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# CONSTRUCTION ENGINEERING AUSTRALIA

APR/MAY 2020

# V6.02



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# contents

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- 2 Editorial
- 4 Industry News
- 12 Cover Feature: Aquatic Facilities Special
- 20 Aquatic Facilities - Pool Covers
- 22 ACRS Feature
- 26 Project Brief: Floth
- 30 Cranes and Lifting
- 32 Product Brief: Aussie Pumps Fast Site Dewatering
- 34 Health and Safety
- 36 Company Profile - Warrgambi
- 38 Equipment Focus
- 40 National Precast Feature
- 44 Case Study: Enerpac Stadium Roof
- 48 IPWEA NSW News
- 52 Special Report: Lessons in Resilience
- 55 Product Focus: Halogen Free Cables



4



22



30



44



## About the Cover

Part 1 of this issue's 2-part cover feature looks at the importance of independence when it comes to selecting a specialist aquatic engineer for an aquatic facility construction or refurbishment project. In Part 2 of the feature, we look at how a focus on quality and attention to detail have kept Crystal Pools at the top of the pool construction industry for over six decades.

► Turn to Page 12 for the full story.

**COVER IMAGE:** Manly Aquatic Centre, Manly NSW  
**ARCHITECT:** Michael Davies  
**STRUCTURAL, CIVIL & AQUATIC :** GNPF





# Building for a Brighter Future

Dear Readers,

While we suspected that the Covid-19 pandemic would have a massive and devastating impact on the entire planet, it's only as we continue to experience it, that we are beginning to understand just how far reaching the impacts of this unprecedented global disaster are. For all intents, Covid-19 has, and for that matter continues to have, a previously unimaginable impact on the day-to-day lives of pretty much every human on the planet.

Together with the horrific death toll and almost unimaginable levels of human suffering (both physically, emotionally and financially) Covid-19 has permanently changed the way that humans will interact both with each other and the environment as a whole.

Then, of course, there is the economic toll.

Put simply, if in late 2019, someone had suggested to you that the levels of government borrowings and debt and that have been undertaken in Australia over the past four months would be widely welcomed and lauded by many as 'global best practice', you would have likely thought they'd taken leave of their senses.

Yet, there we are – nearly \$200 billion committed so far and an expected deficit of \$500 billion... and by international standards, we're doing extremely well.

Perhaps most importantly, we, as a nation, can be fiercely proud of our collective achievements in managing Covid-19. I can say with full confidence, that when we started locking things down during February, nobody but NOBODY, would have dared to hope that we would pass the '100-days since first case detected' mark with less than 100 fatalities. That's not to downplay the seriousness of the illness and the sheer tragedy of the 97 lives that have been lost so far... but compared to the

greater majority of countries, it's clear that the measures implemented across Australia have been directly responsible for saving many thousands of lives.

While I'm at it, I would also like to offer my sincere thanks and congratulations to our Governments for their unprecedented levels of cooperation across all tiers, their rapid and decisive responses and, perhaps most importantly, the total lack of partisan politics. As well as helping to minimise the impact of Covid-19 and control its spread, the past 3 months have provided clear evidence of what can be achieved when party politics and self-interest are 'parked' in favour of working together for the true *'greater good of the nation'*.

That said, we are clearly not done yet. In fact, we're not even beginning to emerge from the 'danger zone' (heading into winter places us at a distinct disadvantage). Even as I type this, individual states are only now getting ready to commence Step 1 of reopening the country, and even if that all goes to plan, we're not scheduled to be through that '3-step reopening' process until the end of July at best.

With that in mind, as challenging as the task of shutting down and reopening an entire country and economy is, I believe 'the Covid-19 shutdown' has presented us with a unique opportunity in terms of our nation's growth and development – especially when it comes to construction of new infrastructure and public facilities, improvements and enhancements to existing infrastructure and asset management and maintenance in general. It also provides us with a unique opportunity to reflect on how we, as humans, interact with our environment, and how we can improve that relationship.

Put simply, with so many public facilities still closed, and many not scheduled to return to full operation for the foreseeable

future (read: *until there's a vaccine*), now is the perfect time for maintenance and redevelopment.

While it may seem, on the surface, to be counter-intuitive to 'spend' money at a time where government debt is at an all-time record high, I offer this simple response:

- Capital expenditure on worthwhile new infrastructure and facilities, or improvements to existing infrastructure or facilities (read: *actual construction and maintenance, not endless feasibility studies*) is an 'investment' in our future – and an extremely worthwhile one at that; and
- Major infrastructure and construction projects offer outstanding levels of gainful employment and subsequent wide-spread economic activity - both of which are critical in ensuring that Australia can 'bounce back' from the Covid-19 shutdown in the shortest possible time and in the best possible shape.

Perhaps most importantly, this opportunity exists across Australia in its entirety, not just in the major capitals.

While I feel certain that, given a choice, everyone would have happily foregone Covid-19 in its entirety, it is and always will remain a harsh reality in our world. And while it has caused almost immeasurable damage and suffering on so many levels, let's at least try and salvage some positives from the unintended consequences by using this unique circumstance to build / rebuild for a brighter future.



**Anthony T Schmidt**  
Managing Editor



# IS YOUR AQUATIC ENGINEER TRULY INDEPENDENT?

There's no such thing as a 'one size fits all' solution for commercial pools and aquatic centres. From pool design, construction, heating, filtration, HVAC and any other number of factors, EVERY pool and aquatic centre design needs to take into account not only the clients specific needs, but also the very specific engineering requirements of the site.

Making sure you get the right planning, design and engineering advice from a fully independent, professional aquatic engineer – free from any conflict of interest - is paramount. It's the **ONLY** way to be sure that you're getting **ALL THE FACTS** and **ALL THE AVAILABLE OPTIONS** to meet your needs.

When it comes to choosing and Aquatic Engineer – choose wisely... it may end up being one of the most important choices you make.



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# BUILDING RESILIENCE

## ASITE LAUNCH NEW CONSTRUCTION REPORT EXAMINING THE KEY TRENDS SET TO SHAPE 2020

Construction and infrastructure tech specialists Asite recently launched a new research report into the trends set to impact the construction industry globally in 2020, including Asia-Pacific. The report also examines the impact of the current COVID-19 pandemic and considers how this will impact the industry in the coming 12 months.

Research was conducted on different regions – namely, Asia-Pacific, United Kingdom, Europe, the Middle East, North America, and India – to examine key trends in those regions and their relatedness. The snapshot report delves into some of the most innovative insights this year. It aims to provide the construction industry with a clear view of its future and determines what the industry needs to do to move forward, overcome current challenges, and build on the progress taking place.

Nathan Doughty, Asite CEO, said: “We are delighted to launch our first research report of 2020, focusing on the construction trends set to impact the industry this year.”

“When we began our research, we could not have known how drastically the world would change in such a short time. This change and the impact of the COVID-19 outbreak has impacted our findings and will continue to shape our industry long after the pandemic has passed.”

“Now more than ever, I believe our industry needs to come together and operate as the global industry it is to solve future challenges and build resilience. This report will hopefully mark the beginning of this new chapter,” Mr Doughty added.

In its conclusion, the report demonstrates how shared trends and developments across regions might offer a solution to the current crisis. Digital engineering and the establishment of strategic operating models are suggested as key to building resilience and safeguarding the industry.

The report also calls on the industry to recognize their interdependence and develop a strategy that is both regionally engaged and globally responsive.

Key takeaways from the report include:

### ASIA-PACIFIC

#### Asian construction boom set to ease following COVID-19

The infrastructure and construction industries were projected to

experience a boom in the coming five years, with Asia forecasting a CAGR of 8.9% by 2023. COVID-19 will impact this growth as site closures across the region result in completion delays. Although sites are beginning to reopen, the initial issues will affect the industry.

#### Rising demand for construction equipment

The demand for new products in the construction equipment market is rising with an expected CAGR of 5% between 2019 and 2025. Smart technologies and their positive impact may be brought into focus, thus increasing their usage in the region. An example is the use of drones to conduct accurate and all-encompassing site inspections.

#### Increase infrastructure investment linked to urbanization

Infrastructure will see strong investment across Asia-Pacific, linked to an increase rapid urbanization in many countries in the regions. Vietnam had planned to increase urbanization from its current 27% to a 45.2% by this year. Ho Chi Minh City is at the heart of this plan as it aims to become a megacity and Vietnam's first smart city by 2020 this year.

Projects are being undertaken across Asia-Pacific to accommodate increase populations; including Hong Kong's Hospital Development Program which sees an investment of HK\$200 billion to transform hospitals across the region.

#### Australia's industry growth linked to infrastructure investment

From 2020, Australia's construction industry is set to regain growth momentum. This growth is attributed to investment in the country's transport infrastructure, which will begin receiving an investment of US \$58.9 billion this year. The report predicts this growth will affect other areas of infrastructure development as more investment in the sector continues.

### WORLDWIDE

#### Impact of European Green Deal

Building and renovating in an energy and resource-efficient way is one of the cornerstones of the European Green Deal. The report envisions the construction industry will begin to feel the impact of





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the deal during the first months of 2020 as legislation ensuring the use of longer-lasting products and recycled materials on EU sites come into place.

#### **North America Smart City dominance to continue**

The smart city platform market is expected to register a CAGR of 18% between 2020 and 2025. North America is already the leading region in the area. We will see this dominance continue and grow as the adoption of smart building technologies becomes common practice in the US with future focus on transportation and energy, New York's MTA will become part of this program as it continues its current transformation.

#### **Post-Brexit Decline before Stabilizing**

65% of the construction industry says that they are either concerned or highly concerned about the outlook for the UK industry post-Brexit. As a result, there is the worry that this may lead to a possible dip in construction activity in 2020. Therefore, it is pertinent that focus shifts to building resilience and preparing for this potential decline.

#### **Substantial Infrastructure Development in Dubai in preparation for Expo 2020**

Despite the global pandemic, Dubai will continue to prepare for Expo 2020, adjusting planned preparations as required. Over the coming months, numerous infrastructure projects will be completed to accommodate the needs of the huge 173-day event.

Industry data shows that, as of March 2018, the total value of the top 10 active projects linked to Expo 2020 will exceed AED 120 billion.

#### **Growth of the Indian Modular Construction Market**

Along with an increase in BIM usage, modular and prefabricated construction projects are expected to gain popularity to help expedite residential and commercial building projects. Considering the government's focus on sustainability and energy-efficiency, this projection makes sense. Moreover, statistics indicate that the modular construction market will stand at US\$157 billion by 2023.

To read the report in full please visit: [www.asite.com](http://www.asite.com)



# IPAF REPORT GIVES NEW INSIGHT INTO MEWP ACCIDENTS WORLDWIDE

Accidents while using Mobile Elevating Work Platforms (MEWPs) are proportionally more likely when working in public areas or alongside roads than on controlled work sites such as construction sites, commercial or rental premises, according to the latest detailed safety analysis from the *International Powered Access Federation* (IPAF).

Accidents on construction sites account for the joint highest average number per year, but as MEWPs are used much more widely in construction than in other sectors and locations, they are in fact proportionally less likely to occur on a controlled work site than in a remote location or a public area, such as alongside a road, the report shows.

As well as the increased proportional risk of an accident occurring when working away from controlled job sites, the new report identifies recurring underlying

causes of incidents involving MEWPs as falls from the platform, electrocutions, entrapments, MEWP tip-overs and MEWPs being struck by another vehicle. This is in line with previous years' fatal accident analysis and demonstrates yet again that the industry should focus on ways to reduce underlying factors common to these types of incident.

The report found that the industries in which deaths most frequently are forestry and construction, with maintenance and electrical service sectors third and fourth respectively. Both forestry and construction had an annual average of 19 reported fatalities, but the total number of days worked using MEWPs in construction worldwide is far higher than in forestry, so a fatal accident is proportionally more likely in the latter than on a construction site.



IPAF's *Global MEWP Safety Report 2016-2018* presents key findings from the federation's analysis of accident statistics gathered through its worldwide accident reporting project, which has incident reporting from 25 countries around the globe.

The report is now available to view or download from: [www.ipaf.org/accident](http://www.ipaf.org/accident)



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## DESIGNING A CITY WITHOUT CARS – FOR THE SAKE OF THE KIDS

More than half of Australian households own two or more motor vehicles, while only seven per cent own none – we are, without a doubt, a car country. However, while countless advertisements celebrate the freedom cars provide, University of South Australia urban planning researcher, Hulya Gilbert, says there are growing reasons to question the cost of that freedom, and even challenge whether it is freedom at all.

“There’s obviously the environmental impacts, and the health and fitness consequences of using cars, but there’s also a huge social impact,” Gilbert says.

“Despite the common view across the world that cars provide freedom and flexibility, increasingly we’re seeing the priority given to cars is infringing people’s ability and right to get around without one.

“That’s especially true of children, and the more we build our cities around cars, the more we rob kids and teenagers of opportunities to enjoy some independence and develop self-reliance.”

Gilbert’s research shows the assumption that most people travel by car dominates current transport discussions, which, in turn, has dictated the design and location of key places in children’s lives, such as schools and sporting clubs.

Once our cities are built that way, she says, it’s hard to move outside the plan.

“It’s not enough just to say, ‘kids need to walk to school more’,” Gilbert says. “In many situations, we have planned that possibility out of cities, and now it’s just not safe or practical for children to ride or walk to the places they need to go – so much so, that there are now perceptions that parents who do let their kids ride or walk are being negligent.”

Gilbert says a change in priorities by urban planners is needed to reverse this trend, and despite a growing interest in alternatives to the private car across the world, her research suggests we’re unlikely to see large scale shifts in travel behaviour unless we make the required changes to infrastructure first.

“That involves building and maintaining safe walking and cycling paths and associated infrastructure including green spaces, trees and pedestrian crossings, and reducing speed limits and traffic flow around those areas to ensure they’re safe.

“It also means ensuring public transport is connected to those active transport networks, and that key locations, such as schools and sports clubs, are located so they’re accessible by those modes.”

Developing these networks will not only benefit children and teenagers, Gilbert says, but also help other social groups currently disadvantaged by being unable to drive, including the elderly, vision impaired and lower income earners.

“At the moment, our cities and societies are set up based on the idea that having a licence and owning a car is the norm, and we often consider the lack of car ownership as a disadvantage. Our right to move around our cities without a car is not commonly considered.

“Now, even though it’s the case that most people have access to a car and travel by car in cities such as Adelaide, planning and thinking as if they don’t would open up many possibilities and opportunities which would accelerate progress towards less private car usage and the associated, wide-ranging benefits,” Gilbert says.

## VBA HOSTS RAPID INDUSTRY GUIDANCE SERVICE TO KEEP INDUSTRY SAFE AND OPEN

Keeping Victoria’s building and construction industry safe and open during the COVID-19 pandemic is now even easier, with the Victorian Building Authority (VBA) hosting a dedicated call centre providing rapid guidance and information on occupational health and safety matters.

The *Rapid Industry Guidance* service is an initiative of the Victorian Government’s COVID-19 Taskforce and provides a single point of contact for real-time information and advice tailored to the building and construction industry.

Workers, contractors, employers, industry associations and unions who call the Department of Health and Human Services’ Coronavirus Hotline on **1800 675 398** and select Option 5 will be transferred to the VBA’s specialist team where they can ask questions, clarify OHS matters and obtain expert advice on issues such as hygiene standards, physical distancing, screening of workers and the use of personnel hoists. On-site assistance may also be made available to address specific situations.

Any enquiries unable to be resolved immediately will be escalated to an Industry Liaison Officer appointed by the Department of Health and Human Services.

VBA Chief Executive Sue Eddy said ensuring the building and construction industry had access to reliable information would be critical to its success in navigating the challenges of operating during the coronavirus pandemic.

“Nothing is more important than the health and safety of Victorians. That’s why the VBA is doing everything we can to ensure workplaces are kept safe and building sites remain open during the coronavirus pandemic,” Ms Eddy said.

“Access to real-time advice and support through the coronavirus hotline will ensure the building and construction industry and the thousands of people it employs have access to information when they need it most while remaining safe at work.”

The launch of the hotline follows the publication of the Coronavirus (COVID-19) Guidelines for the Building and Construction Industry Victoria. Now in their third revision, the guidelines are developed and endorsed by the state’s building and construction unions, industry associations and government agencies.





## SUCCESS IN STOPPING SHIPMENT OF DANGEROUS LADDERS ENTERING THE UK

At a time when our hospitals are stretched to maximum capacity and we see demand for DIY products rocket as the public are forced to stay at home, the UK Ladder Association is delighted to report the newly opened Test & Research Centre in Soham - an independent product testing centre, funded and supported by the Ladder Association - has been instrumental in helping Suffolk Trading Standards Imports Team prevent 266 dangerous ladders from entering the UK. These dangerous ladders, likely destined for online sale to unsuspecting businesses and homeowners, could have compromised the safety of users and contributed to potential falls from height causing injury - or worse.

Last month, Trading Standards intercepted a suspicious shipment of ladders at Felixstowe and turned to the Test & Research Centre for assistance.

The suspect shipment contained two ladder products which claimed to be compliant to EN 131 ladder standard. Initially the ladders were held at the port due to missing the name and address of the producer and batch identification - both offences under Regulation 7 of the General Product Safety Regulations.

However, on further examination, the Trading Standards Officers had other concerns about these ladders. They questioned the multi hinge-joint ladders conformity with EN 131-4, so they contacted the Test & Research Centre for advice. After initial discussions, the ladders were put through "Critical Safety Fault Testing", where the ladders subsequently failed vertical load, strength and opening restraint tests. This testing has helped Suffolk Trading Standards Imports Team prevent 266 dangerous ladders entering the UK market all likely destined for online sale to unsuspecting businesses and homeowners. Trading Standards have not had a viable solution for an independent laboratory to test ladders - but they do now.

