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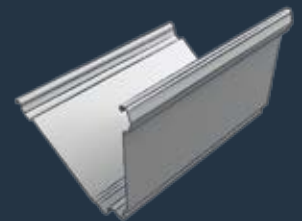




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About the Cover

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► Turn to Page 10 for the full story.

REINVIGORATING THE REGIONS

FINDING A BALANCE BETWEEN DEVELOPMENT AND HERITAGE PROTECTION

Dear Readers,

Change is difficult... And the longer something has been in existence or remained the same, the more difficult it is to change.

Granted, some people find change more difficult than others, but for most, preserving the 'status quo' is much easier than 'rocking the boat'. This is particularly true when it comes to new construction and development.

Notwithstanding the issues associated with new construction in environmentally and/or culturally sensitive areas such as foreshores, parklands and other greenfield sites, resistance to new construction and development - or for that matter, change in general - is also a major challenge facing many of the smaller, formally semi-rural communities on the fringes of our major capital cities.

Whilst these communities often have a long and rich history as towns, villages or hamlets in their own right, for many, the 'glory days' have well and truly passed.

Indeed, for many of these communities, their location - both in relation to busy transport arterials servicing the nearby major cities and the ever-expanding outer suburbs of these cities - has rendered them little more than a mere shadow of their former existence.

High levels of passing traffic (including a high percentage of heavy vehicles)

can result in significant damage to road infrastructure, while the ever-encroaching outer suburbs, which often incorporate major shopping centres and recreation facilities, can, and do, have disastrous consequences for local traders in many of these towns.

The result: money being earned by many of the people in the town never gets spent in the town; the local economy collapses; shops and other facilities close; local unemployment rises; buildings fall into disrepair; and the former township starts to resemble a ghost town.

Unfortunately, more often than not, this is when the really serious issues arise, viz: a division between those who wish to build and develop/redevelop the town and those who are completely opposed to the idea - preferring instead to keep the town as a "... *nice, quiet, little country town like it used to be*".

This may read as a slightly 'glib' statement, but believe me, it is not intended to be.

I have seen disagreements such as these divide regions, towns and even families. Worse still, I have seen first-hand a number of seemingly innocuous development plans degenerate into legal wrangles involving Heritage Protection Orders, appeals, lawsuits and counter-suits for losses and perhaps worse of all, the permanent loss of literally tens of millions of dollars of investment for some communities.

Now, I'm not saying that we should declare 'open season' on any and all buildings and structures for the sake of a dollar - far from it. But I am saying that we cannot continue the way things are.

Put simply, the viability and longevity of these towns and regions must not be allowed to suffer at the hands of outdated planning practices or, dare I say, a utopian view of historic country villages that remain unaffected by surrounding development and an everchanging world. After all, it is impossible for any location to exist in isolation.

Remaining stagnant (in terms of development or growth) is, in all seriousness, a certain death sentence for any town - no matter how resilient.

While I don't profess to have all the answers or, for that matter, a 'magic, one size fits all solution', I do believe that these are issues that need to be addressed with the utmost urgency. The time has come for us to all work together seriously and in good faith to find a solution to this most serious of issues - lest we find our major capitals surrounded by the dilapidated remains of 'former' townships.



Anthony T Schmidt
Managing Editor



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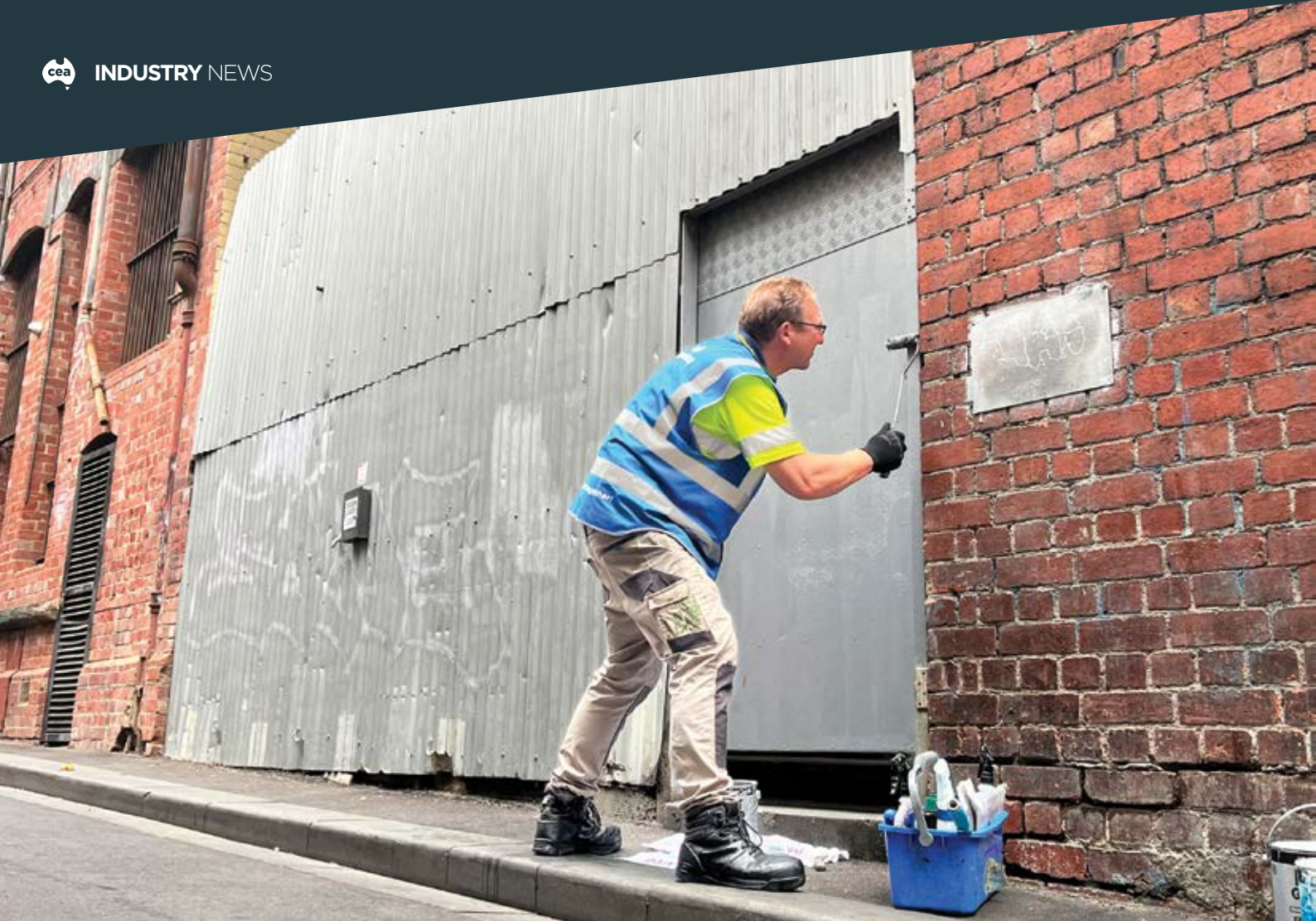


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MELBOURNE CITY COUNCIL STEPPING UP TO SCRUB THE CITY CLEAN

The City of Melbourne did more cleaning in 2022 than ever before, removing the equivalent of nearly eight MCGs of graffiti in the past year.

Council's *Rapid Response Clean Team* removed a record 150,000m² of graffiti across Melbourne in 2022 – a 121 per cent increase on the previous 12 months. More than 87,000m² of graffiti was proactively cleaned, and another 63,000m² was removed following reports from the public.

Targeted operations saw the removal of illegal tagging on bridges along the Yarra River – Birrarung, and more than 3200m² of graffiti was cleaned from buildings and surfaces above 3 metres.

Council has also stepped up its efforts to remove dumped rubbish across the municipality, collecting more than 4,500 tonnes in the past 12 months – and an additional 100 tonnes of discarded mattresses.

More than 900 infringement notices and fines were handed out to those caught littering or illegally dumping rubbish in 2022.

City residents, workers and visitors continue to play an important role in reporting graffiti and rubbish across the city using Council's QR code reporting system. Public reports of graffiti and street cleaning were up 60 per cent last year, compared to 2021. The reporting system has ensured Council can double down on its efforts and allocate resources more effectively across the municipality.

Around 30 vandalised QR codes were removed from Council bins during January, however Council will continue to work with Victoria Police to identify those replacing QR stickers. Council will also continue to expand the *Rapid Response Clean Team* to fast-track graffiti removal across the city, thanks to a record \$1.4 million investment in last year's Budget.

"We're stepping up to scrub the city clean – making sure Melbourne is sparkling for city residents, workers and visitors every day of the year," said Lord Mayor Sally Capp.

"Our Rapid Response Clean Team has

proactively removed tens of thousands of square metres of graffiti from across the city – the large majority on privately owned property."

"We'll continue to target hotspots and work closely with Victoria Police to crack down on repeat offenders who are leaving a scourge on our city," the Lord Mayor added. "This year we'll start implementing more anti-vandalism features, such as green walls and murals."

These comments were echoed by City Transport, Infrastructure and Operations deputy portfolio lead Councillor Davydd Griffiths, who added: "We're scrubbing the city clean like never before – so everyone can enjoy our city's public spaces throughout summer and the school holidays."

"Removing record amounts of graffiti is a credit to our Rapid Response Clean Team, who are working to ensure our iconic streets and laneways are as inviting as our world-renowned open spaces," Councillor Griffiths concluded.

INDUSTRY LEADER TO HEAD IPWEAQ-NT

Queensland and the Northern Territory's public works engineering sector has a new industry leader, with the appointment this month of Brett Wright.

The highly experienced administrator assumes the role of Chief Executive Officer of the Institute of Public Works Engineering Australia Qld-NT (IPWEAQ-NT) after spending more than 21 years leading state and national peak industry bodies in the heavy vehicle and automotive industries.

His most recent leadership position was as CEO of Heavy Vehicle Industry Australia, where he oversaw the transformation of a state association to a peak national body.

A Fellow of the Australasian Society of Association Executives, he has been a former member of the Queensland Government's Ministerial Freight Council and a member of the National Heavy Vehicle Regulator's Industry Reference Forum.



He holds qualifications in governance, budgeting and business planning and is a board director of a children's charity.

Mr Wright said there were strong linkages between the heavy transport industry and public works engineering.

"There's a connection between the two sectors, especially in the essential services space – by providing vital infrastructure and services to communities and individuals. It's really quite a noble cause," he said. "And I was attracted to this position by IPWEAQ-NT's long history in providing excellent

service and representation for the public works engineering sector."

