gold Coast for future generations.

As part of the development of the site, over 30 hectares of habitat and feeding grounds for birds and other wildlife will be renewed, new areas of woodland will be created, and riparian corridors will be naturalised.

Gold Coast Mayor Tom Tate said, "I'm passionate about protecting green and open space across our city and this remains a priority as our population continues its rapid growth and millions of visitors find their way to the Gold Coast"

"Parks and green open space play a crucial role in enhancing the liveability of our city. They not only promote our well-being and quality of life, but also foster community connection, celebration, and an active and healthy lifestyle," Mayor Tate said.

The Greenheart Master Plan represents a dramatic transformation of the site including the development of an extensive sports precinct, major event lawn and discovery centre, integrated with existing indigenous cultural heritage values and experiences and important natural areas.

Greenheart will have 3 primary precincts: Discovery Hub; Event Quarter; and Sports Precinct. A primary precinct is an area of substantial investment and provision of facilities, collectively seeking to achieve a greater intensity of community and visitor gathering opportunities. The primary precincts will be centres of activity with well-defined uses, efficient access, investment in infrastructure and specific attractions.

"Parks and green open space play a crucial role in enhancing the liveability of our city. They not only promote our well-being and quality of life, but also foster community connection, celebration, and an active and healthy lifestyle."

Greenheart will also have 5 secondary precincts: Community Park; Ephemeral Wetlands; Stream Naturalisation; Big and Little Woody Hills; and Wildlife Corridor. Secondary precincts cater for a variety of community and visitor experiences that respond to and take advantage of the existing site conditions, while enhancing the natural values of the site. These precincts will become the ecological fabric of Greenheart.

Director Lifestyle and Community, Mr Alton Twine said, "Greenheart will offer a diverse range of recreational and cultural experiences. Importantly, grassroots sport will form part of the vision, helping nurture a strong sense of community pride and providing opportunities for the Gold Coast's next generations of sporting champions."

"The Greenheart site has a rich and diverse history respecting and valuing our historic and Indigenous cultural heritage plays a critical role in the masterplan vision."

Sitting above the site's predominantly flat landscape are two elevated landforms known as Big and Little Woody Hills. These hills form a ridgeline that was once occupied by local Aboriginal people, who left behind archaeological evidence of their visitation and use of the site.

The ridgeline sits above an extensive floodplain. Historical accounts of specific cultural beliefs including recordings and transcribed cultural stories indicate that local Indigenous groups had an interactive and considered relationship with the floodplain landscape.

In more recent times, in the late 1800s, the great swamp was the first private, large-scale land reclamation project on the Gold Coast. The project was technologically and historically significant as an example of an activity that made an influential contribution to the pattern of development on the Gold Coast.

The Greenheart project is currently in a technical investigations phase, leading to the development of a staging and procurement strategy that will guide development of the site over the next decade. A deep understanding and commitment to working with the natural processes of the Merrimac floodplain and the challenging geotechnical condition of the site is essential to realising the environmental and community benefits of the masterplan vision.

"The delivery of this project over the next decade is an incredible opportunity to positively transform our city," Mayor Tate added. "It is part of our commitment to deliver for the community, while at the same time, preserving and protecting our magnificent natural open spaces."

LEFT: Situated between the Gold Coast's idyllic beaches and hinterland, Greenheart is one of the largest parkland projects ever undertaken in Australia.

RIGHT (from top): Greenheart will have 3 primary precincts: Discovery Hub; Event Quarter; and Sports Precinct; City of Gold Coast Director Lifestyle and Community, Mr Alton Twine, (left) and Gold Coast Mayor, Tom Tate, on a recent visit to the Greenheart site; The primary precincts will be centres of activity with well-defined uses, efficient access, investment in infrastructure and specific attractions.

GOLD COAST MARKS NEW ERA OF DISASTER AND EMERGENCY MANAGEMENT

A state-of-the-art disaster and emergency management centre has opened on the Gold Coast, signalling a new era in disaster response for one of Australia's fastest-growing regions. With 2800 square metres of secure space, the new centre is designed to withstand category 5 tropical cyclones and is equipped to function independently for seven days if critical infrastructure failed.

Officially opened in May 2023, it replaces an ageing disaster management centre in Southport which was no longer fit for purpose nor cyclone-proof and did not meet accessibility standards.

The Gold Coast's growing population and the increased need for real-time response prompted the City to establish a dedicated, central location for key agencies to coordinate and respond to emergency situations in real time. The centre was delivered under joint funding from the City with $15 million contributed from Council, $9.81 million from the Queensland Government through its *South East Queensland Community Stimulus program* and $435,500 from the *Queensland Resilience and Risk Reduction Fund* (which includes Federal Government funding).

"We know how rapidly an emergency can unfold, so to have all the latest tools at our fingertips and the space to accommodate all the key partners, we know the Gold Coast community will be best served for many years to come," Mayor Tom Tate said. "And this building has it all, including the latest in smart integrated technology, audio visual and ICT. Most importantly it is secure and can withstand the most powerful of cyclones."

"The technology will ensure our City can work seamlessly and coordinate responses across the Gold Coast with our partner agencies including Queensland Police Service, Queensland Fire & Emergency Service, Queensland Ambulance Service and State Emergency Services to name a few," Mayor Tate said.

The new building has already been put through its paces, hosting a major disaster exercise including a full component of staff and partner agencies.

"It went very well, and we know it will serve us well during the real thing," Mayor Tate added.

Features of the building include:

- Rated to a category 5 cyclone standard
- Debris protection to all windows and doors
- High security overlay with air lock entrances
- Satellite internet, phones & radios to communicate with all emergency services
- Large 7.2 metre wide video walls
- A main operations room and training and exercise room
- Media centre
- A Local Disaster Management Group meeting room
- Backup power, sustenance, potable water, sewer, fuel and internet connections to operate standalone for seven days.

CITY OF GOLD COAST INVESTS IN COMMUNITY CENTRES TO MEET GROWING DEMAND

The redevelopment of one of the Gold Coast's most loved community spaces is proving to be a game changer for recreational space in the city.

The newly unveiled *Broadbeach Cultural Precinct* is the latest addition to the city's extensive portfolio of community centres and meeting spaces after a $14.8 million facelift was completed in January this year. The project delivered a revamp of the precinct with an additional 515m2 of recreational space and the addition of several new facilities including an upgraded 400-seat auditorium, a new dance studio and multipurpose hall and meeting rooms – all with new audio-visual sound and lighting technology.

On the external façade of the buildings, there is a new and more modern architectural design completed by Paynters Pty Ltd and Peddle Thorpe Architects.

The existing plaza area adjoining the various buildings within the precinct, including the Broadbeach Library, Broadbeach Cultural Centre, and the Broadbeach Community Space, has been redeveloped as a focal point and enhances entry to all the facilities as well as a new café space with two creative pods.

Other improvements include additional parking and enhanced pedestrian and vehicle access for a range of events.

Gold Coast Mayor Tom Tate said the City of Gold Coast was devoted to providing a range of dedicated community facilities to diversify the local economy and provide further employment opportunities.

"Every great city needs great community facilities that allow people to gather both professionally and recreationally in an area that is close to public transport," Mayor Tate said.

"Our newest offering, the Broadbeach Cultural Precinct, is providing the community with even more creative and social spaces that support a vibrant lifestyle for both residents and visitors to the Gold Coast.

Director Lifestyle and Community Mr Alton Twine said "The Broadbeach Cultural Centre that sits centre stage within the cultural precinct, is a state-of-the-art venue that caters to groups of all sizes and ensures accessibility for all."

"We have heard from visitors who have been impressed by how beautifully presented the centre is as well as the high-tech facilities including AV equipment, network connectivity, and plenty of natural light throughout," he added.

As well as creating extra spaces for the community to come together, the Broadbeach Cultural Precinct is also providing jobs to locals and is a base for not-for-profit organisations.

Within the precinct, the Life Education Building underwent a full renovation and opened on 31 January under the new name of the Broadbeach Community Space. It continues to be home to the Life Education Queensland team and Gold Coast company, Placemakers* who are the organisers of the Bleach Festival and Big City Lights.

PALM BEACH THE FACE OF MODERN INTEGRATED FACILITIES OF THE FUTURE

The much-loved Palm Beach Aquatic Centre is being redeveloped into a lively integrated aquatic, fitness and community precinct to serve the community for the next 50 years.

Plans for the revitalisation of the ageing centre commenced in 2010, with delivery of a 50m outdoor swimming pool. The City revisited plans in 2020 to ensure changing usage trends and needs of the highly urbanised suburb were met.

SUBTROPICAL DESIGN

City of Gold Coast Mayor Tom Tate said construction was well underway on the new centre which would inject fresh life into the precinct, with subtropical elements to reflect the culture, climate and character of the southern Gold Coast.

"For the first time, Palm Beach residents will have a whole new community centre with multipurpose hall, flexible meeting rooms and a dance studio," he said.

Other new facilities include separate heated indoor learn-to-swim and warm water program pools, a 25m outdoor heated pool being delivered under joint funding with the Queensland Government, a fitness centre and outdoor water play. A spacious entry includes a cafe and crèche with central connection to all areas, forming the social heart of the facility.

CONSTRUCTION JOURNEY

Director Lifestyle and Community, Mr Alton Twine, said the tightly constrained site presented many challenges to project delivery from demolition through to piling and construction.

"This included the size of the property, the existing facilities to remain, varying ground levels, its location adjacent to one of the Gold Coast's largest high schools, proximity to Currumbin Creek influencing the water table and Beree Bedalla Nature Reserve with the only access via the busy Thrower Drive," he said.

