PROUDLY SUPPORTED BY

Roadmarking Industry Association of Australia

Australasian Corrosion Association Inc.

Traffic Management Association of Australia

iMOVE

itsaustralia Intelligent Transport Systems

AustStab Pavement Recycling and Stabilisation Association

National Precast Concrete Association Australia

HIGHWAY ENGINEERING AUSTRALIA

AUGUST 2023

V54.5

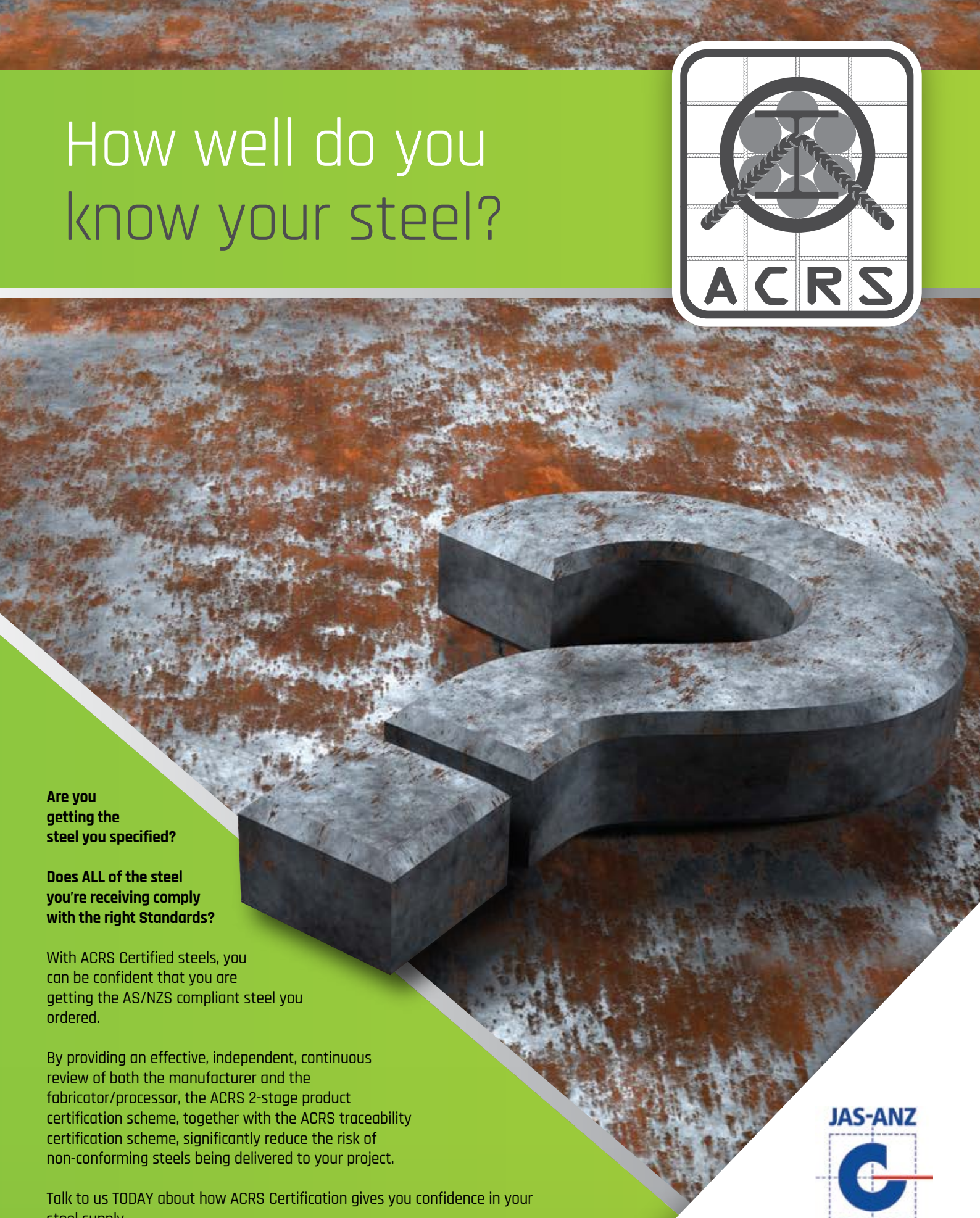
HIGHWAY ENGINEERING AUSTRALIA hea SINCE 1968

TRANSPORT INFRASTRUCTURE ITS TECHNOLOGY

SINCE 1968

PRINT POST APPROVED - 100001888

How well do you know your steel?



Are you getting the steel you specified?

Does ALL of the steel you're receiving comply with the right Standards?

With ACRS Certified steels, you can be confident that you are getting the AS/NZS compliant steel you ordered.

By providing an effective, independent, continuous review of both the manufacturer and the fabricator/processor, the ACRS 2-stage product certification scheme, together with the ACRS traceability certification scheme, significantly reduce the risk of non-conforming steels being delivered to your project.

Talk to us TODAY about how ACRS Certification gives you confidence in your steel supply.

ACRS - Independent, Expert Third Party Certification and Verification of Reinforcing, Prestressing and Structural Steels for Compliance with Australian and New Zealand Standards

www.steelcertification.com
Ph: (02) 9965 7216
E: info@steelcertification.com
ABN: 40 096 692 545

contents

AUGUST 2023
Volume 54 Number 5

Published by:
Editorial and Publishing Consultants Pty Ltd
ABN 85 007 693 138
PO Box 510, Broadford
Victoria 3658 Australia
Phone: 1300 EPCGROUP (1300 372 476)
Int'l: +61 3 5784 2210
www.epcgroup.com

Publisher and Managing Editor
Anthony T Schmidt
Phone: 1300 EPCGROUP (1300 372 476)
Mobile: 0414 788 900
Email: ats@epcgroup.com

National Advertising Sales
Phone: 1300 EPCGROUP (1300 372 476)
Int'l: +61 3 5784 2210
Email: ats@epcgroup.com

Business Development Manager
Lawrence Whiter
Mobile: 0418 543 821
Email: lawrencewhiter@bigpond.com

Advertising Sales - SA
Jodie Gaffney - AmAgo
Mobile: 0439 749 993
Email: jodie@amago.com.au

Advertising Sales - WA
Licia Salomone - OKeeffe Media
Mobile: 0412 080 600
Email: licia@okm.com.au

Graphic Design
Annette Epifanidis
Mobile: 0416 087 412

Registered by Australia Post
Publication No. 100001888
ISSN 0046-7391

About the Cover

Building on the success of the first Australian DOLRE installation in 2022, the revolutionary DOLRE Low Stress Parapet System continues to go from strength to strength in Australia, with three additional installations in Tasmania and New South Wales, as well as a number of other projects currently underway around the country.

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

MANAGING URBAN SPRAWL

Investing in infrastructure to meet the needs of our expanding cities

Dear Readers,

While few would question the complexities associated with urban planning and development, it is also clear that in some areas - particularly 'urban sprawl areas' - something appears to have 'gone badly awry'.

More specifically, it appears that regardless of the much-touted focus on 'building communities', the provision of appropriate supporting infrastructure, or for that matter, ensuring the suitability and/or capacity of existing infrastructure in the vicinity of many new developments is still, for many, a secondary consideration.

That's not to say that the majority of commercial and residential developers don't focus on providing infrastructure within the new developments - quite the contrary. For most developers, highlighting the array of facilities and services within the new residential estate or commercial area is often the number one selling point.

Unfortunately, in the majority of instances, it appears that the focus on quality infrastructure extends only as far as the boundaries of the development precinct.

More often than not, there appears to be little or no concern on behalf of those involved about the impact that a sudden increase in population (working and/or residential) and, in particular, the associated increases in vehicular traffic or increased demand for public transport, will have on the surrounding areas.

These issues are further compounded by the fact that in recent years, many new developments are now being marketed as 'multifunction' or 'mixed-use' precincts, where there is a particular focus on the establishment of home offices and/or micro businesses alongside residential dwellings (ideal in the post-COVID world) - thereby further increasing activity and demand.

What's more, when it comes to the existing infrastructure - particularly roads and drainage - in the outlying and in many instances, until recently, semi-rural areas that are often chosen as the location for these developments is often well past its 'use-by date' and is already being expected to cope with demands that far exceed its original design specification.

With that in mind, I believe that unless we urgently address the problems associated with the lack of appropriate infrastructure and facilities in the areas around these new estates and developments, we are seriously running the risk of undoing much of the excellent work that has been done in recent years to improve the quality of life in our cities - particularly in terms of our road network.

It's simply not good enough to place a set of traffic lights at the entry to a new estate and consider it effective 'traffic management'.

Sadly, there are a number of major new estates that haven't even provided traffic lights! And even if there are traffic lights, they do nothing to overcome the problems of traffic congestion that results from the introduction of hundreds (if not thousands) of additional vehicles onto an already 'overstretched' road network - a road network which in many instances was never designed or intended to carry such high levels of traffic.

Indeed, in Kalkallo, in Melbourne's outer-north, there are reports of residents taking up to one hour just to get their cars out of their sub-division onto the road network!

I believe that the only way to overcome these issues is to take an holistic approach to infrastructure development - one that considers the wider 'footprint' of these new developments and takes into account the 'true' impact on the surrounding areas.

Needless to say, this process must then also deliver appropriate funding for the development and delivery of suitable infrastructure in the areas surrounding new estates. And this new and/or upgraded infrastructure needs to be delivered and fully operational prior to the completion of the new estate - lest we run the risk of developing very expensive suburbs with second-rate facilities and access.

Anthony T Schmidt
Managing Editor

INGAL CIVIL PRODUCTS
A valmont COMPANY

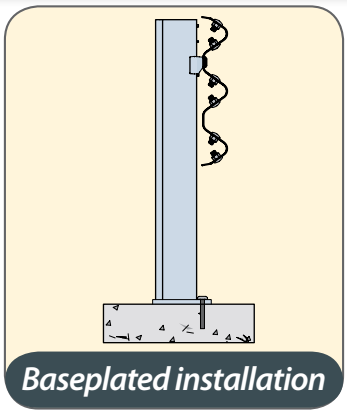
EZY-GUARD HC
INGAL CIVIL PRODUCTS

High-Containment Roadside Safety Barrier

Introducing Ezy-Guard High Containment, a member of the next-generation Ezy-Guard barrier family, providing superior motorist safety. Ezy-Guard HC is proven and crash tested to the latest MASH Test Level 4 standard, distinguishing it from all existing public domain guardrail barrier systems in Australia.

- Crash tested to MASH Test Level 4 – 10,000kg Truck
- Narrow footprint saving road width
- Easy to transport and simple to install
- Consideration for motorcyclists with rounded post corners
- Can be installed as a post-on-baseplate for areas where underground services restrict posts from being driven into the ground


Consideration for motorcyclists


Baseplated installation


Narrow footprint saving road width

www.ingalcivil.com.au
sales@ingalcivil.com.au

- **Sydney** (02) 9827 3333
- **Melbourne** (03) 9358 4100
- **Perth** (08) 9452 9111
- **Wagga** 0427 779 588
- **Brisbane** (07) 3489 9125
- **Adelaide/NT** 0438 153 482
- **Newcastle** 0400 235 883
- **Local call** 1300 446 425

Recycled Plastic Asphalt sample from the RMIT team

Recycled roads pave the way to a sustainable future

New roads mixed with recycled plastics at ten sites across Victoria will demonstrate a viable circular-economy solution to the nation, experts say. The RMIT University-led project – supported by the Australian Research Council, Austroads and 10 Victorian councils – will incorporate recycled plastic from consumer and industrial waste, including notoriously stubborn soft plastics, into asphalt as a performance enhancer.

With Australians generating 2.6 million tonnes of plastic waste each year and landfill space expected to reach capacity by 2025, this project is helping to address an urgent challenge. Project lead, RMIT Associate Professor Filippo Giustozzi, said the team will also produce best-practice guidelines on the use of recycled plastics in asphalt roads.

