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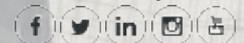
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Editorial and Publishing
Consultants Pty Ltd
ABN 85 007 693 138
PO Box 510, Broadford
Victoria 3658 Australia
Phone: 1300 EPCGROUP (1300 372 476)
Fax: (03) 5784 2210
www.epcgroup.com

Publisher and Managing Editor

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

Business Development Manager

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

National Advertising Sales Manager

Yuri Mamistvalov
Phone: 1300 EPCGROUP (1300 372 476)
Mobile: 0419 339 865
Email: yuri@epcgroup.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

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About the Cover

Building on the success of the Scorpion II® MASH TL-3 Truck Mounted Attenuator (TMA), the new Scorpion II® Metro MASH TL-2 TMA is now available in Australia. Approved and recommended for acceptance throughout Australia by ASBAP, the Scorpion II® Metro TL-2 TMA is the first MASH approved TL-2 TMA. It provides outstanding protection in workzones up to 70km/h.

▶ Turn to **Page 12** for the full story.

And Now for Something Completely Different...



Doing Business in a 'Post COVID-19' World

Dear Readers,

To say that we, both globally - and especially, as a Nation - have been dragged into 'unchartered territory' by the emergence of COVID-19 would be an understatement of the highest magnitude. While the planet has previously experienced the threat of global pandemics, this is clearly (to coin a phrase) 'next level'.

Now, while I have called on the time-honoured introductory line from the famous *Monty Python's Flying Circus*, for the main title, that was more to: a) grab your attention (if you're reading this, it worked!); and b) provide an indication that I would like to focus on a different part of the COVID-19 discussion. That focus, is highlighted by the sub-heading of this editorial - namely: meeting the challenges of rebuilding businesses, industries and economies in a 'post COVID-19 world'.

Before I continue, I would like to make it absolutely clear that I am NOT attempting play down the seriousness of the COVID-19 pandemic, or suggest in any way that the responses of Governments across Australia or around the world are too extreme or somehow unwarranted; quite the contrary. Indeed, I'm feel certain that I am with the majority in sincerely hoping that these measures are able to stem the global impact of this highly virulent and extremely serious disease - a disease that not only continues to have a tragic human cost, but one which has also brought the global economy to its knees and entire countries to a grinding halt.

While there can be no doubt that COVID-19 will continue to wreak havoc

globally for some time to come - indeed, we here in Australia are still only at the 'front-end' of the crisis - it is also important to remember that despite the tragic cost, all is not lost.

At the time of writing, more than 97,000 of the current 310,000+ globally reported cases have recovered. While that is, no doubt, of no comfort whatsoever to those who have lost loved ones, or who's loved ones continue to suffer, it does offer some hope in terms of our ability to move beyond the current crisis and rebuild.

And therein lies the key: *we will need to rebuild - small businesses, large businesses, entire economies*. What's more, we're going to have to rethink the way we go about things... especially in the short term.

For all intents, as it currently stands, we look as if we're set to 'lose' at least 6 (and more likely 9-12) months of normal economic activity across all sectors globally. And it's not just a small loss. In many instances, there will be periods where there is total cessation of activity across a wide range of industry sectors.

For example, even as I write this, I am receiving a constant influx of emails alerting me to cancellations and rescheduling of conferences and trade shows across the globe. Needless to say, the flow-on effects of these cancellations and changes - not only to the conference / expo industry and the hospitality industry, but also to manufacturers, equipment suppliers and service providers - is massive. And that's just one industry sector.

That said, I do believe we have the ability to rebuild, but it will take a concerted

effort from all - governments, industry and individuals. Throwing our hands up in despair and 'walking away' is not an option.

Governments will need to get projects fast-tracked and industry will have to respond accordingly... and we'll all have to do our part to support small businesses - especially in the hospitality, retail and service sectors who will all be 'doing it extremely tough'.

The good news (for Australia at least), and the thing that gives me hope for a bright future post-COVID-19, is that as Australians, we're used to standing together in the face of adversity. In fact, we're renowned for it! Whether it's bushfires, floods, cyclones, or other natural disasters, we ALWAYS stand together and get through. The COVID-19 crisis should be no different.