IPWEAQ-NT has supported the state's public works professionals for 50 years by sharing knowledge, building networks and capability and advocating for the sector.

Mr Wright said his leadership would prioritise member engagement and services, professional development and sector representation.

He thanked the interim CEO Scott Greensill, who is remaining with the institute as a consultant to finalise select projects.

"Scott oversaw the steady operation of the institute during a time of transition; we thank him for that service," Mr Wright said.

IPWEAQ President Angela Fry said: "We are very pleased to welcome Brett to the IPWEAQ-NT team, and we're confident he'll provide great leadership and direction into the future."

"I would also like to extend my thanks to the interim CEO Scott Greensill, and all of the IPWEAQ-NT staff for their hard work and commitment," Ms Fry added.



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Welding expertise learned at Charles Darwin University's Katherine Rural Campus is helping to build the independent skills capacity of First Nation Jawoyn communities in remote Northern Australia.

CHARLES DARWIN UNIVERSITY HELPING TO BUILD INDEPENDENT SKILLS ACROSS FIRST NATION JAWOYN COMMUNITIES



The ancient art of welding learned at Charles Darwin University (CDU) is helping to build the independent skills capacity of First Nations Jawoyn communities on country spread across 50,000 square kilometres of Northern Australia.

Technical skills in welding have important applications across this vast, remote tract of Jawoyn country, which extends north-west from Katherine to Pine Creek, south to Mataranka, and north-east to Bulman, including southern parts of Kakadu National Park and Arnhem Land. There, new knowledge and skills that First Nations men have drawn from welding training at CDU's Katherine Rural Campus is being put to work by the land's traditional owners in nine Jawoyn communities or clan groups.

These are the Barunga (Bamyili), Beswick (Wugularr), Jodetluk (Gorge Camp), Kalano, Kybrook, Manyallaluk (Eva Valley), Rockhole, Werenbun and Banatjarl (King Valley) communities, with a total population of 800 making up the traditional Jawoyn Nation.

Delivering the Welding Short Course, CDU Agriculture and Rural Operations Lecturer, Jonny McGannon said the expertise

imparted to the First Nations men, who are all Jawoyn Association Aboriginal Corporation employees, has wide-ranging benefits.

"The nationally-accredited welding training has helped to build the confidence, skills and workplace credentials of the Aboriginal men," Mr McGannon said.

"But the course benefits – technical knowledge and tangible skills – will also flow from the individual course participants to the wider community.

"The learned techniques for fusing metal together can be used in Jawoyn communities to advance existing industries and, potentially, foster new industries, providing alternative sources of income."

Jawoyn Association Aboriginal Corporation Group Human Resources Manager Amy Murphy said the training has benefits for those participating and communities. These benefits range from learning on country and traditional land management to residential construction and professional development.

CDU course participant Samson Andrews plans to teach his new welding skills to First Nations students as part of the *Learning on Country* program, in

partnership with Aboriginal ranger groups and 15 schools in remote communities, including two Jawoyn schools.

"It is this combination of curriculum and culture that will support remote Aboriginal students to walk strong in two worlds," Miss Murphy said.

"For instance, Samson will teach Jawoyn students how to construct metal cages for feral animal management through the *Learning on Country* program."

First Nations employees at Jawoyn Contracting will also apply their welding expertise to residential construction and maintenance in three communities, and rangers will use their new skills to construct and maintain fencing, gates, ramps, walkways and signs, she said.

The training saw the Jawoyn men put their welding skills to the test building a 'Purple Bench' in recognition of the movement that aims to break the cycle of domestic violence facing women.

The new bench for the University's Katherine campus was designed by CDU Rural Skills and Mechanics Lecturer Lee Hunt, who co-delivered the welding course with Mr McGannon.



BUILDING APPROVALS REFLECT ECONOMIC PRESSURES IN INDUSTRY

The November quarter building approval numbers from the ABS reflect the latest string of economic pressures faced by the building and construction industry, according to Master Builders Australia CEO Denita Wawn.

“The total number of approvals fell by 9.0 per cent during November, and are now 15.1 per cent lower than a year ago,” said Ms Wawn.

“The latest building approvals data is concerning, and it’s clear that we are facing significant challenges which need to be addressed head-on if we want to weather the storm and see a sustainable recovery.

“For detached houses, there was a 2.5 per cent decline during the month and a 22.7 per cent drop for approvals of high-density homes.

“There have been signs that detached house building approvals had stabilised, but recent months indicate that they are moving downwards.

“Higher density home building approvals, which are particularly sensitive to interest rate movements, had shown momentum during 2021, however, this is now on the way down.

“A number of factors are making it difficult for new home building, including rising interest rates coupled with labour and material shortages.

“We must not be complacent in addressing some of the systemic challenges on the supply-side which continue to ripple through the economy.

“Builders continue to advocate for an increase to the migration cap and changes to the migration system that make Australia a more attractive place to live and work, and complementing this with improvements to domestic vocational education and training,” Ms Wawn said.

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Fielders ARAMAX® delivers multiple design solutions at St Bede's Catholic College

The level of design consideration afforded to educational buildings has grown immensely in recent years, with holistic philosophies now coming into play that aim to deliver flexible, yet nurturing and attractive student environments that better encourage learning and progressive teaching methods.

A prime example of this modern educational architecture can be seen at St Bede's Catholic College, a new school based in Chisholm, in the city of Maitland, around 23 kilometres from Newcastle. Key infrastructure on the school grounds includes a recently developed open-learning cluster that does away with the traditional classroom settings of years gone.

Stages one and two of the development have been completed and are in use, with construction of the remaining two stages to begin in the coming months. The overall design comprises four large pillars of buildings that breach across the contours of the site, with an internal circulation spine or 'peregrine trail' linking the four buildings, while organically adhering to the existing contours of the site.

At the heart of the design is a desire to fulfil a pedagogy-based teaching method. The project-specific pedagogical approach is a future-focused learning model that empowers students to take ownership of their learning by providing an environment that is flexible, innovative and challenging, equipping them with the skills and capabilities to thrive in a rapidly changing world.

Designed by leading local architectural firm, SHAC, the St Bede's development features extensive use of Fielders ARAMAX® both for roofing as well as to create a bespoke screen wall.

According to SHAC Director, Architect and Project Manager, Elizabeth Brown, ARAMAX® provided several solutions to both architectural and construction challenges on site.

"There are a few reasons why we chose to specify ARAMAX® for this project," Elizabeth said.

"The long-spanning capabilities of this profile allowed us to incorporate generous roof overhangs to provide protection from the weather (rain and sun) on the walkways below as well as over windows.

"The strength of ARAMAX® also means there's less reliance on secondary structure, which reduces construction costs. There are also no concerns about fixing solar panels to the ARAMAX® roof – we know they're more than strong enough.

"From an installation perspective, it's a profile that's efficient to install, so we can get large sections of the building protected from the rain very quickly."

In line with the site's use as a progressive education centre, so too was SHAC's ability to apply some clever and forward-thinking architectural ideas using ARAMAX®.

One such technique involved creating a twin-layered roof structure which was packed with insulation and left exposed – this provided the space with a clean and simple finish, and aligned it with other design aspects of the site, such as exposed services and the use of raw materials.

Another intelligent application of ARAMAX® was as a sculptured screen wall that was developed to shield students and teachers from the harsh Western sun when using the trail between the buildings. Of course, a



certain level of sunlight would need to permeate the screen wall to provide visibility. This challenge was addressed by perforating the cladding.

“The structural integrity of ARAMAX® again came into play with the design of the screen wall,” Elizabeth said.

“It spans from slab edge to slab edge between levels allowing for uncomplicated fixing, its use in the western screen ties together the trail aesthetically with the building forms. It creates a strong design statement for the building and it’s also non-combustible, which satisfies the compliance requirements of the building and egress paths.

“Additionally, the profile was suitable to perforate, and after considering several patterns, and reviews by wind engineers, a ‘noughts and crosses’ pattern was ultimately selected after passing wind noise testing.

“Along with all the functionality that ARAMAX® provided as a screen wall, we were extremely pleased to use it from an aesthetic standpoint, because it allowed consistency of materials and helped anchor the overall design,” Elizabeth explained.

SHAC is a multi-disciplinary practice based out of Newcastle, and although they specialise in education projects, also work in commercial, retail, health, infrastructure, and residential sectors. Elizabeth noted that one of the other great things about this project was that it was a full team effort in the office and that the client and consultant team were all willing to contribute to provide a world-class education building that fulfils its aim of providing the best education spaces possible for the local staff, students, parents, and community.

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SUSTAINABLE STEEL MADE EASY



ACRS SUSTAINABLE STEEL CERTIFICATION SCHEME RECOGNISED BY GBCA UNDER ITS RESPONSIBLE PRODUCTS FRAMEWORK



ACRS (the Australasian Certification Authority for Reinforcing and Structural Steels), the leading independent, third-party steel certification authority of construction steels to Australian and New Zealand Standards, and CARES, the leading international constructional steel certification authority, have announced that their Sustainable Constructional Steels Certification Scheme (SCS) has been recognised by the Green Building Council of Australia (GBCA) under its Responsible Products Framework.


The Framework is used by the GBCA to recognise initiatives that a product or manufacturer can comply with for the purposes of contributing to a Green Star certification.

As part of the Framework, the SCS Scheme has been recognised as Best Practice across all four of the Framework's credits. These cover building Structure; Envelope; Systems and Finishes.

With the SCS Scheme, steel producers and processors will be able to achieve

Best Practice credits towards Green Star Building compliance. They will also be able to achieve compliance by using other Schemes in combination with the SCS Scheme to achieve either 'Good practice' or 'Best practice' product criteria.

Commenting on the GBCA recognition of the SCS Scheme, Andrew Wheeler, Executive Director of ACRS, said: "We are delighted the SCS Scheme has received this recognition from the GBCA and to now be contributing towards the Green Star rating system. The SCS Scheme is an



internationally recognised, best-in-class sustainability scheme with thirteen years of experience in the steel industry.”

“Working closely with our partners at GBCA and our certificate holders we look forward to helping the Australian construction industry verify the steel being used as being produced using the most sustainable practices as the industry is capable of achieving and to always look for ways to improve this as we head towards net zero by 2050.”

The sentiments were echoed by Lee Brankley, CEO of CARES, who added: “Steel is a safety critical component in all major structures and responsible clients rightly seek the assurance that comes with confirmation the products they specify meet the highest standards in the sector.”