"These guidelines will enable local governments, which control 80% of the nation's roads, to begin widescale adoption of this innovative recycling solution," said Giustozzi from RMIT's School of Engineering.

The City of Melbourne and nine suburban and regional councils will lead the way, each having sections of recycled road up to 900 metres long paved over coming months. The 10 project sites will use an estimated 21,000 kg of recycled plastic, but the potential scale of this solution is considerable given the several hundred thousand kilometres of roads across Australia

"If Australia's 537 local governments each used a small amount of recycled plastic in the many roads they resurface each year, then nationally we'll have created a large end-market for recycled plastic," he said.

NEW ROADS BUILT ON QUALITY RESEARCH

Extensive laboratory studies conducted by RMIT for Austroads – the collective of the Australian and New Zealand transport agencies – show these mixes are mechanically, chemically, and environmentally sound, he said.

"The performance of roads can actually be improved with the additions of recycled material, such as plastic and rubber, to be more durable against traffic and resistant against ageing," Associate Professor Giustozzi said.

The team's latest study, funded by Austroads and published in the international peer-reviewed scientific journal, Science of The Total Environment, found that the recycled plastic asphalt mixtures had 150% less cracking and 85% less deformation under pressure testing than conventional asphalt.

"These studies tell us that adding specific types of plastic in the right way can generate greater rutting and fatigue resistance," he said.

"In some instances, the performance of the mix was similar to some of the more expensive polymers used in roads and substantially higher than conventional asphalt mixes."

The partnership with Victorian councils and Austroads will now translate these findings into applied solutions that enhance the sustainability of our roads.

"This is a critical step in demonstrating the feasibility of this approach to tackling a problematic waste stream in Australia, while at the same time, establishing a trusted network for plastics recycling in road applications," he said.

SUPPORTING WIDESCALE ADOPTION

Austroads Chief Executive, Geoff Allan, noted increasing interest in exploring the viability of repurposing recycled waste plastic, and said Austroads was leading ground-breaking work to investigate the most suitable types of plastics for use in roads.

"This project builds on the work completed last year that confirmed recycled plastics can be successfully incorporated in road infrastructure without detrimental effects on the environment, the health and safety of the workers, or the future recyclability of plastic-modified asphalt," Mr Allan said.

"A major contribution of this project will be to develop evidence-based guidance that will provide certainty to road managers about the use of recycled plastics in road surfacing applications and thus lay the foundations for this solution to be embraced nationally."

Along with Austroads, the collaboration includes Australia's leading pavement authorities and specialists, including public works and building bodies, recyclers and contractors. It will be coordinated under the ARC Industrial Transformation Research Hub for Transformation of Reclaimed Waste Resources to Engineered Materials and Solutions for a Circular Economy (TREMS).

Local government areas involved in the project include City of Melbourne, Banyule, Bayside, Moonee Valley, Hobsons Bay, Baw Baw, Latrobe, Casey, Mornington Peninsula and Wyndham.

'Engineering properties, microplastics and emissions assessment of recycled plastic modified asphalt mixtures' is published in Science of the Total Environment (DOI: 10.1016/j.scitotenv.2023.164869).

Transdev leads the way recycling old uniforms in Australian first

Transdev is going fashion-forward to repurpose old uniforms, potentially turning them back into clothing, sunglasses or playgrounds.

Transdev, which provides uniforms to several thousand of its people across Australia, has started a trial at its Sydney Light Rail and Sydney and Queensland bus operations with clean technology company BlockTexx.

BlockTexx operates Australia's only commercial-scale textile recovery facility, which uses a patent-pending chemical process to break down polyester-cotton blended fabrics. The recovered cellulose can then be used to make textiles, paints, hydromulch, concrete and more.

The recovered polyester is used to make textiles and in injection moulding for playground equipment and even coat hangers.

Transdev CEO Brian Brennan said the new partnership was another practical way Transdev was acting on sustainability, innovation and social enterprise.

"Recycling old uniforms, which would otherwise be dumped, is much more sustainable. And using a more innovative process to recover higher-grade fibres with the help of a social enterprise with supported workers, just makes sense," Mr Brennan said.

"We've already recycled 400kg from our Sydney tram team and hope to get even more from our Sydney and Brisbane bus teams.

"Transdev is always looking for smarter ways to be more sustainable, whether it's decarbonising our transport fleets, working with compliant and ethical suppliers or recycling our uniforms."

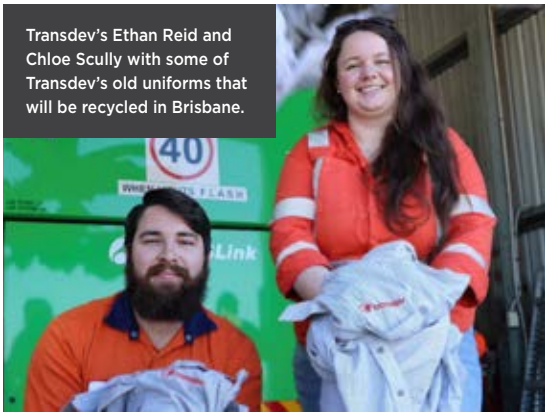
While the initial partnership is focused on three Transdev sites, Transdev also operates Sydney Harbour ferries, buses in Perth, trains and buses in Wellington, and buses in Auckland. The intention is to grow the partnership.

Transdev is seeking to green its transport fleet across Australia and New Zealand in partnership with its government clients, using innovative technology to guide that growth.

It's the pursuit of technology-driven ideals that sits well with Adrian Jones, co-founder of BlockTexx.

"We're proud to work with forward-thinking organisations such as Transdev," Mr Jones said.

"Our world-first technology not only provides a sustainable alternative to sending unwanted uniforms to landfill, it also remanufactures them into valuable raw materials for onshore and offshore product manufacture.



Transdev's Ethan Reid and Chloe Scully with some of Transdev's old uniforms that will be recycled in Brisbane.

"BlockTexx closes the loop of unwanted clothing and textiles by diverting these materials from landfill. Through our advanced remanufacturing processes textiles are given a second life.

"We've also partnered with social impact organisation HELP Enterprises. Their skilled workforce completed the pre-processing by removing labels, buttons and zippers from the uniforms."

This uniform trial uses BlockTexx's S.O.F.T. (separation of fibre technology) patent-pending process in operation at BlockTexx's commercial-scale textile-recovery facility, built at Loganholme in Queensland in late 2022.

Evie networks launches new app: Simplifying electric vehicle charging

Ultra-fast electric vehicle charging network, Evie Networks, has announced the launch of its own independent charging app, designed from the bottom up to make charging simpler.

After extensive testing with a group of dedicated drivers, Evie has taken all customer feedback into consideration to enable them to develop an app that has driver needs at its core.

Available on both iOS and Android operating systems, the new app includes a variety of features that make charging an electric vehicle hassle-free, convenient and part of daily life. By simply tapping the screen twice, users can effortlessly select a charging plug and initiate the charging process. Additionally, the app provides a seamless way to locate Evie chargers by offering an instant snapshot of their locations and availability as soon as the app launches. Users will be able to quickly identify available charging stations nearby and across Australia and plan their routes accordingly.

The app further enables users to track the progress of their charging in real-time, with live updates on the status of their vehicle's charging session available.

For additional charging convenience, Evie also offers Evie Pass - an RFID card linked to your App account, which enables you to start a charge by tapping the RFID card directly on the charger.

For more information, visit: https://goevie.com.au/

SA accelerates towards zero-emission public transport with train and bus trials

The State Government will showcase a clean, green public transport future with hybrid trains and hydrogen buses to join a full-battery electric bus as the latest technology to be trialled across the network.

A ground-breaking, two-year hydrogen bus trial will involve two vehicles based at the Morphettville bus depot deployed on routes across Adelaide from late August. The first of these hydrogen buses has arrived in Adelaide, wrapped in a striking green decal.

In collaboration with Foton Mobility, BOC and H2H Energy, operator Torrens Transit will then begin internal testing of two Foton Hydrogen Fuel Cell Buses from the Morphettville depot before being released for operation.

Hydrogen Fuel Cell Buses (HFCB) represent a rapidly emerging, green alternative technology. HFCB trials and fleet implementations are increasingly occurring across public transport networks globally from London to Beijing and Cologne – which has a similar population size to Adelaide.

The benefits of hydrogen-powered vehicles over battery electric buses include faster refuelling and greater range, which may be critical to delivering services to the outer metro areas and into the regions.

Hydrogen complements battery electric vehicle technology by providing a viable cleaner, greener, emissions-free technology that can power buses, trains or other heavy vehicles carrying heavy loads. Hydrogen fuel carries significantly more energy than the equivalent weight of batteries, which is important as the State Government evaluates future technology options, including powering trains on the Belair, Outer Harbor lines and Grange and Port Dock connections.

Initial testing of a prototype hybrid-diesel railcar is progressing well, with a second railcar fitted with the new Energy Storage and Recovery System. These railcars have been coupled together and the testing of the two-car train set is now underway.

This two-car train set is the first of 44 diesel railcars expected to be fitted with the hybrid system, with the trains to run on the Outer Harbor, Grange and Belair lines.

This new system works by storing kinetic energy generated when the train brakes to an onboard battery, converting it into electrical energy to power normal train operations – decreasing stress on the engine and fuel consumption by approximately 16 per cent. The battery will also be used instead of the diesel engine to supply auxiliary loads (power for lighting and air-conditioning, for example) at the train platform within Adelaide Railway Station to reduce noise, emissions and air pollution.

The first train is expected to be introduced into passenger service in coming weeks.

Installation of the Energy Storage and Recovery System on the remaining trains will be progressively rolled out, with all trains expected to be in passenger service with the new system by mid-2024.

Once fully installed, Adelaide Metro will save an estimated 2,400 tonnes of CO2 emissions annually.

Adelaide Metro also continues to make significant steps towards a zero-emissions future across its bus fleet, with testing of the state's first full-battery electric bus already well underway.

As well as being better for the environment, full-battery electric buses offer a range of benefits for passengers. They offer more space and better comfort and accessibility while eliminating noise and fuel-based pollution. A further five full-battery electric buses are on order, pending the results of this trial.

Adelaide Metro is committed to transitioning to a zero-emissions public transport system to support the State Government's net zero emissions by 2050 target.

TECHNICAL SERVICES

PUT AMMANN EXPERTISE TO WORK

Ammann offers service packages that ensure all maintenance is current, making your plant efficient and also protecting it from premature wear that can result from poor service practices.

A variety of technical service packages are available. Or, if you prefer, an Ammann representative can visit your plant and together develop a plan that suits your needs.

- PERIODIC MAINTENANCE
- ELECTRICAL CHECK
- CALIBRATION SERVICE
- BURNER MAINTENANCE
- FILTER CHECK
- MAINTENANCE CONTROL

CALL US TODAY TO DISCUSS YOUR NEEDS

Nick Patterson
Service Manager
Mobile: 0488 552 103

Ammann Australia Pty Ltd.
8/85 Pasturage Road, Caboolture, QLD 4510

For additional product information and services please visit: **www.ammann.com**
Materials and specification data are subject to change without notice.

AMMANN

Australian First Heavy Vehicle Safety Technology Gets Green Light

Heavy vehicles operated by crews on Stage 1 of the Mickleham Road Upgrade will be the first in Australia to benefit from new safety technology that will help more Victorians get home safer. The ground-breaking MAX-SAFE technology has been installed in some heavy vehicles being used on the congestion-busting suburban road project - with trials of the attention-grabbing audible and flashing light alert system to help reduce the likelihood associated with heavy vehicle movements during delivery of the project.

Automatic detection systems have been installed inside these heavy vehicles to alert the operator within the cabin that a vulnerable road user i.e. pedestrian, cyclist or scooter rider is in the vicinity – in particular during left-hand turning manoeuvres.

Powered by a highly advanced artificial intelligence-based smart camera, this Side View technology as part of the MAX-SAFE system is specialised in detecting specific vulnerable road users, and not other objects or obstructions.