A critical stakeholder requirement involved working closely with the adjoining Palm Beach Currumbin State High School and maintaining access for essential services and deliveries.

Basement works to create new and expanded parking for 150 vehicles required excavation over large areas of the 2.2-hectare site, including close proximity to the existing 50-metre pool. Earthworks involved the removal of 9,000m3 of contaminated material along with excavation and removal for City re-use of 6,000m3 of clean sand. Deep continuous flight auger piling in the poor quality soil was required with more than 400 piles up to 30 metres deep to support the building.

The basement car park includes numerous pump stations for stormwater management and sewerage reticulation.

The centre is due to reopen in mid-2024.

up42

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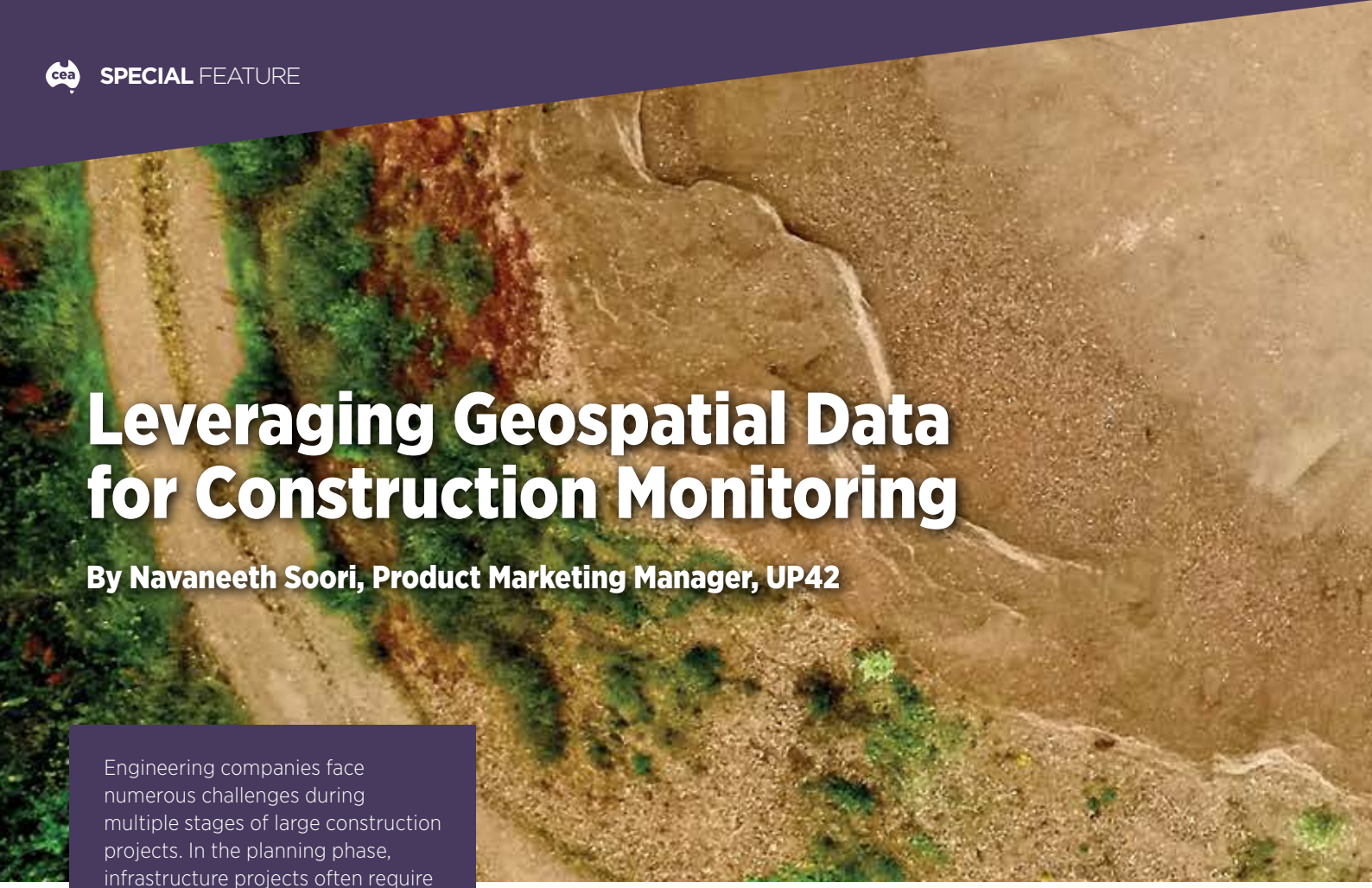


Leveraging Geospatial Data for Construction Monitoring

By Navaneeth Soori, Product Marketing Manager, UP42

Engineering companies face numerous challenges during multiple stages of large construction projects. In the planning phase, infrastructure projects often require the acquisition of large tracts of land or the relocation of communities. Once the construction work has begun, companies need regular monitoring of the construction site to ensure that things are going as planned.

Construction monitoring is traditionally an expensive process, with companies relying on flying aircraft or drones on a frequent basis to collect the latest imagery.

Once the project is nearing completion, there is a different set of challenges – large infrastructure projects have a significant impact on the environment and local communities around it. Comprehensive Environmental and Social Impact Assessment (ESIA) studies are required at this stage, but it can be time-consuming, and can often get bogged down by logistical and regulatory challenges.

A large number of companies still rely on manual surveys and on-site inspections to solve the challenges mentioned above. Besides being error-prone and time-consuming, manual methods of inspection are not viable for large-scale projects, where you need regularly updated imagery over large swaths of land.

GEOSPATIAL DATA FOR CONSTRUCTION MONITORING

The use of geospatial data to solve some of the problems mentioned above is well documented.

The remote monitoring of construction sites through different types of geospatial data (optical, SAR, aerial, etc.) ensures frequent and consistent data collection over large construction sites.

Some of the key advantages of geospatial data for construction projects are:

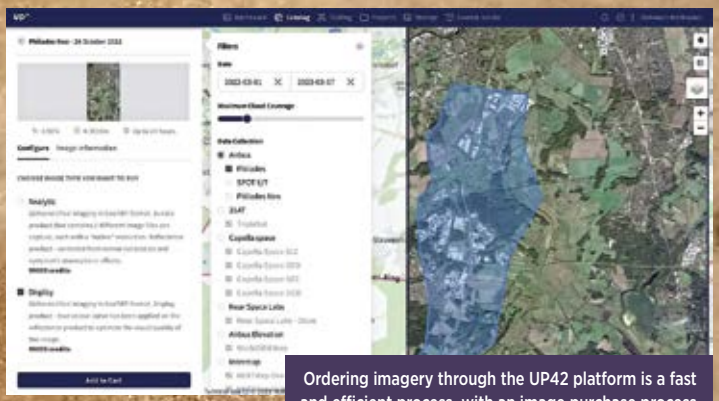
- Comprehensive overview of construction project progress
- Access to an extensive archive of historical data of varying spectral and temporal resolutions, which is updated continuously
- Very high resolution optical and aerial imagery that allows for advanced analysis and monitoring of ground-based objects

Acquiring the specific type of geospatial data that you need is the next big challenge. You can reach out directly to any of the major satellite or aerial data providers and order the data that you need for a specific part of the project, but this can get complex and costly, fast.

For larger engineering projects, you would need to create highly customized data pipelines for accessing geospatial data from multiple providers. This usually requires a combination of different temporal, spectral, and spatial resolutions of satellite or elevation data, along with specialized in-house geospatial expertise to implement.

At this point, geospatial platforms like UP42 can add tremendous value for engineering and construction companies. UP42 offers a unique solution by providing access to data and analytics from the top providers through a single platform.

Check out: **https://up42.com/goingup/up42-for-construction** to find more information about using UP42 for engineering and construction projects.



Ordering imagery through the UP42 platform is a fast and efficient process, with an image purchase process that is easy to follow and transparent.

HELPING YOUR CONSTRUCTION PROJECTS

UP42 offers a comprehensive solution for data acquisition for engineering and construction companies across the world. With a diverse customer base spanning global industries, including a number of prominent engineering companies, the company understands the challenges associated with data access and acquisition.

By working with the world's leading data providers, it ensures that customers have access to high-quality data and analytics, offering a geospatial platform and marketplace that gives access to optical, SAR, elevation, and aerial imagery.

UP42 simplifies the data ordering process with multiple options. Users can access the UP42 platform through their browser, order via the API/Python SDK ecosystem, or directly from ArcGIS Pro using the UP42 add-in.

Pléiades Neo image with 10 cm resolution order through UP42.

Consider an engineering firm that has recently been awarded a contract to replace an outdated bridge in a busy metropolitan area. As they embark on the planning phase of the project, obtaining geospatial imagery becomes paramount for conducting thorough site investigations and creating precise 3D representations of the project site. Thankfully, with UP42, this firm can effortlessly upload its Area of Interest (AOI) and swiftly search for suitable archive imagery that aligns with its requirements.

Importantly, if existing archive imagery doesn't cover specific project requirements, customers can use UP42 tasking to place orders for new imagery for any specific future dates and technical specifications. The image purchase process is simple and transparent, with the use of credits as a currency to place orders through UP42. The placed orders and downloaded imagery can be found in UP42 storage within the console.

UP42 also offers an option to improve the spatial resolution of imagery. For example, once a customer has successfully downloaded a 30 cm resolution Pléiades Neo image of their project site, they can integrate this image into their existing data pipelines for further analysis around project site investigation. But often, for construction projects, we see that customers go for aerial imagery because of the need for an even higher spatial resolution.