John Darby, Test & Research Centre General Manager commented: "It has been several years hard work to get the Test & Research Centre to where it is now. The industry felt that there was a problem with imported ladders not meeting the standards."

"Above all, they felt strongly enough about it to support the start-up of the Test and Research Centre. It appears from this work that their concerns were correct."

"Ladders fall under the *General Product Safety Regulations* in the UK. Product producers and suppliers must ensure that products placed on the market are safe. If you are buying and importing ladders into the UK, it is good practice to verify what the Manufacturer has told you. Independent certification, together with batch testing, give suppliers confidence in the supply chain, and would have prevented these dangerous products attempting to enter the UK," Mr Darby added. "To be able to help Trading Standards as one of our first clients has made the hard work worthwhile and we look forward to helping them in whatever way we can in the future."

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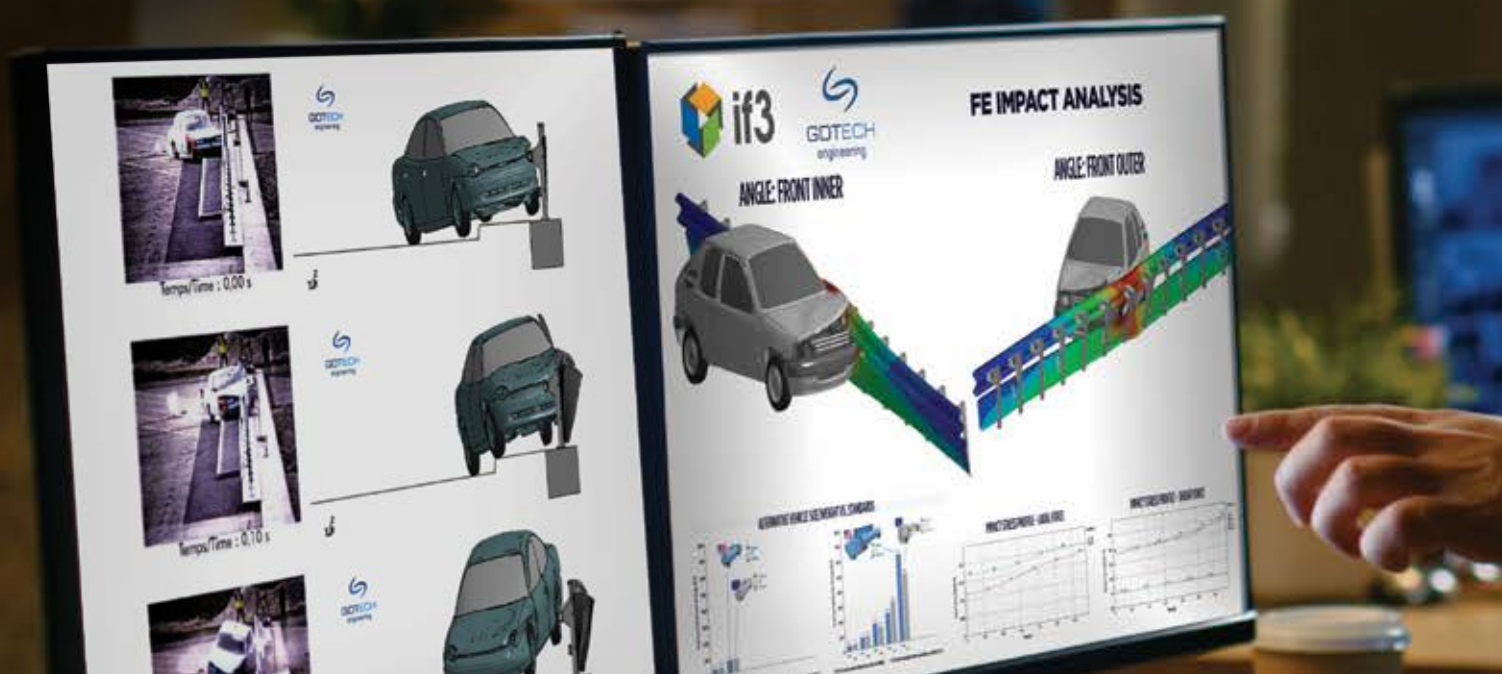
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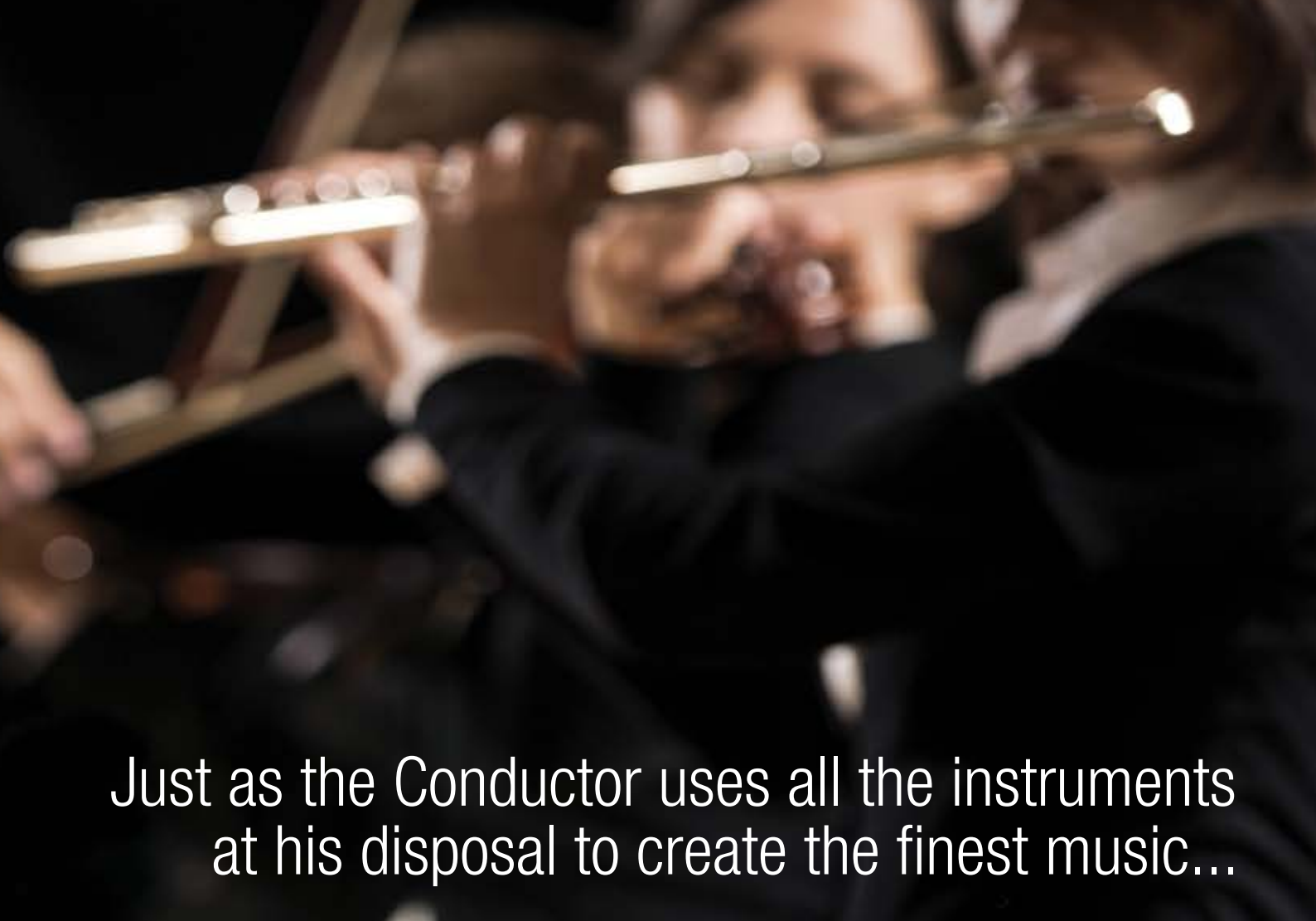
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# ENGINEERED FOR EXCELLENCE



## HIGHLIGHTING THE IMPORTANCE OF ENGAGING AN INDEPENDENT AQUATIC ENGINEER FOR YOUR POOL OR AQUATIC CENTRE PROJECT

**While no one could deny the major impact that the enforced Covid-19 lockdown measures have had the day-to-day lives of every Australian over recent months, there are some impacts that will last significantly longer than others. Indeed, there are aspects and activities that are likely not to return to what we previously considered 'normal operation' for many months or even years – if at all.**

**From a public facilities perspective, the enforced long-term closure of indoor sports and recreational facilities - including pools and aquatic centres - has been particularly severe.**

**Without minimising the severity of the impact of these forced closures, they have provided public and private sector aquatic facility owners and operators with an almost unique opportunity to conduct detailed inspections, maintenance, modifications and upgrades.**

Not surprisingly, the significant increase in maintenance and capital works (both in terms of repairs, refurbishments and new construction) that has occurred as a result of the enforced Covid-19 closures has highlighted a number of underlying issues and shortcomings in some facilities – many of which can be traced back to poor planning and engineering advice during the initial construction or subsequent upgrades.

Brad Fong, Director with leading structural and aquatic engineering specialists, Geoff Ninnes Fong and Partners (GNFP), explained:

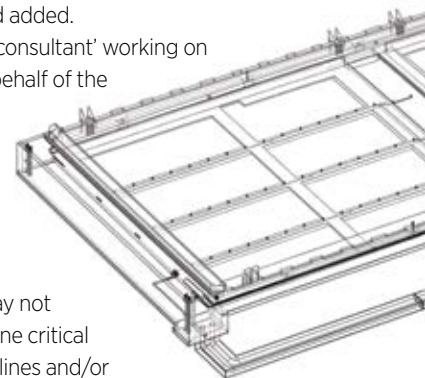
“In recent years we have seen a trend towards a ‘total package offering’ that sees all aspects of a construction or redevelopment project quoted and provided by the one supplier.”

“While at the outset, that type of offering may seem to deliver some initial cost benefits, it eliminates one critical aspect of the project – fully independent engineering advice.”

“It can also result in a serious conflict of interest,” Brad added.

“Having a ‘consultant’ working on a project on behalf of the main supplier – rather than an independent, qualified and certified engineer – may not only contravene critical probity guidelines and/or legislation (especially where Local Governments are concerned) it may also, more seriously, result in the construction of a facility which doesn't meet best-practice engineering, health or operational standards; or one that is not suited to the needs of the owner, operator or community.”

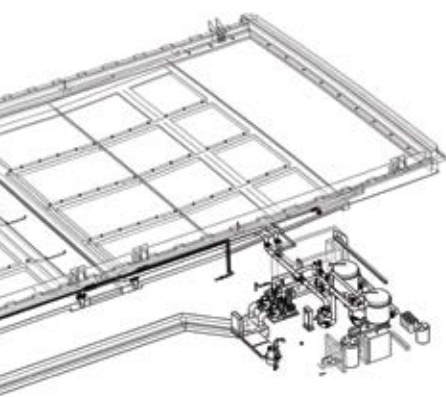
“While I realise those comments may at first appear to be somewhat self-serving







Shore School 50m pool  
Sydney, NSW



coming from an independent structural and aquatic engineer, they are really being driven by some of the situations that we're seeing around the country," Brad Fong said.

"From completely inappropriate structural designs, poor choice of construction materials or pool type, substandard construction, and poor quality or inadequate water treatment infrastructure, some of the issues we are seeing – in both new and refurbished facilities – are quite staggering in their seriousness."

## THE IMPORTANCE OF INDEPENDENCE

As with any major construction or refurbishment project, ensuring that your aquatic centre project is supported by appropriate, qualified engineering expertise is of critical importance – not just for the design and construction process, but also for the long-term safety and viability of the structures and equipment involved.

What's more, with commercial pools and aquatic facilities, there are the additional engineering challenges associated with the design, installation and operation of the associated water treatment infrastructure (including pumps, heating equipment, filtration and disinfection systems) to consider. As well as being critical in the ongoing safe and healthy operation of a commercial aquatic facility, this equipment can have a major impact on both the day-to-day running costs and 'environmental footprint' of a facility, especially if set at the wrong levels and location.

Put simply, poorly designed or inappropriate water treatment infrastructure can also literally 'make or break' a facility – either through skyrocketing operational costs or non-compliance with strict public health requirements.

### How do I know if my aquatic engineer is truly independent and has no conflict of interest?

- True Independence and no conflict of interests means no ownership or pecuniary interests with suppliers, contractors or builders.
- Conflict of interest arises when the consultant has a commercial stake in the decision making process, either related to the design and/or specification of specific equipment or pool types, or in influencing the choice of contractor.
- Consultants who have a commercial interest in the industry may quote unrealistically low fees in an effort to win the job, as they may be remunerated some other way. This creates an unfair advantage over consultants who quote on the basis of the actual time and cost of the undertaking the job.

Are your engineering consultants registered as members of the *Institute of Engineers Australia* and what is their NER status?

#### THEY SHOULD BE!

Members of the Institute of Engineers Australia not only have to hold a Bachelors degree in Engineering from a recognised tertiary education body such as a university or technical college, they must abide by the Institute's Code of Ethics which includes procedures to ensure that **information pertaining to perceived conflicts of interest are disclosed or released to relevant parties.**

Furthermore, engineers registered with the NER (National Engineers Register) must undergo Continuing Practising Development (CPD) to remain registered.

Conflicts of interest can result in specifications of one supplier and one system – even if it is not the best solution for that particular application. This can prevent other suppliers from being able to submit 'conforming' tenders, which in turn, can result in a market monopoly and inflated pricing.

This is precisely why Local Governments have guidelines and legislation to address issues associated with 'Conflict of Interest' – especially when it comes to consultants and other third-party entities associated with large tenders.

"Together with the risk of ending up with a pool or facility that is not appropriate to meet your needs, in many instances, the feedback we get from the industry shows that more often than not, these arrangements generally end up being a case of 'you get what you pay for,'" Brad Fong said.

"Not surprisingly, cut-price or abnormally low consultant's fees are usually directly related to the quality of the design and documentation."

"Taking a cut-price 'cookie cutter' approach to project engineering can result in poor quality 'off-the-shelf', incomplete



Australian Institute of Sport  
Canberra, ACT



drawings and drawings incorporating 'cut and paste' details which are not specific to the project at hand. It also often results in a lack of site-specific coordination between disciplines – especially between the pipework and structure – which can result in needless complexity and delays for builders or contractors while issues are ironed out on site," Brad added.

## GNFP – INDEPENDENT STRUCTURAL AND AQUATIC ENGINEERS

GNFP has been providing independent advice based on Australian and international best practice principles for the aquatics industry for over 25 years, using quality commercial grade plant which has been tried and tested over decades of performance in aquatic centres.

Fully independent and free of any conflict of interest, GNFP works with a range of Australian and international suppliers and contractors, covering an array of available pool and water treatment options and technologies.

"For us, our focus has always been placed squarely on recommending the best solution to suit to the client's particular requirements, Brad Fong said.

"When it comes to commercial pools and aquatic centres, there simply isn't a 'one size fits all' solution. That not only applies to the type and design of the pool structures and buildings, but also to the water treatment and other infrastructure involved."

"Swimming pools and aquatic centres are major assets. In fact, for many councils, their aquatic centre represents one of their largest single assets," Brad added.

"Importantly, pools and aquatic centres also represent a major cost centre in terms of ongoing operation and maintenance."

"Trying to short-cut processes by taking a 'one size fits all' approach to the design and construction of commercial

pools and aquatic centres might, in some instances, appear to offer savings at the outset, but those saving and more will quickly disappear if you choose the wrong type of pool or equipment – either as a result of unnecessarily high operating costs, additional maintenance costs or a significantly shortened operational life."

GNFP has extensive experience with both new and existing pools, providing engineering expertise for construction and retrofitting projects across Australia. Together with their particular expertise in tiled finishes for commercial pools, GNFP provides quality design and documentation with seamless integration between pool water treatment pipework and pool structures. Indeed, GNFP are one of only a few consultants able to provide both water treatment plant design and structural design expertise in-house.

## BRINGING NEW LIFE TO AGEING ASSETS

There are approximately one thousand 50m pools in Australia. Many, particularly those in rural areas, are ageing and due to their design or condition, require significant refurbishment due to issues including:

- Extensive water leaks through the pool shell (usually through expansion joints, pipework, gutters or cracks in the shell);
- Settlement of the pool structure (resulting in structural cracking, and/or uneven water flow along wet deck or scum gutters leaving dead spots of unfiltered water);
- Corrosion of steel reinforcement in concrete;
- Non-compliant filtration systems which do not meet current health guidelines;
- Inadequately sized pool scum gutter or pool water disposal system, inadequately sized balance tank;
- Health risks associated with toddler's pool and 50m pool being on a single filtration system;

- Pool structures beyond their design life (often over 50-60 years old); and
  - Pool tiling at the end of its life.
- GNFP has an extensive track record of undertaking inspections of these old pools across Australia, reporting on the condition of the pool structures and filtration systems, and recommending what remedial can or must be undertaken.

"Councils who own these pools want to know what state the pool is in, what, if any, compliance issues there are (particularly in terms of health Standards) and how long is the pool structure likely to last," Brad Fong said.