Electronic flashing lights and alarms will initiate inside and outside the vehicle, providing the crews who are operating heavy vehicles and machinery with the advanced warning they need to assist with avoiding an unexpected collision with a vulnerable road user. It also acts to alert those outside of the vehicle.

Mickleham Road between Somerton Road and Dellamore Boulevard is used by more than 25,000 vehicles each day and is a key arterial route for Melbourne's rapidly expanding north-west.

Students dominate pedestrian traffic in the area during school terms, with close to a thousand students attending the nearby prep to year 12 Aitken College, with the Mary Queen of Heaven Primary School and other preschool facilities adding to this local vulnerable road user population.

Without intervention, pedestrians, cyclists and scooter riders could be at a heightened risk of entering a heavy vehicle operator's blind spot. Instead this system aims to negate this risk and maintain a form of visibility, especially during left hand turns.

The ground-breaking system trial is the result of collaboration between Major Road Projects Victoria, construction partner BMD and SGESCO-MAX, to find new ways to reduce the likelihood of safety incidents with members of the public during construction.

Speaking about the trial, Major Road Projects Victoria Area Safety Manager, Kelvin Doyle, commented: "We have a number of schools, kindergartens and footpaths that increase our interactions with vulnerable road users through our heavy vehicle movements on Stage 1 of the Mickleham Road Upgrade."

"Through close collaboration with our construction partner BMD, we've developed this trial of the MaxSafe technology - providing the critical audio and visual warnings to not only the operator within the cabin, but also those vulnerable road users outside of the heavy vehicle," Mr Doyle said.

BMD Senior Project Engineer, Todd Stemmer, added: "Today's trials are tomorrow's business as usual. We're so impressed by the technology that we're looking to equip more of our heavy vehicles with this system to address blind spots for our crews."

The success of the new technology will be closely monitored and evaluated, with a view to rolling this and similar systems out more broadly across more of the state's road projects.

The safety trial is part of Stage 1 of the Mickleham Road Upgrade, which is building extra lanes in each direction on Mickleham Road between Somerton Road and Dellamore Boulevard, along with new traffic lights, intersection upgrades, and better walking and cycling connections.

SGESCO-MAX Managing Director, Scott McPherson, said that this is the first time this technology has been used for construction anywhere in Australia.

"We're extremely excited to be a part of the trial," Mr McPherson said.

"We're excited that we can also achieve our mission, which is to protect people around heavy vehicles and machinery," he added.

The Victorian and Australian governments have invested $222 million for the Mickleham Road Upgrade Project. Stage 1 of the Mickleham Road Upgrade is expected to be complete in mid-2025.

Teletrac Navman Campaign Highlights the cost of Non-Compliance in Heavy Vehicle Operations

Teletrac Navman, a global market leader in telematics technology, is campaigning to highlight that compliance with safety regulations is part of the responsibility of every person within the business.

The Cost of Non-Compliance aims to emphasise the critical importance of compliance with safety regulations within the road transport industry in Australia. By shedding light on the true toll of non-compliance, Teletrac Navman seeks to create awareness, drive behavioural change, and foster a safety-first culture among all stakeholders in the supply chain.

"Safety and compliance are not just legal obligations; they form the backbone of a smooth, efficient, and secure road transport sector," says Teletrac Navman's National Manager Transport Anthony Laras. "It's challenging for fleet operators and drivers to navigate the complex regulatory landscape. The campaign brings to the forefront the significant penalties and consequences that businesses and individuals may face due to non-compliance."

Under the Chain of Responsibility (CoR), every party involved in the road conveyance supply chain, including directors, managers, employees, contractors, and suppliers, shares the responsibility for compliance. In the event of prosecution, every party must demonstrate that they've taken every reasonable step to prevent law breaches; otherwise, they may be held partially liable for incidents or collisions that occur on the road.

The CoR ensures that all parties in the chain, such as employers, contractors, operators, consignors, and loading managers, collectively

Major Road Projects Victoria Area Safety Manager, Kelvin Doyle with one of the Mickleham Road Upgrade Project trucks that has been fitted with MAX-SAFE technology.

strive to eliminate or minimise risks associated with heavy vehicle transport activities to the extent reasonably practicable. Surprisingly, more than half of the CoR functions also apply to people or businesses not directly owning or operating heavy vehicles. Whenever a business uses a heavy vehicle to send or receive goods, they automatically become a part of the CoR.

Non-compliance with CoR regulations carries severe penalties and impacts various parties along the supply chain. The new campaign highlights the following eye-opening penalties for non-compliance:

- $3,721,686 - The maximum monetary penalty for NSW companies found guilty of category one offences for reckless conduct according to the Work Health and Safety Act. This highlights the ethical duty for businesses to prioritise safety and protect their most valuable resource – their people.
- $300,000 and five years jail - The penalty for individual company directors found guilty of category one offences under the Heavy Vehicle National Law (HVNL), holding them accountable for their employees' or contractors' actions.
- $10,000 - The maximum penalty under HVNL for consignors and consignees who encourage or require unsafe behaviours from heavy vehicle drivers or parties in the CoR.
- $15,000 - The penalty for schedulers, supervisors, or any person arranging goods for transport in heavy vehicles, responsible for ensuring drivers' well-being, working hours, and compliance with speed limits.
- $16,119 - The maximum penalty in Victoria for an unsecured load causing harm or damage, highlighting the responsibilities of those handling goods and loading/unloading heavy vehicles.
- $5,500 - Drivers are not exempt from responsibilities; they must ensure they follow road rules, with personal fines applying to drivers with over-height vehicles.

"At Teletrac Navman, we are dedicated to supporting the heavy vehicle industry in safety and compliance, ultimately making roads safer for everyone," explains Anthony.

Teletrac Navman solutions streamline compliance with regulatory programs, including the Chain of Responsibility (CoR). With real-time visibility into the responsibilities of different parties in the supply chain, businesses can minimise risks, reduce breaches, and avoid penalties.

"Supporting businesses to foster a safety-first culture, our campaign emphasises that compliance is integral to ensuring the health, well-being, and safety of drivers, other road users, and the community," Anthony concludes. "By adhering to CoR and HVNL obligations, heavy vehicle operators not only avoid legal consequences but also showcase their commitment to being responsible industry leaders."

Learn more about Teletrac Navman campaign at:
https://www.youtube.com/watch?v=hKTSSCPfDgM

DOLRE GOES FROM STRENGTH TO STRENGTH

DOLRE
LOW STRESS PARAPET SYSTEM

Building on the success of the first Australian DOLRE installation in 2022, the revolutionary DOLRE Low Stress Parapet System continues to go from strength to strength in Australia, with three additional installations in Tasmania and New South Wales, as well as a number of other projects currently underway around the country.

Together with life-saving impact protection and attractive aesthetics, another major factor in the success of the DOLRE bridge barrier both in Australia and internationally is its ground-breaking 'low stress' design which restricts the outward transverse force transmitted to the bridge deck during a vehicular impact to a fraction of the bridge deck's capacity.

DOLRE's patented post 'fuse' system, together with its innovative post and rail design enables DOLRE Regular bridge traffic barriers to deliver AS5100 'Regular' (US MASH TL4) protection, while at the same time, limiting the maximum outward transverse force to only 43 kN/post (22 kN/metre), which equates to only 14% of the allowable ultimate load under AS5100-2017.

What this means in practical terms, is that DOLRE can be installed along most bridges without the need for expensive deck strengthening works or additional reinforcement.

In the two most recent Tasmanian installations, DOLRE barriers replaced old-style steel post and rail barriers with direct connections to concrete kerbs along each of the outer edges of the bridge decks.

UPGRADING BRIDGE SAFETY TO MEET CURRENT STANDARDS

While the combination of increased traffic flows, greater vehicle loads and the rapidly-changing vehicle mix undoubtedly presents a significant challenge for many of Australia's aging bridge assets, bridge remediation is not only about load-carrying capacity. It's also about ensuring that the bridges are safe to use and comply with the current Australian Bridge Standards and safety guidelines.

Even though many road bridges - particularly those in rural, remote and urban interface areas - are now carrying vehicle numbers well in excess of their original intended design, not all older bridges are at the end of their useful design life.

Put simply, for many bridges across Australia, it's not so much a matter of upgrading structural capacity, but rather one of upgrading safety.

That said, providing upgraded AS5100-compliant bridge traffic barrier protection along an ageing bridge deck is far more complex than simply 'swapping out' an existing barrier for a newer model with greater structural capacity to cater for faster, larger and/or heavier vehicles. Indeed, when it comes to providing Standards-compliant traffic barrier protection along ageing bridge assets, one of the most common challenges is that the bridge deck lacks the structural capacity to accommodate the transfer of impact energy from higher-capacity traffic barriers.

When a bridge traffic barrier is impacted, the energy transfer is not limited to the barrier alone - it also flows through to the bridge deck and the overall bridge structure. If the amount of impact energy transferred exceeds the capacity of the bridge deck, it not only increases the risk of the barrier failing, it can also pose a significant risk to the structural integrity of both the deck and the bridge as a whole.

COST-EFFECTIVE SOLUTION FOR BRIDGE SAFETY UPGRADES

The innovative DOLRE Low Stress Parapet System is ideal for bridge refurbishment projects. DOLRE offers a cost-effective and easy-to-install method of upgrading safety along bridges that still have residual life in the bridge deck but need upgrading to meet the current Australian Bridge Standards.

Specifically engineered to minimise the risk of damage to the bridge deck and structure during a vehicular impact, DOLRE bridge traffic barriers can play a significant role in extending the serviceable life of many existing bridges - delivering AS5100 and AS3845 compliant protection without the requirement for bridge deck strengthening works.

Crash tested and certified to EU EN1317 (with additional digital model validation and verification to EN16303-2020) and simulated to US MASH-2016 and AS5100-2017 requirements using validated FEA (Finite Element Analysis) modelling, the DOLRE Low Stress Parapet system has been assessed, approved and recommended for acceptance throughout Australia by ASBAP (Austroads Safety Barrier Assessment Panel).

DOLRE is available in 'Low', 'Regular' and 'Medium' performance levels in accordance with the requirements of Australian Bridge Design Standard AS5100:2017.

LATEST TASMANIAN DOLRE INSTALLATIONS

Tasmania's most recent DOLRE bridge traffic barrier installations are located on two bridges along the Murchison Highway (A10) near Guildford in the state's north-west.

Stretching some 147 kilometres between Somerset near Burnie in the north and Zeehan in the south, the Murchison Highway runs along the western edge of the World Heritage-listed Cradle Mountain-Lake St Clair National Park, traversing some of Tasmania's most pristine wilderness areas. As well as providing access to the region's national parks and wilderness areas, the Murchison Highway also forms the primary north-south freight and transport route for Tasmania's West Coast and North-West – providing a critical link for industry, tourists and locals alike.

While the region's economy has diversified from its initial post-European settlement focus on mining and forestry in the mid-1800s, both industries still play a significant role, together with agriculture, manufacturing and, most significantly, eco-tourism. Indeed, Lake Mackintosh, Cradle Mountain and the Granite Tor Conservation Area, together with the numerous surrounding regional and forest reserves, attract tens of thousands of campers, hikers and fly-fishing enthusiasts from across Australia and around the world each year.

Not surprisingly, steadily increasing traffic flows - including a significant percentage of heavy vehicle traffic - are placing a significant strain on the ageing bridge infrastructure along the Murchison Highway.

With that in mind, the Tasmanian Department of State Growth is carrying out a series of bridge strengthening and remediation projects to increase the load-carrying capacity and improve safety on a number of key bridges across the region.