Anthony T Schmidt
Managing Editor

TELL US WHAT YOU THINK!

We value your opinion and welcome your feedback and input.

Send your thoughts to ats@epcgroup.com



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Crash Cushion

MASH COMPLIANT

Reusable Non-Gating Redirective Crash Cushion

The QuadGuard® M10 is a redirective, non-gating crash cushion that consists of an engineered steel nose and crushable, energy absorbing cartridges surrounded by a framework of steel Quad-Beam™ panels. The system is tested to the Manual for Assessing Safety Hardware (MASH) Test Level 3. It can be used to shield fixed objects of 610 mm wide.

The QuadGuard® M10 system utilises two types of cartridges in a configuration designed and tested to address vehicles as defined by MASH for both lighter cars and heavier, high centre-of-gravity vehicles.

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MASH COMPLIANT

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Assembly Advantages

- Splices at mid-span of the posts allow for easy assembly.
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Optional protective cover available for vulnerable road users





Car space by day, pop-up park by night

As public space becomes premium in our cities, could boutique sidewalk activations known as parklets be the solution?

Pop-up parks or parklets are mobile temporary sidewalk extensions which swap a parking space with a parking space-sized park. Rising to prominence in the streets of San Francisco in the early 2000s, they've since popped up in streets all around the world and could be on their way to your local suburb.

Dr Mike Harris, UNSW Built Environment landscape architect and urban designer, says that parklets are an example of the innovative ways streets could capitalise on underutilised space.

"What parklets do is activate a social space in a street that potentially doesn't have any," he says.

"With more people in our cities we need to be smarter with our public space, and on-street car parking is an obvious, if sometimes sensitive, opportunity. The amount of car parking on our high streets, at the sake of other uses, doesn't really stack up economically, socially, or environmentally."

A simple parklet may provide seating, plants and shade to passers-by to relax and enjoy the atmosphere of their surroundings.

"They're usually quite a simple setup; some seats, planter boxes and sometimes shade on a platform that extends from the footpath," Dr Harris says.

Public verandas, performance venues, workshop spaces, podcast studios and libraries, are among the more expansive car space turned park designs to date.

"Because car spaces are essentially temporary storage modules, you can simply plug in a public space... which will benefit more people than the single car space," he says. "In this way you could say parklets return public space to the public."

He says that because parklets tend to be temporary or seasonal, "things can always return to normal relatively quickly if needed".

"People don't really complain if it's just one spot," he says.

According to Dr Harris, parklets could be a rare 'win-win' for councils, satisfying both local businesses and residents.

"Councils may take a liking to them because they're quite novel, as an installation, they get an immediate response and get noticed by locals, and they can be seen to be taking an active role in the community."

"Putting a new public space in front of a café for example, they become a big beneficiary because you attract people to that location and effectively give the café new spill-out space. This can inject a new type of social activity into the street, and then it can snowball with increased foot traffic into a more popular street in general."

There have been small pockets of street activation experimentation in Australia, notably with Sydney's Waverley and Randwick councils. The inner-city suburb of Glebe has also hosted trailer parklets, which were crowdfunded by the community, local businesses and the City of Sydney.

He says that while most are council led, there is potential for the community to play a more active role.

"They could be more locally-led, and locals could engage in discussions with the council. We see that from bottom-up policies that have recently been implemented like verge gardens," he says.

Maintenance Challenge for Road Delineators in Express Lanes in Highways

Ennomotive, the leading open innovation platform for engineering challenges, just launched a competition to find an efficient solution to improve the cleaning and replacement process of road delineators in highways.

Cintra, with Ferrovia Agroman as the main constructor, has improved Interstate 77 in northern Charlotte, North Carolina, by adding electronic-tolled Managed Lanes along 26 miles of the highway. Once construction is finished, I-77 Mobility Partners (I-77 MP), a consortium led by Cintra, will be responsible for the operation and maintenance of the project.

The I-77 Express Lanes run adjacent to the existing general-purpose free lanes, separated by plastic delineators, whose main purpose is to prevent toll violators to enter or exit the toll lane without crossing a toll gantry.