“Knowing their products also meet stretching sustainability criteria set out by highly regarded bodies such as the GBCA, is a further positive endorsement of the choices these clients are making. CARES welcomes this as an additional sign of confidence in the standards set out in the SCS Scheme,” he added.

The SCS Scheme verifies construction steels entering Australia from anywhere in the world meet the highest global environmental, social and ethical standards, using independent certification of ESG criteria and performance indicators. The SCS Scheme allows designers, specifiers and end-users to determine with

confidence the sustainability performance of the steel procured.

Australian and international steel producers are working hard to reduce their emissions. According to the IEA (International Energy Agency), around 7% of global CO₂ emissions are currently generated by the steel industry¹. The SCS Scheme will help steel producers and processors measure, monitor, and improve the sustainability performance of their products and will strengthen industry efforts already underway to combat greenhouse gas emissions.

PROVIDES A CLEAR PUBLIC BENEFIT

The Scheme aligns to the UN-convened Sustainable Development Goals - ‘*The Global Goals*’ - and measures and monitors a comprehensive range of criteria through the global supply chain. Raw material and transport data, combined with independently verified production and life-cycle emissions data, support the development of products’ Carbon Footprint and Environmental Product Declarations. This enables accurate data, for example, the Global Warming Potential per tonne of product, to be easily accessed by designers and specifiers. On-product bar marking and digital product labelling also allows 100% traceability on all verified products from manufacture to site.

“ The SCS Scheme verifies construction steels entering Australia from anywhere in the world meet the highest global environmental, social and ethical standards... ”



“ *The independence and rigour that ACRS is renowned for in Australia and New Zealand will help achieve the desired quality, environmental and socially responsible outcomes across the construction industry.* ”

SUPPORTING INTERNATIONAL TRADE AND COMMERCE

The Scheme already certifies 42 producers and suppliers in 12 countries. Products certified under the SCS Scheme are approved inputs for a range of additional international building and infrastructure rating systems, including the UK's *Building Research Establishment Environmental Assessment Method* (BREEAM); the US *Leadership in Energy and Environmental Design* (LEED) building rating system; the Hong Kong Construction Industry Council (CIC)'s *Green Product Certification* (GPC) scheme and the Singapore Green Building Council's *Green Building Product Certification* (SGBP) Certification Scheme.

BENEFITS FOR FIRMS SEEKING SCS CERTIFICATION

With the introduction of SCS certification, product conformity, traceability, and sustainability certification will all now be available through ACRS. Firms seeking both independent premium product and sustainability certification can now do so through one certification body. The independence and rigour that ACRS is renowned for in Australia and New Zealand will help achieve the desired quality, environmental and socially responsible outcomes across the construction industry.

For further information, please email ACRS at: info@steelcertification.com or visit the website: www.steelcertification.com

Reference: ¹ IEA (2020), The challenge of reaching zero emissions in heavy industry, IEA, Paris



ABOUT THE SCS CERTIFICATION SCHEME

The SCS Scheme covers the production of feedstock for further processing (e.g. billets, blooms slabs, wire rod), finished steel products (e.g. carbon steel bar/coil, stainless steel bar/coil and structural steels), and fabricated materials (mesh, processed bar and welded fabrication).

The Scheme is compatible with ACRS' traceability provisions in ACRS "Stage 1" (Manufactured Product) and "Stage 2" (Fabricated Product) certification plus the Traceability scheme for traders and distributors.

ACRS is the sole certification body in Australasia for delivery of the SCS Scheme, the internationally recognised scheme that is compatible with ACRS' existing certification schemes and meets local market needs.

ABOUT ACRS

Founded in 2001, the Australasian Certification Authority for Reinforcing Steels (ACRS) is Australasia's leading, not-for-profit, independent steel certification authority.

ACRS provides the most technically-rigorous, internationally-aligned, independent steel certification scheme to Australian and New Zealand Standards. It conducts audits and certifies over 100 suppliers from more than 24 countries for construction materials supplied to AS, NZS, EN and BS Standards, as well as a range of Government specifications.

ACRS certifies customer quality management systems and construction steel products to international quality standard ISO 9001:2016 (or the identical ISO 9001:2015, or local equivalent); and Steelwork Fabrication and Erection Standard, AS/NZS 5131.



ABOUT CARES

Founded in 1983, CARES is the world's leading independent provider of assured certification for the construction steels industry. CARES operates in over 50 countries, providing confidence in product performance and provenance to discerning public and private sector clients. The CARES digital ecosystem offers speed and transparency in ever-more complex international supply chains where safety, sustainability and product data quality are mission-critical.



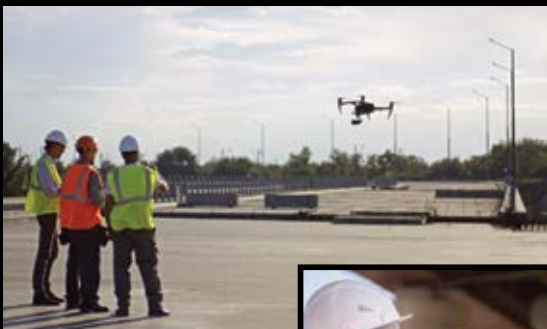
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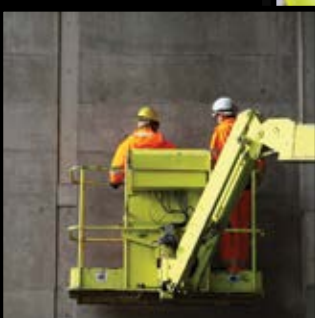
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SLIP-RESISTANT FLOORING

Specialist flooring solutions require specialist flooring applicators

Choosing the right high quality, slip-resistant flooring solution is a critical factor in providing a safe work environment. This is particularly important when it comes to ‘wet’ working environments such as food and beverage production, processing and packaging facilities. Indeed, with over 85% of workplace injuries across Australia reportedly occurring as a result of slips and falls – and over 90% of those happening when the floor is wet – it’s easy to see just how important it is to have the right type of slip-resistant floor.

While there are a number of flooring solutions available that will meet the needs of both the Australian/New Zealand Standards and each jurisdiction’s Safe Work requirements, when it comes to specialist non-slip flooring, there’s more to it than simply picking a product that can deliver the specified slip-resistance (‘P’) value and applying it to your factory floor.



Arthur Karayannis, Technical Manager with specialist contractors ASCOAT Industrial Floor Surfacing, explained: “Choosing the right slip-resistant flooring solution is about much more than the ‘P’ value of the product.”

“Together with slip-resistance, we also need to take into account a number of other critical factors, including light reflectivity, impact resistance, the ability of the floor to withstand a range of temperatures - including freeze/thaw cycles and steam – and perhaps most importantly for the food and beverage industry, cleanability and hygiene,” he said.

“Put simply, for the majority of floors, the higher the ‘P’ value or friction coefficient, the easier it is for dirt and debris to lodge on the textured surface. This can make the floor a lot more difficult to keep clean and hygienic and can significantly increase cleaning and maintenance costs.”



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“Conversely, if you opt for a lower slip-resistance rating simply to make the floor easier to clean, you may end up with a facility that doesn’t meet OH&S requirements, and that can spell disaster on a number of levels,” Arthur said.

Importantly, the quality of the finished floor doesn’t only come down to ensuring you choose the right slip-resistant flooring solution to suit your specific application/environment, it also comes down to the installation.

“With slip-resistant flooring, it’s not only about the product, it’s also about the installation,” Arthur Karayannis said.

“These are specialist floors, usually comprising a number of components, and they should only be installed by a fully-trained and qualified team of installers. Any issues with the surface preparation or application can not only significantly impact the serviceable life of the floor, they can also easily render the floor non-compliant either in terms of slip-resistance, cleanability and hygiene or both,” he said.

With over 30 years of experience, ASCOAT’s team of specialist applicators have both the experience and expertise to deliver the optimum slip-resistant flooring solution to suit even the toughest environments.

Wholly Australian-owned and operated, ASCOAT offers a ‘Total Project Management’ service which includes working with clients to assess their needs, assisting them with selecting the most suitable flooring solution and, of course, having their fully-trained and qualified teams carry out the installation. ASCOAT’s Operational Site QA Program and End-to-End Quality & Management Systems ensure quality, scheduling and budget is achieved on every project.”

“Choosing the right slip-resistant floor really is a balancing act,” Arthur added, “and making the wrong choice can end up being extremely expensive, both in terms of the financial cost and downtime.”

“We work with our clients to ensure that get the floor that they want with the performance criteria they need, installed correctly so that it meets all specifications and requirements – including slip-resistance, hygiene and service life,” he concluded.

For further information on the full range of ASCOAT Industrial Floor Surfacing products and solutions, visit: www.ascoat.com.au

VERSATILE 6" PUMP

Big self-priming pumps seem to be coming into their own for mining, quarry, construction and even Local Government effluent applications. Australian Pump Industries have developed a line of high-flow pumps that are equally at home in quarries or sewage stations.

The company offers two models of 6" pumps. Both are designed for handling solid-laden liquids and are delivered in complete 'trash' handling configuration. The biggest, powered by an 80 hp Deutz air-cooled diesel engine, offers flows up to 6,000 lpm. That's 360,000 litres per hour!

This big machine is the choice of Local Government bodies wanting to provide true flood emergency response, and normally specify the units as you would for a construction site - as a trailer-mounted version.

What makes the trash pump concept so popular for dewatering applications is their ability to handle solids in suspension. Aussie's model MQ600TD pump is capable of passing 76mm solids in suspension.

An important part of that design concept, was building the pump in a heavy duty self-priming body with a front clean out port that allows the operator to open the pump up for clean out in a matter of one or two minutes.

A smaller, more compact model - the Aussie QP60TD - is powered by a Kubota water cooled 24.8hp diesel engine. It has maximum flows of 4,000 lpm and a maximum head of 35 metres. Priming is through a direct vertical lift of seven metres. Like it's big brother, the MQ600TD, it also has a front opening port that enables 'chokes' to be cleared easily!

The impeller in both pumps is a big 'non-clog style' open design that facilitates the pumping

of contaminated water, whether it be silty material from a flood or, effluent or sewage waste from a bypass system.

WHY WET PRIME?

The reason Aussie has focused on wet prime pumps is because of the negative aspects of the 'dry prime' concept. Dry prime pumps are normally end suction design that require the use of priming devices to be able to lift water as part of the prime process.