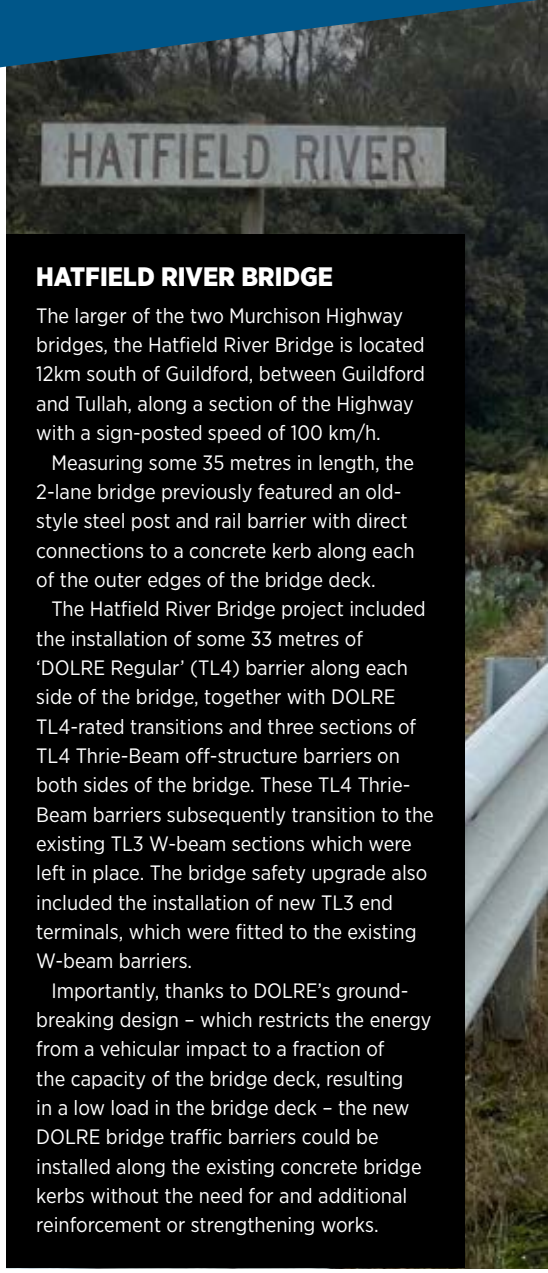
Two of the bridge remediation projects along the Murchison Highway – the Hatfield River Bridge and the Animal Creek Bridge – also included the installation of DOLRE 'Regular' (TL4) bridge traffic barriers and DOLRE TL4 transitions along both sides of the bridge.

The installation works were carried out by Tasmanian civil infrastructure specialists BridgePro Engineering Pty Ltd. Speaking about the DOLRE installations, John Nel, Project Manager with BridgePro Engineering, said they were very pleased with the installation process and the finished barriers.

"Having worked with the DOLRE barrier system previously on the Ringarooma Bridge in early 2022, we were familiar with the installation process and requirements," he said.

"Prior to the installations, we worked with the team from LB Australia who were able to standardise the sizing of the DOLRE components for the two sites, which helped to further streamline the installation process."

"All in all, everything went as planned with both the Animal Creek and Hatfield River Bridge installations, and we're very happy with the finished barriers," John Nel added.



HATFIELD RIVER BRIDGE

The larger of the two Murchison Highway bridges, the Hatfield River Bridge is located 12km south of Guildford, between Guildford and Tullah, along a section of the Highway with a sign-posted speed of 100 km/h.

Measuring some 35 metres in length, the 2-lane bridge previously featured an old-style steel post and rail barrier with direct connections to a concrete kerb along each of the outer edges of the bridge deck.

The Hatfield River Bridge project included the installation of some 33 metres of 'DOLRE Regular' (TL4) barrier along each side of the bridge, together with DOLRE TL4-rated transitions and three sections of TL4 Thrie-Beam off-structure barriers on both sides of the bridge. These TL4 Thrie-Beam barriers subsequently transition to the existing TL3 W-beam sections which were left in place. The bridge safety upgrade also included the installation of new TL3 end terminals, which were fitted to the existing W-beam barriers.

Importantly, thanks to DOLRE's ground-breaking design – which restricts the energy from a vehicular impact to a fraction of the capacity of the bridge deck, resulting in a low load in the bridge deck – the new DOLRE bridge traffic barriers could be installed along the existing concrete bridge kerbs without the need for and additional reinforcement or strengthening works.

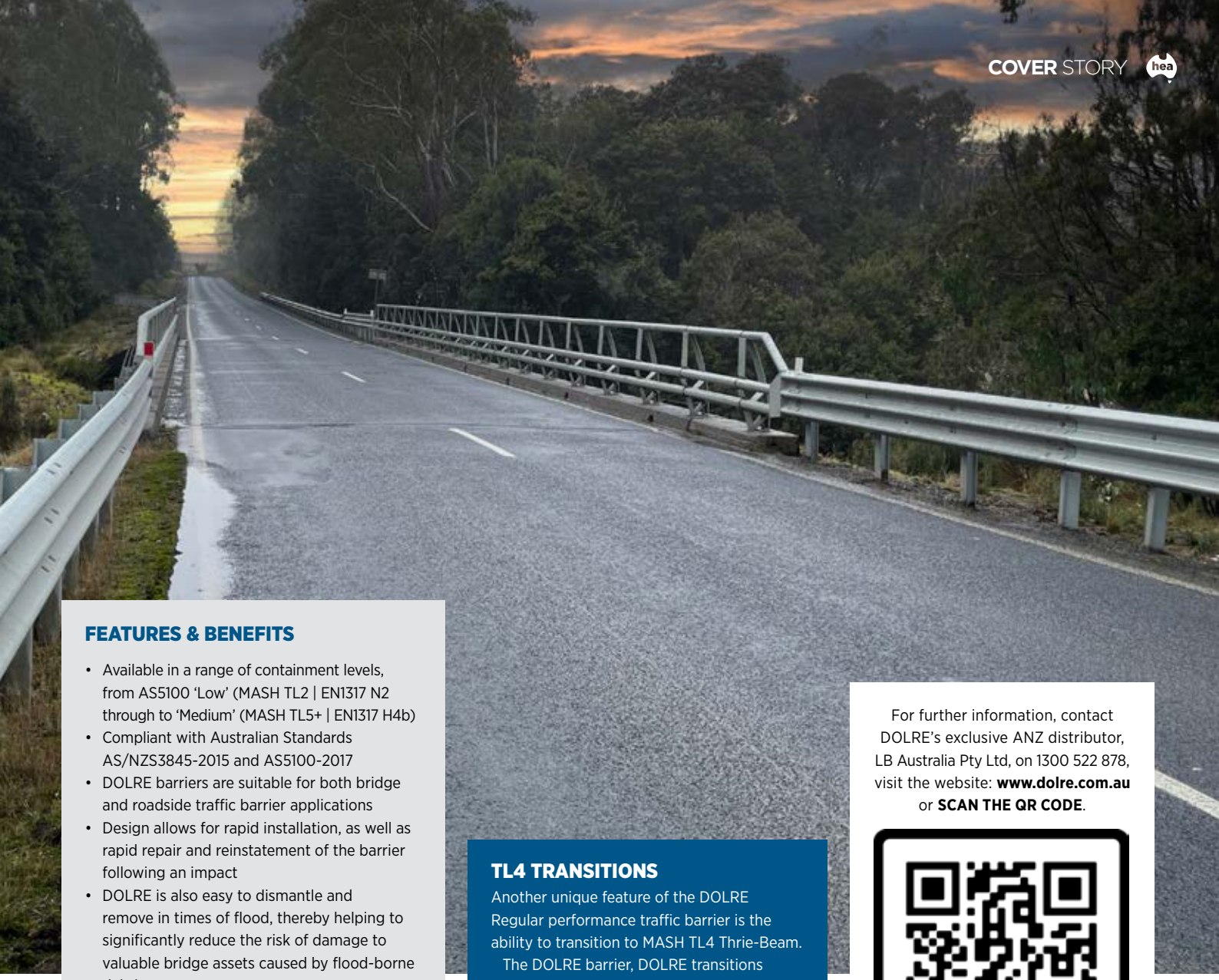
ANIMAL CREEK BRIDGE

The second of the two most recent Tasmanian DOLRE installations took place along the Animal Creek Bridge, which is located a further 14 kilometres south of the Hatfield River Bridge along the Murchison Highway. As with the Hatfield River Bridge, the 2-lane Animal Creek Bridge is also located along a section of the Highway with a sign-posted speed of 100 km/h. It too previously featured an old-style steel post and rail barrier with direct connections to a concrete kerb along each of the outer edges of the bridge deck.

For the Animal Creek Bridge, the team from BridgePro installed some 13.5 metres of 'DOLRE Regular' (TL4) barrier along each side of the bridge, together with a further 60 metres of off-structure barriers along each side of the road on both sides of the bridge.

The off-structure barriers include DOLRE's purpose-designed TL4-rated transitions, which connect the DOLRE barrier to a section of TL4 Thrie-Beam barrier. These TL4 Thrie-Beam barriers subsequently transition to TL3 W-beams with TL3 end terminals.

Together with the obvious benefit of improved safety for road users and reduced risk of damage to the bridge deck during an impact, another major benefit of the DOLRE design is the speed and ease with which it can be installed. This was highlighted during the Animal Creek Bridge installation, which was completed in just one week - including removal of the original steel post and rail barriers and the installation of the new DOLRE barriers, transitions and off-structure barriers.



FEATURES & BENEFITS

- Available in a range of containment levels, from AS5100 'Low' (MASH TL2 | EN1317 N2 through to 'Medium' (MASH TL5+ | EN1317 H4b)
- Compliant with Australian Standards AS/NZS3845-2015 and AS5100-2017
- DOLRE barriers are suitable for both bridge and roadside traffic barrier applications
- Design allows for rapid installation, as well as rapid repair and reinstatement of the barrier following an impact
- DOLRE is also easy to dismantle and remove in times of flood, thereby helping to significantly reduce the risk of damage to valuable bridge assets caused by flood-borne debris.
- Transitions at each end of a DOLRE barrier are engineered to provide a continuity of protection level and full longitudinal load transfer between the bridge traffic barrier and connecting roadside barriers
- Aesthetically pleasing design - also available with an extensive range of optional fascia designs and integrated lighting options
- One post design per system type, suitable for both sides of the bridge
- The post design (including the patented 'fuse') allows the post to yield in an outward transverse direction and fully deform - minimising load transfer to the deck while ensuring that maximum energy is absorbed or transferred along the rails
- DOLRE posts are designed to yield in multiple characteristic steps
- All DOLRE systems feature three rails - two rails for the initial vehicle impact and one rail to resist roll-over
- All rails are cylindrical sections with wall thicknesses and diameters to suit the specified design loads
- All rails manufactured in Europe in standard lengths of 6, 2 or 1.5 metres and carry CE Mark quality certification.

TL4 TRANSITIONS

Another unique feature of the DOLRE Regular performance traffic barrier is the ability to transition to MASH TL4 Thrie-Beam.

The DOLRE barrier, DOLRE transitions and the Thrie-Beams create a continuum of MASH TL4 protection for road users onto and across the bridge structure. Thus, there is an engineered continuity of MASH TL4 protection on either side of the DOLRE Regular traffic barrier.

For further information, contact DOLRE's exclusive ANZ distributor, LB Australia Pty Ltd, on 1300 522 878, visit the website: **www.dolre.com.au** or **SCAN THE QR CODE**.

WHERE AI MEETS

All of your asset data...

DYNAMIC INFRASTRUCTURE

TOWARDS ZERO ASSET FAILURES

DYNAMIC INFRASTRUCTURE utilises infrastructure asset inspection data - from historical reports, photos and videos, through to current drone imaging and LiDAR data - to provide asset owners and managers with a comprehensive condition report for their assets.

Our AI-based predictive analytics utilise your current and historical data to prioritise maintenance requirements and optimise your infrastructure asset management activities.

if3

T: 1300 552 878 **www.dynamicinfrastructure.com.au**

ASSET MANAGEMENT

Right at your fingertips

91% OF TOTAL DEFECTS DETECTED

OVER 99% OF CATEGORY 3 AND CATEGORY 4 DEFECTS DETECTED

Tested by certified engineers, Dynamic Infrastructure utilises proven, cutting-edge AI technology to provide asset owners and maintenance managers with actionable insights to save money and increase maintenance efficiency.