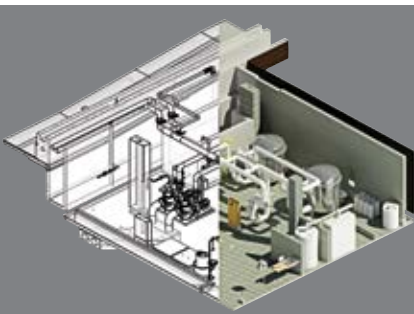
"GNFP not only undertakes these technical audits and reports, but also provides detailed costings on the upgrades required to these keep ageing pools safe, compliant and operational, and how that compares with the cost of total replacement of the pool."

"If required, we can also undertake a full life-cycle costing, which is invaluable to councils when assessing the long-term costs of these pools and setting future operational and maintenance budgets," he said.

"Perhaps most importantly, as fully independent engineers, GNFP can provide truly independent advice as to the best available solution to suit the specific location and requirements – without any bias towards specific technologies, brands or suppliers," Brad added.

"We can assist with complete or partial replacement or additions to aquatic facilities - bringing them up to code, improving operational efficiencies, extending operational lifespan and enhancing the attractiveness of the facilities to the community – with recommendations that are based purely on what we believe to be the best and most cost-effective solution for the specific location."

For further information, please visit: [www.gnfp.com.au](http://www.gnfp.com.au)



Water treatment plant room - West Coast Eagles training facility, Perth, WA

Water treatment infrastructure (including pumps, heating equipment, filtration and disinfection systems) is a critical factor in any aquatic facility design. With extensive experience with both new and existing pools, GNFP is one of only a few consultants able to provide both water treatment plant design and structural design expertise in-house.



# Capability

translates to a construction partner you can always count on

PYMBLE LADIES COLLEGE

Get the full list of completed projects at our website

GOLD COAST AQUATIC CENTRE



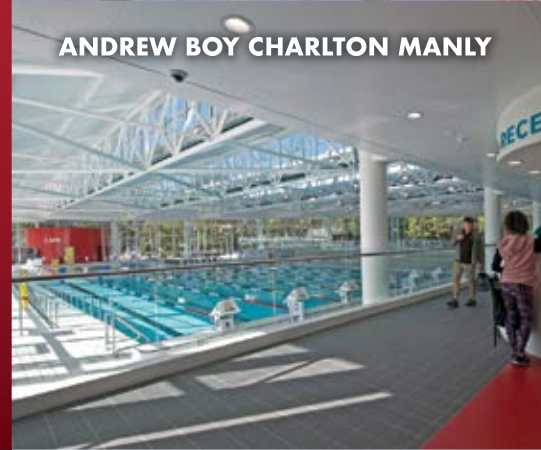
SYDNEY CRICKET GROUND



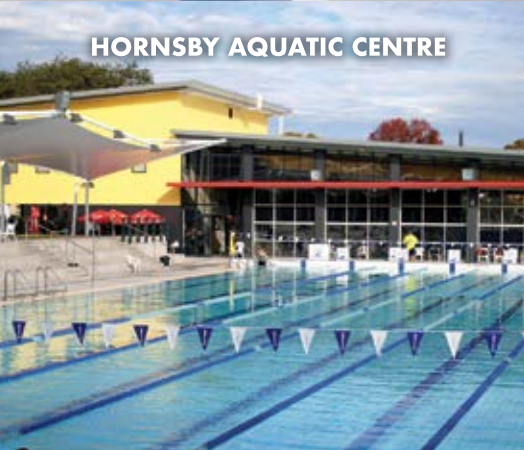
ROYAL SYDNEY GOLF CLUB



ANDREW BOY CHARLTON MANLY



HORNSBY AQUATIC CENTRE



2018 COMMONWEALTH GAMES  
POOL CONTRACTOR



ANGELO ANETIS AQUATIC CENTRE



Australia's most capable and experienced pool builder remains the benchmark all others are measured by

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QUALITY WITHOUT COMPROMISE SINCE 1957



# POOLS

## BUILT RIGHT!



**CRYSTAL  
POOLS**

MASTER POOL BUILDERS  
SINCE 1957

CRYSTAL POOLS PROJECTS HIGHLIGHT THE BENEFITS OF MORE THAN SIX DECADES OF EXPERIENCE AND EXPERTISE, AS WELL AS AN UNWAVERING FOCUS ON QUALITY

In six decades so many others have come and gone, yet Crystal Pools remains as Australia's longest operating pool company. More importantly, for many decades now Crystal Pools has been at the forefront of commercial pool construction and is considered by many to 'hold the crown' as Australia's most capable commercial pool builder. They are also unique in that their business spans both domestic and commercial markets.

From plunge pools to aquatic centres, Crystal Pools has been awarded countless tenders for commercial aquatic

infrastructure projects – across both the private sector (major luxury hotels, holiday resort operators, private sports/health facilities and major residential and commercial developers) and the public sector, with numerous major projects for local, state and federal government clients. Certified for government projects and experienced at working with developers, Crystal Pools offer a total design and build service for councils, corporates and smaller businesses alike.

What's more, their extensive expertise and experience, combined with their enviable reputation for quality, has seen

Crystal Pools deliver projects across Australia. From many of the largest commercial aquatic centres in the country, to smaller bespoke pool construction projects conducted in the remoteness of the Australian outback, the company is able offer a technical expertise and operational capacity that is truly second-to-none.

### WHERE EXPERIENCE AND PERFORMANCE COUNTS

63 years in business is a long time. But what does that mean, in practical terms, to Crystal Pools' clients? Commercial Pools manager, Peter Stewart, explained:





***“OVER THE PAST 63 YEARS, CRYSTAL POOLS HAS BEEN FORTUNATE ENOUGH TO HAVE BEEN ABLE TO WORK ON MANY OF THE COUNTRY’S LARGEST AND MOST PRESTIGIOUS PROJECTS...”***

“Right from our initial dealings with our clients – especially new clients – we provide them with access to case studies and references from construction companies, schools, property developers and councils who’ve relied on our experience to deliver them real results. After all, when it comes to constructing a pool, quality results and performance of your investment are critical.”

While to the uninitiated, constructing a large commercial pool might seem a simple case of ‘scaling-up’ the processes used for a smaller domestic pool, nothing could be further from the truth. Commercial pools are complex, large-scale, engineered structures requiring an extremely high level

of construction expertise and capability – anything less, can spell disaster.

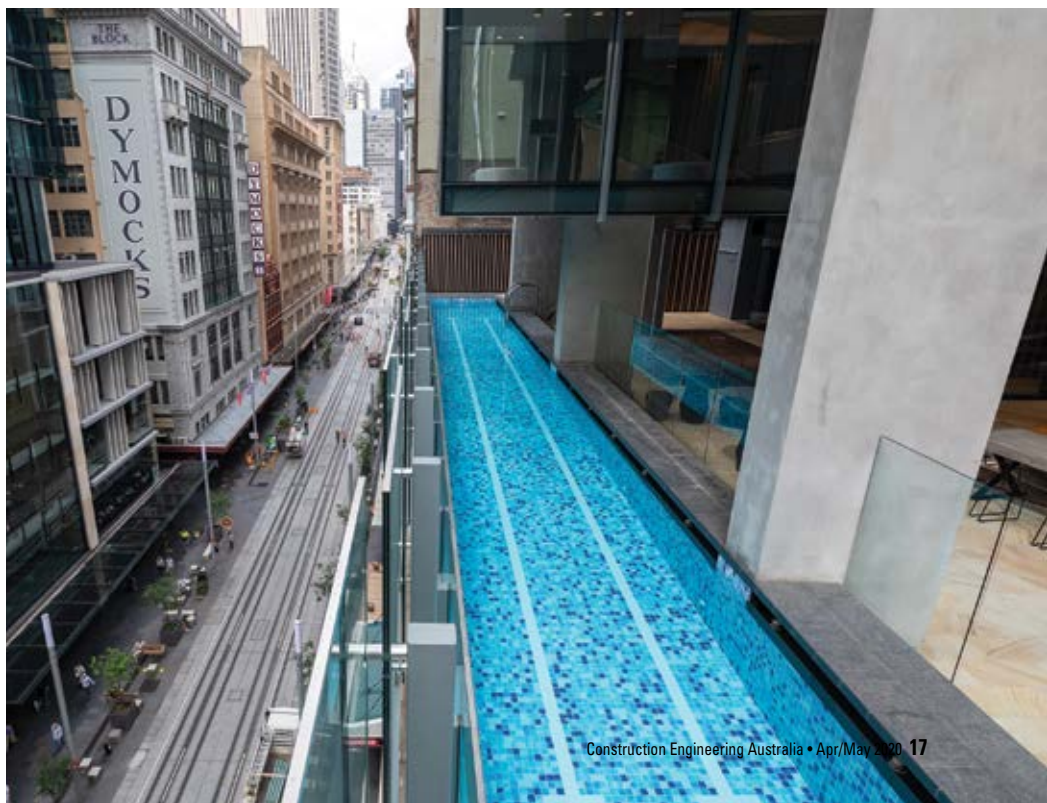
“Over the years we’ve seen countless domestic pool builder competitors often throw themselves in the deep-end in an attempt to build commercial pools, and the process is usually chaotic,” Peter Stewart said.

“Over the past 63 years, Crystal Pools has been fortunate enough to have been able to work on many of the country’s largest and most prestigious projects – from major Olympic-sized pools through to massive bespoke pools for a number major exclusive resorts – and these projects have all played a role in earning us an enviable reputation as a ‘go to’ company for major pool projects,” Peter said.

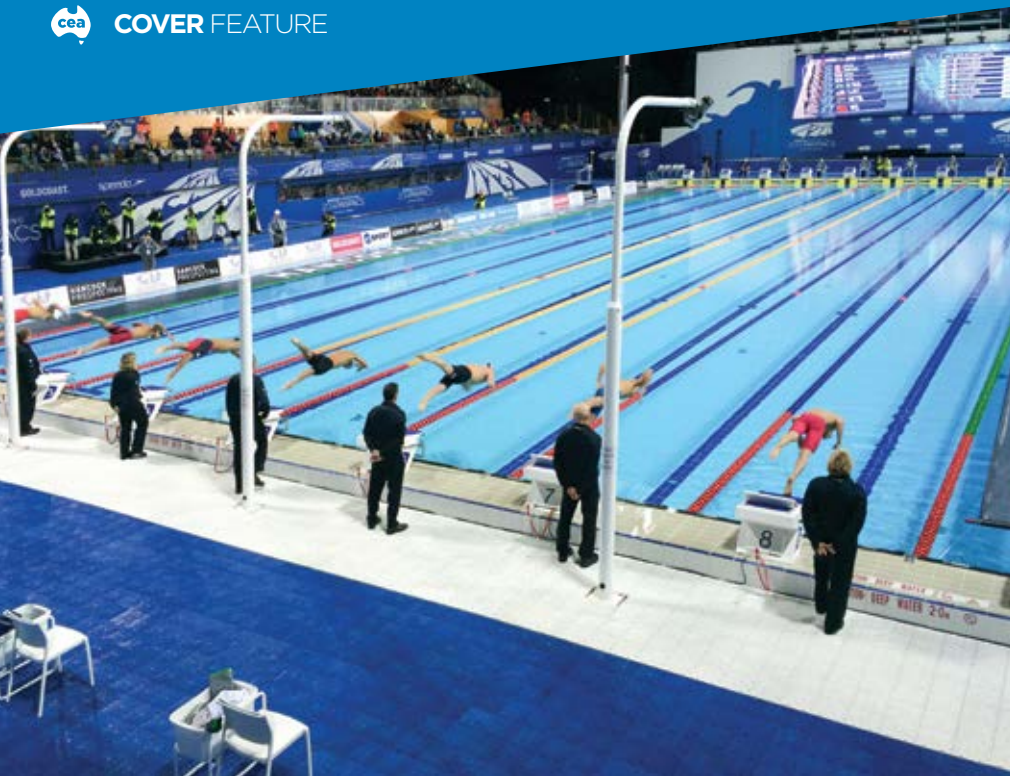
“As well as the obvious benefits that come with being at the forefront of an industry for over sixty-three years, having that level of experience with such a wide variety of pool construction projects right across Australia, has enabled Crystal Pools to develop a natural efficiency and scale-of-economy that really only comes with many decades in the industry.”

Importantly, that’s not only reflected in the quality of the finished projects, it is also reflected in the bottom line of every project we do.”

“Needless to say, it’s also something that we’re fiercely proud of,” Peter added.







Testament to the quality of its exceptional work, Crystal Pools was invited to completely redevelop Parramatta Aquatic Centre in 2008. The original pool (the stage one pool they were NOT involved in) had to be demolished and re-built, whereas the pools built by Crystal Pools in 1959 required only cosmetic refurbishment.

Not surprisingly, the company's success on Stage Two of the Parramatta Aquatic Centre project was soon followed by other commercial projects throughout New South Wales and the ACT, with each new project adding to an ever-increasing list of successful references for future work.

### INDUSTRY INNOVATORS

Present at the birth of the swimming pool industry, Crystal Pools has delivered many innovations: from construction techniques and methodologies, through to supporting pool technologies, like the earliest sand filters. Interestingly, while the company had experimented with prefabrication over the years, Crystal Pools remain convinced that conventional concrete construction is still the preferred method for new pools and aquatic centres across Australia and around the globe.

"As one of Australia's leading authorities in the design, specification and construction of commercial pools we have no aversion to adopting new technologies," said Paul Hicken from Crystal Pools Commercial Division. "Naturally, we would be the first to adopt and recommend prefabrication to clients if we believed it offered an advancement in pool construction methodology, or conversely, delivered radically cheaper pricing to compensate for what we believe is an end product with a much shorter service life," he said.

"Since our beginnings in 1957, we've never stopped believing in Quality over Quantity. And in keeping with that mandate, to this day, we still limit the number of pools we build annually," Paul Hicken added. "Amazingly, despite actively trying 'not to grow too big', we've still managed to build over 20,000 residential and 1,000 commercial pools – a massive number by any measure."

"Importantly, we are also a financially solid, Australian-owned company where the directors running the business work within the business," he concluded.

For further information, please visit: [www.crystalpools.com.au](http://www.crystalpools.com.au)

Some of Crystal's most recent commercial projects include:

- Stromlo Leisure Centre, Stromlo ACT
- Shore Grammar School, North Sydney NSW
- Waterfall By Crown NSW
- CDRL Centre of Excellence, Braddon ACT
- ADFA Sports Centre, Campbell ACT
- Prime Macquarie Park, North Ryde NSW
- St. Leonards Square, St. Leonards NSW
- Wenty League Club, Wentworthville NSW
- Harbord Diggers Club, Freshwater NSW
- The Manors of Mosman NSW
- Elara Aspire Club Marsden Park NSW
- Darling Square, Haymarket NSW
- Infinity Green Square, Zetland NSW
- Western Sydney Stadium, Parramatta NSW
- ANU Union Court Redevelopment, ACT
- Narellan School, Narellan NSW
- NSW Rugby League Club, Sydney Olympic Park NSW

Other notable recent commercial projects include:

- The Gold Coast 2018 Commonwealth Games Aquatic Centre
- Andrew Boy Charlton Centre, Manly
- Ballina & Alstonville Aquatic Centres
- Skye (Crown International), North Sydney
- Pymble Ladies College
- Hornsby Aquatic Centre

### PIONEERS OF THE GREAT AUSTRALIAN SWIMMING POOL

Most of Crystal Pools' work in their early days was building domestic swimming pools, although this began to change when the company started winning contracts for commercial projects in the late 50's.

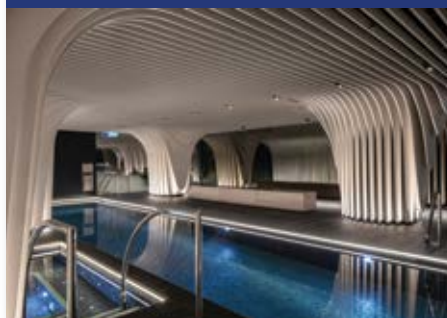
### AWARD WINNING PERFORMANCE

Not surprisingly, 63 years at the forefront of the pool construction industry has seen Crystal Pools amass a staggering amount of major awards, including, most recently, both major *Excellence in Pools Awards* categories at the 2019 MBA awards.

Both of the winning pools are located within The Arc by Crown, a stunning 25-storey residential complex designed by Koichi Takada Architects on Kent St, Sydney.

Crystal Pools built a total of 3 water elements in this building, two of them taking out the 2019 MBA Award for *Best Commercial Pool* and *Best Commercial Spa* in the Open Price category.

On the lower floor, a cave-like room creates an intimate, cosy experience. The subterranean style room features the winning lap pool (13x3m) and spa pool (3x2m), both of which are fully-tiled using Brillante glass mosaic tiles, offset with a dark grey porcelain tile.



Crystal Pools made a big splash on the commercial scene when it was awarded the contract to develop the second stage of the Parramatta Aquatic Centre in 1959. The first stage included a 50m pool and a diving board, while the second stage incorporated another two recreational swimming pools as well as children's wading pool, complete with a water fountain in the centre of it.

Coronavirus  
(COVID-19)

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Australian Government





# Cost vs. Value

## POOL COVERS – the clever investment that delivers outstanding environmental performance and significant ongoing annual savings

With ever-increasing pressure on Local Governments to *'do more with less'* in terms of budgeting and expenditure - while also reducing the environmental impact of their day-to-day operations - the importance of 'whole-of-life' costing and full 'cost benefit analysis' modelling has never been more important.

Needless to say, this type of modelling is particularly important when it comes to decisions relating to capital expenditure associated with construction and/or refurbishment of major public assets such as swimming pools, which will continue to generate significant ongoing operational costs once completed.

In many instances, constant budgetary pressures have led to an overarching focus on cutting capital costs and initial expenditure - especially when it comes to 'big ticket' items. This approach tends to result in decisions being made purely on the basis of initial 'cost', rather than an informed consideration of the actual 'value' of an item.