Those devices can be anything as rudimentary as a hand pump to sophisticated vacuum pumps or even compressors.

The limitation of those priming aids is that they are not designed to handle dirty water, whether it's effluent or construction site waste products.

HOW DO THEY PRIME?

The beauty of Aussie's wet prime pumps is the priming system itself. The pumps are designed with huge 'shoulders' that are cast into the pump's body. The shoulders constitute a water tank that holds enough water to enable the pump to prime efficiently.

The priming process is simple. There is a priming plug built into the top of the casing of the pump. The operator fills the pump with water which is trapped inside the pump housing by a check valve fitted to the suction port.

The operator ensures the suction hose has no air leaks, always a good move to check the couplings, and then starts the engine.

The pump voids through the discharge water that is in the body, creating a vacuum. The check valve then opens on the suction port, drawing up water through the 6" suction line.

This simple priming process avoids a lot of service issues.

Normally, priming a pump like this takes only minutes and specifically doesn't require the suction hose to have a foot valve. Australian Pump recommends a strainer should be on the end of that hose as foot valves are unnecessary and can clog up with solids entering the valve.

The two big pumps have engine protection equipment built in. The air-cooled Deutz diesel comes with low oil pressure, oil temperature and V-belt failure shutdown. The Kubota water-cooled diesel with the smaller pump has low oil pressure and oil temperature shutdown incorporated.

In both cases, oil-lubricated mechanical seals are fitted, with the bigger MQ600TD pump having a tungsten titanium carbide seal as standard.

BUILT-IN VERSATILITY

Although these pumps were originally designed for mine and construction site dewatering, their ability to provide flood mitigation services or effluent bypass is well established. They have also been applied to aeration duties on effluent or sewage wastewater lagoons, providing trouble-free and reliable service.

Both pumps offer fuel tanks with sufficient capacity to run for up to ten hours at a time without refuelling. Australian Pump also offers free extended warranties on this equipment, with pumps having up to five years guarantee.

The engines - both Kubota and Deutz - come with two-year manufacturers' warranties.

For further information on these multifunction assets, contact Australian Pump Industries (Aussie Pumps) on 02 8865 3500 or visit: www.aussiepumps.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.



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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.



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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 Impacting Vehicle Weight: 2266kg
Impact Angle: 10.3 Degrees Impact Speed: 103.8km/h
Roll-Ahead Distance: 5.1m

Scorpion® II METRO® TL-2 TMA

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



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Structural Steel Design in Australia over the past 50 years

by Paul Uno, Director, ETIA

Having graduated from the University of Sydney as a civil/structural engineer in the mid 1970's, I have seen many changes in the structural steel industry over that time. I was fortunate enough to have been lectured by experts in steel such as Nick Trahair, Greg Hancock, Russell Bridge, Michael Rotter and Jack Roderick. The Steel Standard I used at university was AS1250-1972 (working stress) which was then then morphed into AS3990-1993 (for mechanical engineers who use working stress).

I was also fortunate to have worked for the Australian Institute of Steel Construction (AISC) in the mid 1980's. I have worked & met with some of the influencers of steel design and construction. It included people like Tim Hogan, Arthur Firkins as well as Branko Gorenc, Ron Tinyou and Arun Syam (authors of Steel Designers Handbook). The AISC (Aust) was merged with the SIA (Steel Institute of Australia) in 2002 and rebranded as ASI (Australian Steel Institute) to separate its identity from the AISC (USA).

While I worked for AISC, I was on the Standards committee BD-001 when AS1250 'working stress' was being converted to 'limit state'. I put forward the idea that the Code number (ie 1250) should be changed to differentiate it from the impending new Standard which would contain significant changes related to limit state design. My

suggestion was met with resistance from other senior & experienced Committee members at the time and I was over-ruled. I then expressed my concerns to my boss (Arthur Firkins), that in years to come if engineers refer to AS1250 they won't know whether the calculations were done using *working stress* or *limit state*. Fortunately he could see the logic and agreed with me. He then put in motion a series of steps (eg personal discussions with the Standards Australia CEO, extracting various clauses out of the Welding Code AS1554 and inserting them into the draft Steel Code, plus other measures) which then gave him justification to nominate a new number for the final document, which then became AS4100. At least today if someone talks about AS1250 they know it was a *working stress* document vs AS4100 which is a *limit state* document.

Since 1998 I have conducted many ETIA courses on Structural Steel Design. For many years I would refer to the BHP steel catalogue for section properties of UB's, UC's, Angles, Channels etc. However, BHP steel then changed their name to One-Steel and so I referred to the One-Steel catalogue. One-Steel then became Liberty and now it is called Infrabuild. Since steel members produced in Australia have not changed for many years, I still refer to the catalogue of steel section members as the "One-Steel" catalogue.

Designers should be wary of the fact that whilst they may do their design calculations using the One-Steel catalogue, there is a good possibility that the builder gets a better price on imported steel that may not have the exact dimensions and properties of the Australian steel sections.

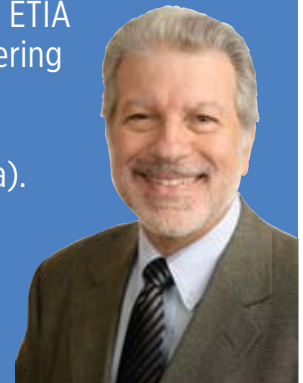
Fortunately, basic principles of design such as buckling and crushing of members remains the same. That is why in our ETIA "Steel Design Workshops", I address topics such as Lateral Torsional Buckling (now referred to as Flexural Torsional Buckling), Compact vs Non-Compact (or semi-compact) vs Slender members, Form factors, Shear Centres.

As a design engineer with Transfield (1980-1984), I did all my calculations by hand, as we did not have desk top computers with prewritten programs. As a result of having to do designs manually I have a sound knowledge of steel design basics.

Once computers started to enter the workforce, I found that after a period of constantly using computer programs, you tend to forget the basic formulas that apply. This is why engineers who attend our 2-day Steel Design Workshops are taught first principles ie the basics, the formulas and so on. All the worked examples and tutorial examples and calculations given to attendees have to be done by hand (to strengthen their understanding and



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).



accuracy of the designs they are performing).
For further information on our structural steel courses, visit www.etia.net.au

Note that our first course for 2023 (face to face) will be held at Rydges, Norwest (Baulkham Hills) in Sydney on 1-2 March 2023.

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CLEVER ENGINEERING: 12 WAYS PRECAST CAN MAXIMISE CONSTRUCTION EFFICIENCY

There is no question that precast concrete has sustainability benefits that deliver construction efficiencies and subsequent profitability gains, over in-situ concrete, blockwork or steel construction.

Precast elements - as opposed to traditional construction methods - are manufactured off-site in factories, and that provides builders with significant advantages.

National Precast's Master Precasters use quality systems that are inherent in their manufacturing processes, resulting in better quality and more reliable delivery of whole elements. The result is safer construction sites, lower waste removal costs and faster construction times... all of which mean fewer materials' deliveries on site, fewer trades on site and less waste on-site. For the builder and asset owner, faster construction means earlier lockup and handover.

In addition to precast's inherent efficiencies, its advantages can be maximized when twelve engineering design principles are applied both before and during construction.

1. SIMPLIFYING PANEL CONNECTIONS FOR COST SAVINGS

Even though a lot of precast projects require the

manufacture of bespoke, one-off elements, there is usually scope and commercial incentive to use standardised connection details. There are many instances in which special or unusual cast-in items (such as cast-in plates) can be replaced with combinations of smaller plates and/or standard plates.

2. PROGRESSIVELY SELF-SUPPORTING TO MINIMISE TEMPORARY WORKS

There are many factors that can be considered when planning panel interactions and structural connections to minimise the temporary works that will be needed. It is possible, for example, to erect stair and/or lift cores to an impressive height with only a few braces, and then provide lateral stability to other works once they have been connected.

3. USING PRECAST AS FORMWORK TO ELIMINATE THE NEED FOR FORMWORK

In many cases, precast elements can be installed prior to in-situ concrete floors and/or walls being cast. The precast and connections can be carefully detailed by the design engineer to use the precast as formwork.

4. UTILISING A PANEL'S BEAM ACTION FOR STRUCTURAL PERFORMANCE

All materials and components behave structurally even before they are included in a much larger aggregated structure and a precast panel placed on its edge will mobilise beam action, that can be used to improve its behaviour in lifting and handling, as well as in some in-service applications.

5. EQUALISING LOADS DURING LIFTING TO MAXIMISE LIFTING EFFICIENCY

Precast elements' Center of Gravity (CoG) and the safe distribution of lifting forces between the anchor arrangement and the connected rigging must be considered in a lifting and handling design. With this careful consideration, efficient lifting of the precast element can be achieved at each stage and the lifting positions of the elements can be determined.

6. BETTER SAFETY AND EFFICIENCY BY MINIMISING SHEAR CONNECTIONS

Directly aligned load paths (axial loads in tension or compression) are safer and more efficient than eccentric or unaligned load paths (creating shear and bending effects) and as an example, panels

across an opening can be better supported by adjacent panels rather than by merely steel shear plates or corbels.

7. USING ALTERNATIVE CONNECTIONS TO MINIMISE ON-SITE WELDING

Quality control and compliance with specifications are notoriously difficult to achieve with welding, and it is possible to reduce or eliminate the requirement for on-site welding by using the many available alternative types of connections.

8. INCORPORATING COMPLETE BASE CONNECTIONS TO ELIMINATE BRACING

It is common for precast wall panels and columns to have grouted base connections, with a grouted base bed and grouted starter bars. It may be possible to reduce or eliminate the need for temporary bracing if the base has enough bending capacity to withstand rotation due to temporary design wind loads or construction loads on the element, once the grout has cured for the minimum period.

9. USING MORE STRUCTURALLY EFFICIENT PANEL REINFORCEMENT TO RESIST BENDING

Panels are usually reinforced with one layer of mesh or bar, positioned in the center (mid-depth). A panel's ability to resist bending when lifted, handled and erected is enhanced when reinforcement is distributed in two layers of lightweight mesh or bar, both top, and bottom. This applies particularly to tall, double-storey height panels and especially when there is a mid-height breakout for an in-situ slab pour.

10. USING PRECAST FLOORING PLANKS FOR LONG SPANS AND FASTER CONSTRUCTION

In construction, utilising precast flooring planks with in-situ topping screed, can provide significant advantages when it comes to achieving long, clear spans, without the need for back-props. By doing this, follow-on trades can start earlier, thereby speeding construction times.