- **Identify defects before they evolve into large-scale failures**
- **Prevent unplanned expenses & manage risk**
- **Maximise warranty through automated tracking of repairs**
- **Gain full field-to-office visibility**

DISCOVER MORE

SCAN ME

INNOVATION TOWARDS ZERO

CELEBRATING THE LOCAL FACE OF ENGINEERING: ENGINEERS AUSTRALIA EXCELLENCE AWARDS

The Engineers Australia Excellence Awards will recognise the outstanding engineers who show innovation and resourcefulness in their work and the region's top engineering projects and the teams behind them.

From 4 to 8 September 2023, Engineers Australia will announce the local winners of the Engineers Australia Excellence Awards and winners of the Achievement Awards at a series of events around the country. The Excellence Awards winners will then go on to represent their location as finalists at the national gala event in November.

"Historically, our winners have this in common; an outstanding capacity to lead by example and work for the good of the community and the planet," said Engineers Australia National President and Board Chair Nick Fleming.

Winners of the Engineers Australia Excellence Awards will not only receive well-deserved recognition but also become ambassadors for the engineering profession, inspiring future generations of engineers.

Secure your spot at the prestigious gatherings celebrating engineering excellence across the nation.

LOCAL WINNERS ANNOUNCEMENTS

Canberra
Monday 4 September, 6.30–9.30 pm AEST
National Museum of Australia, Lawson Crescent, Acton ACT 2601
Book tickets **https://web.cvent.com/event/79087d0b-a092-4148-937f-f97a5e1596ce/summary**

Newcastle
Friday 8 September, 12.30–3.30 pm AEST
Newcastle Club, 40 Newcomen Street, Newcastle NSW 2300
Book tickets **https://web.cvent.com/event/548d0958-a75d-4fbe-8fed-3e38eef155f6/summary**

Northern Territory
Thursday 7 September, 6.30–9.30 pm ACST
Darwin Club, Mitchell Street, Darwin NT 0800
Book tickets **https://web.cvent.com/event/7b5b239b-b860-4939-9747-93cfda035f0b/summary**

Queensland
Friday 8 September, 7.00–10.00 pm AEST
Emporium Hotel South Bank, 267 Grey Street, South Brisbane QLD 4101
Book tickets **https://web.cvent.com/event/0faf4bfa-efb2-4343-9682-29152a52fb33/summary**

South Australia
Tuesday 5 September, 7.00–10.00 pm ACT
Hilton Adelaide, 233 Victoria Square, Adelaide SA 5000
Book tickets **https://web.cvent.com/event/7e4b9021-d89b-472b-8e84-42d2fb070b83/summary**

Sydney
Thursday 7 September, 6.00–9.00 pm AEST
Hilton Sydney, 488 George Street, Sydney NSW 2000
Book tickets **https://web.cvent.com/event/cba1dba5-b59e-40b3-aee2-0d47e8478a3d/summary**

Tasmania
Thursday 7 September, 6.00–9.00 pm AEST
Blundstone Arena, 15 Derwent Street, Bellerive TAS 7018
Book tickets **https://web.cvent.com/event/da773133-4e2e-4c22-a1fa-ef939ff00759/summary**

Victoria
Wednesday 6 September, 6.30–9.30 pm AEST
Cargo Hall, 39 South Wharf Promenade, South Wharf VIC 3000
Book tickets **https://web.cvent.com/event/5b0457a8-51e3-4c78-b032-2f9f299b2ff4/summary**

Western Australia
Thursday 7 September, 12.00–-3.00 pm AWST
Optus Stadium, 333 Victoria Park Drive, Burswood WA 6100
Book tickets **https://web.cvent.com/event/d467b8ad-db11-4f3e-aaac-b2bf2d78052f/summary**

ENGINEERS AUSTRALIA | cse

Climate Smart Engineering Conference

29-30 November 2023 | Melbourne

ACCELERATING AUSTRALIA'S TRANSITION TO NET ZERO EMISSIONS

Connecting engineering minds, ideas and opportunities, Climate Smart Engineering Conference (CSE23) will showcase the latest solutions to pave the way for net zero emissions in Australia.

Book early and save up to $210.

Register now

www.engineersaustralia.org.au/cse

Conference partners

MELBOURNE | MELBOURNE Convention Bureau

ENGINEERING CLIMATE SOLUTIONS: CSE23

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

RECENTLY ANNOUNCED PLENARY SPEAKERS INCLUDE:

Ruby Heard CPEng

Director, Alinga Energy Consulting

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

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

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

Kane Thornton

Chief Executive, Clean Energy Council

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

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

Dr Margie Warrell

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

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

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

IS IT MASH APPROVED?

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

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

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

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

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

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

INFINITY TESTING

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

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

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

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

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

A1 ROADLINES

www.a1roadlines.com.au

THE ULTIMATE TEST OF ATTENUATOR PERFORMANCE

HOW IT'S DONE

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

WHAT ABOUT ROLL-AHEAD DISTANCES?

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

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

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

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

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

A1 ROADLINES

MOVING THE EARTH

Not only is cleaning the machines critical for maintenance, but operators feel pride in a well-kept machine.

Earthmovers know there is nothing messier than moving earth. After shifting tonnes of spoil from A to B, there still seems to be another tonne of mud to be washed off the machinery!

Caked-on clay can prevent an operator from noticing serious issues, like leaking hydraulics or blown seals. Not only is cleaning the machines critical for maintenance, but operators feel pride in a well-kept machine.

AUSSIE UNDERSTANDS EARTHMOVING

Aussie Pumps is a local Australian business that understands the earthmoving business. They know that after a long day on the job, the last thing operators want is to waste hours in a wash bay cleaning their machines.

There are pressure cleaners available that are simply not up to the task of cleaning earthmoving equipment. A pressure cleaner purchased from a tool shop, hardware barn or even a mower shop, may be adequate for DIY projects at home, but for efficient earthmoving washdown, a professional pressure cleaner is essential.

DESIGNED FOR EARTHMOVERS

Aussie's Scud series of cold water pressure cleaners was developed following consultation with earthmovers. They aim to reduce the time operators spend washing their machines and improve the result.

When Aussie introduced the Scud 5 years ago, it took the market by storm. Elegant in design, functional, easy to push around and extremely powerful, the Scuds are ideal for big plant washdowns.

With a fully welded stainless steel frame (no bolt togethers for Aussie), and the world's best high-pressure piston pump, "Big Berty" Bertolini, the machines come in a range of three models, specifically targeting large equipment washdown.

Available with a choice of either recoil or electric start, all Aussie Scuds are gearbox driven, and powered by Honda 13hp engines. That means no belts and pulleys to wear or fray, and, of course, the machines are slow speed. The engine runs at 3,200 rpm but, by the time it's got through the reduction box to the pump, the pump is only running at 1,450 rpm. Those big pumps, with huge, finned crank cases run cooler and provide a long trouble-free life... for decades.

SAFE AND FAST

All machines come with Aussie's 'Safety Protection kit' which includes a safety valve that will blow off in the event of a pressure spike. A thermal dump valve is also fitted as standard equipment. This is to protect the pump from overheating if left on excessive bypass.

High-pressure guns, long lances, and even stainless steel reels with 30 metres of high-pressure hose are all part of the package of accessories available to operators.

With an additional 30m hose for a whopping 60m reach, you get your cleanup finished even faster.

3 SCUD OPTIONS

The Aussie Scud range offers three options for pressure/flow combinations.

For extremely dirty applications, Aussie reckons their Scud 351 is the go. With a flow of 21 litres per minute, matched to 2,600 psi pressure performance, the machine will make light work of earth and clay.

The Scud comes standard with detergent injection as part of the kit. A 5,000 psi rated gun with a stainless steel double lance enables high-pressure / low-pressure modulation and the activation of the detergent system. Using Aussie's heavy-duty Turbo Master turbo lance means the blaster has an effective working pressure (EWP) of 4,000 psi.

Second in the line-up, is the Scud 350. This machine produces 3,000 psi at 15lpm, using the same great engine and same gearbox driving the heavy-duty "Big Berty" pump, and when matched with a turbo lance, the EWP becomes 4,785 psi!

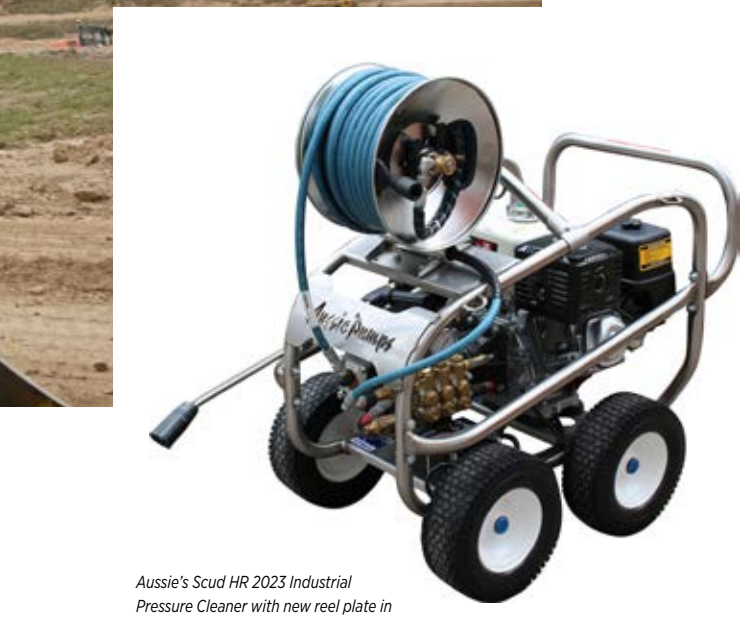
The third option, Aussie's Scud 400, is found in every Kennard's Hire branch around the country, with the diesel version used in many Coates operations. It's a tried and true winner.

With 4,000 psi and 15 lpm, the machine has the extra grunt and flow to clean your big machines fast. Add a turbo lance, and the Scud 400 delivers an amazing Effective Working Pressure of 6,485 psi – enough to tackle even the toughest dirt!

All machines are available with detergent injection standard equipment, and all the safety gear you would ever want.

CLASS A MACHINES

Australian Pump is Australia's leading manufacturer of high-pressure water blasting and cleaning equipment. The Aussie Scud usits are all Class A machines under the Australian High Pressure Jetting Safety Standard, so no operation certification is required.



Aussie's Scud HR 2023 Industrial Pressure Cleaner with new reel plate in front, allowing for a lift bar on top.

FREE ONLINE OPERATOR TRAINING COURSE

Aussie Pumps absolutely recommends all operators of pressure cleaners, whether using Class A or B machines, should undergo some form of safety training. To that end, the company has produced its own online safety program, called 'Aussie Blaster Safe Operator' course. This free training is available online at https://aussiepumps.com.au

Managers are encouraged to have their operators trained through the program. The course covers the safe operation of Class A and Class B high-pressure water blasters to 500 Bar maximum pressure. It also covers triplex pump technology, identifying and minimising hazards associated with high-pressure water blasting, and basic machine maintenance.

Visit: **https://aussiepumps.com.au** or scan code to access Aussie's Safe Operator Online Training Course.

NSW'S TRANSITION TO TMA AND SMART OBM: WHAT YOU NEED TO KNOW

Transport for New South Wales (TfNSW) is adopting the use of the Telematics Monitoring Application (TMA) and Smart On-Board Mass (OBM) for some Performance Based Standards (PBS) vehicles operating in New South Wales.

From 1 June 2024, all PBS vehicles operating in NSW that have on-board mass as a road access condition on their permits must be fitted with a TCA approved Smart OBM system.

The deadline was first announced by TfNSW on 1 December 2022.

The change will harmonise the use of Smart OBM systems in NSW with other jurisdictions.

Affected PBS vehicles will need to transition from

- Intelligent Access Program (IAP) to the Telematics Monitoring Application (TMA); and
- Interim OBM solution to Smart OBM system.

Smart OBM systems capture axle mass measurements as digital records. This data is shared with relevant road managers in a secure and standardised way. All Smart OBM systems are type-approved by TCA.