In short, rather than approaching the project budget with a focus on *'what do we need?'* and *'what are the long-term benefits?'*, the

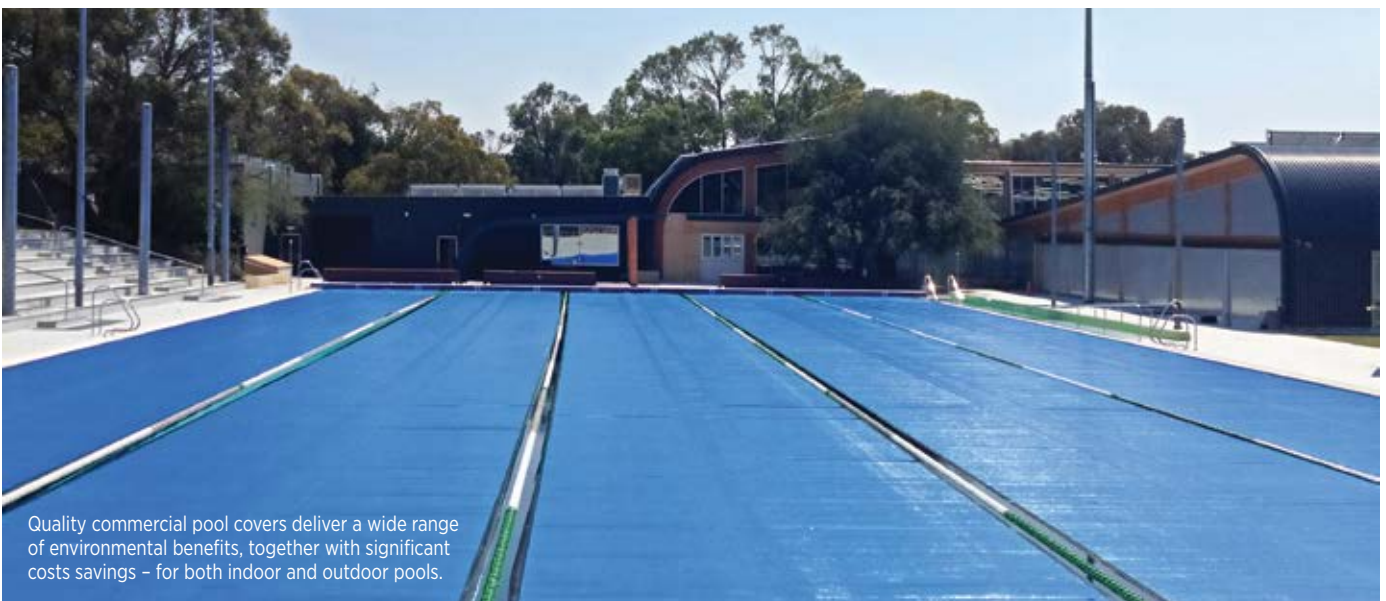
budgetary review process often becomes more a case of *'what can we cut out?'* and *'how can we reduce the cost of the project?'*

Unfortunately, the aim of this 'cost cutting' is also inevitably focused squarely on the initial project cost rather than long-term operational or environmental cost.

While not wasting public funds on unnecessary line items is indeed laudable, in some instances, what has been touted as a project saving, has actually resulted in significant increases in ongoing operational and maintenance costs, and the overall environmental impact of the completed facility.

### CASE IN POINT – POOL COVERS

When it comes to pool and aquatic centre construction or redevelopment projects, one capital item where the importance of conducting a whole-of-life Cost Benefit Analysis is particularly evident, is in the pool cover. Bernard Schenk, Commercial Sales Manager with leading commercial pool equipment specialists Elite Pool Covers, explained:



Quality commercial pool covers deliver a wide range of environmental benefits, together with significant costs savings - for both indoor and outdoor pools.



This state-of-the-art built-in pool cover system makes storage easy - storing the pool cover under the pool deck when it's not in use.

“Installing a good quality commercial pool cover can not only significantly reduce water loss through evaporation, it can also, quite literally, end up saving the facility owner or operator tens (or even hundreds) of thousands of dollars in operating and maintenance costs.”

“From reduced energy bills for water heating and reduced water costs, through to the extended painting and maintenance intervals that can result from reducing the amount of condensation being generated in indoor aquatic facilities, a commercial pool cover can not only significantly boost a facility’s ESD credentials, it’s also an excellent financial investment,” he added.

Alarming, despite the fact that the greater majority of new commercial pools are designed with pool covers, almost 25% of new pools and major refurbishment projects end up having the pool covers ‘managed out’ of the project specification prior to completion!

What’s more, in nearly all cases, the reason cited for eliminating the pool cover has been ‘to reduce the cost of the project’.

Conducting a whole-of-life Cost Benefit Analysis - using actual data from hundreds of existing installations across Australia - provides clear evidence that the average ‘payback’ of the capital cost of a high quality commercial pool cover, in direct water and energy savings alone, is around 18 months – and that doesn’t take into account the ever-increasing cost of both energy and water.

“Installing a high quality commercial pool cover delivers a wide range of significant, tangible benefits for pool owners and operators,” Bernard said.

“In fact, even if you were to completely ignore the financial benefits (which generally add up to tens of thousands of dollars per year in reduced water and energy costs for most facilities), and only consider the environmental benefits, there’s a fair argument that pool blankets should be considered a mandatory inclusion for all commercial pools.”

“From reductions in energy consumption; water consumption; and CO<sub>2</sub>(e) emissions, through to reduced chemical use; improved public and staff health & safety; and a significant reduction in maintenance requirements (in what can be an extremely harsh and corrosive environment), commercial pool covers tick all of the ESD boxes,” he said.

“If you consider the financial and environmental benefits that will be delivered over the operational life of the pool cover, and compare it with the installed cost, it’s clear that there is simply no value in ‘managing the cost’ of a pool cover out of a project,” he added.

For further information, please contact Elite Pool Covers on T: 1300 136 696 or visit the website: [www.poolcovers.com.au](http://www.poolcovers.com.au)

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# ACRS 2-STAGE CERTIFICATION

**SO YOU KNOW YOU'RE GETTING THE STEEL YOU SPECIFIED**

**A**s we all know, not all building materials are manufactured, processed, or fabricated to the minimum performance requirements of Australian and New Zealand Standards. So, when designers and procurement officers specify steel to particular standards, steel suppliers, builders, and building surveyors need to actively confirm that the steel they receive and sign off for or certify as meeting Regulations, is not just the right steel - they equally need to confirm that this conforming steel was cut, bent, and welded so it is still compliant when it is delivered and installed on the project.

Philip Sanders the Executive Director of ACRS, explained:

"You can take the best steel in the world and easily ruin it by inappropriate processing or fabrication - and if the steel was the wrong steel in the first place, the best steel processing, or fabrication won't make it right."

Using steel certified through ACRS' integrated, 2-stage certification system takes away that problem.

The ACRS 2-stage certification system was adapted for Australian and New Zealand conditions from European best practice for high-risk building materials. The ACRS system certifies both the steelmaking at the mill and again the last point at which the steel properties can be

changed before delivery and installation in the structure. This type of system is called a "bookended" system and is far more robust than a single point certification of either just the mill, or just the processor or fabricator (or of one stage being certified by one certifier and the second stage by another).

As ACRS steel certification covers both ends of the supply chain, the ACRS 2-stage system inherently includes full materials traceability - not just for reinforcing and prestressing steels, but also for structural welded sections manufacture, covering CC1 to CC3 to AS/NZS 5131, which are increasingly used in construction.





## ACRS MAKES IT EASY

A simple check for the ACRS logo on the markings or tags and labels on the delivered material, matched to the supplier's ACRS certification - which can be checked and validated by visiting the ACRS website ([www.steelcertification.com](http://www.steelcertification.com)) - provides easy and stringent validation that the materials being used meet both the relevant materials and design and construction Standards, as well as the building Codes or government specifications.

ACRS Stage 2 certification of the reinforcement processor, or welded structural section fabricators is the vital link between the steel producer (ACRS Stage 1 certified) and the end-user on the construction site, ensuring that:

- All steel is from an approved source and satisfies the requirements of the relevant product Standard.
- Steel is correctly handled and processed so materials performance is not compromised during subsequent rebar processing or steelwork fabrication.
- The necessary procedures and documentation are in place to ensure full product traceability from steel mill through materials scheduling and fabrication to delivery to site.

Regrettably, ACRS is approached for help with too many examples of insufficient care in purchasing and later signing-off delivery of materials. This problem has been reported to ACRS on industrial building projects, multi

storey buildings, and even bridge projects.

Whilst the majority of projects manage procurement and supply well and are aware of the pitfalls, ACRS now often hears the excuse that just-in-time (JIT) supply practice means that even if the contract and specification calling up AS/NZS Standards with ACRS certification is available months, or even more than a year ahead, the steel is ordered just a short time before delivery is required to site "...and we had to take what steel we could get to keep the contract moving".

Some suppliers and distributors have told ACRS that they often don't get the original contract specification, or were never informed ACRS certified material was a contract requirement.

Although not a uniform practice by any means, it is happening far more often than it should. The solution is simple: Inform the steel supplier, processor, or fabricator, and check on receipt that ACRS certified steel has been supplied.

This growing problem in some areas of the supply chain is why, in July 2019 and following in-depth development with industry, ACRS released a *Steel Traceability Scheme* offering steel and steel product suppliers (such as rebar coupler and structural bolt suppliers), distributors, and steelwork fabricators the opportunity to demonstrate the same rigour in product traceability as provided by ACRS Stage 1 and Stage 2 certificate holders.

For more details, contact ACRS at: [info@steelcertification.com](mailto:info@steelcertification.com)

## WHY IS ACRS INDEPENDENT 2-STAGE STEEL CERTIFICATION SO IMPORTANT?

Philip Sanders, speaking on behalf of the Australasian Certification Authority for Reinforcing and Structural Steels ("ACRS") says: "You cannot just accept certification of the steel mill (Stage 1). You need to know what arrives on site. Is all the steel you expect? If it is, has it then been properly processed or fabricated?"

"Historically, Australia and New Zealand have accepted a more relaxed product verification regime at the processor or fabricator (Stage 2) level than most developed countries, and these less onerous requirements have saved builders significant time and money in checking and testing costs."

"However, in today's dynamic market with global sourcing and supply, we can only maintain our traditional approach by the use of expert and independent certification systems to provide the minimum necessary assurance of both steel manufacture and equally the supply of that steel to site," he added. "If not, as shown increasingly over the past few years, there will be more poorly performing structures as non-conforming materials are substituted for those the customer, and the public have been led to expect."

"ACRS was set up to do this in 2000, based on the system set up in the EU and UK - who were some of the first to experience these problems," Philip Sanders explained. "In the last 20 years, ACRS has developed and expanded this system to meet the specific needs of Australian and New Zealand construction industries government and public."





## WHY YOU NEED BOTH ACRS STAGE 1 & STAGE 2 CERTIFICATION

### ACRS End-to-End Traceability

When we say 'end-to-end', we're talking about the ability to track information on all raw materials, components, and associated processes across the supply chain, including the design, manufacturing, supply, and delivery phases.

'End-to-end' traceability is part of the ACRS product certification scheme's cornerstone 'All Products, All Locations rule' which has provided market confidence in steels supplied under ACRS product certification for nearly 20-years.

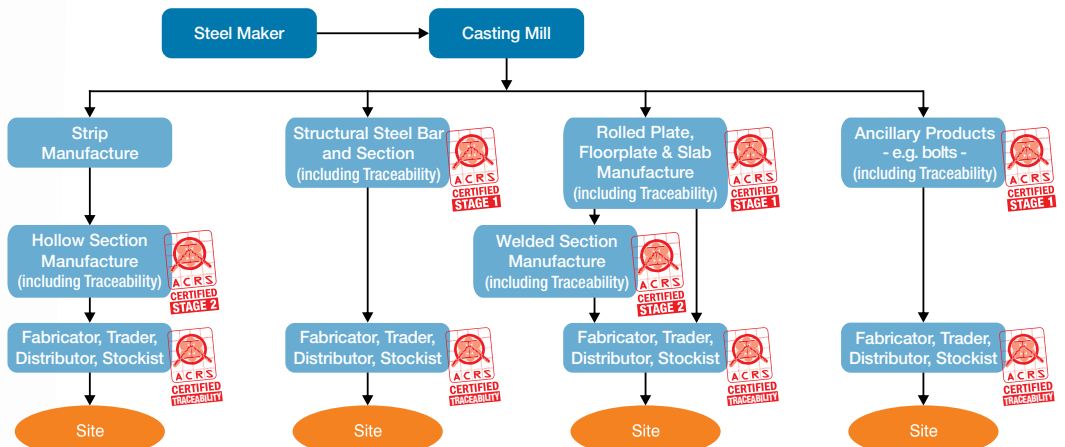
### The ACRS 2-stage 'Chain of Certification' – certifying steel from mill to site

Steels supplied to AS/NZS Standards can be made non-conforming by processes as cutting, bending and welding.

So, if you only have certificates from the steel mill, it means you only have half the story. The ACRS steel scheme certifies both the steel mill (Stage 1) and steel reinforcement ("rebar") processor, mesh manufacturer, or structural welded section manufacturer - providing a rigorous mechanism covering the two critical aspects of steel supply, and the traceability of materials between them. This 'chain of certification' provides a vital link between the steel manufacturer, the steel supplier, and the construction site.

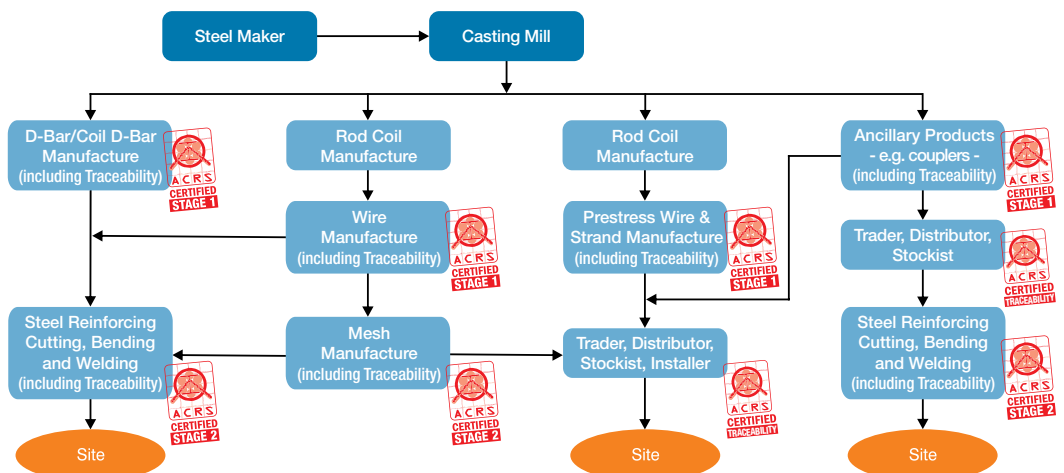
**For your steel to be ACRS certified, it must be covered by both ACRS Stage 1 and ACRS Stage 2 certification. Any break in the 'chain of certification' between the steel mill and the processor or fabricator means the steel delivered to site is not ACRS certified.**

## ACRS Structural Steel Chain of Certification



For structural steels, ACRS certifies BOTH the steel mill that manufactures the steel AND the manufacturer or fabricator of any welded structural steel sections. Verification of the outputs of both these supply streams is essential for any structural steels and steelwork claiming to conform with AS/NZS 5131. ACRS has worked with the ASI to deliver "end-to-end" certification from steel mill to construction site via the ASI's Steelwork Certification Australia fabricator scheme to provide consumers confidence in structural steelwork from the purchase of verified and traceable ACRS certified structural steels, through the supply chain to ACRS certified welded section fabricators and then through supply, delivery and erection of all finished fabricated steel on the project site.

## ACRS Reinforcing Steel Chain of Certification



For reinforcing steels, ACRS certifies BOTH the steel mill that manufactures the steel AND the steel reinforcement processor and mesh supplier. Verification of the outputs of both these supply streams is essential for any steel reinforcing materials claiming to conform with the Standards.

## SUBSTITUTION OF SPECIFIED STEELS BY UNVERIFIED STEELS

Philip Sanders explains there are two basic causes driving steel substitution, both often linked to the (usually) lower cost of unverified steels compared to steels meeting AS/NZS Standards:

**1. Deliberate substitution:** (e.g. supplying overseas grade steels such as BS-EN or more frequently these days, Chinese Standards' steel grades that do not meet minimum AS/NZS requirements). Product swapping is very common in the supply prestressing strand and structural steels – both manufactured steels and finished fabricated steels. Even worse, we are now seeing supply of completely different products altogether. For instance, ACRS has recently assisted an engineer who specified hot rolled structural sections to be supplied to AS/NZS 3679.1 and ACRS certified. Instead, what arrived on site were welded steel beams manufactured from plate made from overseas steel grades not meeting AS/NZS Standards. In another case, cold-formed steels were supplied instead of the specified hot rolled structural sections.

**2. Mistaken substitution:** Many mills manufacture different products to different standards to satisfy their international customers, and these variable products are widely available in the supply chain. Some suppliers buy similar looking product manufactured by the same company but to different country's standard (usually as it is cheaper) and supply this material instead of the specified, ACRS certified product. As a recent example, ACRS was approached over structural steels manufactured by an ACRS certified company, but the supplied material did not have the expected ACRS markings, labels, or documentation. On investigation, ACRS and the engineer discovered that the steel, although very similar in size and profile, had been made to a different steel standard for use in a third-country, and never intended for use in Australia or New Zealand.