11. DESIGNING PRECAST/PRESTRESSED BEAMS SPECIFICALLY FOR EACH PROJECT

The ability to 'mould' concrete beams into structurally efficient cross-sections allows designers to create beams that meet exact project requirements. This, combined with prestressing, can offer great benefits for both building and infrastructure projects.

12. TOTAL PRECAST STRUCTURES TO MAXIMISE CONSTRUCTION EFFICIENCY

By combining various precast elements in one complete precast structure, not only can construction times be minimised, but also longer spans, higher floor-to-floor dimensions, and more structurally efficient designs can be achieved, all without compromising architectural intent or price.

To access more engineering information from a Master Precaster, visit the National Precast website: www.nationalprecast.com.au There is an extensive range of resources available which have been developed by the vast engineering expertise of its members.

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1,529 PRECAST ELEMENTS DELIVERING QUALITY, FORM AND FUNCTION



to document the project, as well as to create the special moulds that were required to construct the 'picture frame' elements," according to Brett Foster, Advanced's Operations Manager.

With quality high on the client's agenda, it is no wonder that Advanced's precast was chosen. Manufactured in the precaster's Wetherill Park factory in steel moulds and with extensive quality processes in place, National Precast CEO Sarah Bachmann says the finish that has been achieved is nothing short of exemplary.

"The high quality, plus speed and ease of construction that precast offers projects like these certainly deliver benefits to the client and future inhabitants alike," she added.

Meanwhile, Parkview's Project Manager for the development, Peter Lantouris, says that "we consider this project to set the standard for quality in Granville with great attention to detail and high-quality finishes throughout the apartments and lobbies."

"Granville Place has been delivered on time and offers a superior product which the client is really happy with, and we are confident the owners and users will be happy with it also," he added.



Project: Granville Place Apartments

Location: Granville, NSW

Master Precaster: Advanced Precast

Its proximity to Paramatta and Sydney's CBD as well as improving infrastructure amenity are making Granville a very desirable destination for first home buyers. The Granville Place apartment complex is offering affordable residential living that is touted as a premium development in a buzzing neighbourhood.

With construction commencing in 2019, the three-year, three-tower project was built in planned stages. This meant that towers A and B were operational while tower C was being constructed.

EXTENSIVE USE OF PRECAST

The 9,000 square metre Granville Place makes extensive use of precast concrete and is the latest offering from Shokai Ausbao, the team that developed The Quay Apartments, which revitalised Sydney's Chinatown. It's an iconic, eye-catching mixed-use development including 617 one, two and three-bedroom apartments that sit above retail and commercial spaces. There are also five levels of car parking, a mall, a common area and park at ground level and a podium offering a communal play and landscaped area.

Precast was specified for the vertical elements to ensure the highest quality external finish.

Working with Parkview Group, Team 2 Architects, WSP and ADG Engineers, National Precast Master Precaster Advanced Precast was awarded the contract to manufacture the precast elements which included both loadbearing and non-loadbearing walls, columns and balcony 'picture frames' for the project. All up, 1,529 different elements were supplied for the project, comprised of 1,029 panels, 237 spandrels, 172 columns and 91 upstands.

FRAMING THE VIEW

The three unique towers each use the precast bays to frame a different outlook. Multiple mould shapes were used during manufacture to both distinguish the frame effect between each tower, as well as the view from one bay to the next.

According to the precaster, the mould complexity and ensuring that junctions of frame intersections were all perfectly aligned during installation, were the key challenges for the project.

TEAM EFFORT AND 3D MODELLING ACHIEVING RESULTS

"Creating the 'picture frames' within 'picture frames' was a true team effort. 3D modelling was used

HAVING A SAY IN STANDARDS: THE ROLE OF INDUSTRY ASSOCIATIONS

Associations and peak industry bodies typically undertake a broad range of activities like promoting the sector to encourage increased uptake, advocating to authorities, educating, and encouraging collaboration and networking. One of the often-unsung achievements is the inroads that associations make into the review and development of Australian Standards.

In the case of National Precast Concrete Association, this work is done through an experienced and knowledgeable cohort of its members, who represent National Precast on a myriad of precast-related Standards' committees.

According to National Precast's CEO Sarah Bachmann, National Precast has active representation on twelve Standards' committees.

THE INDUSTRY CONTRIBUTION

"Industry makes a huge contribution to Standards. Thanks to the commitment of our members, we are able to provide input to Standards both as they are being developed and reviewed," Bachmann comments.

Nominating for a standards committee and reporting back to the Association is a rigorous process in National Precast's case.

According to Bachmann, the Association puts out a call for expressions of interest when specific standards need representation for development or updating. Members nominate suitable individuals, who must agree to a strict set of requirements when they nominate. She says there are benefits all round when members' employees represent National Precast.

"By making their employees available to do the work that's needed, our member companies are able to promote their contribution to the betterment of the precast and broader construction industries. It's being a good corporate citizen, not only via their membership, but by this work. They can also be ahead of the game by knowing what lies ahead.

"It's also good for staff morale as the individuals feel like they are making a difference to something greater and it looks good on their CV.

"And for us", continues Bachmann, "we are ensuring that precast manufacturers have a say in decisions that can sometimes have a more academic bent and complement the influence of safety authorities or unions. This balanced approach ensures the most practical and best practice outcomes for the entire industry," Bachmann comments.

ROBUST SELECTION AND REPORTING PROCESSES

Representative nominations are assessed by the National Precast Board for their suitability based on experience and skills.

Likewise, reporting back to the Association and providing feedback and guidance to the representative, strictly follows a transparent process, to ensure the individual is representing the membership and not his or her own personal views.

"We are also careful to follow Standards Australia's requirements around committee confidentiality. It's a delicate balancing process."

Ms Bachmann says the Association's members are the experts in the field and are well-versed to provide practical feedback to committees on behalf of the membership

"Of course, we assist with that information gathering process where needed," she adds.

"We will often act as the go-between the representatives and the membership, to make

sure that safety benchmarks are maintained and continuously improved through the Standards' network".

AS 3600 CONCRETE STRUCTURES UNDER REVIEW

At a recent National Precast members' event, the representative for AS 3600 Concrete structures - Geoff Fletcher from Euro Precast - spoke about the current review of the standard.

Bachmann says BD 002, the Standard's committee, has since agreed to National Precast's proposal to revise the precast-relevant material in the Standard and a sub-committee has since been formed and will be chaired by Geoff Fletcher, to review the content.

National Precast has also initiated conversation with David Chandler, the NSW Building Commissioner and Geoff is continuing the conversation around improvements to AS 3600 that are consistent with the work David and his Department are doing.

About National Precast's BD 002 rep, Geoff Fletcher

Geoff is the in-house engineer at Euro Precast. He is registered in both Victoria and Queensland, where Euro has its factories. Geoff also represents National Precast on BD 111, the committee for ISO/TC 59/SC 19 Prefabricated buildings, and the Australian Steel Institute on BD 066, the committee for AS 3850 Prefabricated concrete elements.

Geoff says his introduction to precast was as a Product Manager for concrete lifting systems at Reid Construction Systems in 2004. Straight away, he was told that engagement with National Precast was a part of his duties. Geoff says this has always been enjoyable & worthwhile - even during a few periods since then, where he withdrew from the industry! Incidentally, Reid is still a very active Industry Partner member of National Precast, and has its own staff representing the industry on Standards' committees.

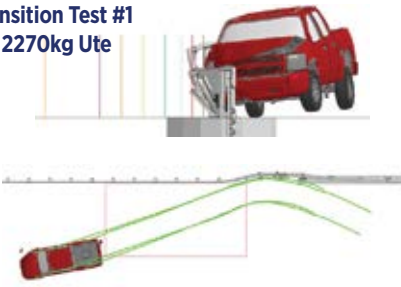
According to Geoff, he has long thought that if one is going to be in an association, then giving time and participating is far better than just throwing money at it!

Before his precast career, he came out of the formwork industry and could see then that precast was a market threat, which it remains for in-situ formed concrete. And now for the precast industry, we see new external threats, so it's in the interests of all National Precast members that we collaborate to respond. And besides, he says the National Precast gatherings are a lot of fun!

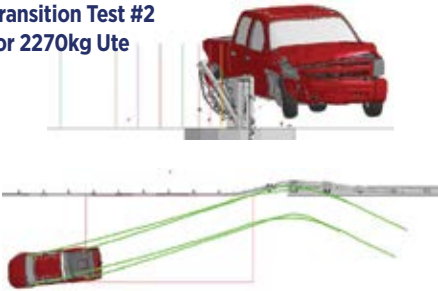
And as for something more personal about Geoff - he has recently started giving blood again after a 22 year break, since he lived in the UK at the wrong time during the Mad Cow Disease scare, and his donating was banned here in Australia.



Transition Test #1
for 2270kg Ute



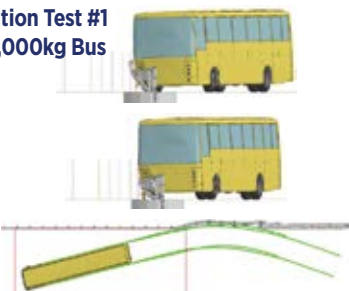
Transition Test #2
for 2270kg Ute



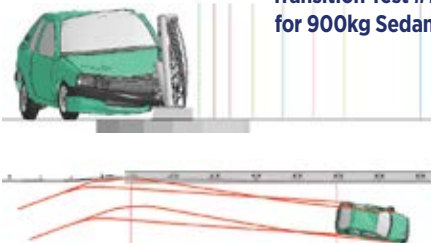
Transition Test #3
for 2270kg Ute



Transition Test #1
for 13,000kg Bus



Transition Test #1
for 900kg Sedan



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.

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.

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.

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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A ONCE IN A GENERATION OPPORTUNITY TO ACHIEVE TRANSFORMATIVE OUTCOMES AT SCALE

By Aaron Hudson MAIPM CPPE

We are experiencing a once-in-a-generation opportunity to achieve transformative outcomes at scale from the current global, short-term infrastructure stimulus spend, and project professionals are on the front line. Aaron Hudson MAIPM CPPE looks at how the new wave of infrastructure projects targets transformative outcomes for people and the planet, and why success depends on tenacious project leadership.

Governments worldwide have turned to infrastructure spending to drive economic recovery post-COVID-19. The stimulus packages represent a once-in-a-generation opportunity to achieve significant transformative outcomes with a global impact through the high-calibre delivery of mega-projects and programs.