As established in the Concession Agreement, delineators must be cleaned to meet the reflectivity requirements and be replaced when damaged or missing. Consequently, Cintra is looking for solutions to reduce the maintenance cost of the delineators while complying with the contract requirements.

This online competition is open worldwide to any professional, company, or tech centre from different industries and technical backgrounds that want to propose a solution for this challenge.

Ennomotive offers AUD\$27,500 in prizes to be shared among the best ideas for this competition. Interested participants should sign up at www.ennomotive.com and submit their solution before the 6th of April.



Researchers uncover significant malware campaign against Australian transportation sector

Mimecast Limited, a leading email and data security company, recently announced the availability of the *Mimecast® Threat Intelligence Report: RSA® Conference Edition* - which shows researchers uncovered, for the first time, a significant malware campaign against Australia's transportation, storage and delivery sector.

The sector was targeted over 4 days between 22-25 October, 2019 by a campaign that used masses of *Emotet* - a malware strain that was deemed one of the most prevalent threats of 2019 and identified as a key threat by the Australian Cyber Security Centre (ACSC) on October 24, 2019.



Globally, transportation, storage and delivery was the highest-attacked sector in 2019. With Australia becoming a key investment area for Chinese businesses, the volume and complexity of threats and attacks

against the local industry are likely to increase.

The full report is available for download at: www.mimecast.com/globalassets/documents/whitepapers/threat_intelligence_report_rsa-2020.pdf

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Infrastructure can lay the foundations for Australia's net zero emissions future

Infrastructure will play a critical role in supporting Australia's transition to net zero emissions according to a new paper released recently.

Infrastructure contributes around 70 per cent of Australia's annual greenhouse gas emissions, according to the Issues Paper: *Reshaping Infrastructure for a net zero emissions future*. The paper is published in partnership by the Infrastructure Sustainability Council of Australia (ISCA), ClimateWorks Australia and the Australian Sustainable Built Environment Council (ASBEC).

"Most infrastructure built today will still be operating in 2050," says Ainsley Simpson, CEO of ISCA. "By this point, all Australian states and territories are aiming to be at net zero emissions."

Ms. Simpson says that infrastructure must respond to and support broader economic and social trends, one of which is decarbonisation of Australia's economy.

"Infrastructure is facing pressure from both the public and private sector to prepare for net zero emissions," said Ms Simpson.

"In addition to state and territory commitments, private investors are increasingly aligning their portfolios with net zero emissions."

Mr Michael Li, Senior Project Manager (Cities & Policy), at ClimateWorks Australia, says infrastructure influences 15 per cent of Australia's emissions directly and 55 per cent indirectly.

"Direct emissions occur across the life-cycle including in procurement, construction, operations and decommissioning. But the majority of emissions are associated with the end use of assets and the activities they enable," said Mr Li.

"For example, providing public transport infrastructure close to population centres can reduce local road transport emissions," he said.

Ms Suzanne Toumbourou, Executive Director of ASBEC, says that preparing infrastructure for a net zero emissions future is a shared responsibility between all stakeholders across the infrastructure lifecycle, including infrastructure advisors, investors, construction companies and operators.

"With billions of dollars in the infrastructure pipeline, and the need to rapidly rebuild infrastructure after this summer's natural disasters, now is the time for consensus about what role infrastructure can play in achieving a net zero emissions future," said Ms Toumbourou.