By working with our partner Nara Space, UP42 offers a processing algorithm that lets you enhance the visual quality of Pléiades Neo imagery. The algorithm improves the spatial resolution of downloaded Pléiades Neo imagery from 30 cm to 10 cm.

SO HOW DOES UP42 HELP ENGINEERING AND CONSTRUCTION COMPANIES?

1. In the project planning phase, UP42 offers a fast, cost-efficient way to investigate project site conditions. The variety of geospatial collections offered ensures a simpler way to conduct planning and feasibility studies.
2. For project monitoring, the combination of stereo and elevation data on the UP42 platform helps develop cutting-edge infrastructure monitoring solutions.
3. Construction change detection can be carried out with high-precision collections like Pléiades Neo, which lets you continuously track and assess ground activity, right of way, and environmental impact for better decision making.

For more information on UP42 products and services, please visit: **https://up42.com**

Find out more about how UP42 is helping engineering and construction companies to leverage geospatial data.

Scan the QR CODE or visit: **https://www.youtube.com/watch?v=38WTqG9bTZU** to check out the webinar *'Leveraging geospatial data for construction monitoring'*.

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SCAN ME

INNOVATION TOWARDS ZERO

NEW MILLER VORTEX HDV PROVIDES THE NEXT LEVEL OF WELDING RESPIRATORY PROTECTION

In recent years, there has been an increased body of research and general awareness around the long-term respiratory health hazards of welding fumes. As a result, there is a growing demand for personal respiratory protection that not only offers increased protection, but also enhanced comfort, visibility, and capability to the operator.

These advantages are particularly important within industries such as mining, mineral processing, oil and gas, petrochemical, and structural steel manufacturing. Within Australia, these industries, in particular, rely heavily on the use of filler metals such as stainless steel, nickel or manganese alloys, aluminium, hard-facing, and self-shielding wires throughout their welding processes. In addition to other contributing factors, these wires can generate far more hazardous fumes while welding, thus the typical fume ventilation and extraction methods are no longer considered adequate protection to the welding operator.

In these environments, the operator must utilise a Personal Air Purifying Respirator (PAPR) like the new Miller Vortex HDV system from Welding Industries of Australia (WIA) to protect themselves from short-term respiratory irritation and long-term illness.

EXCLUSIVE MILLER TECHNOLOGY

Designed to take respiratory protection to the next level, the Miller Vortex HDV PAPR System offers a range of features and exclusive technologies that set it apart from other systems, says Product Manager Aleksandr Koshelyev, who consults extensively with users of welding equipment concerning their industries' particular and evolving needs.

"The Vortex HDV PAPR system standout is its HDV technology which provides a sharp, detailed view at any angle with minimal distortion. This feature makes it easier for welders to see their work with increased visibility," says Aleksandr.

Other technologies include *ClearLight™ 2.0* - which offers a second-generation view through the lens, providing advanced high-definition optics for a clearer, brighter and more realistic weld view - and X-Mode which is another benefit to welding operators.

Designed for outdoor usage, *X-Mode* eliminates sunlight interference, as the lens only darkens when the welding operator strikes an arc. Considered by many to be a game-changing technology, X-Mode is also ideal for low amp TIG and out-of-position welding.

The helmet's *InfoTrack™ 2.0* technology is also exclusive to Miller. It allows users to track arc time and arc counts, as well as store and switch between two custom preset memory settings.

STAND OUT FEATURES

Designed with comfort and visibility in mind, Miller's Vortex PAPR system includes a lightweight blower unit. Weighing in at only 1362 grams, it provides long-term comfort so that welders can wear it for extended periods without causing strain. The helmet's large 174 x 126 mm integrated grind shield offers a larger, clear viewing area for grinding and other tasks.

From a productivity perspective, Miller has integrated a quick-release one-piece HDV cover lens to simplify lens changes and reduce downtime, and a brighter 2.5 Light State so welders can keep their hood down for improved safety and productivity.

The Vortex HDV PAPR System provides protection against solid particles, welding fumes and mists, making it an ideal choice for welders searching to improve safety and reduce health risks associated with grinding and welding operations. Six air distribution points ensure that the air is evenly distributed, providing maximum cooling and comfort, while the three air speeds allow the operator to control the volume of air to meet their work conditions. The audible and vibrating alarm increases safety by notifying the user in noisy environments of low battery due to reduced airflow.

Included in the package are two lithium-ion batteries, one to use and another for charging, eliminating downtime when it's time for a recharge.

The Vortex HDV PAPR System is also easy to use, thanks to the LCD display that provides an easy-to-read screen for viewing fan speed, current time, and battery level, and a filter timer to remind the welder when it's time for it to be replaced.

With all of these features and technologies combined, the Miller Vortex HDV PAPR System provides the ultimate respiratory protection for welders, ensuring greater clarity, comfort, and safety, says Aleksandr.

"The Miller Vortex HDV PAPR System is a game-changer in respiratory protection for welders, providing exclusive technologies and top features that offer the next level of protection, comfort, and visibility. Its lightweight design and industry-leading features make it a must-have for welders in various industries to provide a clean, comfortable, and compliant work environment."

The Miller Vortex HDV PAPR System complies with Australian and New Zealand Standards AS/NZS 1716.2012 - Respiratory Protective Devices, AS/NZS 1338.1 - Filters for Eye Protectors (Auto-Darkening) and AS/NZS 1337.1 B - Safety Eyewear (High Impact).

For further information, visit: **https://www.welding.com.au**

Whether it's a TL-2 or TL-3 attenuator, your first question should always be:

IS IT MASH APPROVED?

With the ASBAP (Austroads Safety Barrier Assessment Panel) guidelines now requiring all new TMAs sold for use in Australia to be tested and approved to MASH Standards, one of the most critical questions for equipment purchasers to ask is: **"Is it MASH Approved?"**.

When it comes to **Scorpion® TMAs**, the answer is a resounding **YES** – for BOTH TL-2 and TL-3 attenuator.

In fact, the Scorpion II® Metro MASH TL-2 TMA is not only **THE FIRST TL-2 TMA** to be fully tested and approved to the latest MASH Standards, it is currently **THE ONLY TL-2** Truck Mounted Attenuator to be successfully **TESTED, PASSED & ELIGIBLE** to the current MASH Standards.

So, whether it's TL-2 or TL-3, when it comes to selecting a fully MASH tested, passed and eligible TMA that has also been **ASSESSED, APPROVED & RECOMMENDED FOR ACCEPTANCE** throughout Australia by ASBAP, the only name you need to remember is Scorpion® from A1 Roadlines.

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

A1 Roadlines Pty Ltd | 89 Rushdale Street, Knoxfield, Victoria 3180 | **www.a1roadlines.com.au**
P: 1300 217 623 (A1ROAD) | **E:** sales@a1roadlines.com.au

INFINITY TESTING

'Infinity Testing' is without a doubt the harshest method of testing the performance of a Truck Mounted Attenuator (TMA) during an impact.

NO RELIANCE ON ROLL-AHEAD DURING AN IMPACT
Rather than relying on some of the impact energy being absorbed by the forward movement of host vehicle on which the TMA is fitted, with 'Infinity Testing' the host vehicle is anchored to the ground to prevent any forward movement during an impact.

'WORST CASE' SCENARIO TESTING
Compared to standard testing with an unrestrained host vehicle, Infinity Testing is a much tougher testing regimen. It is considered 'worst-case scenario' testing which makes it much more difficult to meet the pass criteria for IS values, as all of the Ridedown Acceleration must be provided by the TMA absorbing the energy from the impact.

TMA ABSORBS & DISSIPATES 100% OF THE IMPACT ENERGY
Testing the TMA on a host vehicle which is anchored in place, tests – and for both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMAs – confirms the capacity of the TMA to absorb/dissipate 100% of the impact energy - without the benefit of the host vehicle roll-ahead.

NO UPPER LIMIT FOR HOST VEHICLES
From a practical standpoint, the fact that both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMAs were successfully tested to MASH Standards using the 'Infinity Testing' method, means both units are MASH certified with no upper weight limit for the host vehicle.

A1 ROADLINES

www.a1roadlines.com.au

THE ULTIMATE TEST OF ATTENUATOR PERFORMANCE

HOW IT'S DONE

With 'Infinity Testing' the host vehicle is anchored in place during the impacts to assess the TMA's capacity to absorb/ dissipate 100% of the impact energy without the benefit of roll-ahead.

WHAT ABOUT ROLL-AHEAD DISTANCES?

Importantly, to emulate 'real world' operating conditions, both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMA have also been successfully tested and MASH certified using standard 'non-anchored' host vehicles, with both units posting impressively low roll-ahead distances.

Scorpion® II TL-3 TMA
Crash Test: MASH Test 2-53
Impact Angle: 10.3 Degrees
Roll-Ahead Distance: 5.1m
Impacting Vehicle Weight: 2266kg
Impact Speed: 103.8km/h

Scorpion® II METRO® TL-2 TMA
Crash Test: MASH Test 2-53
Impact Angle: 9.9 Degrees
Roll-Ahead Distance: 12.4m
Impacting Vehicle Weight: 2295kg
Impact Speed: 81.6km/h

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A1 ROADLINES

AUSSIE'S CONCRETE PERFORMANCE

It's widely held that the Romans invented concrete. What a breakthrough! They could never have built the viaducts, bridges and buildings without that great product that we all take for granted. Look around at the major projects going on around the world, and you realise that it is concrete that holds together our cities, bridges, tunnels, and even our homes!