- US\$3.2 trillion: Infrastructure stimulus announced by G20 governments between March 2020 and August 2021 (source: Beyond the Baseline, Jacobs). This includes US\$26.3 billion announced in Australia with by far the largest chunk – some 65% – going to the transport sector (source: Global Infrastructure Outlook)
- US\$94 trillion: Further investment needed over the next 20 years to meet the forecasted infrastructure deficit (source: Global Infrastructure Outlook)

As project leaders, we're the custodians of best practice, responsible for delivering the benefits of this once-in-a-generation investment. We need to take charge with a sense of urgency and strong leadership to realise these transformative outcomes.

EXPECTATIONS ARE CHANGING

In the past, project delivery focused on minimising infrastructure development's impacts, for instance, minimising diversity loss or social dislocation. Now, the expectation is that we derive multiple positive effects throughout project delivery and leave an enduring legacy. The positive social and environmental outcomes are equally important as the economic benefits, with the Australian Institute of Project Management's (AIPM) recent report with KPMG, The state of project management in Australia 2022, highlighting that 62% of

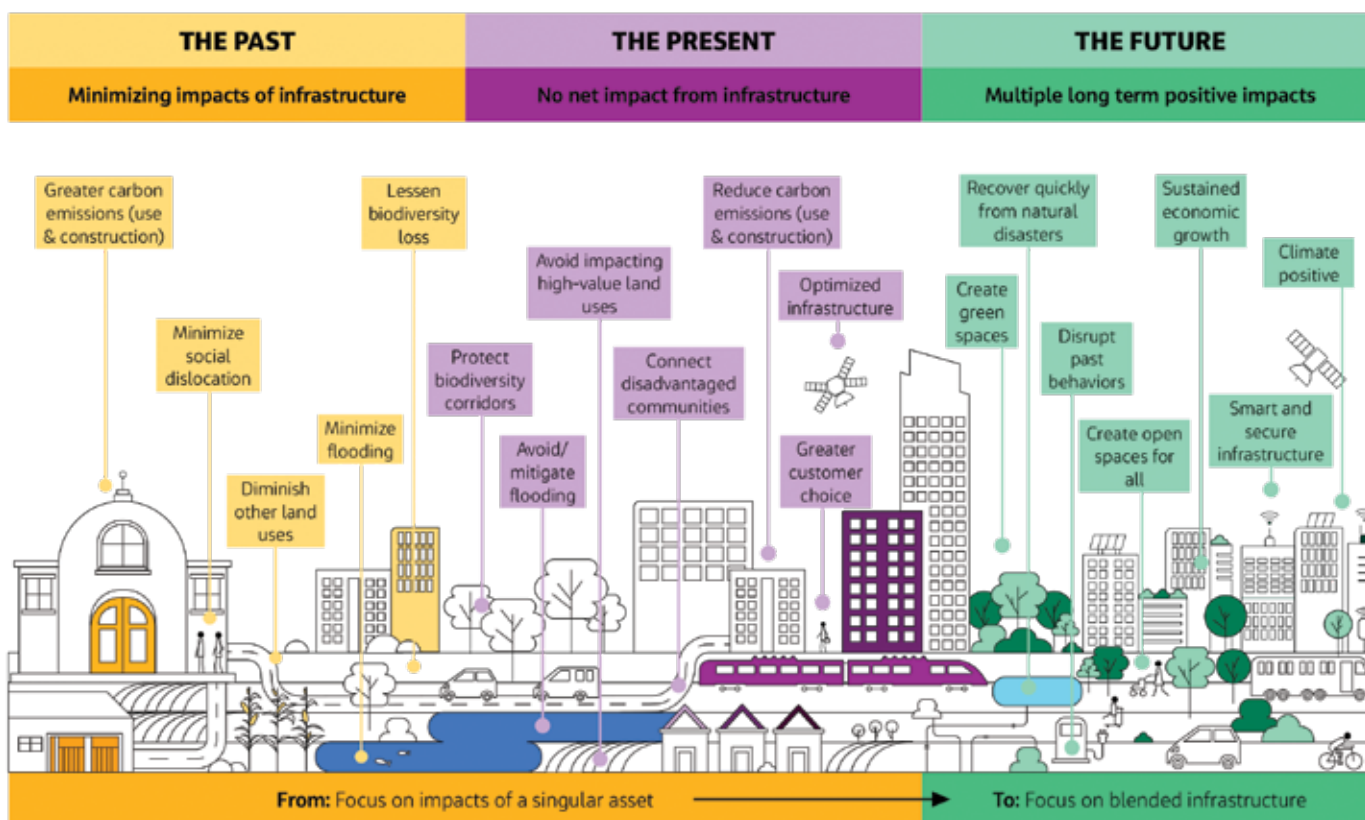
respondents expect ESG requirements to influence their projects and programs in the future.

BLENDED INFRASTRUCTURE IN ACTION

Brisbane 2032 Olympic and Paralympic Games

Hosting Brisbane 2032 presents an opportunity for Queensland to create legacy outcomes over the next 20 years – 10 years before and 10 years after the Games. Their plan will drive economic, social, cultural, environmental, and built environment opportunities that ensure lasting benefits before, during and after the Games.

Source: Brisbane 2032 Olympic and Paralympic Games Legacy Plan



The infrastructure evolution (Source: *Beyond the Baseline*, Jacobs)

THE OUTCOMES REQUIRED THROUGH INFRASTRUCTURE ARE EXPANDING

In November 2021, the Global Infrastructure Hub publicly launched the Transformative Outcomes Through Infrastructure initiative. The initiative examined the stimulus spending announcements of G20 countries at the height of the pandemic and the outcomes those investments were targeting.

The GI Hub found that G20 governments are targeting six transformative outcome categories through infrastructure stimulus. These categories are broadly aligned with the United Nations Sustainable Development Goals (UN SDGs).

The GI Hub’s examination found the bulk of infrastructure stimulus already seeks to deliver against at least two of the transformative outcome categories per investment.

However, for infrastructure to realise its full potential and transformative obligations, infrastructure programs and projects must embrace as many, if not all, of these outcomes at every investment opportunity.

Category	Overview of transformative outcomes targeted by category	Specific transformative outcomes contained in the category
Environmental sustainability and regeneration	Enhancing the environment by regenerating ecosystems and biodiversity, maximizing resource recovery, eliminating use of finite resources and becoming carbon positive.	<ul style="list-style-type: none"> • Circularity • Environmental regeneration • Low carbon transition • Pollution reduction
Resilience	Building the capacity of individuals, communities, institutions, businesses and systems (natural and built) to survive, adapt, grow and thrive no matter what kinds of chronic stresses and acute shocks they experience.	<ul style="list-style-type: none"> • Disaster and climate adaptation • Social cohesion
Inclusivity	Improving the quality of life and wellbeing of individuals, specifically by reducing inequalities and inequity in all its forms.	<ul style="list-style-type: none"> • Inclusive mobility • Digital connectivity • Affordability and access to services
Research and Development (Disruptive Innovation)	Creating new products and services that are more useful and valued, thereby developing an enduring innovation culture.	<ul style="list-style-type: none"> • Disruptive innovation
Digital/InfraTech	Achieving rapid technology advancements as a result of infrastructure either scaling-up or advancing a new or existing secure (physical, information, operational) infrastructure technology.	<ul style="list-style-type: none"> • Digitalization • Cyber security • Digital connectivity
Economic development	Supporting sustained and diverse growth that drives job creation and a rise in living standards.	<ul style="list-style-type: none"> • Job creation • Economic growth

Six categories of transformative outcomes through infrastructure stimulus (source: *Beyond the Baseline*, Jacobs)

“We won’t have a successful project unless a focus on the future impact is at the heart of all our decisions.”

WHY THE URGENCY?

While the forecasted investment speaks to a 20-year horizon, there are reasons to believe it may be a limited-time offer. This could translate to a limited window to realise transformative outcomes at the pace and scale currently possible.

As the global COVID-19 pandemic took hold, governments around the world rapidly committed to stimulus initiatives designed to not only drive economic recovery post-COVID-19 but also to make the world more sustainable, resilient, prosperous, and inclusive. The Global Infrastructure Hub estimates this stimulus could represent a 45% increase in the average yearly infrastructure investment across the G20 if spent between 2021 and 2023.

However, we are seeing initial drivers for this spending being progressively overtaken by more recent, and in some parts of the world, just as calamitous events.

Global resource capacities are becoming stretched, and medium-term inflationary and supply chain pressures are significantly impacting project budgets. The desire and political will to spend at the current pace and scale may be eroded just as quickly, as delivery costs mount and returns on investments deteriorate. This increases the need to urgently define and value the return from transformative outcomes as part of infrastructure investment.

The growing global talent shortage further compounds the capacity to achieve transformative outcomes within the available funding period.

We have other reasons to adopt a sense of urgency, the most important being the pressing need to realise the transformative outcomes themselves.

CYBER SECURITY

Cyber security must be considered as a transformative outcome of program delivery. Secure environments can be achieved by addressing physical, information, and operational technology security profiles in an integrated manner.

WELLBEING

Projects are expected to improve individual and community wellbeing. Wellbeing determinants include education, skills, employment, health, housing, income, and quality of and access to the natural environment.

ENVIRONMENT

There is an urgent need to avoid global warming beyond 1.5°C (compared to the pre-industrial period) and actively reduce carbon emissions. Every infrastructure project must strive to meet or exceed net-zero targets.

THE OPPORTUNITY IS A CHALLENGE FOR LEADERSHIP

Realising transformative outcomes at every investment opportunity is not easy. Our industry has a strong bias towards rewarding cost-efficient delivery over increased benefits. Governments are routinely challenged for overspending on projects, with little question of whether the return on investment compensated for the increased spend, or whether they had met their carbon budget. Commercial project delivery organisations are geared to maximise profits to shareholders, not to maximise benefits on the projects they deliver.

These challenges must be addressed through strong leadership at government, stakeholder, owner, and delivery team levels. We need visionary political, infrastructure, project and community leadership that takes responsibility for achieving transformative outcomes, and steers teams effectively both during and after delivery to create positive, lasting legacies.

As Nick Smallwood, CEO of UK’s Infrastructure and Project Authority, put it in McKinsey’s, Sept 2021 report *‘Delivering sustainable infrastructure: Insights from industry leaders’*: “We won’t have a successful project unless a focus on the future impact is at the heart of all our decisions.”