WHO IS AFFECTED?

All PBS vehicles operating under permit in NSW for whom mass monitoring is currently an agreed condition of road access.

WHAT YOU NEED TO DO

Beyond 1 June 2024, all PBS vehicles that require mass monitoring as a road access condition must be fitted with a TCA-approved Smart OBM system.

Smart OBM systems also need to be paired with a TCA certified Application Service Provider (ASP) telematics device. Information about the existing pairing arrangements between ASPs and Smart OBM system suppliers is available on the TCA website.

Eligible PBS vehicles must also be enrolled in the TMA PBS Vehicle Mass Monitoring Scheme (NSW). Further information about the scheme is available in the TMA PBS Level 1–4 Vehicle Monitoring Schemes (NSW) document.

Enrolment in the IAP is not required for these vehicles from 1 June 2024.

NOTE: Even if a vehicle is already enrolled in TMA or IAP in another jurisdiction, the **vehicle will still be required to separately enrol in TMA with TfNSW for travel in NSW**. Enrolments are managed by Application Service Providers (ASPs).

For more information, download the factsheet: Differences between IAP and TMA from: **https://bit.ly/IAP-TMA**

JOIN THE WEBINAR

Thursday, Aug 31 2023
1:00 PM - 2:00 PM (AEST)

Austroads will be hosting a webinar with TCA and TfNSW to provide more detail on NSW's Transition to Smart On-Board Mass for PBS Mass Monitoring on Thursday 31 August from 1:00 PM.

The webinar will provide an overview of the upcoming changes and how they will affect PBS drivers travelling to and within the state.

Webinar attendees will be taken through the steps required for signing up to Smart OBM or transitioning from Interim OBM to Smart OBM. Presenters will also talk about the importance of Smart OBM for the road network and how mass data from Smart OBM is being used by road managers.

The session will be beneficial to PBS operators who operate their fleet in NSW or travel across the border, ASPs seeking information to update their customers and road authorities looking to better understand the use of Smart OBM data.

There will be question and answer opportunities during the session.

The webinar will be presented by Gavin Hill, General Manager of Strategy and Delivery at TCA, and Brett Graham, Senior Manager for Road Access at TfNSW.

The webinar is FREE to attend, but registration is essential.

If you are unable to attend the live session, you can still register, and you will be sent a link of the recorded webinar.

Scan the QR Code or visit:
https://tca.gov.au/events to register.

GEAR UP FOR AUSTRALIA'S 3G SHUTDOWN

3G services in Australia are shutting down. Between December 2023 and September 2024, Telstra, Optus and Vodafone will be closing their 3G networks to make room for new, faster networks. The 3G network shutdown will affect vital equipment and services and the road transport sector is urged to start their transition immediately.

When 3G networks are shut down entirely, devices that rely on 3G connectivity will no longer function. To continue to operate those devices will need to be upgraded or replaced. Commonly affected devices include:

- Telematics and vehicle/asset tracking devices installed in heavy and light vehicles as well as general assets such as trailers, generators, etc.
- Traffic management signs used in school zones, intersections and freeways
- Weather systems and stations
- Alarms/building entry
- Devices that incorporate gateway or mesh backhaul
- Personal Emergency Response (PER) systems
- Phones and tablets.

"The shutdown will affect the large number of devices across the industry. Early transition and planning are crucial," said Geoff Allan, Austroads Chief Executive. "We urge everyone to begin their migration process now as it may take months to complete, depending on the number of affected devices and the availability of installers".

Austroads and Transport Certification Australia have partnered with key industry players and organisations and will run a webinar to provide high-level information on the impacts of the shutdown and what local government and transport industry need to do to prepare for the transition.

JOIN THE WEBINAR

Monday, Sep 4 2023 - 1:00 PM (AEST)

Austroads and Transport Certification Australia, together with key industry players and organisations, will be presenting a FREE webinar on the 3G shutdown on Monday, September 3, at 1:00 pm (AEST). The webinar will provide high-level information on the impacts of the shutdown and what local government and transport industry need to do to prepare for the transition.

The webinar is FREE to attend, but registration is essential.

If you are unable to attend the live session, you can still register, and you will be sent a link od the recorded webinar.

Scan the QR Code or visit:
https://tca.gov.au/events to register.

TCA RECOGNISES SIMON NATIONAL CARRIERS THROUGH THE NATIONAL TELEMATICS FRAMEWORK

Transport Certification Australia has certified Simon National Carriers to be an Application Service Provider (ASP) through the National Telematics Framework (NTF).

Transport operators like Simon National Carriers, who have invested in their own telematics systems, can obtain TCA certification so they can participate in NTF applications and schemes by using technologies already used in their vehicles.

Having obtained certification, Simon National Carriers can provide telematics applications up to Level 2 Assurance, including the Telematics Monitoring Application (TMA) and Road Infrastructure Management (RIM) applications of the NTF, for its own vehicles.

Simon National Carriers is a family-owned and operated business that has been serving the Australian freight industry since 1966. One of the largest privately owned national freight companies in Australia, Simon National Carriers runs a fleet of over 140 prime movers and rigid trucks across the country.

"Our fleet comprises Performance-Based Standard (PBS) combinations, including A-doubles, that require enrolment in TMA and Smart On-Board Mass (OBM) systems to conform with road access conditions. We decided it was time to have our existing telematics system recognised by TCA, rather than fit yet another system in our vehicles," said David Simon, Chief Executive Officer at Simon National Carriers.

Gavin Hill, General Manager Strategy and Delivery at TCA congratulated Simon National Carriers on becoming a certified ASP, and for delivering services for its own vehicles through the NTF.

"It highlights how the NTF can accommodate transport operators who have made investments in their technology, which satisfy their specific needs."

Simon National Carriers has also obtained a pairing approval with its preferred Smart OBM system supplier, Tramanco. David said his company has had a relationship with Tramanco for over 40 years.

"Tramanco's Smart OBM system was a simple system to implement for our fleet, at the time that we selected it. It allowed trailers to be mixed and matched without re-configuration, which met our customers' needs with trailer types. We've successfully operated Tramanco's load cell weighbridges in our depots for over 40 years. The move to Smart OBM systems extends this long-running relationship."

Roger Sack, Managing Director of Tramanco, congratulated Simon National Carriers on obtaining the TCA certification.

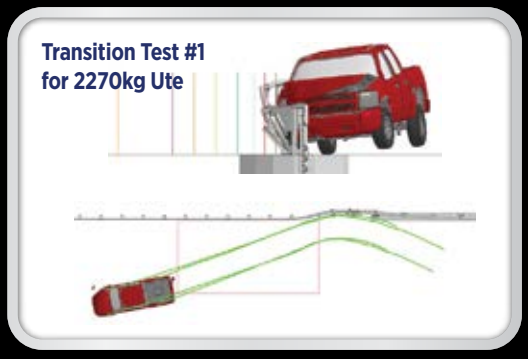
"We have worked with Simon National Carriers since 1975 when they installed one of our dynamic weighbridges to ensure their vehicles ran to legal axle limits," said Roger.

"Today, we continue to share the same ideas and views on business such as reliability and customer service. This strong relationship has evolved over the years to culminate in the pairing of our CHEK-WAY Smart OBM system – type-approved by TCA – with Simon National Carriers' TCA certified telematics system."

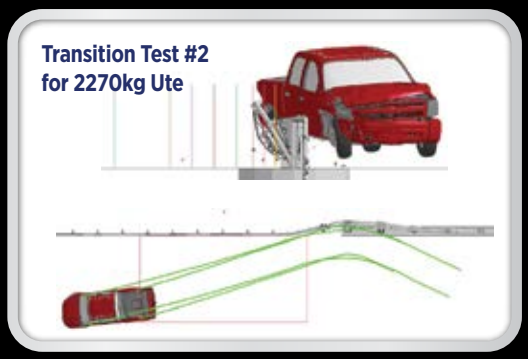
According to David, the move to have Simon National Carriers' telematics system certified by TCA allows the company's PBS drivers to meet TMA and Smart OBM requirements on the routes they travel between Brisbane and Melbourne.

In Victoria, certain PBS vehicles are now required to have Smart OBM systems to continue operating at full capacity. Similarly, both Queensland and New South Wales governments have set a deadline of 1 June 2024 for eligible vehicles that have on-board mass as a road access condition to transition to Smart OBM.

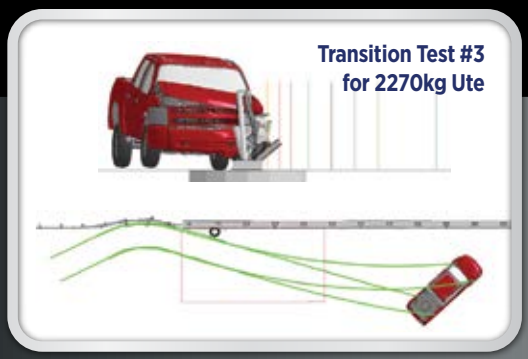
For more information, visit: **https://tca.gov.au**



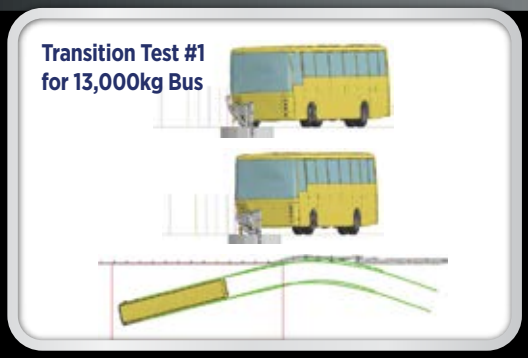
The DOLRE bridge traffic barrier development demonstrates how the incorporation of FEA into the design process can optimise a solution that is vastly different from the solutions that traditional Engineering methodologies would produce.

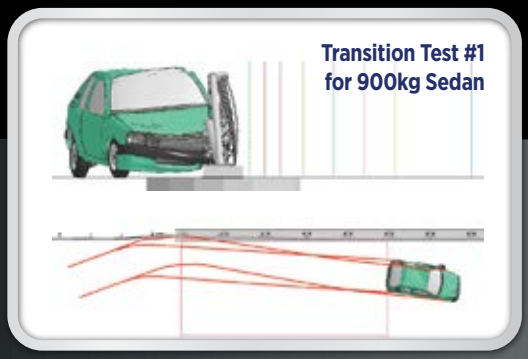


A problem was identified and through the iterative use of FEM combined with Eurocodes for structural analysis a solution was found and optimised that was vastly different to the direction that traditional engineering was leading.



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





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

LB AUSTRALIA

Ideal for Bridge Refurbishment Projects.

ASBAP Approved for use in Australia

DOLRE
LOW STRESS PARAPET SYSTEM

TOWARDS ZERO BRIDGE FATALITIES

DISCOVER MORE

SCAN ME

- Fully crash tested to European Standards and simulated to US MASH TL4 requirements
- Unique design imparting low stress to bridge deck - protecting water proofing membranes and coatings on the deck
- Easy to install
- Easy to dismantle in times of flood
- Cost-effective bridge rehabilitation solution

INNOVATION TOWARDS ZERO

www.lbaustralia.com.au Ph 1300 522 878

SEGWAY-NINEBOT DRAFTS WORLD'S FIRST INTERNATIONAL STANDARD FOR ELECTRIC TRANSPORTERS

Segway-Ninebot, a global leader in autonomous mobility solutions, drafted the world's first international standard for e-Transporters. The standard, IEC 63281-1 'E-Transporters - Part 1: Terminology and Classification', was published by the IEC/TC125 e-Transporters Committee of the International Electrotechnical Commission (IEC).

The standard provides a unified definition and classification system for e-Transporters, encompassing microbility products and delivery robots. Its release demonstrates Segway-Ninebot's deep expertise and insight into the e-Transporters industry as the driving force behind establishing this critical standard.