One Australian company, Australian Pump (commonly known as Aussie Pumps), has focused on the concrete industry at virtually all levels. The company turned 30 years old in March this year and has worked with the industry to develop products to help reduce costs, improve safety and even change some aspects of the industry dramatically in terms of efficiency.

READY MIX CONCRETE

Ready mix concrete changed the way we build - not just in Australia but around the world. We thank Max Hood and his transit mixers, the Forbes family in Queensland, and all the others that have participated in the development of the ready mix concrete industry across Australia. Imagine, what the Romans would have thought of that level of mobility!

BATCH PLANTS

Gravel, sand, cement, and water! Those are the key ingredients of any concrete mix. You will find batch plants operated by Australia's dynamic concrete industry scattered all over the country in key locations. Precast concrete product manufacturers, people making culverts, beams for bridges and even septic tanks, are all involved in this very diverse industry.

When it comes to batch plants, Aussie's chief engineer John Hales has had a lot of experience with pump application.

"We call them 'Semi Trash' pumps and the range is available with flows of up to 2,300 lpm and heads as high as 75 metres."

"Where we used to supply submersibles, we've seen a trend in recent times to surface mounted self-priming pumps for both batching and pit pump out applications," he said.

The company has introduced a wide range of heavy-duty cast iron self-priming centrifugal pumps to the industry. The pumps all have big open impellers, to handle solids in suspension. A different idea is a built-in stainless steel wear plate, a silicon carbide mechanical seal (capable of dealing with solids in suspension), and a front clean-out port. That port, mounted below the suction, enables easy clean out of the pump in the event of a blockage.

"We call them 'Semi Trash' pumps and the range is available with flows of up to 2,300 lpm and heads as high as 75 metres. Thus, we can deliver water for the batching process, and move water out of sumps, without having the pump submerged," John Hales said.

A pump that isn't underwater is much easier to service. As it's visible, you can see if a seal is leaking. The pumps are driven by single and three-phase heavy-duty 'squirrel cage' motors with stainless steel shafts.

"We keep innovating and recently started offering the standard cast iron pumps with 316 stainless steel impellers. For applications where there is a lot of abrasion, 316 stainless steel lasts much longer and, reduces maintenance costs dramatically," John Hales added.

WASH DOWN

Batch Plants are high maintenance items. Having the right cleaning equipment to facilitate maintenance is essential. This even extends to the transit mixers that deliver the product to the final point of application.

Mixers have become mobile advertisements for their company. They have made the three big operators household names across Australia!

Keeping those trucks and the plant clean is not just about pride or ego, but an essential part of reducing maintenance costs. Aussie Pumps makes a great range of high-pressure cleaning equipment with pressures up to 5000 psi. The machines are tough and either electric, petrol or diesel driven.

SHORING CLEANUP

Australia's leading shoring contractors are challenged every time they pull the shoring off a job. It must be prepped for the next job, and all the concrete dags on the steel have to be cleaned off. On big jobs, this can be a real challenge.

Aussie Pumps produce a range of high-pressure washers (up to 7000 psi) that enable steel shoring to be cleaned efficiently and safely. The company even has a free 'Safe Operator' training program to keep the people using this plant safe from the very real dangers of using high-pressure water.

Cleaning times can be reduced even further with the use of Turbos. The Aussie Turbo Master range can half pressure cleaning tasks, saving loads of time and water.

"Our big, rugged machines come with the option of either diesel, petrol, or even electric drive. They are Class B machines, which means that operators do require RTO certification under the new Safety Standards," John Hales said.

THE AUSSIE TOUCH

When it comes to producing equipment for an industry as important as this, the Aussie Pumps team works with users to make sure they get their feedback.

"Feedback from all sectors of the industry is really important to us," said Hales. "Through this, we gain knowledge... and that inspires further product development."

Renowned for its focus on customer service and quality products, Aussie Pumps is an innovative Australian company that now exports its products to the world!

For further information on the complete product range, including two comprehensive catalogues on pumps and pressure cleaners, please visit: **https://aussiepumps.com.au**

FREE ONLINE OPERATOR TRAINING COURSE

Aussie Pumps also offers a free training program for high-pressure cleaning operators. The course is extremely thorough and is based Aussie Pump's extensive experience in the design, manufacture and supply of high-pressure water and steam cleaning equipment to a wide range of industries.

The 'Aussie Blaster Safe Operator' course aims to inform users on the safe operation of Class A and Class B high-pressure water blasters to 500 Bar maximum pressure. The course covers a range of key topics, including Australia Safety Standards for Operators, and high-pressure technology, as well as maintenance and operation of the machines.

Scan code to access Aussie's Safe Operator Online Training Course.

ENGINEERING CLIMATE SOLUTIONS: CSE23

Engineers Australia's *Climate Smart Engineering Conference 2023* (CSE23) will be an exciting in-person event held at the world-class sustainable Melbourne Convention and Exhibition Centre on 29-30 November.

This is a flagship conference for knowledge-sharing, networking and engaging debate on engineering-led climate solutions – reflecting the critical role the profession will play in driving the economy-wide transition to net zero.

With Australia's engineering sector at the forefront of innovation globally, CSE23 has garnered a reputation as the focal point for informed discussion and profiling of new and emerging technologies.

Now in its third year, the program for CSE23 includes some of the profession's brightest and boldest minds as well as key leaders across government and industry offering diverse perspectives on climate mitigation and resilience, the clean energy transition and opportunities in the circular economy.

"Whether it be adapting to the impacts of climate change, designing, developing and deploying safe, affordable and innovative technologies to support decarbonisation or moving to a more circular economy – engineers are essential in addressing climate change," said Engineers Australia Chief Executive Romilly Madew AO.

"It's a huge task and we live in challenging times, but we are surrounded by extraordinary professionals."

We're on the precipice of renewal and that presents an opportunity to influence the development of the structure, systems and standards that sustainable engineering practices require," Ms Madew said.

As an active participant in COP27 and COP28, Engineers Australia continues to build strategic alliances with global partners to meet our shared obligations to curb carbon emissions and achieve our Nationally Determined Contribution commitment to Australia's emissions reduction target of 43 per cent and net zero emissions by 2050.

"This conference builds on our international advocacy, but it is also a key opportunity to profile best practice and thought leadership."

"This is a conference for everyone, engineering and industry leaders, and our leaders of the future will be able to share in the latest thinking while also building those all-important networks that help drive innovation in our sector," Ms Madew said.

The key themes that underpin this year's conference program include adaptation and mitigation, resilience, social impact, business management, regeneration and systems thinking, energy transition, the circular economy, technology and innovation.

The full two-day program includes a variety of speakers and topics that will challenge, confront and inspire attendees. This year, a full technical program chaired by Engineers Australia Chief Engineer Jane MacMaster will support the plenary sessions.

"Engineers Australia is proud of the expertise and diversity of speakers selected for the CSE23 event program, which was developed in consultation with our members and the CSE23 Plenary Program Advisory Council," said Ms MacMaster.

"Addressing an issue as significant and wide-reaching as climate change will require engineers to work collaboratively with stakeholders right across the economy. The foundations we build now will shape the future of our country and support effective pathways to net zero," said Ms MacMaster.

For program and speaker updates, visit **https://engineersaustralia.org.au/cse**

RECENTLY ANNOUNCED PLENARY SPEAKERS INCLUDE:

Ruby Heard CPEng

Director, Alinga Energy Consulting

Ruby Heard has a great affinity for sustainability, and global experience and her background as an electrical engineer has helped her establish herself as an entrepreneur. Her career started at Arup and then transferred to San Francisco to follow her passion into the renewable energy sector, designing complex solar arrays and microgrids for Google campuses.

In 2018 she volunteered with Engineers Without Borders on a six-month expedition to support the United Nations High Commissioner for Refugees energy team in Ethiopia. On her return to Australia, she founded Alinga Energy Consulting, where she currently serves as a Director.

As a versatile and ambitious entrepreneur and electrical engineer, Ruby will provide valuable insights at CSE23 on Australia's fair and equitable transition to renewable sources, considering the needs of those affected by change.

Kane Thornton

Chief Executive, Clean Energy Council

Kane Thornton has 20 years' experience in the energy sector and has been on the journey of the development of the clean energy sector into a global clean energy superpower, influencing and driving political conversations. He is currently the Chief Executive of the Clean Energy Council, the peak body for renewable energy and storage industry in Australia.

Kane Thornton will join a panel discussion on how organisations can overcome the engineering skills shortage that might inhibit progress to net zero.

Dr Margie Warrell

Dr Margie Warrell is the best-selling author of *Stop playing safe*. She is a global authority on courageous leadership and has no doubt been influenced by embarking on the path of 'courage over comfort' since growing up in rural Victoria. She has worked all around the world and draws on her diverse background in business, psychology and coaching to mentor leaders and help navigate the complex challenges and risks in today's fast-changing world.

With courage being key in driving Australia's transition to net zero emissions, get ready to be inspired by Margie at CSE23 as she helps readjust your mindset so you can step up and lead the change that the world needs to see.

ENGINEERS AUSTRALIA | cse

Climate Smart Engineering Conference

29-30 November 2023 | Melbourne

ACCELERATING AUSTRALIA'S TRANSITION TO NET ZERO EMISSIONS

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INTEGRATED SOFTWARE SOLUTIONS AS A GAME CHANGER FOR THE CONSTRUCTION INDUSTRY

TechnologyOne's software solution for the project-intensive industry is helping fix the information silos that plague the construction industry and can cost construction businesses billions in rework fees and lead to major failings. The industry-tailored solution addresses a massive operational problem for construction project managers by modernising the way building and infrastructure projects are run using Software-as-a-Service (SaaS) technology.