HOW CAN WE DO THIS?

A tricky question, best answered by starting with two much simpler questions:

1. What leadership attributes do current and emerging infrastructure leaders need to lead the charge on realising transformative outcomes through infrastructure?
2. How can leaders acquire these attributes?

Our team at Jacobs explored each of these questions in detail in our recent paper, *Beyond the Baseline Part 1: Leading infrastructure teams to deliver transformative outcomes*. We outlined several key attributes and abilities that we believe collective infrastructure leadership must possess to instil the culture and behaviours needed to embrace and adopt strategies that will realise transformative outcomes.

We also outlined a few strategies that can be implemented at a jurisdictional/ organisational level and at a program/ project level to help develop these attributes in our people. Committing to developing adaptable and resilient leaders by providing ongoing professional training and development for people is key.

Key attributes and abilities that collective infrastructure leadership must possess:

- Fully appreciate the complicated and dynamic nature of the strategic operating environment
- Have clear values and communicate these values
- Be able to mobilise private capital and partner with an array of potential investors
- Be exceptional at building and leading diverse teams
- Have the experience needed to deliver complex projects
- Have an entrepreneurial spirit
- Be politically astute and able to collaborate across government(s)
- Be excellent communicators
- Implement agile organisational structures with clear plans for resourcing both now and in the future
- Be data and analytics driven
- Be comfortable with disruption and change
- Commit to a learning-based approach
- Create an environment that values and facilitates cooperative relationships with partners.

LET’S SEIZE THE DAY

It’s exciting to be at the forefront of this once-in-a-generation opportunity to achieve transformative outcomes at scale. There is so much opportunity within our grasp, but it will take deliberate effort and strong leadership, acting with urgency to realise it.

We believe the AIPM, and all of us as members, have a significant role to play. As the peak industry body in project management, and as industry professionals, it is incumbent upon us to guide our governments, stakeholders, owners, and delivery teams to take advantage of this once-in-a-generation opportunity.

Aaron Hudson MAIPM CPPE is a member of AIPM and the Asia Pacific Regional Solutions Director for Project and Program Management at Jacobs, which is an AIPM Organisation Member.

AIPM’s newly released annual report, ‘*The State of Project Management in Australia*’, is based on a survey of the profession conducted with KPMG Australia. The report survey was conducted from July to August 2022 amongst AIPM members with 329 respondents working in project management roles across a range of industries.

Download a copy of the Report at: <https://aipm.com.au/reports/the-state-of-project-management-in-australia-2022/>



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ADDRESSING THE MENTAL HEALTH IMPERATIVE IN THE CONSTRUCTION INDUSTRY

By Tom Karemacher, Vice President - Asia-Pacific, Procore Technologies

The construction industry is a battlefield, in more ways than one.

In addition to the widely reported rise of Australian and global building companies on the brink of collapse, chronic labour shortages and supply chain issues, the physical dangers of working in the construction industry are having a knock-on effect on the mental wellbeing of workers. With this, business leaders need to ensure they are doing everything they can to support their workforce.

Worryingly, research by Australian College of Applied Professions (ACAP) as part of its *Nationally Representative Survey of Australian Workers* showed that nearly 50 per cent of Australian employees are afraid to be open about their mental health issues at work for fear of stigmatisation.

Moreover, a new industry poll from Procore found that over half (52 per cent) of Australian construction leaders report losing skilled workers due to higher levels of stress and burnout.

Respondents to Procore’s survey acknowledged the mental health impact of the skills shortage on their workforce, both onsite and in the office — reporting an increase in work health and safety (WH&S)

incidents, including emotional wellbeing cases. 52 per cent of respondents also agreed that the industry needs to improve how injured workers are supported with their mental health.

In response to this growing concern, the industry has adopted more mental health-related policies over the past 12 months. More than half (54 per cent) of construction leaders state their business has invested in more mental health resources to support the rising stresses, fears and anxiety of all staff in need.



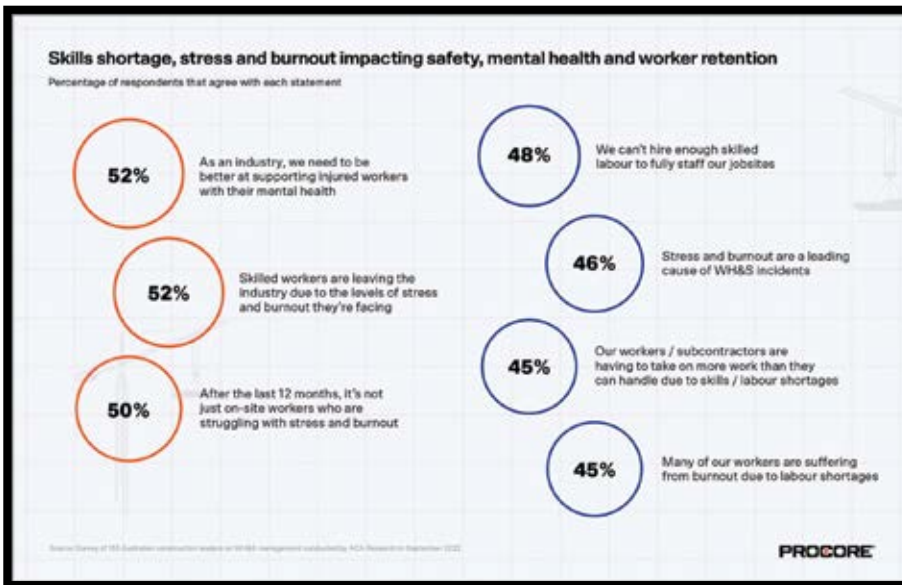
HOW TO BUILD A WORKPLACE FOR OPTIMUM MENTAL HEALTH

Creating a more open and accepting culture around mental health starts from the top down.

Leadership initiatives must incorporate clear information and guidance that removes the stigma of mental health issues and discourages any lingering attitudes, like the idea that workers should “just toughen up”.

Australian construction companies must establish accessible resources and programs that offer ongoing support and training to all levels of the workforce. This includes adopting a regular check-in philosophy, where communication is a two-way street that promotes compassionate evaluation, the ability to share and understand both sides of the management/employee equation; and, most importantly, an open, non-prejudicial and supportive environment.

The Australian suicide prevention organisation, *R U OK?* which champions connection through communication, is a step in the right direction. This is confirmed by Harvard Business Review research, which found that almost 40 per cent of global employees were not asked at their company if they were doing okay.



National Mental Health Month help to raise awareness of mental health within the broader Australian community.

LEVERAGING TECHNOLOGY TO IMPROVE WORKER SAFETY

The National Skills Commission's 2022 Skills Priority List reveals that construction managers rank as the fourth highest in-demand skillset across all industries. With 4,984 construction vacancies in Australia, almost half (48 per cent) of respondents to Procure's poll say they can't fill the demand for skilled labour to fully staff their worksites. There is no doubt that this increases pressure on other workers, leading to increased levels of burnout across the industry.

But the good news is that Australian construction companies are implementing technology solutions to improve site inductions, training and workplace safety methods.

In 2022, 34 per cent of respondents have a dedicated solution in place to manage safety: an increase of 10 per cent on last year; and 63 per cent of construction businesses are analysing data to predict potential risks, which is more than double the response of 30 per cent in 2021.

Long-term investment in the quality and safety of the global construction industry is a driving force in not only streamlining efficiencies but in doing so, minimising safety risks and maximising the health and wellbeing of its workforce.

"...developing a psychologically safe workplace depends on creating a sense of belonging and a culture of inclusivity"

Simply put, it costs nothing to inquire about the wellbeing of your colleagues but showing an interest in your people will help to regulate and motivate your organisation's greatest asset. After all, developing a psychologically safe workplace depends on creating a sense of belonging and a culture of inclusivity.

EDUCATION LEADS TO INTEGRATION

Mental health, safety and wellbeing measures are all sound initiatives, in theory, but how can leaders and managers put them into practice in a workplace setting?

Providing educational resources is imperative. This is particularly important because a large percentage of workers might not raise their hand for help — for fear of being met with a lack of understanding or made to feel unfounded shame.

Stamping out the stigma of mental illness starts with an emphasis on pragmatism and acceptance. Initiatives like the Mental Health Foundation of Australia's

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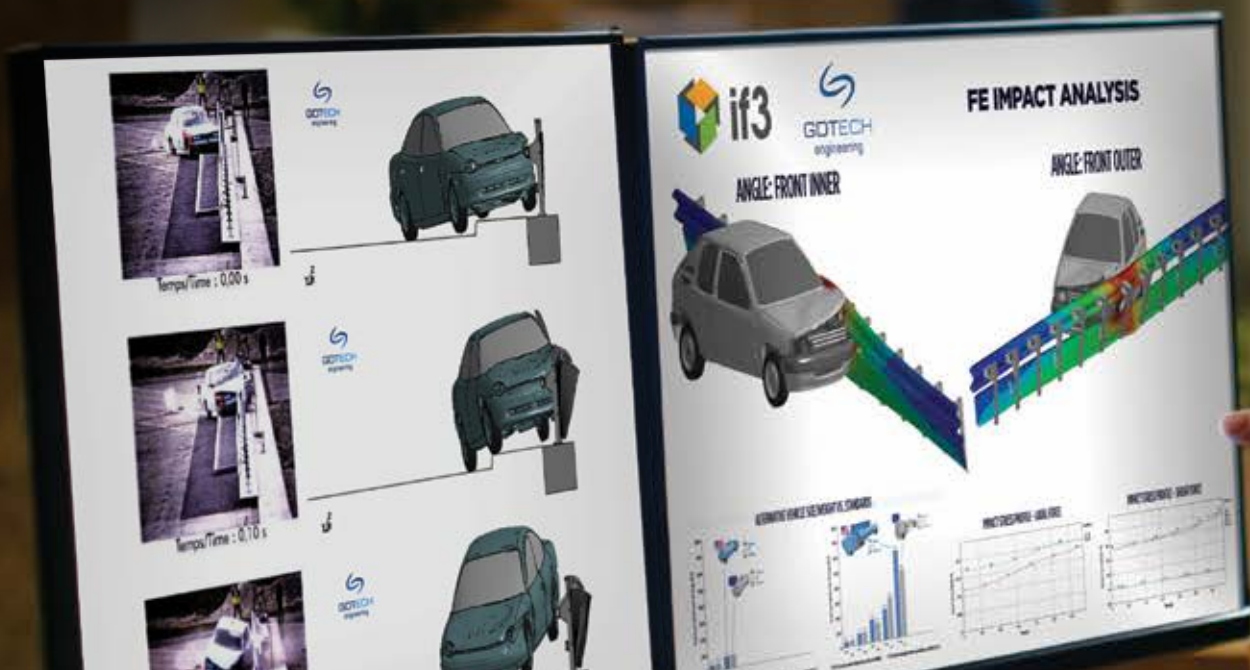
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TECH KEEPING CONSTRUCTION ON-BEAT FOR THE LONG-TERM

By Warren Zietsman, Managing Director of IFS Australia and New Zealand

Despite being notoriously slow in digital adoption, the construction industry has remained remarkably resilient. It has long played a vital part of our local economy, generating \$360 billion in revenue – 9 per cent of Australia’s GDP – and employing over 1.1 million workers.