Please contact ACRS, free of charge, if there is any aspect of steel specification, procurement, and supply that your team would like to discuss. All enquiries are confidential. Email: [info@steelcertification.com](mailto:info@steelcertification.com) or call +61 2 9965 7216.

## BUSINESS AS USUAL WHEN BUSINESS IS UNUSUAL

**ACRS Executive Director, Philip Sanders, confirms continuation of ACRS product certification for conforming steel producers and suppliers, and the maintenance of verified steel supply during the COVID-19 pandemic.**

ACRS is very pleased to confirm that its operations have not been interrupted by the current crisis, and ACRS certificates remain fully valid. Philip Sanders says; "We are working closely with our institutional stakeholders to deliver ongoing assurance that the wide range of manufactured and processed steels supplied under ACRS certification continue to meet the requirements of both applicable AS/NZS Standards and related Government-based specifications."

To limit the effects of the current restrictions and speedily resume normal operations upon the lifting of travel restrictions, ACRS has developed detailed, emergency provisions which allow ACRS to continue remote assessment of some site processes and systems coupled with increased market testing of materials, where required, to maintain rigorous and effective certification at the levels expected and required by users of ACRS certificates for the duration of this emergency.

"For all involved in the supply chain, we fully understand every company has its own sourcing policies and requirements, and ACRS will be working closely with you to maintain the highest possible levels of purchasing flexibility, yet not reduce the

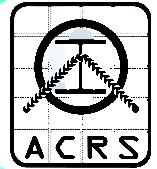
rigour of the ACRS certification system and its value to certificate users." Sanders says.

ACRS' temporary emergency measures allow steel purchasers, specifiers and consumers relying upon ACRS certificates to remain assured that the manufacturers and suppliers currently supplying to their projects remain ACRS Certified.

ACRS' uninterrupted certification services mean that you will continue to enjoy the maximum possible choice of independently verified conforming steels. Similarly, ACRS certification will continue to assist suppliers, steel users, and consumers avoid receipt of non-ACRS Approved materials, or mixed supply of ACRS Approved and non-ACRS Approved materials through this difficult time, and you can continue to verify this is the usual way via the ACRS website.

Full details are available on the ACRS website at [www.steelcertification.com](http://www.steelcertification.com).

For any enquiries, please email ACRS at: [info@steelcertification.com](mailto:info@steelcertification.com)







## Brisbane office recognised as global 'game changer'

Leading Australian independent engineering consultancy, Floth, has received further global recognition for its innovative Brisbane headquarters, which is the only building in Australia nominated as a 'Game Changer' in the *World Green Building Council* (WorldGBC) Online Case Study Library. In fact, the office complex, located at 69 Robertson Street in the lively inner Brisbane suburb of Fortitude Valley, is one of only three buildings in the world that has been designated as a 'Game Changer' – from a list of 128 projects.

The WorldGBC Library showcases the most cutting-edge examples of sustainable building from around the world, with each case study demonstrating a building that has enhanced performance in relation to health benefits and net zero operational carbon, as verified by established certification schemes, rating tools or other verification systems.

Following the WorldGBC recognition for 69 Robertson Street, Floth Group Managing Director Glenn Ralph spoke of his continuing pride in his team's achievements on the building.

"Being listed in the World Green Building Council Online Case Study Library is just the latest in a long list of key achievements for Floth with this unique premises," said Mr Ralph.

"It goes without saying that we're incredibly proud to be the only building in Australia that has been recognised as a 'Game Changer', and one of only three in the world.

"We believe we are setting the standard for future workplaces in this country through our innovative design."

The architectural design of Floth's headquarters consists of three storeys of office space, which were developed by the

company during 2014-2015, with the building services engineering and sustainability design undertaken in-house. The building initially achieved a hat-trick of firsts in Australia, receiving the first six-star Green Star Design and As Built v1.1 certified rating in the country and the first six-star National Australian Built Environment Rating System (NABERS) indoor environment rating.

69 Robertson Street was also recognised as the first building to publicly adopt the Australian Sustainable Built Environment Council (ASBEC) *Zero Carbon Standard Building* definition by virtue of highly energy-efficient design, 28% on-site renewable energy contribution from a roof-mounted photovoltaic system and 100% 'greenpower' purchase to offset remaining operational emissions.

A series of national and international awards followed, namely:

- First Australian winner of the Leadership in Sustainable Design and Performance category at the 2016 World Green Building Council Asia Pacific Leadership in Green Building Awards
- Winner of the Consultants Excellence category at the 2016 UDIA (Qld) Awards for Excellence
- Winner of the Best Sustainable Development – New Buildings award at the 2017 Property Council of Australia Innovation and Excellence Awards
- Winner of the Energex Award for Sustainability in Business at the 2017 Brisbane Lord Mayor's Business Awards

Additionally, the building recently became the first *Climate Active Carbon Neutral* building in Queensland, in conjunction with the achievement of 5.5-star NABERS Energy (without GreenPower) rating and 6-Star (with Green Power) rating, as well as a 6-star NABERS Water rating.

To find out more about the WorldGBC Online Case Study Library, go to: [www.worldgbc.org](http://www.worldgbc.org)

### ABOUT FLOTH

With offices in Brisbane, Sydney, Melbourne, Perth and Jakarta, Floth is one of Australia's leading engineering consultancy practices.

For more than 35 years Floth has worked on major projects in Australia and Asia, earning a reputation for technically excellent, commercially viable and sustainable designs.

Recognised for pioneering many of today's established building services solutions, Floth continues to pursue the latest technologies, particularly in Digital Engineering space with Building Operational Technology (BOT) and Building Information Modelling (BIM).

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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

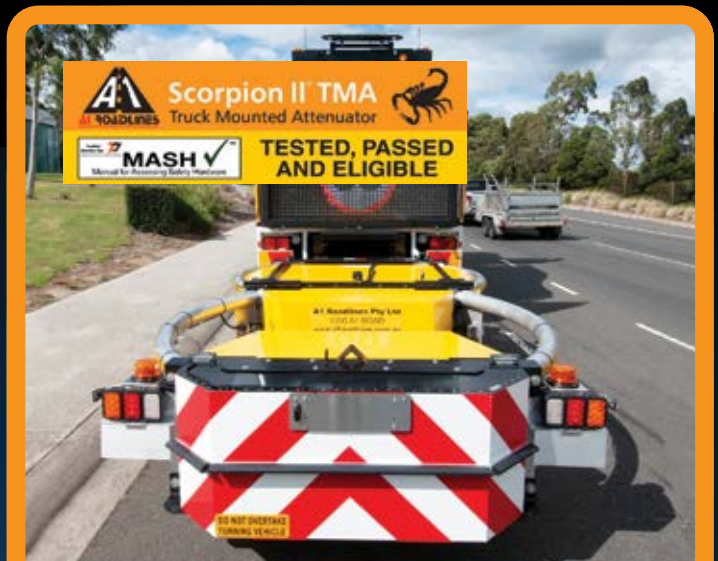
Compared to standard testing with an unrestrained host vehicle, Infinity Testing a much tougher testing regimen. It is considered 'worst-case scenario' testing which makes it much more difficult to meet the pass criteria for IS values, as all of the Ridedown Acceleration must be provided by the TMA absorbing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



# 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 TMAs 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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Two Konecranes underslung CXT double-girder cranes were selected for installation and maintenance of Australia's new Space Surveillance Telescope's main building in Exmouth, WA. (Image courtesy: Sitzler)



# Konecranes stargazing crane integral to new \$97m Exmouth Space Surveillance Telescope facilities

A new \$97.2 million Australian space surveillance project is receiving expert materials handling from Konecranes for the installation and maintenance of the main telescope and building. Konecranes, which is a global leader in cranes and lifting equipment and service to a diverse range of industries, provided two CXT double-girder underslung cranes with lifting capacities of 15 and 20 tonnes, to safely and efficiently receive and install materials on the new Space Surveillance Telescope being installed in Exmouth, Western Australia.

The cranes were underslung (meaning the crane track was suspended from the ceiling) due to the compact spaces involved in the building, and due to lots of other structures that needed to be installed in the same tight space.

Additionally, one of the cranes had to be able to remain locked in position as the dome rotates, so that it could still perform all its usual functions at whichever angle the building is facing. The section of the building where the crane was attached is capable of rotating up to 17 degrees per second, with rate of rotation varying according to the telescope's particular usage.

## PROJECT BACKGROUND

The project – including the 270 tonne rotating dome, telescope, building and supporting facilities – is being built for the Australian Defence Force by managing contractor Sitzler, and is on track to meet initial operating capability in 2021.

Sitzler, established in 1976, is a highly regarded Australian construction company delivering quality projects safely, in an environmentally and socially conscious manner.

Exmouth was selected as the site for the telescope as it provides clear and dark sky conditions with low light pollution. The project has provided a large boost to employment in the town, with more than 25 local businesses engaged and more than 145 residents having worked on-site.

Department of Defence said the telescope would increase the capacity to detect and track objects in space to manage threats, including space debris, and predict and avoid potential collisions.

## UNIQUE CRANE REQUIREMENTS

The telescope project required customised





cranes that were tailored to its unique needs, so Sitzler worked with Konecranes to ensure the cranes had the right structure and features to meet all installation and maintenance requirements.

“The cranes needed to meet tight space requirements, and utilising underslung cranes – which are typically involved in one in every hundred projects – provided better hook approaches to suit the client’s lifting requirements,” explains Ms Claudia Estrada, Project Manager, Konecranes.

The cranes both featured Konecranes’ Extended Speed Range (ESR) smart feature, which meant they had a variable speed drive for additional precision and control when lifting delicate and valuable parts.



“ESR was particularly valuable for this project, because the telescope’s powerful mirrors, which are the key to its functionality, are highly valuable items. If one mirror becomes damaged during installation, it’s a very expensive and highly specialised part to replace,” says Ms Estrada.

Mr Paul Gurr, Project Manager, Sitzler, says that Konecranes was selected because its cranes met all the complex specifications required for this important project.

“In addition to the ESR and other functionality specifications, there were extra safety requirements for locking of the crane while rotating, and Konecranes was able to meet the stringent requirements,” he said.

“Konecranes is a world leader in safety and the brand is known for its quality, reliable products. These qualities, plus their ability to meet all the customised needs of this project, were major factors in the decision to recommend Konecranes as the overhead crane equipment and service provider,” he said.

“Right from the beginning, Konecranes was thorough with detailing and reporting, which helped us with the smooth and efficient management of the project, and ensured we remained on schedule.”

“Their installation work was also of outstanding quality. Their staff were well qualified, experienced and completed work efficiently and productively, with excellent communication with other involved companies.”

The construction of the telescope building and support facilities has now been completed, and preparations have begun for the telescope to be installed, calibrated, tested and evaluated.

**Below:** The cranes had to be installed in compact locations, with unique specifications to suit the project’s materials handling precision and safety requirements. (Image courtesy: Sitzler)

**Right:** In addition to the cranes above the main dome, a second Konecranes CXT underslung crane was installed in the material receiving bay, to lift, move and position incoming materials for installation. (Image courtesy: Sitzler)



#### ABOUT KONECRANES, INC.

Konecranes is a world-leading group of Lifting Businesses™, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes.

In 2018, Group sales totalled EUR 3,156 million. The Group has 16,100 employees at 600 locations in 50 countries.

For further information, please visit:  
[www.konecranes.com](http://www.konecranes.com)



# Fast site dewatering

For construction site dewatering, self-priming trash pumps are cost effective, reliable and easy to set up. Aussie Pumps heavy duty 6" trash pump, powered by a Kubota 18.5 kW water cooled diesel engine, handles solids contaminated water and delivers flows to 4,200 litres per minute.

Reaching maximum heads of 35 metres, the QP60TDK will draught water through a vertical suction lift of seven metres. The impeller is a heavy duty non clog style, manufactured from high SG cast iron. The hydraulic design of impeller and volute is superbly balanced to obtain the best result in flow, pressure and co-efficiencies.

The pump body is cast iron and a ductile hardened wear plate is provided as standard equipment. The pump's 6" suction and discharge ports are flanged bolt on style.

The easy cleanout port means that if the pumps internals become clogged, it is simple to clean out without the need to disconnect

the pipework. The pump's body can be opened simply by releasing four toggle style hinged levers giving access to impeller and volute for cleaning and service.

A separate drainage sump is also accessed by levering toggles, enabling easy draining of the pump. Removal of sediment from the sump is a simple matter of flushing.

Sealing is achieved by an oil bath mechanical seal running in turbine oil (viscosity ISO 32). The mechanical seal is tungsten carbide to provide long, trouble free operation, even in trash laden or muddy liquid applications.

The engine selected by Australian Pump for the drive is a Kubota four cycle, three-cylinder diesel engine, model D1105. It comes with a 60-litre fuel tank that provides 10 hours of run time. The pump also comes with engine protection in a form of low oil, high water tank cut out.

The standard unit is mounted on a sturdy skid steel base, fitted with an integrated centre mounted lifting bar, that enables easy crange on and off trailers or utes.

Aussie's compact design, in spite of its high performance characteristics, weighs in at 790 kilos, which means it can be mounted in a trailer or transported by a utility vehicle if necessary. Like all Aussie QP pumps, the QP60TDK is covered with a five-year warranty.

Not surprisingly, the new 6" trash pump has generated a lot of interest across a number of key industry sectors, including: quarries, councils (as an emergency sewage bypass pump) and for general construction site dewatering.

For further information on the new 6" trash pump, including a list of authorised distributors throughout Australia, please visit the Australian Pump Industries website: [www.aussiepumps.com.au](http://www.aussiepumps.com.au)

Ideal for fast filling water carts and construction site dust suppression, Aussie's Kubota powered 6" trash pump can be mounted on a trailer or transported by utility vehicle.



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companies such as Thor is how to retain and support staff as their health needs change, particularly those specialising in manual tasks. One of Thor's prime objectives is to keep staff turnover as low as possible, in part by ensuring the highest levels of health and safety.

"Our employees were delighted by the way the exo immediately relieved strain on their muscles, for example during overhead welding or electrical installations under ceilings," said Thor CEO Kersten Thor.

"Exoskeletons also make jobs in industrial assembly more attractive. They can increase employee loyalty and help us recruit new employees."

A former heating engineer, Mr Thor worked for years as a temporary worker on assembly. Wanting to improve working conditions for those in the temporary employment industry, he has been on a mission for 20 years to improve conditions for workers, whether it be bad pay, poor treatment or inadequate working environments.

The company has long ensured that employees have perpetual contracts, performance-based pay, over-the-counter allowances, free weekends, and monetary incentives and awards. Mr Thor, who was also awarded *Entrepreneur of the Year* in 2013, said, understanding how employees perceive their working environment is vitally important for any business going forward in a fast-paced market.

# Outside help

## German-designed Paexo Shoulder exoskeleton is helping reduce staff turnovers – and the construction industry is taking note

Leading German medical technology company Ottobock is revolutionising the capacity for manual overhead labour with innovative wearable tech body suit, the Paexo Shoulder exoskeleton, which could provide major benefits when it comes to the Australian construction industry.

The upper body exoskeleton, which is now being used in 500 plants and factories worldwide, recently launched in the Australian market following its initial release in Europe 18 months ago. There it has already been snapped up by leading businesses in the construction and internal fit-out industries.

The exoskeleton was designed to relieve muscular stress for workers who specifically spend long periods of time working with their arms raised. When people wearing the Paexo Shoulder raise their arms, pads around the biceps transfer weight to the hips thanks to mechanical cable pull technology.

It provides noticeable relief for the muscles and joints in the shoulder region. This makes it particularly beneficial for people such as plasterers, painters, electricians, builders, assembly line workers or anyone else in the construction, general maintenance or repair fields, required to do intricate or repetitive tasks overhead.

German company Thor Industries GmbH & Co. KG which provides qualified staff for the household, building and supply technology sector was one of the first companies in Europe to use the Paexo Shoulder exoskeleton. The company, which has around 1,000 employees, is known for being extremely loyal to workers and in 2012 was named one of the top 100 employers amongst German SMEs.

With people now living on average well into their 80s and beyond, and retirement age increasing, the issue for many





As far as productivity goes, the company believes it's vital to guarantee Thor employees can work independently and efficiently, hence their interest in the Paexo Shoulder exoskeleton.

The suit does not need an energy supply, so it can be donned within a moment's notice without the need to power up. Workers wear the Paexo Shoulder close to their body, similar to a backpack. It provides mechanical support for individual body segments in certain postures and movements through the interplay of springs or elastic bands. This type of preventive relief could reduce the risk of work-related musculoskeletal disorders in the shoulder region over the long term.

In Australia, these disorders are a common cause for inability to work and are a significant cost for companies and healthcare systems. Safe Work Australia reports 60 per cent of all serious claims between 2009-2010 and 2013-2014 were related to musculoskeletal disorders (MSDs) affecting areas such as the joints, vertebrae, muscles and tendons. Some 76 per cent of injuries relate to MSDs.

Lotte Koenig, Sales & Business Development Manager Australia, said apart from the construction, general maintenance and repair industries, the Paexo Shoulder has great potential to increase productivity and support workers from a very wide variety of industries in Australia such as all aspects of manufacturing industry including ship building, automotive and rail; farming and agriculture; food processing; and engineering.

"Paexo Shoulder is especially lightweight – in fact, it is the lightest exoskeleton of its kind, weighing in at less than two kilograms," said Ms Koenig.

"As the design is based on natural human movements, users can walk, sit and also pick up objects with it. The suit can be worn comfortably for an entire shift, or parts of it, while providing noticeable relief for shoulders and arms during overhead work."