The construction sector is notorious for using a multitude of systems, tools, and processes for various aspects of operations. These can include project management software, accounting software, building information modelling (BIM) software, and tools for managing personnel, equipment, and materials.

While each of these systems is designed to address a specific aspect of construction management, using them in isolation can lead to issues and may mean businesses struggle to operate at peak efficiency.

Between subcontractors, on-site staff, suppliers, and other stakeholders, construction projects generate a massive amount of data. This data can be used by business leaders to gain insight into the successes and failures of current operations but regardless of how much is gathered, it provides little value unless it can be fully visible and accessible across the business.

Loosely coupled data from disparate sources that don't share the same internal taxonomy, logic, KPIs or information currency is a recipe for confusion—not clarity and consistency. This lack of unified data doesn't enable consistent, informed decision-making because fragmented, uncontrolled information is often less reliable and incomplete.

This lack of data sharing can lead to several issues, including project delays and cost overruns, and the lack of transparency makes it difficult for project managers to make informed decisions, which can slow down project timelines and increase costs.

TechnologyOne's Industry General Manager Luke Fleming said one single source of truth was imperative in today's connected construction world.

"Without a unified view of the project, project managers can struggle to make informed decisions about resource allocation, scheduling, and forecasting, adding stress to their jobs that they don't need," Mr Fleming said.

"Integrated software solutions can improve project resource planning in construction by enabling real-time visibility into project data and resources. It means construction managers can easily view which resources are being used on a project and when they will be available for others.

"Working with our single comprehensive system means the latest information is always available to project managers, business leaders and onsite staff. It's a game-changer for the construction industry. It provides a single source of truth and greater access to information, so businesses can make cost-effective decisions in real-time."

TechnologyOne's solution, which was built for the Australian construction industry, helps to streamline and centralise project management processes, integrating all core business processes including finance, procurement, supply chain, human resources, and project management. It enables construction businesses to automate complex workflows, enhance operational efficiencies, and enable collaboration across teams.

The solution's seamless data sharing means construction managers can generate real-time reports on project progress.

"Quality reporting is challenging when construction managers are pulling data from multiple systems and trying to combine them into something that makes sense. It can be a time-consuming process that invites the probability of errors," Mr Fleming said.

By simplifying reporting, TechnologyOne's solution enables project managers to identify potential issues before they become problems and make informed decisions to keep projects on track.

The solution is also adapted to today's modern way of working, allowing workers to communicate with each other anytime, anywhere and on any device.

"We know that employee experience and productivity is important in the construction industry and one simple intuitive interface makes it so much easier for workers to input and access data information," Mr Fleming said.

"Having a single source of truth for all project-related information can improve communication and collaboration with workers being able to easily access and share data in real-time. This can reduce errors, improve accuracy and speed up project timelines."

In 2022 TechnologyOne partnered with Australian engineering design, construction and land development powerhouse BMD Group to implement a market-leading integrated software solution to help them better manage all aspects of their growing $2 billion infrastructure pipeline across the entire project lifecycle.

BMD Group needed a comprehensive integrated software solution tailored specific to their individual needs, that would replace their disparate systems and business processes, which were often manual and labour intensive and not sufficient to support their growth plans or increasingly mobile workforce.

"It will massively increase productivity and in turn, be a game changer in supporting our people by equipping them with the right technology and tools they need to manage what is an unprecedented pipeline of work for our company," BMD Group CEO Scott Power said.

"Our integrated software solution will ensure BMD Group have the right business processes and technology in place to boost productivity with a software suite that covers the totality of the project and procurement lifecycle and gives full project visibility enabling the business to make cost-effective decisions," said Mr Fleming.

For a live software demonstration and to find out more from industry expert Luke Fleming on how TechnologyOne's solution can help deliver on projects, register for their Project Delivery webinar at **https://technologyonecorp.com/construction**

FIELDERS KINGFLOR® RF55® FEATURES IN AWARD-WINNING BUILDING

There's a new yet familiar skyscraper in Sydney's Circular Quay that's craning necks and sending gazes skyward. Some aspects of the building may be recognisable to the area's residents, workers and passersby because it's occupied the same address at 50 Bridge Street since the 1970s, yet over the last three years, the building's seen a remarkable transformation that's made it a world beater.

Quay Quarter Tower as it's known, is a result of major upcycling work and adaptive refurbishment, which involved demolishing the northern elevation of an existing tower and replacing it with a new steel composite structure that was constructed alongside and integrated into the existing building.

The subsequent design elevated the existing structure from a 45-year-old 45,000m² office building into an 89,000m² world-class sustainable commercial tower, and along the way provided Danish architects 3XN with BVN architects in Sydney just recognition, with the project winning *'World Building of the Year'* 2022 from a shortlisted field of over 250 buildings globally.

The upcycling approach demonstrates what's possible using the latest construction techniques and modern materials, and provides efficiency and sustainability benefits by maintaining sections of existing buildings that may have otherwise been demolished and replaced by all-new structures.

"Steel has been a massive enabler in this project. Its strength, lightweight nature and versatility have allowed designers to create a remarkable building. The outcome could not have been achieved using traditional concrete construction methods."

Steel construction materials such as Fielders KingFlor® RF55® have played a major role in the new Quay Quarter Tower development, according to Fielders Business Development Manager – Engineering, Marko Stankovic.

"Steel has been a massive enabler in this project. Its strength, lightweight nature and versatility have allowed designers to create a remarkable building. The outcome could not have been achieved using traditional concrete construction methods," Marko said.

"Specifying KingFlor® RF55® permanent formwork as part of the steel-composite structure has enabled designers to resolve large in-plane diaphragm forces and achieve floor cantilevers which are instrumental to the towers' striking and twisting geometry, setting it apart from others in the area."

KingFlor® RF55® permanent formwork is an excellent choice for high-rise buildings, shopping centres and multi-level car parks. The profile provides superior composite performance thanks to its patented ReLok® corner embossments that work to create a mechanical interlock with concrete. It also features dovetail lapping ribs which resist lateral deformation of the deck in the formwork stage and enhance the profile's spanning capacity with minimal propping requirements.

Marko said that the installer on the project, Santana Stud Welding, is an avid user of Fielders KingFlor® permanent formwork products due to the quality of products, unrivaled customer service from order to delivery, on-demand technical support – in the office or on site – and decking layout service provided by Fielders on large projects.

"Fielders has enjoyed an excellent long-term relationship with Santana Stud Welding and on this project, along with supplying the product we were able to add considerable value in other ways," he said.

"The complex floor plate geometry meant that no two floors were alike – typically commercial floor plates are the same and repeated on each level. In this case they were all unique, so we developed bespoke decking layouts and provided cutting lists to better support the installer and builder, Multiplex.

"This approach meant that the KingFlor® RF55® arrived on site largely ready to go with only minimal trimming needed. On restrictive CBD sites, this is always preferable as there's less wastage, there are fewer bins needed, there's reduced site congestion, less imposition to neighbours and the public, and of course there's improved safety which we all strive for."

Quay Quarter Tower was completed in 2022 with its upcycling philosophies and construction techniques likely to set a precedent for commercial building refurbishments of the future.

For more information, please visit: **https://fielders.com.au/products/flooring-solutions/**

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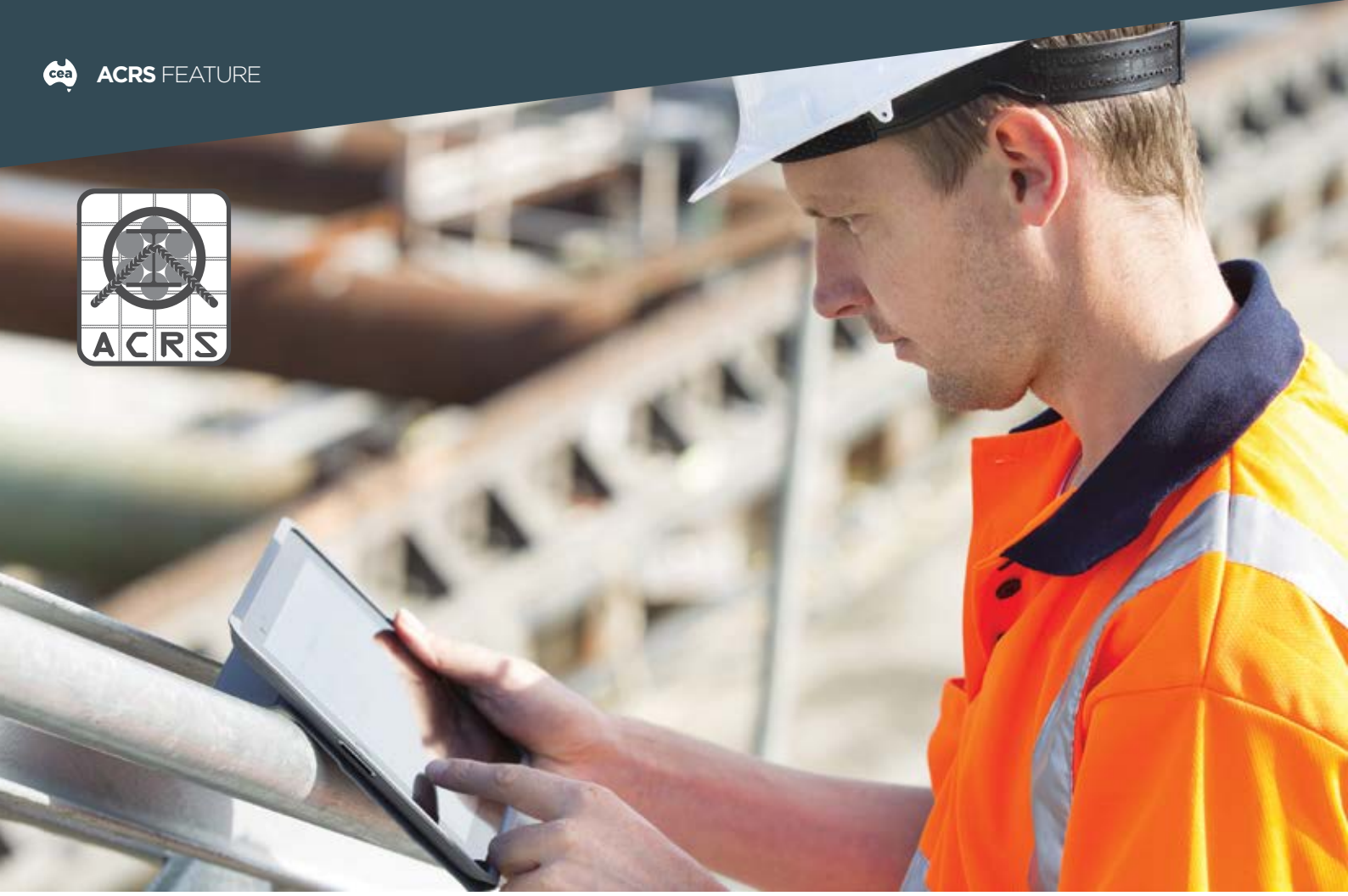