But talk of an economic downturn and energy price hikes now has the industry worried.

The cascading series of local inflation, international sanctions and pandemic-related disruptions have not only thrown global supply chains and economies into turmoil, but reinforced what we already knew – the construction is facing a reckoning and can no longer lag behind on the adoption of digital innovation.

Spiralling costs and limited resources have made major projects untenable, leaving giant monoliths sitting idle and unfinished across our major cities. With a number of key industry heavyweights experiencing financial difficulties, or worse – administration. Only recently, we saw Lanskey Construction and Probuild enter administration, so this is a very real concern for the industry as a whole.

These challenges have been a catalyst for further technology investment. But there are still a number of obvious barriers – lack of understanding, outdated practices,

technology silos and user behaviours – that limit the effectiveness of the technology to alleviate pressure and stimulate growth.

In uncertain economic times, the inability to achieve digital transformation and integration will be at the detriment of construction companies.

So how do we shift the dial from ‘keeping the lights on’ approaches to a sophisticated, integrated model that span from conception to construction?

“In uncertain economic times, the inability to achieve digital transformation and integration will be at the detriment of construction companies.”

END-TO-END VISIBILITY

Project management in construction is akin to conducting a symphony orchestra – ensuring that your team can work in unison while keeping everyone in time – finding that perfect balance. For things to work correctly, the detail and precision of each section (or team) to both get things

right, as well as coordinating with others, is crucial to the balance of success.

So where does end-to-end visibility come in?

By using a combination of IoT sensors to connect the dots and enable cloud-based reporting to create a centralised data hub as a single source of truth, project managers have precise detail of what is happening across the build, providing full visibility of their operations. This enables them to efficiently project manage, compress timelines where required and allocate resources effectively.

ADDING FORESIGHT WITH AI

But what else can the data do? With clean and accurate data now at touching distance to business leaders, how this can be utilised is where advanced enterprise IT architecture takes a leap into the future.

Enter artificial intelligence.

The data captured from the end-to-end systems can create a digital twin, that uses artificial intelligence to map scenarios before they happen. With many builds being multi-year operations, unlocking the ability to plan ahead for any circumstance can transform the once unforeseen into a foreseeably viable solution.

From supply chain disruptions, to fluctuating materials costs – the risks of

snowballing into financial catastrophe in construction are a very real threat. It's clear that domestic onshoring is a short-term fix at best and a far from ideal solution financially. But by harnessing the power of AI-fuelled intelligent data – business leaders can get ahead of the curve to ensure projects can remain both cost-efficient and on time.

KEEPING ASSETS READY

At the heart of construction projects are expensive and highly detailed assets that are critical to any build. Much like an orchestra without its instruments, a construction company without its assets is an ultimately futile proposition.

Downtime on vital assets means inaction, and two weeks out of action can snowball into months of delays, proving costly, inefficient and damaging to a firm's reputation. Predictive asset management ensures that important components are serviced before they are in need of major repair, allowing for more time in-field and less time out of action.

So, what does this all mean for the construction industry?

It's a challenging time for the industry, and the ability to deliver projects on time

and within budget is being surpassed by the ability to deliver them at all.

It's time for construction companies to embrace the future.

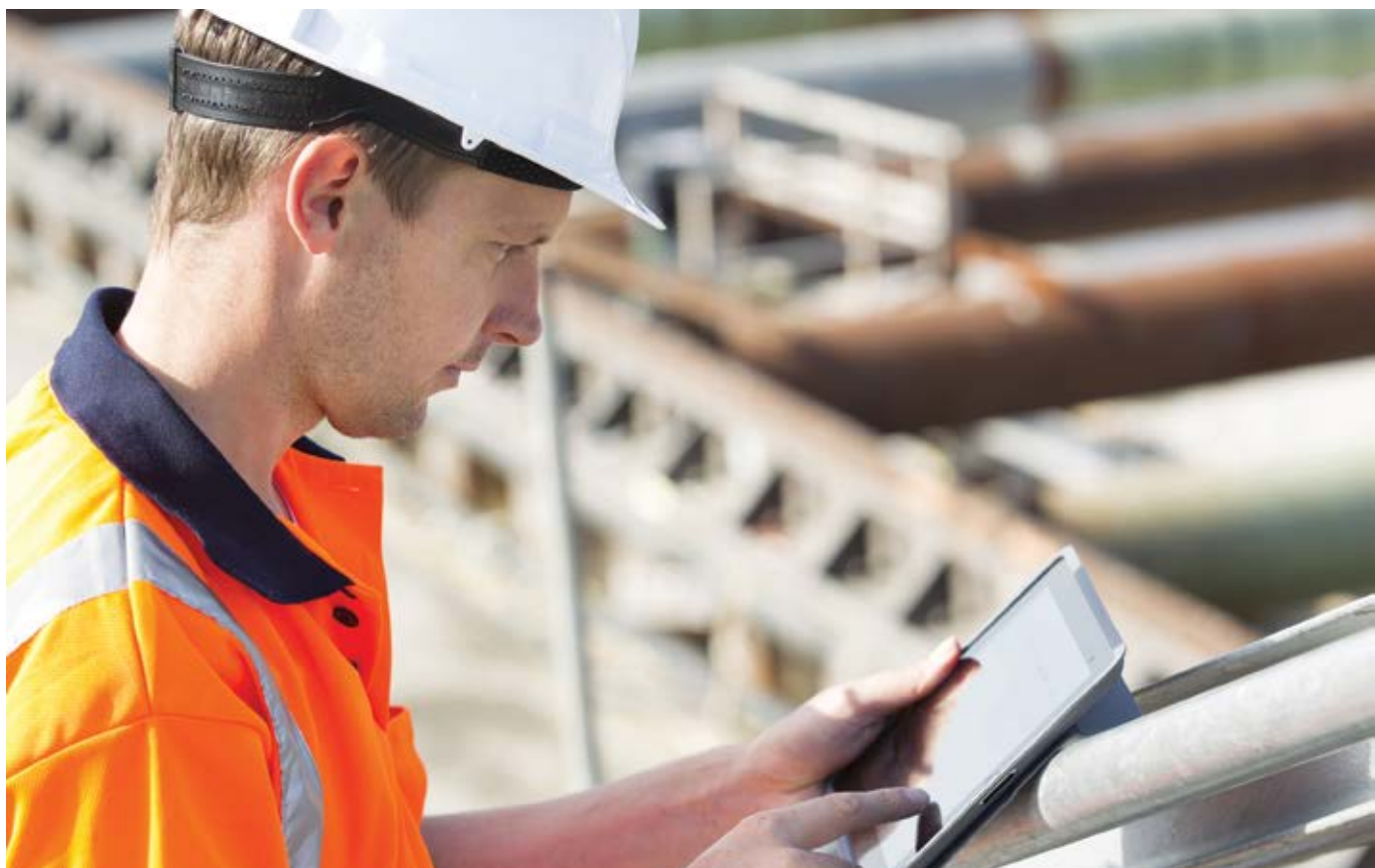
Modern IT infrastructure will fast become the foundational framework to which construction companies develop their operational procedures. A sophisticated, integrated model that spans from conception to construction creates connected experiences between people, processes and projects. Those who embrace it will have the competitive advantage to get through these uncertain times.

Like they say, the show must go on.



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.....
Warren Zietsman is the Managing Director for IFS Australia and New Zealand. He is responsible for the delivery of modern enterprise systems that create value for IFS's customers, developing a local business strategy, building its customer base, and expanding the company's network of quality resellers. With more than 24 years' experience in the business sector, he is highly adept at building and leading high-growth companies and teams, and developing new markets across APAC, AFRICA and EMEA.



Exterior cladding solution brings a fresh slant to modern home design



Transforming Australian modern home design and complementing the increasing trend of vertical façades on modern homes, James Hardie has launched their latest innovation, Hardie™ Oblique™ Cladding, a durable fibre cement 14mm shiplap board with wide grooves and angled edges. Offering a point of difference, it is the only Hardie™ exterior cladding product with a slanted groove edge that mixes shadows and highlights, providing interest and depth.

Produced in 200mm or 300mm widths with 175mm and 275mm groove spacing, the two board widths and groove spacing options of Hardie™ Oblique™ Cladding present design versatility with multiple installation options and bespoke groove combinations possible. These include the simple repetition of one width to an alternating rhythm, or an artful staggered combination of two widths, delivering a fresh, contemporary aesthetic.

Improving jobsite efficiency, Hardie™ Oblique™ Cladding does not require specialist

installers, reducing the number of trades on site, while the new Hardie™ Castellated Batten method makes vertical installation and bespoke arrangements of Hardie™ Oblique™ Cladding straightforward. The horizontal castellated battens are an easier, more cost-effective way to do vertical installation than with metal top hats behind every joint.

When used vertically, the new cladding style helps create fresh designs and signature looks to excite homeowners. Two separate panel lengths make vertical installation efficient and can help to reduce wastage. The 2750mm panel lengths suit common wall heights, while the 4200mm length gives tall walls a continuous look.

Bringing modern design to life with its wide grooves and bespoke design flexibility, Hardie™ Oblique™ Cladding is perfect for re-cladding existing homes or using from the ground up for a new build or renovation. Being similar in appearance to standing seam metal cladding,

the easy-to-install fibre cement shiplap boards represent a durable, high-value alternative.

Hardie™ Oblique™ Cladding won't warp or split like conventional timber cladding can, no matter how dark the colour.

Made with Hardie™ fibre cement, it will stay looking good. It is rot resistant and resistant to damage from moisture and is engineered to stand up to harsh Australian conditions, including coastal conditions.

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For more information, visit: <https://www.jameshardie.com.au/productrange/hardie-oblique-cladding>

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