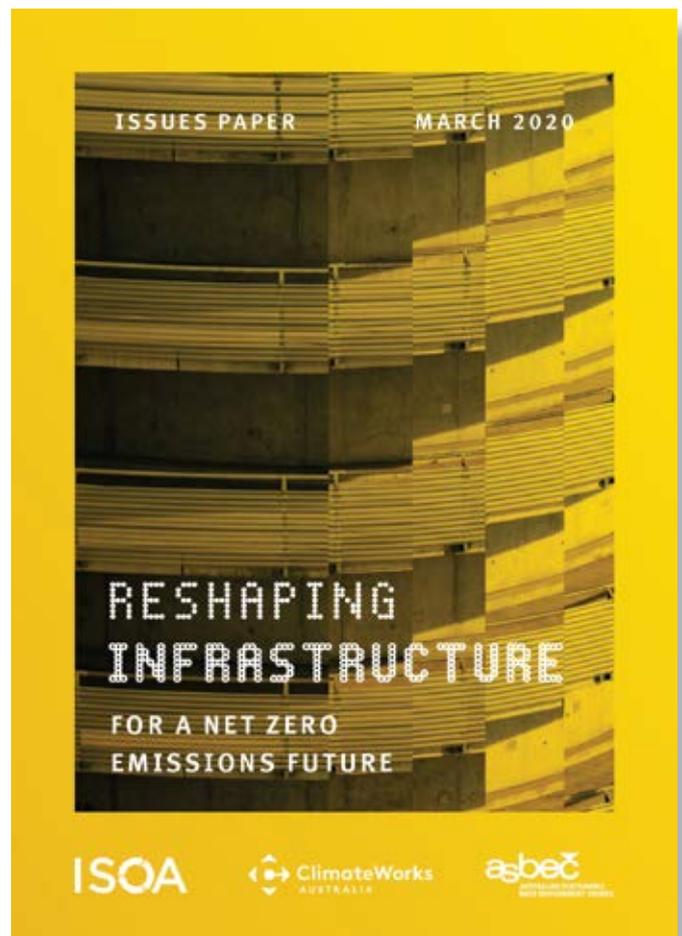
The Issues Paper will be a focal point for conversations amongst infrastructure stakeholders around reshaping the conception, planning, design, construction and operation of infrastructure for a net zero emissions future. Using the Issues Paper as a starting point, ISCA, ClimateWorks and ASBEC aim to work collaboratively with those responsible for planning, assessing, funding and delivering infrastructure.

ISCA, ClimateWorks and ASBEC will be actively engaging with infrastructure sector individuals and organisations and inviting them to this important conversation.

"We invite stakeholders from across the infrastructure sector to collaborate and participate in solutions-focused discussions that are essential to reshaping infrastructure for a net zero emissions future," says Ms. Simpson.

Stakeholders who wish to participate in the conversation throughout 2020 and beyond are also invited to reach out directly to ISCA, ClimateWorks and ASBEC for updates.

Reshaping Infrastructure for a Net Zero Emissions Future is a partnership between ISCA, ClimateWorks Australia and ASBEC. For more information, or to download a copy of the paper, visit: www.isca.org.au



ABOUT ISCA

The Infrastructure Sustainability Council of Australia (ISCA) is a member-based, not-for-profit peak body operating in Australia and New Zealand with the purpose of enabling and rewarding sustainability best practice in infrastructure. It does this through:

- Operating an Infrastructure Sustainability (IS) rating scheme for infrastructure assets
- Delivering training and capacity-building to enhance sustainability in infrastructure
- Connecting infrastructure projects to suppliers of sustainable products and services
- Bringing sustainability practitioners and infrastructure professionals together
- Recognising and rewarding best practice in sustainability and resilience

CLIMATEWORKS AUSTRALIA

ClimateWorks Australia develops expert, independent and practical solutions to assist in the transition to net zero emissions for Australia, Southeast Asia and the Pacific. Co-founded by The Myer Foundation and Monash University in 2009, ClimateWorks is a non-profit organisation working within the Monash Sustainable Development Institute. ClimateWorks also benefits from strong relationships with an international network of affiliated organisations that support effective policies, financing and action for emissions reductions. Acting as a bridge between research and action, the ClimateWorks collaborative end-to-end approach seeks solutions that will deliver real impact. ClimateWorks supports decision-makers with tailored information and tools, working with key stakeholders to remove obstacles and help facilitate conditions that support the transition to a prosperous, net zero emissions future.

ABOUT ASBEC

The Australian Sustainable Built Environment Council (ASBEC) is the peak body of key organisations committed to a sustainable built environment in Australia. ASBEC members consist of industry and professional associations, non-government organisations, and government and academic observers who are involved in the planning, design, delivery and operation of Australia's built environment. ASBEC provides a collaborative forum for organisations which champion a vision of sustainable, productive and resilient buildings, communities and cities in Australia.