"It also comes in an adjustable one size fits all model, so there's no need to buy different sizes. This means each company has full flexibility when the exoskeleton is needed in different departments," Ms Koenig added.

Retailing for \$6,900, the Paexo Shoulder launched in Germany in 2018 after six years in development with Volkswagen. It is now in international use across many different countries including most countries in Europe, the US, Canada, Mexico and India.

The use of exoskeletons in general is expected to become more commonplace in the future in workplaces given high injury rates. Safe Work Australia reports that musculoskeletal disorders are highly prevalent in the Australian population affecting 6.9 million people between 2014-2015 according to the Australian Institute of Health and Welfare.

For Australia's workforce, work-related musculoskeletal disorders (WMSDs) are the leading work health and safety problem, both in frequency and cost which in 2012-13 totalled more than \$24 billion.

Given the need for our increasingly ageing workforce to remain healthy and productive, implementation of more effective workplace risk management practices to reduce WMSD risk is increasingly urgent. Whilst musculoskeletal disorders may result from a single event, more commonly they arise from cumulative exposure to one or more hazards over an extended period.

Many of these issues are caused by manual material handling tasks, which include lifting, lowering, holding or carrying loads. Twisting, bending and overhead work also increase the risk of a work-related disorder, decreasing productivity.

Situated in the German city of Duderstadt, south west of Berlin, Ottobock has been responsible for several innovations in prosthetics, including the C-Leg, a computerized knee that adaptively varies its passive resistance to suit the patient's different walking gaits, and the Michelangelo Hand, a fully articulated robotic hand prosthesis. Ottobock has also been a partner to the Paralympic Games since 1988, and an international worldwide partner to the International Paralympic Committee since 2005.

The Ottobock Paexo product range also includes neck and wrist supports. The company will also be launching a much-anticipated back support exoskeleton in 2020.

For more information, please visit:

[www.paexo.com](http://www.paexo.com)





# True Blue Indigenous tech gives all youth a leg up with building, safety and security leaders



Indigenous trainee Corey Williams (right) with Warrgambi Managing Director Tim Donovan, celebrating a year's training with Warrgambi corporate supporter FS Solutions

A company dedicated to Indigenous and all-inclusive Australian youth advancement through providing excellence and training in technologies relevant to architecture, construction, security and safety is expanding its services nationally from its headquarters in Canberra.

*Supply Nation Certified* national trades and professional services company, Warrgambi, is building upon its successes with public and private companies using its expertise to cover a broad range of security, electronics, fire detection and professional services increasingly needed throughout Australia. Warrgambi is an Aboriginal and Torres Strait Islander word from the Gumbaynggirr Nation on the NSW Mid-North Coast of Australia which means "Working Together".

"Each step we take forward also benefits Australian youth and Indigenous people, because an intrinsic component of our work is to involve them all in our training, successes and world-class service initiatives," says proud Gumbaynggirr man and Warrgambi co-founder Tim Donovan, who has worked at the highest levels of Australian Government security, safety and risk management.

Mr Donovan co-founded the company with General Manager Dave Healey, who has been involved in the Electronic Security, Technology and Communications industry for more than 20

years. Their technology excellence and social objectives – coupled with access to Federal and State Indigenous advancement Initiatives including the *Indigenous Procurement Policy* and agencies such as Supply Nation – have won them ACT, national and international recognition.

Warrgambi's professional partnerships include:

- Boon Edam Australia – a global leader in entrance security technologies widely applicable to all levels of Government, as well as public and private facilities
- Securecy – the developers of an award-winning cloud-based software platform designed specifically for Australian security providers.
- CIC Technology – Manufacturers of high quality electronic key cabinets
- ENGIE – a leading provider of mechanical and HVAC Services
- Essex Locksmiths – High security locksmithing
- xAmplify – a leading provider of technology services
- Syndeticom – a leading provider of data and communications and audiovisual technologies
- Blackett Commercial – a leading fit-out construction and project management organisation

- PechVonHartel – a leading architecture and interior design firm
- Art of Mentoring – a leading software reseller and program manager

"We align ourselves with like-minded partners who would like to be involved with the process of creating positive social change and developing sustainable, meaningful and long-term employment opportunities for all Australians," said Mr Donovan.

"We provide mentoring and support services to guide our employees through their journey, which can include placements with our partners, where they can further expand their skills and career paths," he said.

For more details, please visit: [www.warrgambi.com.au](http://www.warrgambi.com.au)

Warrgambi is a Supply Nation certified company, and it has put in place a Reconciliation Action Plan.



Warrgambi co-founders Dave Healey, left, and Tim Donovan, right, at Supply Nation Connect – Australia's largest Indigenous business event



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Firmengruppe  
Max Bögl ©2020

# Reinforcing cages for tunnel construction and wind-energy solutions

Building and implementing specialist projects such as tunnels and wind energy plants is particularly demanding work requiring specialist knowledge and capability. The facilities and manufacturing processes required for the production of the specialist steel reinforcement for these projects need to be established and adjusted well in advance of construction to allow for efficient manufacture of the reinforcing ladders and mesh to meet the specific engineering requirements.

Progress Maschinen & Automation, a Progress Group company, has a range of complete technologically mature solutions which, depending on the customer's requirements, can incorporate the highest degree of automation. As well as focusing on consistently high production quality, another major consideration for these plants has been the development of mobile solutions which are able to be established in the vicinity of the project. For implementing projects in tunnel construction and for the erection of wind energy plants, the company, based in South Tyrol, Italy, banks on machines tailored to meet specific individual requirements.

## TUNNEL MASTER LADDER WELDING MACHINE

The Tunnel Master is designed for the manufacture of straight and bent ladders off coil. This robust and low-maintenance welding machine enables fast and cost-saving production of tunnel segments. The ladder welding machine excels particularly with its flexible grids of longitudinal and transverse wires, as well as with a flexible choice of diameters of up to four longitudinal wires.

What's more, the Tunnel Master's computer-controlled welding controller enables precise and controlled welding without hydraulics.

Together with the benefits of short conversion times, the Tunnel Master offers a range of other benefits, including adjustable cutting angles and an automatic stacking unit for completed pieces.



The Tunnel Master welds straight and bent ladders off coil.

## M-SYSTEM MESH WELDING PLANT

The latest generation M-System mesh welding plant combines the benefits of precise and controlled welding, with just-in-time production of made-to-measure reinforcing mesh off coil for a wide range of projects.



The M-System: Precise welding and made-to measure mesh production.



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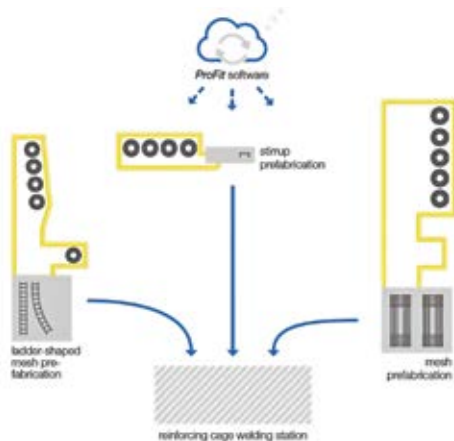
Developed with a focus on versatility and performance, the M-System plant can be used to manufacture a wide range of mesh designs, including special geometric shapes and blockouts in a variety of diameters. The unit's bending system allows the mesh to be bent both upward and downward for maximum versatility. The M-System also features a fully integrated straightening plant.

In addition, the M-System can also be expanded with various logistics solutions and is available as a mobile plant.

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Mobile plants enable flexible, just-in-time production. Photo: Courtesy Firmengruppe Max Bögl ©2020

For further information, please visit: [www.progress-m.com](http://www.progress-m.com)



## NEW GUIDE AVAILABLE NOW! UNDERSTANDING GROUTED JOINTS: A GUIDE FOR ENGINEERS AND BUILDING CONTRACTORS

National Precast has released a new guide for engineers, builders, installers and grouting contractors, that will help them better understand the importance of, and suggested practices for designing and constructing grouted precast joints.

The new publication, *Understanding Grouted Joints: A guide for engineers and building contractors*, comes as forced evacuations of apartment blocks resulting from structural defects and fire safety concerns have shone the light fairly and squarely on the need for building industry reform.

According to National Precast, a part of this much needed reform is a better understanding of the role that grouted loadbearing joints play in precast structures.

"Loadbearing grouted joints play a critical role in precast concrete structures and need to be treated accordingly," says National Precast CEO Sarah Bachmann.

### PERFECT STORM CAN BE CATASTROPHIC

Bachmann says that there are three potential causes of inadequate grouting. "Grouting practices are often not adequately detailed in

drawings. Construction programmes are usually rushed and grouting is often assigned to untrained workers."

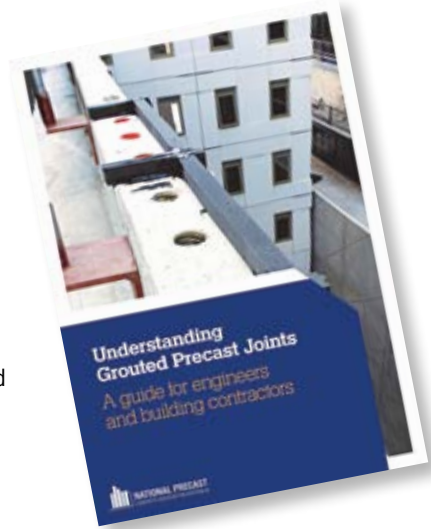
"All three together and we have the perfect storm, and that can result in a big price to pay later on," she warns.

Inadequately detailed grouting, poor or even worse, absent grouting, can result in structurally ineffective joints, which can have catastrophic consequences.

### BETTER UNDERSTANDING

"It all comes down to having a better understanding of the critical role that grouted joints loadbearing play and why everyone in the process needs to treat them accordingly."

National Precast's new guide does this. It offers considerations and outlines their responsibilities for In-service Designers (refer AS3850.1:2015 Prefabricated concrete elements Section 1, 1.4 Definitions, 1.4.30 In-service Designer), for Erection Designers (AS3850.1:2015 Prefabricated concrete elements Section 1, 1.4 Definitions, 1.4.20 Erection Designer) and other engineers. As well, the guide provides some guidance on typical grouting design.



"Builders, installers and grouting contractors have an important role to play too. We have included practical information on the different types of joints plus we've outlined typical grouting methods for grouting flat joints, inaccessible joints and ship-lapped joints," Bachmann adds.

While not exhaustive, the guide references loadbearing walling elements. Similar principles apply however for columns and other elements, and also for non-loadbearing joints.

The guide is available from National Precast for \$75+gst (colour printed copy) or \$55+gst (PDF) plus postage. Email [info@nationalprecast.com.au](mailto:info@nationalprecast.com.au) to order.

Contents and sample pages can be viewed at: [www.nationalprecast.com.au/resources/publications](http://www.nationalprecast.com.au/resources/publications)

## NATIONAL PRECAST WELCOMES NEW RELATIONSHIP MANAGEMENT TALENT

With around 35 years' experience in senior roles within CSR, Holcim, Humes and Cemex, Peter Coombs has extended his involvement with National Precast. Already the organisation's Queensland State Co-ordinator, Peter has also accepted a consulting role to look after National Precast's work with roads' authorities.

Since working with the likes of CSR, Holcim, Humes and Cemex, Peter has been consulting to a range of construction and building materials' organisations, providing services including process analyses, gap identification, improvement planning and strategy development.

Peter takes over the roads' advocacy work from Sean O'Gorman who was previously Technical Services Manager with the Association. Sean has moved into a full-time workload with the University of Adelaide as he pursues his PhD scholarship.

"We wish Sean all the best as his new venture with the University rolls out. He's been

instrumental in resolving several matters on behalf of members," says National Precast's CEO Sarah Bachmann.



"Liaising and working with roads' authorities is an important part of our work. Our membership comprises many civil precasters, including the country's largest manufacturers like Humes, Rocla and Reinforced Concrete Pipes Australia."

"As well, we have many state-based manufacturers who supply the authorities. Developing and maintaining good working relationships with the roads' authorities is imperative to very many of our members' ongoing operations," Bachmann adds.

Coombs will offer a different skill to what National Precast has experienced until now.

"Peter has worked in very senior management roles and is well across requirements for both precast manufacturers and state roads' authorities. One of his key leadership strengths is being able to distil business frustrations down to simple solutions that form the basis of strategic redirection. We see this is a huge benefit going forward and we are pleased to welcome him to the team."

# A PUSH FOR SAFER CONSTRUCTION



With strict WHS requirements and practices, the precast manufacturing environment is strictly controlled and a very safe manufacturing environment with workstations generally isolated and appropriate PPE being used.

National Precast Concrete Association CEO Sarah Bachmann says that being manufactured off-site, precast offers safer and more efficient construction, and its use should be encouraged during the Covid-19 pandemic.

As construction continues, builders around the country are managing strict social distancing and hygiene requirements. So too are precast concrete manufacturers who are members of the Association, who supply factory-manufactured – or prefabricated – elements to essential infrastructure.

“The continued operation of the precast concrete industry is imperative to allow continued maintenance, functioning and construction, particularly of essential infrastructure like roads, rail and bridges, and buildings such as hospitals, government facilities and shopping centres,” says Bachmann.

Construction or maintenance of these structures very often uses off-site manufactured precast elements, whether they be walling,

flooring, beams and columns, or stairs. As well, road and rail infrastructure works are underpinned by drainage systems that incorporate precast elements such as pipes, box culverts and other elements.

Continuity of supply of these items is key to maintenance works and continued construction of transport and building infrastructure, Bachmann claims.

## MAKING CONSTRUCTION SAFER

“Much of our essential infrastructure already uses precast concrete, and if it doesn’t, it should... particularly when our community is at threat from this virus,” Bachmann claims.

Being manufactured off-site, precast concrete improves safety on construction sites because whole elements are delivered to site, instead of onsite fabrication. That means a reduced need for individual trades and labourers, eliminates the need for formwork, minimises waste and generally de-clutters sites.

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“Those considerations become very significant when we want some industries to be able to continue operating for economic reasons, and when we all need to obey social distancing and strict hygiene requirements,” Bachmann says.

### SAFE FACTORY ENVIRONMENT

Additionally, the precast manufacturing environment is strictly controlled, with strict WHS requirements and practices. It is already a very safe manufacturing environment with workstations generally isolated and appropriate PPE being used.

“Insofar as the virus is concerned, we know our members have all put in place strict additional requirements to minimise the spread of Covid-19.”

“As well as adhering to social distancing and hygiene requirements, they have rolled out a myriad of other initiatives to address the threat of virus spread among its workforce, including separating shifts of workers, isolating workstations, staggering start and break times, distancing workers during breaks and other measures,” Bachmann comments.



Being manufactured off-site, precast offers safer and more efficient construction, and its use should be encouraged during the Covid-19 pandemic.

Bachmann welcomes the decision by federal, state and territory governments to allow construction, maintenance and associated manufacturing works to continue. “But we want governments to go one step further – to recognise

the safety and efficiency of using precast and recommend its use. That’ll ensure all workers in the construction and manufacturing supply chain are better protected as they continue to deliver and maintain essential infrastructure.”

## DO CONTROL JOINTS IN EXTERNAL PRECAST CONCRETE WALLS NEED FIRE PROTECTION?



Properly detailed and constructed joints play a vital part in maintaining the integrity of the external envelope of a building, ensuring they conform to specified fire resistance and meeting any other requirements such as weatherproofing and acoustic performance.

Control joints are used not only in precast walling, but in a myriad of construction arrangements. With this in mind, we do need to do our own due diligence in reading an understanding the National Construction Code (NCC).

**If an external precast wall, in particular a precast concrete boundary wall, requires a Fire Resistance Level (FRL), then should the control joint also have the same FRL?**

This is a question that is commonly raised in the industry.

In the NCC, Volume 1, Section C *Fire resistance* > Part C3 *Protection of openings* > C3.1 *Application of part*, and C3.16 *Construction joints*, address fire rating in control joints of external walls.



If reading C3.16 *Construction joints* alone - without taking into consideration C3.1 *Application of part* - then you may interpret the answer as ‘yes’.

But unlike many other building materials that are not masonry, the answer is no, on the basis that the joints in question are not larger than necessary for their purpose.

C3.1 *Application of part* quite clearly shows that 3.16 *Construction joints* does not apply to joints between panels in external walls of precast concrete panel construction.



**NEW ABCB VIDEO ON FIRE RATING OF JOINTS**

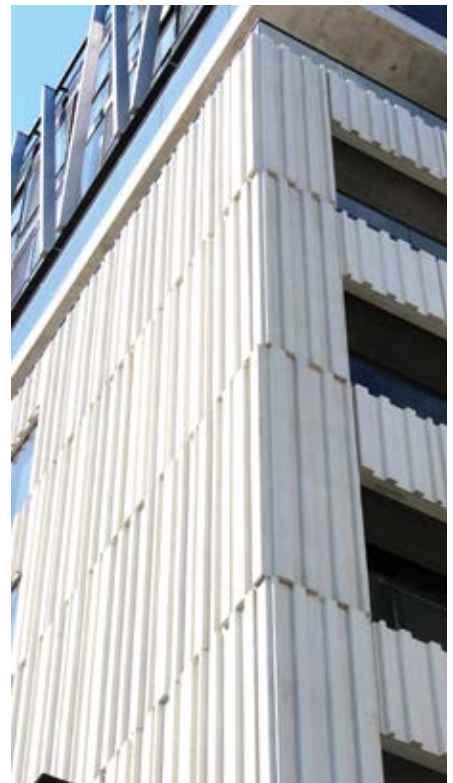
The Australian Building Codes Board (ABCB) has recently released a video on fire ratings in control joints, describing how in most cases, the NCC provides a concession for fire rating of external precast control joints – view the video at <https://www.abcb.gov.au/Resources/Videos/do-control-joints-in-tilt-up-concrete-external-walls-require-fire-protection>.