GOING DIGITAL

Making it easier to ensure you're getting the steel you ordered

The assurance of quality in the building sector is of prime importance, and the evidence of conforming materials is increasingly becoming more important to builders. In the current environment with a diverse and global supply, do you have certainty regarding the conformity of your steel?

The building industry predominantly uses paper systems for the verification and recording of conformity for products and materials. This is often carried out by the builder or the supplier who identifies the manufacturers of the products, requests the required compliance documentation, compiles folders, and provides these as part of the handover package.

This process can not only be time-consuming and onerous, it also relies on being able to identify particular lots from a manufacturer, and then being able to cross-reference and match those lots to a particular document.

While for a significant number of products, this provides a sufficient level of confidence, for safety-critical building components or materials, it is essential that we have confidence in products through the traceability of the product from the manufacturer to the site. In such cases, the evidence of compliance of each batch needs to be provided to ensure the performance of the product, and its conformance with relevant Australian and New Zealand Standards.

With the increase in requests to demonstrate compliance in the building sector, there has also been an observed increase in cases of falsified test records and falsified test certificates, along with a lack of traceability between the documentation and the product supplied. These factors further complicate the collection of required compliance documentation and increase the workload for builders and suppliers.

In recent years we have seen an increasingly digitized environment, with verification of authenticity, and digital identification now everyday occurrences for items including groceries, textiles and pharmaceutical products. These digital systems enable easy and efficient identification and verification of products down to a batch level, thus enabling the confirmation of compliance for the public benefit.

Another widely used example of digital identification and verification systems would be the COVID-19 certificates used for international travel – a simple and secure digital certificate that provides a widely recognised and standardised verification of conformance with statutory requirements (in this case, vaccination status).

While the acceptance and uptake of digital technologies across the building sector has lagged behind many other industry sectors across Australia, it is clear that a move away from traditional paper-based systems to digital product verification and traceability will deliver a significant range of benefits. Together with the improved efficiency, productivity gains and reduced costs that come from streamlining the entire product conformity process, standardised digital certificates are also expected to reduce the opportunities for non-conforming materials being delivered to site.

The Australasian Certification Authority for Reinforcing and Structural Steels (ACRS) strives to innovate and develop systems to meet the needs of the Australian construction industry. Having worked in the certification and traceability of steel products for over 20 years, ACRS has a comprehensive, detailed and independent understanding of steel manufacturing and fabrication - from the mill or processor, through the supply chain to the construction site.

While the current ACRS certification system has served specifiers, engineers and end-users across Australia and New Zealand extremely well for many years, to improve efficiencies and provide additional confidence in compliance, ACRS is now moving into the digital domain, with a new cloud-based certification system.

This move to a digital system will commence with the rollout of newly formatted certificates containing a QR Code. This QR Code may be scanned using the freely available ACRS cloud app, thus validating the certificate, the scope of the certificate, product markings, and the period of validity of the product. This will be followed by the gradual rollout of QR Codes on labels and tags for all ACRS certified products.

The new digital system will enable quick and easy verification that the documentation supplied is valid and that it is relevant to the batch of material/product that you have been supplied - improving efficiency and providing the end user/owner with a high level of confidence the product specified was supplied and installed.

In our global supply environment, it has never been more critical to ensure that you are getting compliant reinforcing and structural steels that are fit-for-purpose and conform with the relevant Australian and New Zealand Standards. The easiest way to do this is to:

- Specify ACRS certified steels;
- Specify steel from ACRS certified manufacturers and processors; and
- Check on delivery that the product is correctly labelled and has an ACRS certificate.

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2023
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at

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ABC STEEL

has satisfied the Authority that it complies with the rules of the ACRS Product Certification Scheme and the relevant ACRS Quality and Operations Assessment Procedures. Where appropriate, and as listed below, it has further satisfied the Authority that it manufactures and/or supplies products that conform with the standards listed below, and is entitled to use the ACRS mark in relation to the products listed on this certificate.

SCOPE OF CERTIFICATION

Reinforcing Bar Manufactured in straight lengths to AS/NZS 4671:2019

Products listed on this Manufactured Product certificate may be relied upon as having the benefit of ACRS Product Scheme certification after any subsequent processing only if cut, or bent, or welded by an ACRS certified processor. For Approval of processed reinforcing bar, refer to the bar processor's ACRS Fabricated Product certificate.

This certificate remains the property of the Authority and is issued subject to the Regulations of the Authority.

CERTIFICATE NUMBER	FIRST APPROVAL	ISSUE DATE	EXPIRY DATE
999999	01 May 2004	01 January 2023	31 December 2023

SIGNED FOR ACRS

Andrew Wheeler,
Executive Director
AUSTRALASIAN CERTIFICATION AUTHORITY FOR REINFORCING AND STRUCTURAL STEELS LTD | ABN: 40 096 692 545 | PO BOX 1369, CROWS NEST NSW 1585, AUSTRALIA

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Page 1 of 2

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PIER AND PILE DESIGN

by Paul Uno, Director, ETIA

When engineers (and architects) become involved in the design of low-rise, medium-rise or high-rise structures, the starting point is always the foundations. They need to determine the soil properties on site and the type of foundation needed to support these structures. These processes are carried out by structural engineers and geotechnical engineers.

When designing low-rise structures, the foundations are usually either spread footings or piers. In the case of retaining walls, then piers or piles can be used to support the earth forces. These piers can be either reinforced concrete, masonry or timber piles (the latter two being mainly for smaller loads). Further information on timber piles and bollards can be found at **www.woodsolutions.com.au**

For mid to high-rise structures, the foundations are usually either pad foundations or piles. However, the terms piles and piers are often confused with each other.

Piers are usually just smaller piles and are usually used in low-rise structures, such as domestic construction. Typical dimensions for piers in residential construction with clay-type soils are 300 mm, 450 mm or 600 mm diameter, comprising reinforced (or sometimes unreinforced) concrete anywhere from 2m to 4m in depth (but may be deeper if rock is close at hand).

A more detailed set of differences between Piers and Piles is given below:

PIERS

- Pier foundations are usually required for small applied loadings
- Pier foundations transfer their loads via bearing only
- Pier foundations are therefore of shallow depth
- Types of pier foundations included concrete or even masonry
- Piers are more appropriate where top strata consist of decomposed rock, stiff clays
- Piers are usually drilled with an auger

PILES

- Pile foundations are usually required to resist greater loads, for example, mid or high-rise buildings or bridges
- Piles are usually longer than piers (> 3m on average)
- Longer pile foundations usually transfer their load through side friction whereas piles that are intermediate in length transfer their load via both side friction and end bearing
- Pile foundations are more appropriate where there is no firm strata at reachable depth
- Piles can be either driven or bored through overburden soils into load-bearing strata
- The various types of pile foundations include end-bearing piles, friction piles, compaction piles, anchor piles, tension (i.e. uplift) piles, sheet piles, batter piles and screw piles

When sandy soils are encountered, then screw piles are the preferred option (since loose sands will collapse into bored piers). Full technical details on screw pile design can be obtained from companies such as Katana Foundation Systems (visit: **https://katanafoundations.com.au/technical/**).

Screw piling is often used in residential construction to support waffle pod systems including Expanded Polystyrene (EPS) pods or the next generation of pods such as BIAX, a recycled plastic void-formed pod system (visit: **https://www.biax.com.au/**).

The appropriate Australian Standard for Pile Design is AS 2159-2009. This document provides guidelines on what engineers need to consider when carrying out pile design, including durability requirements for both concrete and steel.

The exposure classification of piles can vary from normal soils to extreme corrosive sites, such as those in marine environments or industrial refuse. In extreme conditions, the required concrete grade and cover required is much greater than needed for a normal site. Similarly, if the site conditions are difficult, or a limited number of tests have been taken or the personnel involved with the project are less skilled, then the capacity reduction factor for design is often more conservative than usually adopted on normal sites.

Curing of concrete is usually not an issue with pile elements, however the pile capping which is usually a massive element encasing all the piers may need to be cured correctly. In such cases, it may be worthwhile considering new curing compounds available in the market, such as E5 Internal Cure (visit: **https://www.mcclay.au/e5-tech**).