Contractors keen to get started on NZ Upgrade Programme

New Zealand's civil contractors have welcomed New Zealand Government's recent announcement of a range of infrastructure projects funded under the *New Zealand Upgrade Programme*.

Civil Contractors New Zealand Chief Executive Peter Silcock said the announcements showed the Government was looking at a wide range of projects, including roads, was a welcome one for the country's road builders and civil construction companies.

"Planning for many of these projects is well advanced as they have been on the drawing board for a long time. This selection will start to address the country's infrastructure deficit, but it will be interesting to see the shape these projects take, and when they hit the ground."

Mr Silcock said timing was critical for civil construction companies as projects like Transmission Gully, Christchurch Motorways

and Waikato Expressway began to wind down, and he hoped these projects would not get bogged down in bureaucracy.

He said continuity of work was very important for the civil construction industry to ensure it could retain valuable skills and make the best use of available equipment. While the location and proposed project start dates seemed to provide good continuity of work, getting projects like this going took time and making them happen wasn't as simple as flipping a switch.

Mr Silcock said many of the projects announced had been 'pretty much ready to go', but any radical changes could cause significant delays. He also lauded the Government's investment in improved rail networks, which would build continued long-term rail construction capability.

"The Government has re-prioritised many projects towards improved road safety and multi-modal transport, so it will be really interesting to see how these projects have changed under the lens of their current policies."

Four-lane highway improvements at Mill Road in Auckland, Tauranga Northern Link and Otaki to North of Levin showed a welcome sense of pragmatism.

He said the newly-created New Zealand Infrastructure Commission provided an opportunity to further de-politicise the infrastructure decision making process, and seeking a more impartial way forward would be a 'wise choice' to reduce the boom-bust nature of construction work that was currently easily influenced under the three-year electoral cycle.

Mr Silcock also expressed concern around projects proposed for the South Island, or a lack thereof, as the programme seemed heavily North Island-focussed with sparse detail on proposals for Queenstown and underwhelming investment in the rest of the South Island.

He said as well as 'playing catchup' in areas with high growth, it was important to stimulate growth across the wider country using infrastructure as a means of regional economic development and making much-needed improvements to the southern transport network.



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Ian Pinney 0409 905 451
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QLD & NT

Gavin Kirk 0407 789 370
gavin@garwoodinternational.com.au

NEW ZEALAND

Reece McCrystal 0413 751 292
reece@garwoodinternational.com.au

Tackling Adelaide's urban heat by cooling roads

An innovative way to tackle urban heat is underway in Adelaide's Central Market District with an aim of making the city a more attractive place to work and live.

The *Cool Road Adelaide* project will test how three heat reflective treatments applied to a 100-metre part of Bowen Street West in the Adelaide CBD work to reduce heat absorption, cool the area and create a more livable city.

South Australian Minister for Environment and Water, David Speirs, said the project was another example of practical action to deal with our changing climate which could improve both environmental and economic outcomes.

"Cities and urban areas really feel the heat on hot summer days because roads, footpaths and buildings absorb more heat from the sun," Minister Speirs said.

"Areas that are hot and uncomfortable are places that people avoid, so by cooling down hot urban areas people will use them boosting the local economy."



"Planting trees around cities can be sometimes difficult given the demands on open spaces, so another way to cool down cities is by cooling down roads," the Minister added.

Member for Adelaide Rachel Sanderson encouraged constituents to provide feedback on this project.

"Anything that makes our CBD more liveable and environmentally friendly is a good thing," said Ms Sanderson.

"My constituents are very supportive of new technologies that improve the amenity of our city and I look forward to seeing the project's findings."

Lord Mayor of Adelaide Sandy Verschoor said adding heat reflective treatments to roads can also create better quality roads that combat heat to reduce maintenance costs, as well as reduce energy costs for surrounding buildings.

"Three cool road surface products are being applied to Bowen Street West and will be monitored to see how they make the area cooler," said Ms Verschoor.