For the first time, this standard defines the basic terminology of e-Transporters on an international level, which is further divided into two categories of products: 'Personal e-Transporters', such as electric self-balancing vehicles, electric kick-scooters and other micromobility products; and 'Cargo e-Transporters', such as delivery robots, logistics distribution vehicles, and other delivery products. This new international standard for electric transporters is an important element of the company's technological innovation. The standard considers the diverse technology and forms of electric transport products in a novel way.

In the future, specific standards for different product categories can be formulated based on this classification method. Technical elements can be freely selected and combined based on product characteristics for reclassification. This avoids limiting industrial innovation due to rigid classification methods. It brings great usability and flexibility to industry development.

Standardized terminology definitions make it easier for different manufacturers and research institutions to understand each other's technical characteristics and directions, promote technical exchanges and cooperation, and not only effectively reduce product development costs and risks, but also accelerate the industrial standardization process. At the same time, this standard also guides enterprises to develop more efficient, energy-saving, and environmentally friendly products in all industrial chains, thereby promoting the sustainable development of the entire industry.

According to Crystal Zhuang, Head of Compliance, Segway-Ninebot, due to the lack of unified international standards for electric transportation equipment such as electric self-balancing vehicles, electric kick-scooters, and service robots, China, US, and the European Union have been operating according to their own standards. Products exported from one country to multiple countries often need to comply with different standards, resulting in significant differences in user experience and high enterprise costs.

This standard for the first time clearly specifies relevant terminology, and classification standards which is helpful for the communication consistency and advantageous for further introducing the overall international standards. For example, another heavyweight international standard IEC 63281-2-1 'E-Transporters - Part 2-1: Safety requirements and test methods for personal e-Transporters', which is also led by Segway-Ninebot, has completed all technical development work based on this standard and is about to enter the final voting stage (FDIS).

Some market insiders believe that the standard not only proposes an effective set of international norms at the industrial level but also signifies the international market's optimism and high regard for the entire electric transportation equipment industry.

ZERO-EMISSION SUPER HEAVY TRANSPORT NOW POSSIBLE

A new zero-emission heavy transport vehicle has been created, which can significantly reduce the carbon impact of installing large infrastructure such as bridges, wind turbines and power station components.

Mammoet – the world's largest heavy-lifting and transport company – is responsible for this major breakthrough.

The key to the new technology lies within converting existing Self-propelled Modular Transporters - or SPMTs - from diesel to electric power. SPMTs are the workhorse of heavy industry, used in almost every large energy and construction project worldwide.

Mammoet developed a retrofit kit to replace diesel engines in the vehicles with electric motors. Once converted, each SPMT works in the same way as before: transporting objects up to thousands of tonnes at walking pace, using a remote control.

The new vehicle technology highlights Mammoet's strong commitment to the energy transition, and to its own sustainability. Fitting new engines in existing SPMT fleets cuts down on both waste and additional construction, compared to purchasing new zero-emission equipment.

"The new SPMT can eliminate the carbon footprint of site transports," a Mammoet representative said. "This allows our customers to reduce the impact of large infrastructure projects on surrounding people, businesses and infrastructure."

"It also reduces noise levels at project sites, making working conditions quieter and safer," they added. "Communication between staff is clearer, while work can take place for longer at sites with sound restrictions."

This solution was part-financed by the DKTI, a Dutch government program to develop climate technologies and innovations in logistics. Mammoet worked with a leading provider of zero-emission powertrains for heavy industry to bring the electric power pack solution to market.

Developed by Mammoet in 1984 and with over 40,000 axle lines in use globally, the SPMT, or Self-propelled Modular Transporter, revolutionized heavy industry by moving any heavy load safely, efficiently and with precision.

This next step in its story will be just as significant, according to the company, as it aims to reduce its CO2 and NOx emissions to nil - pointing the way towards a sustainable future for heavy transport.

WA EV NETWORK LAUNCHES FIRST EV FAST CHARGER IN THE KIMBERLEY

The WA EV Network continues its rollout across regional Western Australia, with the first of eight electric vehicle fast chargers for the Kimberley now operational in Broome.

Located at Town Beach carpark, Horizon Power's 150-kilowatt fast charger will allow drivers to top up their electric vehicles in as little as 20 minutes.

Horizon Power's next EV charging station will open in Carnarvon next month, while construction has started in Exmouth, Denham, Derby and Karratha. The State Government's WA EV Network is being delivered by Horizon Power and Synergy and will include 98 charging stations across 49 locations connecting Perth and regional WA.

Horizon Power's bespoke approach to this project includes using a combination of solar and battery, with a backup diesel generator, to power its EV chargers in WA's remote locations.

The WA EV Network is part of the Government's $43.5 million investment to boost EV infrastructure around WA. The project is providing vital infrastructure for EV owners who will easily be able to travel the State, with the average distance between charging stations around 200 kilometres.

An EV charged using the State's main electricity grid, the South West Interconnected System, will generate 30 per cent less greenhouse gas emissions than a conventional petrol vehicle.

The WA EV Network will be the longest in Australia stretching over 7,000 kilometres from Kununurra in the north, to Esperance in the south and east to Eucla. Geraldton and Northampton received the first fast chargers in April 2023.

"I'm delighted Horizon Power's first fast charger in the EV Network is now operational in Broome," Western Australia Energy Minister, Bill Johnston, said. "This innovative project is showcasing Horizon Power and Synergy's commitment to opening Western Australia's regions to the electric transport ecosystem."

"Broome's fast charger is an important step to drive the uptake of electric vehicles in WA and ensuring EV drivers can explore our wonderful State without any range anxiety," Minister Johnston said.

The comments were echoed by WA Acting Climate Action Minister, Dr Tony Buti, who added: "The WA EV Network is critical to boosting electric vehicle uptake in WA and will help support the transition towards net zero carbon emissions by 2050."

"The Government is committed to preparing the State for the rapid uptake of EVs, creating a more sustainable future and making clean transportation more accessible to communities across WA."

Kimberley MLA, Divina D'Anna, added: "This is an exciting step forward for the residents and tourist operators in Broome."

"I look forward to the next fast charging station in Derby opening over the coming months, as the Kimberley region adapts to a cleaner, greener energy future."

VICTORIAN-FIRST SUSTAINABLE ASPHALT TRIAL

The Pound Road West Upgrade in Melbourne's outer south-east recently conducted an exciting Victorian-first trial that used a recovered carbon product made from end-of-life tyres as a substitute material in road construction – potentially paving the way for future road upgrades to use more sustainable asphalt.

As part of the trial, a 500m section of Pound Road West was paved with a high-recycled content asphalt mix containing a recovered carbon product extracted from waste tyres, in place of the fine ground limestone normally used in standard asphalt mixes.

The recovered carbon product – Recovered Carbon Black – has been developed by Entyr, an Australian company that converts end-of-life tyres into sustainable raw materials.

Fine ground limestone is commonly used as a modifier in asphalt, but the mining and manufacturing process produces considerable CO2 emissions – the production of one tonne of fine ground limestone generates around 1.2 tonnes of CO2.

By replacing fine ground limestone with Recovered Carbon Black, CO2 emissions were lowered substantially during asphalt production on the trial.

Over the past two years, Entyr in partnership with the National Transport Research Organisation (NTRO) has conducted validations and road trials using NTRO's world-class laboratories. Over eight trial locations have been constructed and monitored across Queensland, which have shown that for every tonne of end-of-life tyres processed into Recovered Carbon Black carbon emissions are reduced by 500kg.

Entyr has recycled more than two million end-of-life tyres from its headquarters in Queensland, most of which would otherwise have been set to landfill.

Speaking about the project, Major Road Projects Victoria Director, Program Services and Engineering Alexis Davison, said: "We were excited to collaborate with some of Australia's leaders in sustainable road construction as part of this trial, which presents a great opportunity to make long-term environmental advances in our industry."

"Progressing the use of innovative recycled products like the example at Pound Road made from recycled tyres is key to transitioning Victoria's transport infrastructure sector towards a circular economy where procuring fit-for-purpose recycled products is business as usual."

On the Pound Road West Upgrade trial, MRPV and its construction partner Seymour Whyte also partnered with Alex Fraser Asphalt, Department of Transport and Planning, ecologiQ, NTRO and Tyre Stewardship Australia.

Seymour Whyte Project Manager, David Keegan, added: "It was exciting to see our 'recycled tyres for sustainable roads' trial come to fruition after six months of planning. Seymour Whyte has set an ambitious target to cut its carbon emissions and is taking action for the climate throughout its value chain by optimising resources and paving the way for a circular economy."

"The solution combats the global challenge of tyre waste disposal, easing the strain on landfills and significantly reducing carbon emissions associated with traditional road construction methods," Mr Keegan said.

Asphalting works on the remainder of the Pound Road West Upgrade were completed with a Green Roads asphalt that contained up to 40 per cent recycled materials.

In using Green Roads construction materials on Pound Road West, the project:

- reused 2,287 tonnes of waste glass – the equivalent of nearly 11.5 million glass bottles
- recycled 10,334 total tonnes of waste – diverting the equivalent of over 82,000 wheelie bins from landfill.
- reduced carbon emissions by approximately 290,000kg.

The Victorian Government's ecologiQ program aims to integrate recycled and reused content into every corner of Victoria's $100 billion Big Build, by incorporating waste products wherever possible.

ecologiQ along with the state's Recycled First policy has had a powerful impact so far, resulting in commitments to use over 3.3 million tonnes of recycled and reused materials.

Entyr CEO, David Wheeley, said the company

was delighted to provide its world-leading patented technology and recycled products to this project.

"We were Using Entyr's Recovered Carbon Black and tyre-derived fuel oil in the creation of asphalt avoids the use of virgin resources and creates a superior asphalt proven in both laboratory tests and road use. The end result for Pound Road West will be a measurable improvement in safety and sustainability," he said.

Alex Fraser Managing Director, Peter Murphy, added: "The 'recycled tyres for sustainable roads' trial on the Pound Road West Upgrade is an exciting first for Victoria and a prime example of what can be achieved when our industry's innovators collaborate on infrastructure sustainability."

"We were honoured to join forces with Major Road Projects Victoria, ecologiQ, Seymour White, Entyr, National Transport Research Organisation and Tyre Stewardship Australia to demonstrate the use of Recovered Carbon Black in asphalt to build greener roads for Victoria."

The Pound Road West Upgrade was completed ahead of schedule in June 2023. The project connected Pound Road West and Remington Drive with a new bridge over the Cranbourne rail line, along with upgrading intersections and adding an extra lane each way between Abbotts Road and South Gippsland Highway.

The upgrade has reduced congestion, improved traffic flow and safety, and enhanced connections in the Dandenong South employment hub.

NEW HERCULES POT BEARINGS PROVIDE UP TO 3,000 TONNES CAPACITY FOR ROAD AND RAIL BRIDGES

A range of pot bearings in individual capacities from 300-3000 tonnes is being introduced by Hercules Engineering to provide compact and cost-efficient solutions to the impact of sudden high loads and seismic shock upon tall structures, particularly large bridges.

Hercules Engineering General Manager David Booty says the range of pot bearings is being broadened in size and type in response to new challenges facing bridge designers, engineers and builders of concrete and steel structures.

Challenges they face include increased shock loads from larger road and rail loads; heat and other climate change-related issues including high winds; and, in light of recent earthquakes in both Australia and New Zealand, the need to safeguard against seismic hazards.

Hercules Engineering's pot bearing range is designed to support high vertical loads while allowing rotation and lateral movement using a confined elastomer block encased inside a 'pot'. Depending on the type, they can accommodate movements of up to ±50mm in standard range, and rotations between 0.015 to 0.03 radians.

The expanded pot bearing range complements Hercules Engineering's long-established and extensive range of elastomeric bearings, as well as the company's new range of Herculon™ structural bearings, which integrate H-Glide fibre-reinforced composite pads sliding on 2B finish stainless steel to achieve an exceptionally low sliding coefficient of friction, even under water.