**FIRE RATINGS OF PANELS AND SEALANTS**

External cladding may be required to have a specified Fire Resistance Level (FRL) and precast cladding panels will usually be designed or tested to meet these requirements in accordance with AS 3600.

*Unlike non-masonry building materials, control joints in external precast walls do not require the same FRL as the wall.*

Most sealant manufacturers produce sealants that are designed to provide resistance to fire. The joint details and sealants should be designed and applied in accordance with the manufacturer's recommendations to give the required level of fire resistance, if necessary.



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# In Sync

## Enerpac 'SyncHoist' synchronous lifting technologies play a critical role in sliding roof construction for major stadiums

**With an ever-increasing number of major outdoor stadium owners and operators around the world looking to incorporate sliding roof solutions into their facilities to combat the issues associated with climate change, one of the major challenges being faced by project engineers is finding a reliable method of lifting the massive roof components into position – safely, efficiently and with an extraordinary level of precision.**

Increasingly severe weather changes including heatwaves and downpours are presenting challenges to designers and specifiers of sporting and mass entertainment stadia. These seasonal and climate change issues that may be faced in the future by these massive buildings was illustrated over the past year by the bushfires in Australia that had burnt through 10 million hectares by January, sending plumes of smoke across

the Tasman to New Zealand and then around the world. Similarly, forest fires in Sumatra and Kalimantan, meanwhile, sent toxic haze across South-East Asia, aggravating respiratory illnesses and forcing the closure of schools, airports and entertainment events.

The unusual weather associated with such events – ranging from electrical storms, to exhausting record temperatures exceeding 45°C in many parts of Australia – pose an ongoing issue for such stadia, the largest of which can each accommodate 100,000 spectators and athletes. The top 20 such stadia in Australasia and the Asia-Pacific collectively accommodate more than a million people.

### **STADIUM ROOFS CREATE HEALTHIER SPORTING ENVIRONMENTS**

One solution to coping with climate change being considered and implemented globally by architects and engineers is the construction and/or retrofitting of opening stadium roofs that can respond rapidly to changing

ambient conditions - protect the health and comfort of occupants, while at the same time safeguarding the financial and operational viability of stadia that can cost hundreds of millions of dollars to build.

But such projects can involve a daunting scale of the construction and special lifting needs, including the precision positioning of components forming unusually long steel beams used in the construction of sliding roofs that can weigh 10,000 tonnes and more. Not only do these beam components need to be placed safely and precisely from considerable heights, but the operation must also be completed in as stable and as rapid a way as possible to protect construction scheduling, workers and the structure itself against the vagaries of weather conditions arising during the task.

### **MAJOR STADIUM ROOFING SUCCESS STORY**

One solution to this delicate construction task was employed recently in a landmark stadium





**Left:** The Globe Life Stadium employed Enerpac SyncHoist technology during the construction of its massive retractable roof. *Image courtesy: Manhattan Construction / HKS Architects*

**Bottom:** The Texas Rangers Globe Life Stadium under construction. *Image courtesy: Manhattan Construction*

When completed, the new home of the Texas Rangers baseball team will include a retractable roof for climate control during the hot summer months. The roof will operate on a mechanism much like a train on a railroad track.

This project used Enerpac's internationally proven *SyncHoist* system to permit PLC-controlled vertical and horizontal load manoeuvring using one crane while placing essential elements of the 5.5-acre (2.25 ha) roof.

Such synchronous lifting technology – the family of which has already been proven on Australasian and SE Asian projects – was used in the Texas Rangers project during the delicate positioning of components of structural steel spans more than 180 metres long in the retractable roof of the new 167,000m<sup>2</sup> structure. One of the priorities in this job was to complete the task as rapidly and possible within a limited window of opportunity, while eliminating the risk of damage from oscillations of wire rope caused by sudden crane stop/starts, says Enerpac Asia-Pacific Marketing Manager, Mr Antony Cooper.

construction project, the Texas Rangers Globe Life sports stadium in the US, designed by HKS architects and built by Manhattan Construction Group.

Because it was not feasible to use one crane to lift such long members, it was constructed in segments that were lifted into place one at a time using the specialized hydraulic system from Enerpac. The *SyncHoist* system allowed the trusses to be assembled on the ground and then hydraulically lifted and put into place with one crane, instead of building them up in the air. To prepare for the roof installation, Manhattan Construction workers built temporary supports to hold the installed pieces in place until the entire span was connected and could support itself.

### UNIQUE SAFETY REQUIREMENTS

The process was not without challenges, especially the need for limiting construction work below while the roof trusses were moved. Closely controlled scheduling was required to provide space and clearance so crane operators could put the spans in place on one side of the stadium while construction activity below progressed on the other side. A priority was placed on addressing the unique safety considerations of the process, including training workers about safety precautions while working with heights in, around and below activity.

The movable nature of the roof also made it much more complicated and heavier than a fixed roof, Enerpac Product Line Director of Heavy Lifting, Pete Crisci, said.

Several *SyncHoist* features helped smooth installation. The system's wireless





communication allowed Enerpac engineers to control pieces of steel more than 60 metres in the air and position them down with millimetre-precision using an iPad-like control screen on the ground.

Mr Crisci said such modular roofing trusses could in general generate cost savings by requiring less equipment, crews and time. "From a speed and efficiency standpoint," he said, "we can do the work much more quickly and safely."

Ground-level modular roof construction is ideal for extremely large, complex projects like bridges, power plants and ship building factories, Mr Crisci said.

"One of the things you're seeing in stadium trends these days, is that they are getting much bigger and more elaborate, so the designs are quite complex. This means that traditional construction methods of erecting individual roof components in the air isn't really the best way to do it anymore, given the sheer size of the large roof trusses on these stadiums."

In use across the world for 15 years, the *SyncHoist* system was also used to install the roofs of the Atlanta Falcons' Mercedes Benz Stadium, the "Bird's Nest" Olympic stadium in Beijing, China, and for the renovation of the San Francisco-Oakland Bay Bridge.

In Australasia, Enerpac synchronous lifting technologies have been used in applications as diverse as hoisting and positioning entire prefabricated shipping components, mining mills and oil processing platforms.

**Below:** One of the 33 Steel truss sections used in the roof, each weighing up to 680,000kg (1.5 million pounds). The *SyncHoist* technology involved is suitable for construction of roofs responding to trends such as crowd protection, either from the elements, unique designer roofs, the use of sports venues as entertainment districts and the trend towards bigger, more modular facilities. Image courtesy: Manhattan Construction



**Above:** (LEFT) Enerpac SyncHoist technology has also been employed in Australian naval construction for precision positioning of major components. (RIGHT) Enerpac SyncHoist utilises four lifting and control points suspended from one crane.

### ENERPAC'S SYNCHOIST SYSTEM

Enerpac's Synchronous Hoist System (*SyncHoist*) is a below-the-hook sling adjuster (hydraulic turnbuckle) which typically includes multiple specialised hydraulic cylinders mounted directly in-line with the rigging. This provides the operator the freedom to precisely monitor and adjust each lifting point independently.

Most importantly, the system enables a single crane to precisely position heavy and unbalanced loads.

Offering accuracies of plus/minus one millimetre over cylinder strokes of up to 1500mm, the *SyncHoist* differs from standard Synchronous lifting systems in that it generates pull forces while suspended from a crane above the load, rather than generating push forces from underneath.

Typical *SyncHoist* functions include high precision load positioning; pre-programmed positioning, tilting and aligning; and counterweighting to determine centres of gravity. Enerpac's *SyncHoist* technology is

ideally suited to a wide range of applications, including:

- Positioning of roof sections, concrete elements, steel structures
- Positioning of turbines, transformers, fuel rods
- Precise machinery loading, mill rod changes, bearing changes
- Precise positioning of pipelines and blow-out valves
- Positioning and aligning of ship segments prior to assembly

Benefits of the system include vastly improved operating and positioning speed and worker safety, says Mr Cooper. "It means also that weather conditions play a less critical role."

"Intelligent hydraulics such as *SyncHoist* can turn conventional lifting systems into high accuracy hoisting and load positioning systems. *SyncHoist* and Synchronous Lifting can produce measurable cost reductions and safety benefits when compared with conventional lifting systems," Mr Cooper added.

### ABOUT ENERPAC

Enerpac is a global market leader in high pressure hydraulic tools, controlled force products, portable machining, on-site services and solutions for precise positioning of heavy loads.

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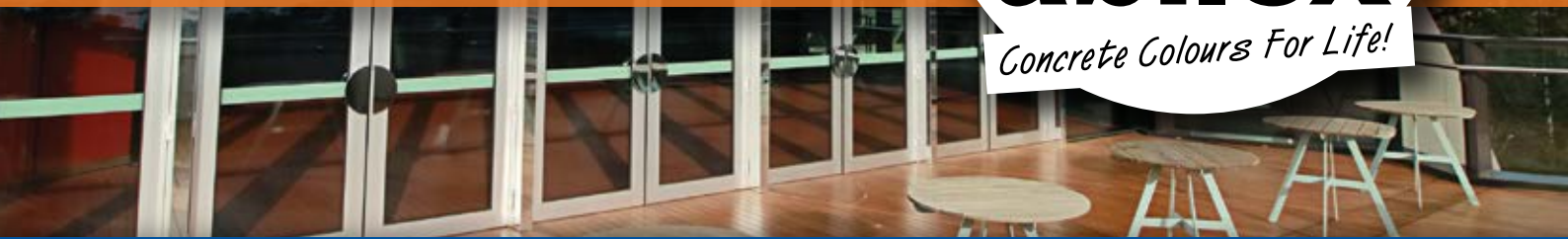
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## A message from the IPWEA NSW President

Firstly, I would like to start by saying, this past year has hit the communities of New South Wales hard, whether it be drought, bush fires, floods or COVID-19. These have been very tough and challenging times, yet together we have created a more optimistic outlook.

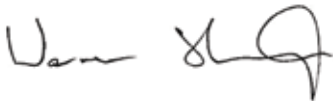
In the face of these disasters, IPWEA NSW members have risen to the enormous challenges to help respond to these national-scale natural catastrophes.

We congratulate all who have given so much to help their communities during this traumatic period. We always knew the IPWEA NSW family was a strong united force dedicated to serving our communities.

In light of the current situation, IPWEA NSW has suspended all face-to-face events and courses until further notice. We are moving to virtual classrooms and/or transferring all our courses scheduled for May and June to online. We will also be providing webinars for additional learning.

The well-being of our team, our members and our NSW communities is our primary concern in this challenging environment.

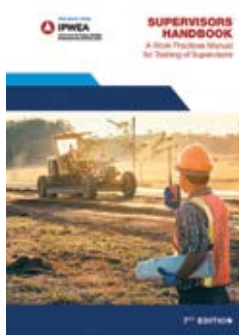
Stay safe all,



**Warren Sharpe OAM**  
President IPWEA NSW

## New improved Supervisors Handbook

The seventh edition of the once Gangers Handbook has been edited to consider the many changes in legislation, regulations, practices and procedures that have taken place since the last edition.



The handbook is for use by field staff in city, urban and country situations and we also believe it is a valuable guideline to younger engineers as they gain experience in the field.

It should be used by members of the workforce to find out what “teams” do and to open up opportunities for workers to seek advancement in their careers. The Institute can provide assistance to staff to seek recognition for the experience they have gained and develop their skills - in an appropriate environment, such as ‘on the job’.

The Supervisors Handbook is now available to purchase. For more information please contact our Professional Development Department on T: 02 8267 3008 or E: Training@ipweansw.org

## 2020 Engineering Excellence Awards Nominations Now Open

IPWEA NSW presents the annual *Engineering Excellence Awards* to encourage, promote and recognise outstanding achievements within Local Government and Public Works.

### HAVE YOU NOMINATED YOUR INNOVATIVE PROJECT?

Our Excellence Awards are a major highlight of the annual State Conference and all Councils throughout NSW are encouraged to nominate their projects and programs. No project is too big or small to be considered by our expert judges.

### DO YOU HAVE AN OUTSTANDING TEAM MEMBER?

IPWEA NSW Members are encouraged to nominate colleagues in their team who deserve recognition for their hard work. Nominating passionate individuals for Category 9 & 10 is the perfect way to acknowledge their contribution to your organisation.

To submit your nomination or to find out further information, please visit: [www.ipweansw.org/engineering-excellence-awards](http://www.ipweansw.org/engineering-excellence-awards)

recognised qualifications in civil construction including CERTIFICATE IV IN CIVIL CONSTRUCTION SUPERVISION and DIPLOMA OF CIVIL CONSTRUCTION MANAGEMENT is now also available online with additional

remote phone and online support and interviews with IPWEA NSW trainers and assessors.

To view all the IPWEA NSW webinars and live webinars, please visit: [www.ipweansw.org/pd-workshops](http://www.ipweansw.org/pd-workshops).

For information about the full range of courses and professional development opportunities on offer, please visit: [www.ipweansw.org](http://www.ipweansw.org)



## IPWEA NSW Online Learning

IPWEA NSW have produced a number of webinars and live webinars to help public works professionals reset their own development plan and maximise a work from home environment.

Online Learning opportunities include:

- Risk Management Planning – 60 Minute webinar
- Useful life of infrastructure: Session 1 Theory and Application – 65 Minute webinar
- Useful life of infrastructure: Session 2 Estimation Practices – 75 Minute webinar
- Introduction – Manage a Local Government Project – 65 Minute webinar

In addition, other IPWEA NSW professional development initiatives such as the *Civil Construction Recognition Program* for nationally



## 2020 Call for Papers Now Open

The Conference Committee are now calling for original papers to be provided for presentation. It is crucial that we continue to learn from our peers and utilise innovative techniques to improve existing practices – this is achieved through you actively participating and sharing your experiences.

### HAVE YOU THOUGHT ABOUT SUBMITTING YOUR PAPER?

Public Works are developing rapidly with the assistance of innovative technologies and we must investigate clever, more efficient ways to keep up with these recent changes.

Learn from like-minded peers and evolve together.

To submit your paper or to find out further information, please visit: [www.ipweansw.org/state-conference](http://www.ipweansw.org/state-conference)



## New Website Feature

We have a new feature on our website under *Corporate Opportunities* providing an opportunity to be part of something special. We are always on the lookout for presenters who understand our attendees, their challenges, responsibilities and unique expertise.

If you think you have what it takes or know someone who can deliver expert knowledge relevant to our members with key initiatives, someone who can motivate, challenge but yet energise our members?

Log onto our website (<https://www.ipweansw.org>) and click onto Corporate Opportunities and express your interest.



## Development Engineering Forum Now Open

The 3rd Annual *Development Engineering Forum* will be held at the Holiday Inn, Warwick Farm over two days in September.

The Forum Committee invite you to submit an original paper for consideration to be included in the Program. Papers can include case studies, innovative technology, service delivery, program evaluation, review of

resource and delivery/quality of improvement activity.

To express your interest in presenting at the 3rd Annual Development Engineering Forum, please visit: [www.ipweansw.org/development-engineering-forum](http://www.ipweansw.org/development-engineering-forum) and fill out the Expression of Interest form.



### ABOUT IPWEA NSW

The Institute of Public Works Engineering Australasia (IPWEA) NSW Division is the professional membership organisation who provides services and advocacy for those involved in and delivering public works and engineering services to the community.

IPWEA has been established as a charity with the purpose of advancing the public works sector in Australia, particularly in NSW. Our mission is to enhance the quality of life of NSW communities through excellence in public works and services. We seek to inform, connect, represent and lead public works professionals in NSW.

Many of our members are engaged in local government, the tier of government that has at its heart the provision of public infrastructure, works and services, management of roads, bridges, community health, road safety, sport and recreational facilities, water and sewer, emergency management which are all key areas of responsibility for local government engineers.

To become involved in this prestigious membership organisation, visit our website [www.ipweansw.org](http://www.ipweansw.org) and sign up via our new system and membership portal, or contact us via email at: [nsw@ipweansw.org](mailto:nsw@ipweansw.org). Don't miss out on the opportunity to be a part of something special.