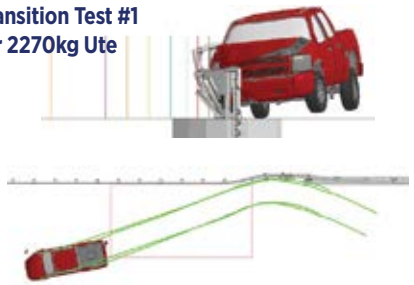
The primary loads on piles are axial (i.e., down the vertical axis of the pile) and lateral (perpendicular to the pile near or at the top). It must be noted here that geotechnical engineers often ask a structural engineer for the ultimate loads. These loads are factored applied loads (i.e., 1.2G +1.5Q) however, some geotechnical engineers believe the ultimate loads they are given from the structural engineers are equivalent to the ultimate capacity of the soil – which is incorrect.

Geotechnical engineers usually divide their ultimate capacity (using Terzaghi or Meyerhof or Vesic formulas) by a factor of safety which is usually three (3.0). The structural engineers' ultimate applied loads average out at a factor of safety of around 1.35 (i.e., average of 1.2 and 1.5) and therein lies the discrepancy between the factors (3.0 vs 1.35). I have heard of many cases where geotechnical engineers who have thus under-designed their piles because of this anomaly in factors, have resulted in litigation from the structural engineers!

For more information on the structural design process for piles and piers (including screw piles), visit **www.etia.net.au** where you can register for our upcoming Pile Design and Construction Workshop on 8+9 August 2023 (via Zoom Live Streaming).

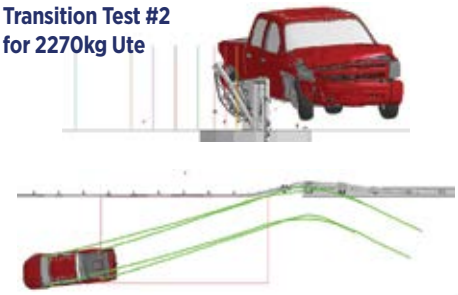
This blog is the latest in a series produced for Construction Engineering Australia by globally respected engineering educator and reinforced concrete specialist, PAUL UNO BE MBdgSc MIE(Aust) CPEng NER RPEQ APEC Engineer IntPE(Aus), Director, ETIA (Engineering Training Institute Australia).

Transition Test #1
for 2270kg Ute



The DOLRE bridge traffic barrier development demonstrates how the incorporation of FEA into the design process can optimise a solution that is vastly different from the solutions that traditional Engineering methodologies would produce.

Transition Test #2
for 2270kg Ute

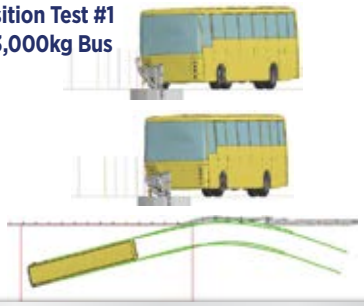


A problem was identified and through the iterative use of FEM combined with Eurocodes for structural analysis a solution was found and optimised that was vastly different to the direction that traditional engineering was leading.

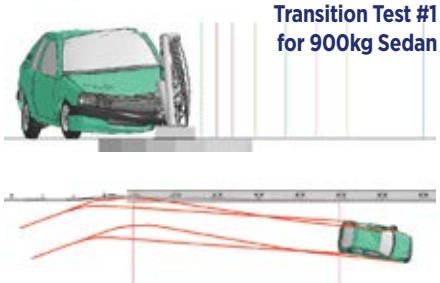
Transition Test #3
for 2270kg Ute

Once the bridge barrier design was optimised, the same process was used to assess **transition designs** to various European roadside barriers in accordance with EN1317 and TR16303-2011 requirements.

Transition Test #1
for 13,000kg Bus



Transition Test #1
for 900kg Sedan



Australian authorities required product assessment to Australian bridge standards. Future finite element modelling in accordance with MASH standards and NCHRP179 validation requirements satisfied ASBAP's analysis for both traffic barrier and transition designs.

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DRIVING PRECAST INNOVATION IN RESIDENTIAL CONSTRUCTION

Traditionally, residential homes aren't a typical application for precast, other than in medium and high density builds of course. The other exceptions are architecturally designed high-end builds and homes in aggressive or fire-prone environments, where precast homes are revered for their durability.

One National Precast member, Rezicast, is turning this thinking on its head. While the company is not itself a precast manufacturer, it has developed a patented home-building system and is working with fellow National Precast Master Precaster members – as quality precasters already established in the industry - to offer builders precast supply options.

National Precast CEO Sarah Bachmann says that while a superior construction product and method in many ways, getting the best value from precast has typically required repetition to achieve the economies of scale that make it a cost-effective solution.

"There's no doubt that precast construction is superior," she says. So much so that precast was her go-to when constructing her own home in the fire-susceptible Adelaide Hills.

"It's fast to construct, thereby saving site time and allowing earlier occupancy. It's safer as it removes on-site works to a controlled factory environment. It reduces waste, with no site waste and factory waste recycled, and being factory manufactured, it is better quality than site-poured concrete."

"Precast structures are durable against fire, floods and rodents and they are long-lasting. And importantly, precast can deliver incredibly thermally efficient buildings," she adds. "That in itself can almost eliminate the need for heating and cooling, thereby minimizing the building's impact on the environment."

Amid the ACT and NSW's Black Summer bushfires in 2020, which saw 510 properties destroyed and tragically four deaths and hundreds of injuries, builder and Rezicast™ Systems Owner/Director Mick Johnson, was keen to participate in the rebuild. Having struggled with shortages of bricklayers, and even bricks on occasion, he knew that speed of construction would be an important component of any alternative solution to traditional building methods.

"After seeing what I saw on that New Year's Eve I knew it would be a massive effort to rebuild and I knew that the Rezicast™ System could make a difference and we could help immediately," Johnson says.

He has devised a way for traditional commercial precast construction methods to be adapted to suit the residential market. It's a building system that uses engineered precast concrete panels for rapid construction, durability, good energy performance and bushfire resistance - a quality that would be particularly relevant for rebuilding these devastated communities.

Fast forward three years and there is another crisis with a housing shortage

across all of Australia. Building durable homes faster will surely play a role in assisting to fill the gap that traditional methods are struggling to do.

The Rezicast™ Home Building System has a BAL29 rating as standard delivery but Johnson says with minimal additional costs, a BAL40 or higher, rating is easily achieved.

NO STRANGER TO PRECAST HOMES

According to Johnson, he wasn't a stranger to precast construction.

"I built my first precast home in Bungendore NSW in 2012, which we completed in just eight weeks," he says.

"Since that first home, we've tweaked the process to speed the build time and to make using the system more affordable, meaning it is comparable to other traditional building methods."

"We've built approximately 80 homes using the system across ACT and NSW over the last eight to nine years," Johnson adds.

PROVING THE SYSTEM'S VERSATILITY

The homes have been an eclectic mix of custom builds, as Johnson took up the challenge to prove the versatility of the system. They have ranged from granny flats, accommodation pods, single and multi-level family homes, and high-end duplexes, selling for $1.8m for one side only in 2022 in the Snowy Mountains region of NSW.

The most common layout is using precast panels on the outside, finished in any number of ways. Alternatively, panels can be used internally, with lightweight cladding on the outside. This 'reverse veneer' method bolsters natural energy efficiency, maximising the designs' thermal mass benefits. It can also provide strength and security to cater for Speciality Disability Accommodation (SDA) for participants with high physical disability needs (another area of enquiry that is gaining momentum).

A SOLUTION FOR SOCIAL HOUSING?

"While we have not yet built a home, village or complex for this demographic, this is where most of our enquiry is coming from. One of the established builders we are working with has just submitted a State Government Housing Authority tender which integrates the system into their business. Social Housing suppliers across Australia are very keen to improve delivery times which has driven the enquiry from this sector."

BENEFITS FOR ALL

Architect Hugh Gordon says "...the system is incredibly flexible and caters for most designs with any number of finishes available to achieve affordability targets or, scale up to meet the expectations of high-end customers as required."

There are benefits for both the builder and the client too. Lock-up can be achieved in as little as 14 days, assisting the builder to be cash flow positive throughout the project and benefiting the end user by getting them into the home sooner. The livability of the home is also better with lower energy costs, less maintenance and superior acoustics.

Passionate about what he has developed to assist the construction industry, Johnson finishes by saying "At Rezicast we have a genuine desire to make a difference and, we firmly believe our system has a role to play in assisting builders to meet the demand for much-needed homes across Australia."

SMILES ALL ROUND FOR WOOLGOOLGA PRECASTER

National Precast Precaster member Fine-Form Precast has been given a huge pat on the back for its precast work with client Lipman Constructions, winning an award in the *2023 Northern Regions NSW Master Builders Excellence in Building Awards*.

Supplying a range of precast elements across a variety of projects in New South Wales, the precaster faced tough competition against several other specialist contractors in the awards, taking home the *Subcontractor of the Year Award*. Celebrating building excellence in the Northern Regions, the Awards showcase local craftsmanship, expertise and excellence, whilst contributing to a vibrant regional building industry. They cover the Tweed, North Coast, Mid North Coast and New England Regions.

According to Fine-Form's owner Jukka Ylinen and manager Steve Russo, the precaster's strong reputation in the Coffs Harbour area for over 25 years ensures that clients like Lipman have a positive precast experience and achieve maximum design efficiency with their precast projects.

"Because we install most of the precast we supply, we have a thorough understanding of the entire process from design through to installation. Our experience with precast extends way beyond simply manufacturing and we do a lot of early stage design work to make sure the benefits of using precast are maximized," Russo comments.