David Booty says Hercules Pot Bearings offer a strong, reliable and cost-efficient load-bearing solution because they can accommodate high stress - up to 40-45 megapascals (ULS) - in a more compact area than conventional alternatives that can typically accommodate only 12 megapascals (ULS). Custom-fabricated bearings incorporating H-glide can accommodate even greater stresses (350MPa ULS and more) with an even smaller footprint.

Standard types of Hercules Pot Bearings include:

- Fixed bearings (HPT/FX) - these consist of a small piston fitting closely inside a steel cylinder containing a rubber pad, which, under load, acts as a contained fluid, enabling the piston to tile attracting very little eccentricity of load. This bearing can resist simultaneous vertical and horizontal loads, as well as rotations about any horizontal axis.
- Expansion bearings (HPT/SG and FF) - these Sliding Guided and Free-Float bearings are similar to the fixed bearings, but with the addition of a slide plate faced with stainless steel, which slides on a plate of PTFE recessed into the top of the cylinder plate. HTP SG bearings include lateral restraint guides to take lateral loads. These guides are faced with stainless steel which slides against low-friction materials on the side of the cylinder plate.
- Custom-engineered bearings: these can incorporate ultra-high performance surfaces, such as H-Glide, which can accommodate exceptional loads (more than 350 – 500 megapascals ULS) even under water, depending on the way the bearing is designed.

David Booty says the broadened ranges and designs, including the latest materials, build on Hercules Engineering's local and international experience of more than 50 years producing a wide range of bearing types in general, and pot bearings in particular.

"HPT Type Bearings. for example, offer lower eccentricity of vertical load when rotating (tilting). This keeps the load away from the

edges and reduces any risks of concrete spalling in the event of an earthquake or regular service cycles," he said.

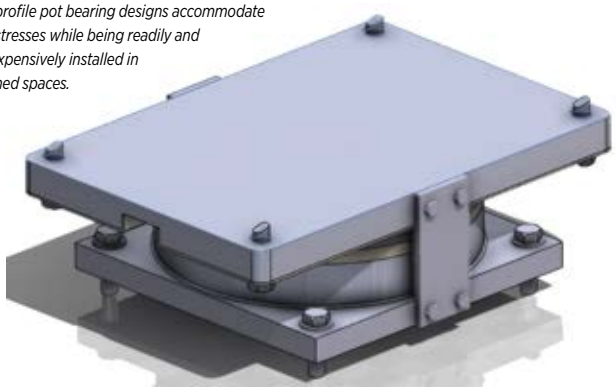
The rotation capacity of standard bearings varies from 0.030 rads for smaller sizes, to 0.015 rads for larger sizes. Larger and smaller rotations can be customised by amending the rubber pad thickness and other custom modifications as necessary, with special designs available to 0.200 rads capacity.

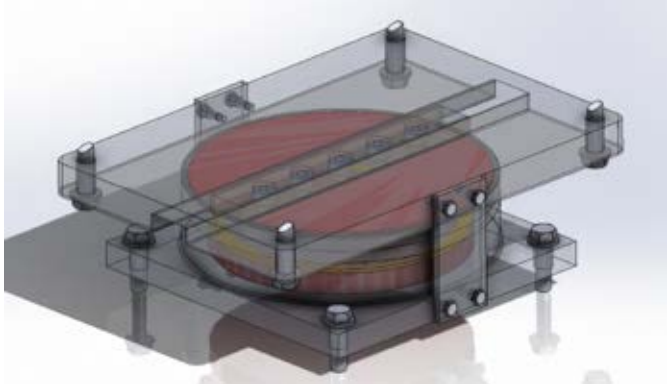
Eccentricity of vertical load is also typically higher because of their rotation and transition performance, which varies with pad dimensions but is generally less than A/50, which is considerably more than simple laminated elastomeric bearings. Vertical deflection at full working load varies from 0.5mm to 2.0 mm depending on size.

"The new and broader bearing ranges and capabilities result from new challenges in areas including public and private infrastructure, as well as commercial and resource projects, which are now facing greater challenges than ever before with bigger road and rail vehicle loads, larger climate variations -including wind, flood and heat – plus earthquake hazard management," David Booty said.

"Bridge builders – including public works and private enterprise – are very aware of their Duty of Care to safeguard their structures' safety as bridges get bigger and with the expanded loads they have to carry on public and private roads, including those serving resource, construction, civil engineering and road and rail sites where shock loads can be greatest as heavy loads are imposed suddenly on structures," he added.

Low-profile pot bearing designs accommodate high stresses while being readily and less expensively installed in confined spaces.





So too, the Engineer can use the vast capacity of Finite Element analysis to validate, optimize and adapt data to create the finest design solutions.

Just as Conductors use all the instruments at their disposal to create the finest music...

if3

GDTECH engineering

www.if3.com.au

GOING DIGITAL

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

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

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

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

While for a significant number of products, this provides a sufficient level of confidence, for safety-critical building components or materials, it is essential that we have confidence in products through the traceability of the product


2023
VALID TO 31 Dec
CERTIFICATE OF APPROVAL
Product Conformity Certification
ABC Steel Pty Ltd
ABC STEEL
55 Steel Products Road
Somewhere, NSW 3000
SCOPE OF CERTIFICATION
JAS-ANZ

from the manufacturer to the site. In such cases, the evidence of compliance of each batch needs to be provided to ensure the performance of the product, and its conformance with relevant Australian and New Zealand Standards.

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

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

confirmation of compliance for the public benefit.

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

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

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

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

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

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

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

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

With the new ACRS digital certificates and App, you'll be able to check compliance quickly, easily and conveniently using your smartphone. For more information, visit: **www.steelcertification.com**

Master Precasters like MJB Industries are constantly investing in new plant, to ensure supply of compliant precast products

COMPLIANCE IMPERATIVE FOR **DURABLE INFRASTRUCTURE**

Durability is of paramount importance for Australian infrastructure if it is to withstand the country's unique environmental challenges, enhance safety and resilience, support economic growth, and promote sustainable development for the benefit of its citizens and future generations.

It follows that using quality and compliant products in infrastructure construction is crucial for ensuring durability... as well as safety, efficiency and cost-effectiveness.

But with the volume of infrastructure projects at an all-time high, the resultant demand for products inherently means higher-than-usual lead times and it can be easy to take shortcuts when products are in limited supply.

The consequences, however, can have significant consequences in the long run. When inferior, untested products are unknowingly used, there can be a drastic negative impact on the lifespan and structural integrity of the project.

REPORTS OF INFERIOR SUBSTITUTIONS

According to National Precast CEO Sarah Bachmann, this is on occasion happening in the civil space, where inferior products like raw cast liners are on occasion being substituted for their superior alternative, spun reinforced precast concrete liners.

"Perhaps without realising the consequences, we have been informed that some authorities are installing the inferior alternative, unaware of their actual performance," Bachmann comments.

"Our members – and in particular our Master Precasters – pride themselves in manufacturing high quality, durable precast elements, whether that be in the civil or buildings space. It is really concerning when that is being compromised," she says.

THE PROBLEM WITH RAW CAST LINERS

Unlike spun liners, raw cast liners do not comply with AS/NZS 4058 Precast concrete pipes (pressure and non-pressure), a typical requirement of roads' authority specifications.

Raw (or dry) cast liners are not spun. They use very little reinforcement (or fibre reinforcement) and they are typically untested and not manufactured to ISO 9001 accreditation.

"Using them is false economy," Bachmann comments.

ADDRESSING SUPPLY SHORTAGES – A WA SOLUTION

National Precast Master Precast member MJB Industries has made the manufacture and supply of Class 2 spun liners a priority in its new pipe plant. Located in Australind, Western Australia, its original bidirectional pipe plant is currently operating at full capacity, with a production schedule booked months in advance.

MJB Director Kim Hovey says that manufacturing spun liners will be the first cab off the rank in the new plant, so they can be stockpiled for current and future orders.

"Our second pipe plant will be operational in the third quarter of this year and will greatly increase production output and reduce lead times," says Hovey.

"The spun liners we manufacture meet Main Roads Western Australia's Specification 405, which requires precast liner segments to be manufactured to AS/NZS 4058."

Bachmann says that there are a limited number of Master Precaster manufacturers able to produce these spun liner products in the West.

"Other manufacturers of raw cast liners - that do not conform to AS/NZS 4058 - are not an equivalent alternative and do not meet Main Roads Western Australia specifications," she comments. "It should be a case of buyer beware."

BETTER UNDERSTANDING NEEDED

According to Bachmann, this is an industry-wide issue that requires better understanding by everyone involved in roads and infrastructure projects.

"The longevity of our infrastructure depends on quality products that are compliant with Australian Standards and specifications. I'm pleased to say that our Master Precasters, like MJB, ensure they do just that."

"Only by using high quality products can we ensure that infrastructure will meet the needs of society and stand the test of time," says Bachmann.

ENGINEERING TRAINING INSTITUTE AUSTRALIA

CELEBRATING 25 YEARS

PREMIER PROVIDER OF ENGINEERING TRAINING WORKSHOPS

Over 40 Design and Construction Workshops Offerred

PROFESSIONAL DEVELOPMENT | SMALL GROUPS | LIVE STREAM | FACE-TO-FACE

2023 UPCOMING COURSES

1.	Glass & Aluminium Façade Design Workshop	5 + 6 September 2023	ZOOM
2.	Blast, Fire & Progressive Collapse Workshop	7 September 2023	ZOOM
3.	Reinforced Concrete Design Workshop: Module 1	11 + 12 September 2023	F2F BNE
4.	Cement & Concrete Practice Course	14 + 15 September 2023	F2F BNE
5.	Timber Design Workshop: Module 1	19 + 20 September 2023	ZOOM
6.	Concrete Pipes & Pipeline Design Workshop	21 September 2023	ZOOM
7.	Hydraulic Engineering Design Workshop	26 September 2023	ZOOM
8.	Repair & Protection Workshop (Concrete, Steel & Masonry Structures)	27 September 2023	ZOOM
9.	On-Site Detention Systems Design Workshop	28 September 2023	ZOOM
10.	Concrete Pools & Tanks Design Workshop	4 October 2023	ZOOM
11.	Concrete Technology Workshop	5 October 2023	ZOOM
12.	Residential Slabs & Footings Design Workshop	9 + 10 October 2023	F2F MLB
13.	Cement & Concrete Practice Course	12 + 13 October 2023	F2F MLB
14.	Forensic Engineering Workshop	17 October 2023	ZOOM
15.	Risk Management Workshop	18 October 2023	ZOOM
16.	Retaining Walls Design Workshop	24 October 2023	ZOOM
17.	Slope Stability Design Workshop	25 October 2023	ZOOM
18.	Accounting & Management for Engineers Course	26 October 2023	ZOOM
19.	Masonry Design Workshop	31 October 2023	ZOOM

**F2F BNE (Face-to-Face Brisbane)*

** F2F MLB (Face-to-Face Melbourne)*

Paul Uno

ETIA Director

VIEW OUR COURSES

Contact us: **(02) 9899 7447 | registrations@etia.net.au | www.etia.net.au** | *Connect with us:*

2023 ETIA Annual Sponsors

BarChip Inc. · DANLEY · GRANOR · mcclay · Ramset · Wood Solutions · Biax · fine · KATANA · PAEC · reid

UPSKILL YOUR KNOWLEDGE OF PRECAST WITH NEW WEBINARS

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

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

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

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

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

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

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

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

Everything you want from a

Media Company

...and more

epc media group

CALL US TODAY and find out how we can help you.

T: 1300 EPC GROUP (1300 372 476) **M:** +61 414 788 900

E: ats@epcgroup.com **W:** www.epcgroup.com

Whatever your line marking or traffic management requirements, A1 Roadlines has the equipment and expertise to meet your needs.

QUALITY

EQUIPMENT

A1 ROADLINES

SUPPORT

SERVICE

A1 ROADLINES

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

A1 Roadlines Pty Ltd | 89 Rushdale Street, Knoxfield, Victoria 3180 | **www.a1roadlines.com.au**

P: 1300 217 623 (A1ROAD) | **F:** (03) 9765 9499 | **E:** sales@a1roadlines.com.au