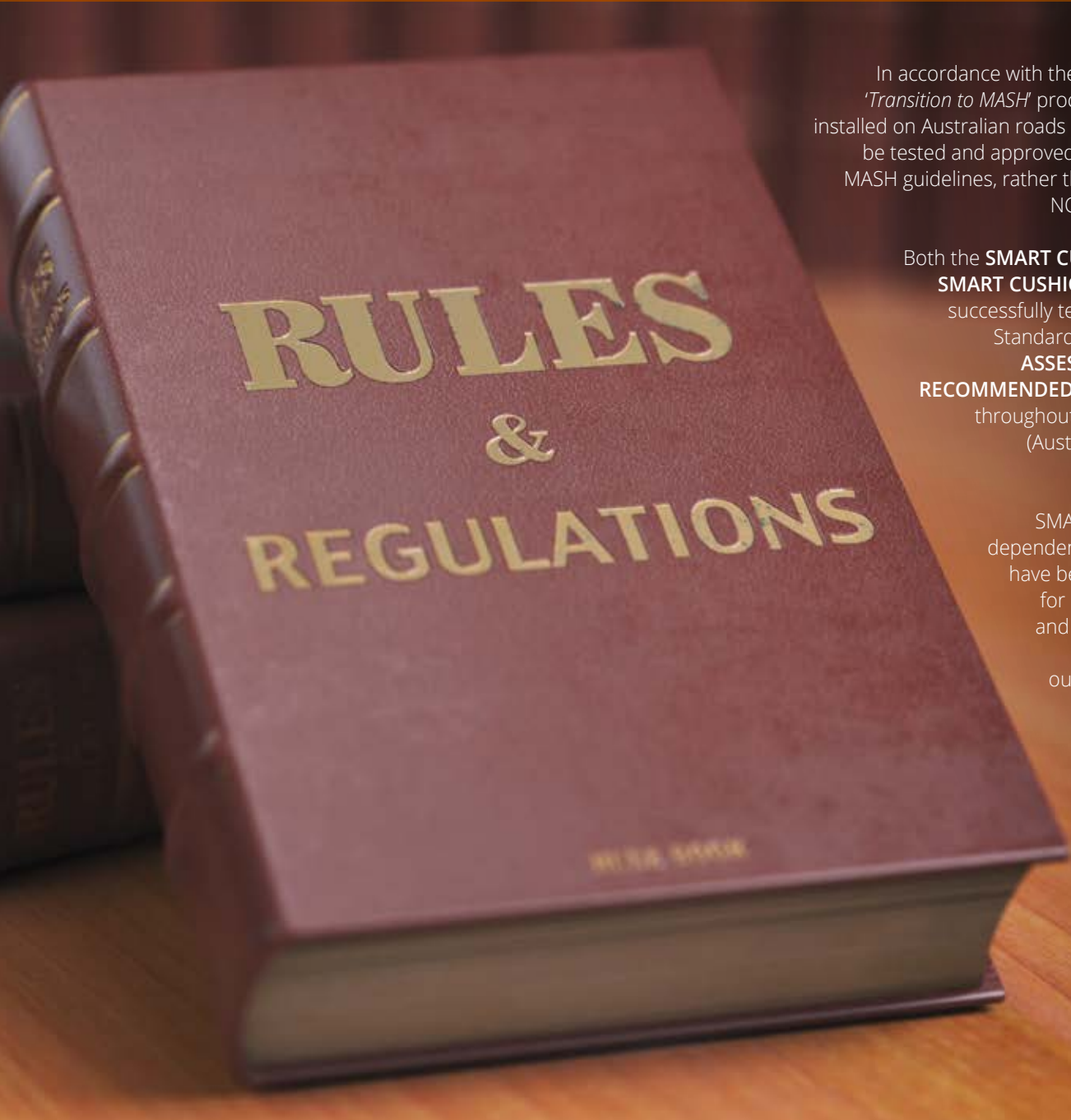




# CRASHWORTHINESS RULES HAVE CHANGED...

## DO YOUR CRASH CUSHIONS COMPLY?

The new rules requiring MASH tested & approved crash cushions came into effect across Australia on January 1st, 2020



In accordance with the Austroads / ASBAP 'Transition to MASH' process, crash cushions installed on Australian roads are now required to be tested and approved under the AASHTO MASH guidelines, rather than the superseded NCHRP350 guidelines.

Both the **SMART CUSHION SC100** and **SMART CUSHION SC70** have been successfully tested to MASH-2016 Standards, with both models **ASSESSED, APPROVED & RECOMMENDED FOR ACCEPTANCE** throughout Australia by ASBAP (Austroads Safety Barrier Assessment Panel).

SMART CUSHION speed dependent crash attenuators have been used in the USA for almost two decades and in Australia for over 5 years – delivering outstanding life-saving performance and significant savings on repair costs in many thousands of impacts.

# SMART CUSHION

**Speed Dependent Crash Attenuators**

# SMART CUSHION

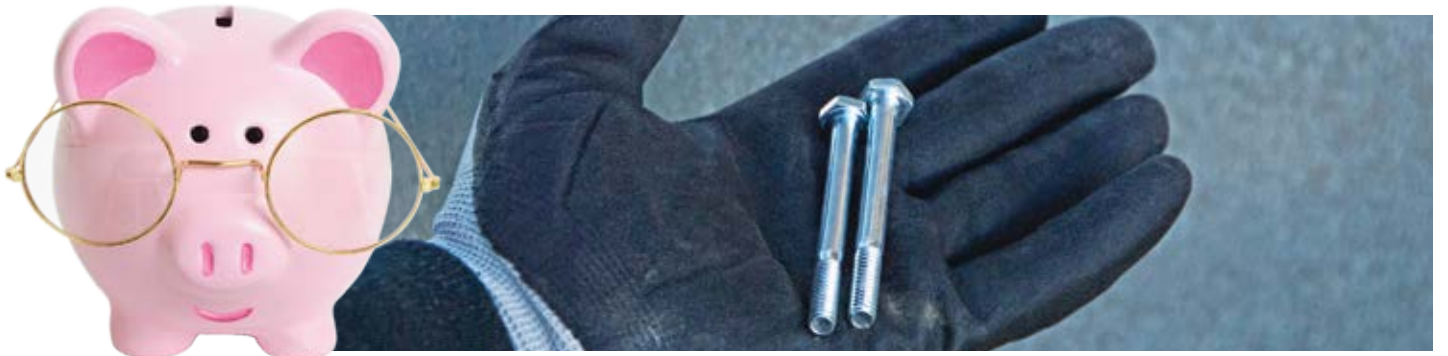
## Speed Dependent Crash Attenuators

### MASH TESTED & APPROVED



### SAVE TIME...

For most impacts up to 100km/h (by vehicles up to 2,270kg) the SMART CUSHION can usually be repaired and reinstated into service in under 60 minutes.



### SAVE MONEY...

In 90% of all impacts in Australia, the only spare structural parts needed for repairs are 2 shear pins (COST <\$5). After 59 impacts in Australia, the average cost for each reset was \$169.



### SAVE LIVES...

After more than 20 years of successful service internationally and over 5 years successful service in Australia, SMART CUSHION has been directly credited with saving numerous lives and significantly reducing the severity of injuries in literally thousands of impacts.

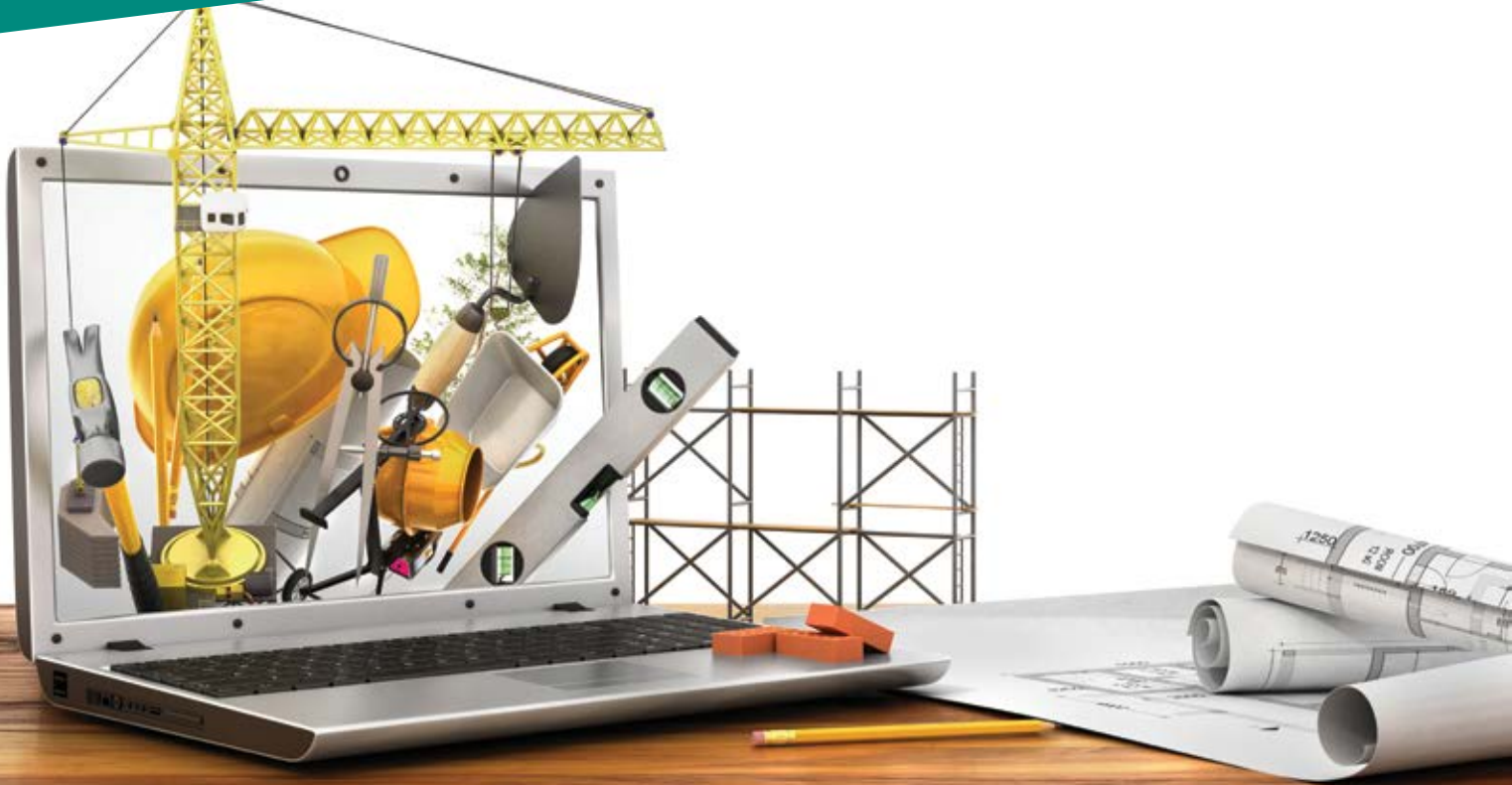


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# Three lessons in resilience as Australia rebuilds

Anna Murray, Senior Account Executive at IFS Australia



The saying is that every fighter has a plan until they get punched. It is then that the plan goes out the window, even as the fruits of planning for contingencies become central. In Australia, we are in a similar situation, having been hit by record bush fires in late 2019 through to February 2020 that will make us re-examine how we prepare for, manage and then recover from disasters, including fire, tsunami and even global pandemics.

The thing is, Australia has been here before and has tried to plan for this future after the Black Saturday fires of February 2009 saw such devastating losses. We had offered buybacks of properties in fire-prone areas that few landowners took while the insurance industry is coming to terms for the risk

associated in rebuilding, driving premiums in some cases to \$10,000 per year. We are, more than ever, learning to track and manage the changing cost of using our land during a time of environmental change.

As we plan our recovery from these bush fires, the rest of the world is coming to terms with a new threat in the form of the COVID-19 pandemic.

Immediately, supply chains are disrupted, most notably for companies reliant on container ships full of inventory from China. Ports saw as much as an 85 percent decline in Chinese-made goods. Many of us may remember similar disruption during the Severe Acute Respiratory Syndrome (SARS) epidemic of 2003.

What do our recent bush fires and the current pandemic have in common? They are part of recurring patterns. As business executives, we should be able to identify and plan our business activities around these patterns.

What are the tactics we Australians, and others around the world who periodically face natural disasters, use to help us rebuild today, and plan for a more secure future?

## 1. MAXIMISE USE OF MODULAR, OFFSITE CONSTRUCTION

Offsite construction is already growing in popularity globally, although in Australia it represents just 3 percent of the residential construction industry even as companies like Lendlease build out central fabrication facilities to handle increasing demand.

Offsite manufacturing enables the industry to increase productivity. Will modular or offsite construction be a boon to us as we rebuild in 2020 and beyond? Offsite fabrication plants may experience high utilization rates for sure, but the availability of offsite capacity in terms of fabrication facilities, personnel and processes may prevent us from using modular construction for a sizable proportion of our immediate need.

## 2. CHANGE THE WAY WE BUILD TO MITIGATE FUTURE RISK

Here in Australia, we are already debating whether we should rebuild in some particularly fire-prone areas. Apart from where to rebuild, how we do it can leave

us better prepared for a future that could involve more and larger bush fires.

The Australian architectural community has created a series of designs that meet the highest fire-resistant standards. These may not be conventional-looking enough, and according to Helen Lochhead, the Dean of UNSW Built Environment for residents of bush fire affected zones, we will probably have to focus on using materials and design features that are compliant with Australian Standard AS3959 for construction of buildings in fire-prone areas.

The construction industry must develop the skills and the data set to make a strong case for these design features, which according to Lochhead may represent 5 percent of the cost of a \$332,000 project.

Current events should make us think about more than fire though, and also consider other risks that architects, engineers and contractors can help their customers avoid. ASHRAE, the global association for heating, ventilation and air conditioning manufacturers, is referring people visiting a

new COVID-19 resource page, to its newly updated Position Document in Airborne and Infectious Diseases and its 2019 Chapter 62, Ultraviolet Air and Surface Treatment from the ASHRAE Handbook.

### 3. RELY ON SYSTEMS TO IDENTIFY AND MANAGE RISK

Individual project owners, designers and contractors may realise the extent to which the projects that they work on expose their organizations to risk, not only during construction but over the lifecycle of the asset.

The industry as a whole could probably concentrate more on creating projects that serve to mitigate risks for the owner and the community at large. That risk may be from fire, from infectious disease, from off-gassing of materials, flood or other natural, or man-made disaster.

Contractors will need the systems in place to evaluate their own exposure to risk and help their customers and project owners assess their own risk.

## TOWARDS A MORE SECURE FUTURE

These are challenging times for Australia, and for the world at large. Some of the factors are beyond our control. But in the enterprise software industry, it is our role to help our customers masterfully handle the things that can be proactively managed. And we look forward to helping our fellow Australians feel prepared for whatever comes.

### ABOUT IFS

IFS develops and delivers enterprise software for customers around the world who manufacture and distribute goods, maintain assets, and manage service-focused operations. IFS's products are known for being user friendly, modular in their design and flexible enough to support the customers in their way of working according to their established processes.

IFS was founded in 1983 and currently has over 4,000 employees. IFS supports more than ten thousand customers worldwide from a network of local offices and through its growing ecosystem of partners.

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LAPP's new ÖLFLEX® ranges of low-smoke, flame-retardant halogen-free cables and cable systems are focused on safety and helping protect against fire and smoke inhalation.



## Halogen-free cable systems respond to safety and sustainability demands

With increased demand for safety in public and private buildings, places, spaces and infrastructure, specifiers are now focusing on materials that protect people in case of fire.

Designers, specifiers, contractors and facility managers understand that smoke and poisonous fumes can be a greater risk to lives than that of fire alone, says global cable systems technology leader LAPP, which is established in 50 countries.

So, to optimise safety in construction and development projects – and to help future-proof them to comply with evolving requirements – LAPP Australia is introducing significant local stocking holding of expanded ranges of German-manufactured halogen-free, low-smoke and fire-retardant cables and cabling systems designed to comply with some of the world's most stringent safety requirements.

The new ÖLFLEX® ranges of low-smoke, flame-retardant halogen-free cables and cable systems are designed for facilities ranging from high-rise buildings and

public entertainment facilities, spaces and places, through to airports, rail and road terminals, recreational and tourist facilities, stadiums, ports, factories, and fire hazard areas of process and production facilities in industries such as mining and energy, oil and gas, bulk handling and food processing, agribusiness and utilities including water and waste handling.

"These new products are engineered to enhance the safety of public and private infrastructure by ensuring that they comply with strict safety standards today, while also extending the sustainability and fit-for-purpose standards of new structures by meeting and exceeding the most advanced requirements being imposed upon them," says LAPP Australia General Manager Mr Simon Pullinger.

He says the biggest issue sometimes facing specifiers is the full understanding of what is a true low smoke-halogen free cable (LSHF – Low Smoke, Halogen Free, or LSZH (sometimes LSOH) – Low Smoke, Zero Halogen).

"According to the international standards with which LAPP products comply, a cable or cable system that ensures security during fire must have passed three tests pertaining to halogen content, low smoke density and flame propagation."

"LAPP's range of low-smoke halogen-free products are accordingly stringently tested to IEC and VDE standards to ensure peace of mind where human life or valuable property are exposed to a high risk of fire hazards."

Examples of the new halogen-free products include:

- Different varieties of ÖLFLEX® Classic 128 H and 128 CH, which are suitable for power and control on static installation or for occasional flexing up to 0.6 – 1kV voltage operations. They are also UV resistant. The CH version contains a copper wire braid for EMC protection.

They may be used in public facilities, airports, railway stations and construction, particularly where human and animal life as well as valuable property are exposed to a high risk of fire hazards.



- ÖLFLEX® CLASSIC 128 H and 135 CH cables, which are power and control suitable for use in damp or dry conditions within industrial environments up to 500v. They are suitable as a control cable for static installation or for occasional flexing operations and are particularly useful where fire hazard is a consideration and areas where high value property is concentrated. The CH version contains a copper wire braid for EMC protection.

The new halogen-free, low-smoke products are new additions to LAPP Australia's stocking of more than 2,500 products locally for short lead time delivery coast-to-coast. These include cable and cabling systems focused on safety and sustainability, including halogen-free products and extended ranges of special purpose and conduit and cable systems integral to sustainability and reliability in areas such as solar, wind and broader green energy systems, surveillance, security and safety systems.

Mr Pullinger says the current availability of 20,000 products online locally, with engineering and technical support – as well as twice that number accessible from LAPP's global ranges – gives customers greater access to advanced products and rapid lead

times for better planning of future-focused initiatives, including safety, sustainability and Industry 4.0 automation and digital integration.

For information, please contact LAPP Australia, T: 1800 931 559 or visit the website: [www.lappaustralia.com.au](http://www.lappaustralia.com.au)



Ideal for a wide range of public and private infrastructure applications, ÖLFLEX® Classic 128H Cabling (left) and ÖLFLEX® Classic 135 CH (right) are examples of LAPP halogen-free power and control cables.

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