"We encourage pedestrians, cyclists and locals to provide their feedback about the cooling effects of the project by visiting the City of Adelaide website: <https://yoursay.cityofadelaide.com.au/cool-road>

"The City of Adelaide is also delivering tree planting and water sensitive urban design projects to make the Adelaide CBD a more comfortable place to live and visit."

Climate KIC CEO Christopher Lee said new innovations in heat reflective products are being used across the globe, with cool roads and cool roofs taking off in America, Europe and in other countries.

"Given South Australia's climate and relatively high temperatures, these innovations are another way to cool Adelaide's urban environment and create a more livable city," said Mr Lee.

The *Cool Road Adelaide* project will be completed at the end of summer. The results will be shared with local councils to help inform future cooling programs across South Australia.

Cool Road Adelaide is a Climate KIC Australia project delivered in partnership with the City of Adelaide (\$35,000) and South Australian Government (\$50,000), and made possible with in-kind support from Fulton Hogan.

Intermodal Asia 2020 rescheduled to take place in July 2020

Intermodal Asia, which was originally scheduled to be staged in March 2020, will now be held at the SWECC in Shanghai on 14-16 July.

Rob Fisher, Group Director Informa Markets said: "We have been closely following developments since the outbreak of novel coronavirus (COVID-19) in Wuhan in December 2019. First and foremost, our thoughts and support go out to our colleagues, partners and clients in China during this uncertain time."

"After careful consultation with our joint venture partners the China Container Industry Association (CCIA), the in-depth discussion with the venue, we have taken the decision to reschedule this year's event to ensure the safety of our visitors, exhibitors and staff. By delaying *Intermodal Asia*, we are providing the container shipping and intermodal sectors time to recover from any setbacks experienced as a consequence of the outbreak and its effect on global trade."

The postponement has been welcomed by the industry, with Mr Huang Tianhua, President of CCIA, and Vice President of CIMC Group adding:

"As a leader within the container shipping industry, CIMC Group's mission is to promote the development of the global container shipping industry. CIMC has been the main sponsor and a loyal exhibitor of *Intermodal Asia* since it moved to China in 2014, and *Intermodal Asia* has become an important stage for CIMC Group to showcase its cutting-edge services, and an opportunity for communication and cooperation with global partners."

"We greatly appreciate the decision to postpone *Intermodal Asia 2020*. It reflects the organiser's responsible attitude towards the safety and health of its international exhibitors and visitors, but also reflects confidence in China's ability to quickly overcome the outbreak."

"CIMC Group intends to continue fully supporting *Intermodal Asia 2020*. We also call on international container partners and industry leaders to join *Intermodal Asia 2020* to showcase solutions and share knowledge and take this important opportunity to build new business relationships," Mr Tianhua said.

Intermodal Asia brings together the leading

decision-makers and thought leaders in the global intermodal and shipping container sectors. With visitors from more than 90 countries from across the container transport and logistics supply chain, it is the most important annual industry event in Asia. Taking place in Shanghai on 14-16 July, one of the world's most dynamic logistics markets, *Intermodal Asia* is a unique opportunity to discover innovative products, services and solutions and meet suppliers, customers and partners to help you gain a long-term competitive advantage and stay abreast of the latest industry developments. It is the perfect opportunity for global professionals to come together to network, do business and encourage the healthy and sustainable development of modern intermodal transport.

"We apologise for any disruption to visitor and exhibitor schedules and we trust that the intermodal community understands the reasons behind our decision," Rob Fisher added. For further information or to secure your free ticket to the event, please visit the *Intermodal Asia 2020* website at: www.intermodal-asia.com

Leading Australian traffic management software up for grabs

The rights to a state-owned traffic management system used in many parts of Australia will be sold off to allow the further development of the software and potential international rollout.

Addinsight was developed by the South Australian Transport Department in 2012 and provides real-time and predictive updates on traffic movements and congestion by using beacons installed on the road network to identify movement of devices, including Bluetooth and Wi-Fi.

The Bluetooth sensors were developed and installed across Australia by South Australian company Sage Automation.