Two of the noteworthy Lipman projects the precaster supplied include Mission Australia in Coffs Harbour and the Mid-North Coast High Performance Centre in South West Rocks. Darren Ferguson of Lipman worked closely with Steve Russo of Fine Form to change the design of the Mission Australia building from brickwork to precast. Darren has always been a progressive builder that advocates the use of precast whenever possible.

Over 365 panels – including brick faced panels – as well as balcony upstands, were supplied for the Mission Australia project, for staircases, lift shafts, and internal and external walls.

"Good planning during the very early stages of the project allowed the job to be finished well ahead of time, despite the high volume of panels and tight access," comments Ylinen.

"From a logistic perspective, the Mid-North Coast High Performance Centre was an exciting challenge," he said.

Internal and external Class 2 panels were supplied for the project, as well as stairs, lift shaft panels, floor slabs, seating planks and step treads. Panels ranged in size from 10 to 29m^2, weighing 12.6 tonnes each.

All top-level 11m long panels required rotation during installation.

"Given the tight access for trucks and cranes, sorting out lifting plans at a very early stage was necessary so we could allow for the limitations of the crane's capabilities," Ylinen added.

"We were honoured to accept the Award on behalf of the whole team at Fine Form. It's a wonderful reward given the effort we all make to ensure our projects are a success."

PERTH PRECASTER WINS BEST WORLDWIDE INNOVATION AWARD

One of National Precast's Master Precasters, BGC Precast, has recently been awarded *Best Innovation Worldwide* in the manufacture or use of hollowcore for 2023.

The award was presented by the International Prestressed Hollowcore Association (IPHA) at its May annual conference held in Vilnius, Lithhuania, for developing a method to de-bond prestress at any point along a hollowcore plank.

HOW HOLLOWCORE IS MANUFACTURED

Hollowcore planks are typically manufactured in long lines up to 150m long and are cast by extrusion slip-forming or flow-forming along prestressed steel tendons (or strand), which are usually stressed to around 14 tons of force each. Once cured, planks are diamond sawed to the required lengths and delivered to site. Most hollowcore is topped to achieve composite action.

A SUSTAINABLE CHOICE

According to National Precast, hollowcore planks are commonly used for precast flooring. Being prestressed by pre-tensioning, they can span long distances and support heavy loads. Planks are available in varying thicknesses and lengths are cut to suit.

National Precast CEO Sarah Bachmann says the flooring method is incredibly sustainable as it offers the benefit of de-materialisation (using up to thirty per cent less concrete). Site waste is reduced because exact elements are delivered and factory waste is recycled.

Using hollowcore also dramatically improves construction speed and makes sites safer by reducing clutter and activity on site and transferring works to a controlled factory environment.

CHALLENGE WITH DE-BONDING STRESSED TENDONS FOR CERTAIN APPLICATIONS

To prevent the concrete from bonding to the ends of the tendons, sleeves are typically placed over the ends of the tendons.

When prestressing by pre-tensioning however, certain applications require de-bonding at certain points along the planks. Using sleeves in such scenarios is not possible as they would snag on the strand guides in the casting machine - which pick up and hold the tendons in the correct position – as the casting machine makes its way along the casting bed.

PROBLEM SOLVED WITH INNOVATION

Driving the innovation in the first place, was an approach to the Master Precaster by Hera Engineers - a Perth-based, Australia-wide structural engineering consultancy – while working on the Busselton Civic Centre project.

The design intent was to utilise hollowcore planks with a large cantilever, point-loaded on the ends with wall and roof loads.

With some clever innovation, BGC Precast had to develop a method of de-bonding the tendons, in order to accommodate the design requirements if hollowcore was to be used and this was achieved.

STAYING AHEAD OF THE GAME

Through its memberships of both IPHA and National Precast, BGC Precast prides itself in staying at the cutting edge of innovation.

National Precast is proud of the achievement of its WA member. "To win an international award is a remarkable achievement, and well done to the team at BGC," says Bachmann.

"It's not at all surprising as our Master Precasters are always on the hunt for solutions to challenges and are constantly innovating," she adds.

WHY IS DE-BONDING IMPORTANT?

De-bonding is necessary when manufacturing deep hollowcore sections that are heavily prestressed. This is because it delays the introduction of any large, eccentric prestress force along the tendon, which then reduces any propensity for web cracking.

Additionally, de-bonding extends the length that hollowcore can be cantilevered while also increasing the load-carrying capacity of any cantilevered sections.

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UPSKILL YOUR KNOWLEDGE OF PRECAST WITH NEW WEBINARS

National Precast – the precast industry's peak body – now has a range of online webinars available for not just precasters, but for engineers, builders and other industry stakeholders.

"Over the last twelve months, we have run sixteen webinars," says National Precast's CEO Sarah Bachmann.

Topics of the webinars the organisation have run over the last year include:

- New precast contract
- Measuring concrete maturity
- Payment for goods offsite
- PPSA, indemnities & bank guarantees
- Structural connections for precast
- Chain of responsibility
- Bolted connections (including column connections)
- Improve traceability, risk management, and reputation with digital QA
- Employment law
- Trade practices issues
- Concrete protection to improve durability
- Employment and industrial relations
- Automation to counteract cost increases & labour shortages
- Dust diseases risk – silica dust
- Digital assistance to reduce the process complexity within the precast industry - through ERP
- Contracts
- Bracing & propping of precast

The webinars are available online at **https://nationalprecastonline.com.au/webinars** and can be counted as continuing professional development.

Bachmann says more webinars are being run all the time, and it's not just members who can participate in these.

"The good news is that anyone can now participate in future webinars."

These are scheduled on the Association's main website, at **https://nationalprecast.com.au/events**. Upcoming webinars include site testing of anchors and insurance liability.

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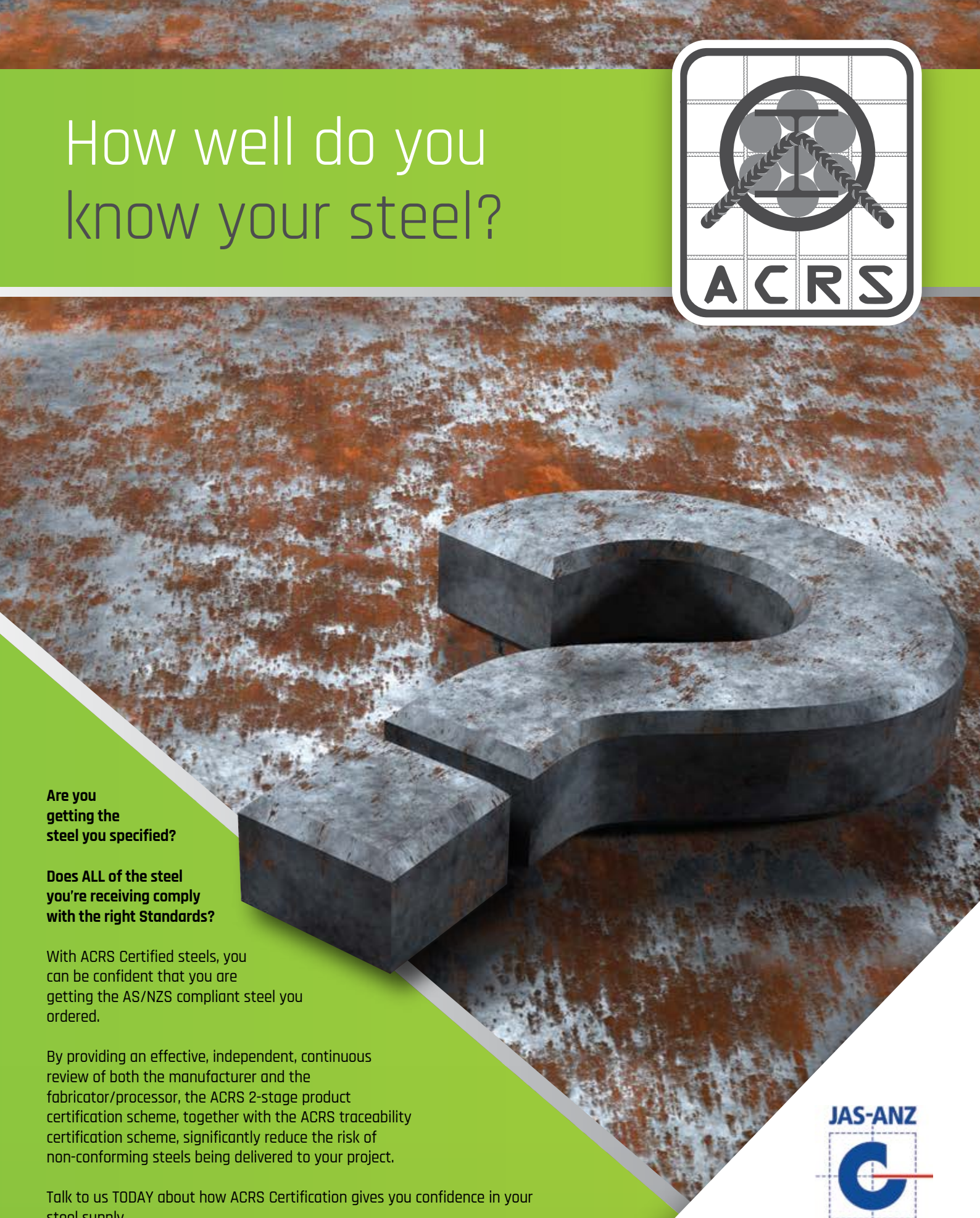

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