In 2016, it was developed into an award-winning app for public use, letting users assess congestion and time delays on their chosen route.

Its creator, former Transport Department engineer James Cox, welcomed the move to commercialise the software.

"I just don't think the Government's a good place for software to be commercialised - it's not geared up for doing marketing and I think that the system's essentially stagnating being in government, because it's not being promoted," he said.

Cox said the software was originally developed as a planning initiative for Adelaide's North South corridor, but has since moved under the purview of the Traffic Management Centre.

"The system's essentially just grown and grown," he said.

"At the moment it's essentially used all over Australia, but it hasn't really expanded out of Australia, because of that whole word of mouth thing ... it needs a bit of investment in trying to get a deal done overseas."

The South Australian Government recently released an Expression of Interest to the market for the future development of the *Addinsight* software.

South Australia Transport Minister Stephan Knoll said there was an opportunity to "...turbo charge the service AddInsight provides by allowing private sector expertise, capital and creativity to further develop this technology".

"*Addinsight* is an innovative approach to traffic management and the fact that it is now being used by other traffic management centres across the country is a testament to those involved in its development," he said.

"*Addinsight* is operating in a dynamic and rapidly emerging market and the state government does not believe taxpayers should continue to fund the development of this technology... there are potential options to use and expand the program into other markets, including logistics or queue management.

"It could also integrate with smart cities or other traffic and planning initiatives, or further synergise with other traffic management products, which should be explored to maximise its use and potential.

"As such, the future of Addinsight technology, software and uses extends far beyond core government business."

The software captures data that is de-identified, aggregated and utilised by the Traffic Management Centre to monitor and improve traffic flow.

Knoll said the Government remained "...open and flexible as to the potential structure of *Addinsight* through this process" but would "seek conditions that will retain data security provisions as well as guaranteeing continued use of the *Addinsight* data for the betterment of the state".

"The government will also seek to provide ongoing support to the potential third party by way of enabling the Adelaide network to be used as a test-bed for ongoing enhancements to the software," he said.

"*Addinsight* will continue to operate as normal and the Government is committed to providing the same level of service that is currently provided to existing customers."

This story was originally published on news website InDaily.

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NEW YEAR... NEW RULES

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



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

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

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

SMART CUSHION
Speed Dependent Crash Attenuators

SMART CUSHION

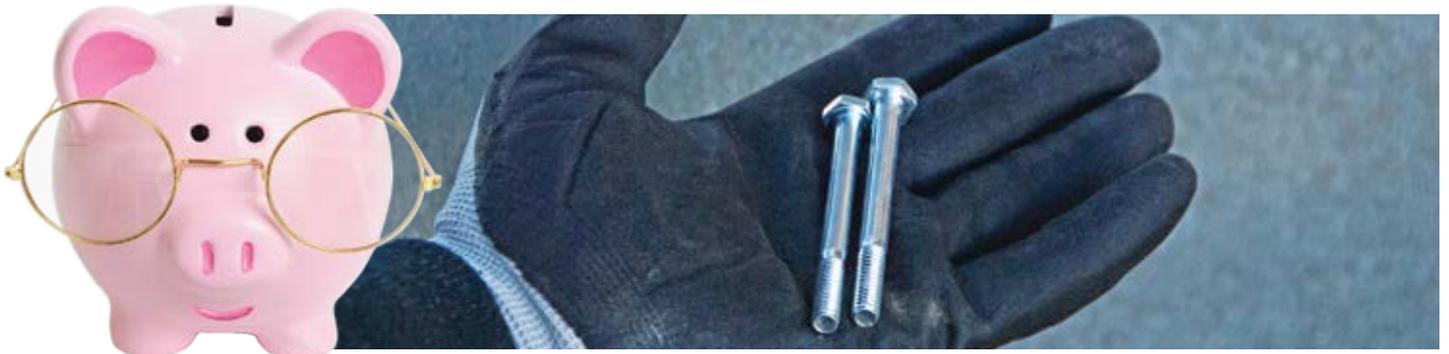
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MASH TESTED & APPROVED ✓



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



SAVE MONEY...

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



SAVE LIVES...

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



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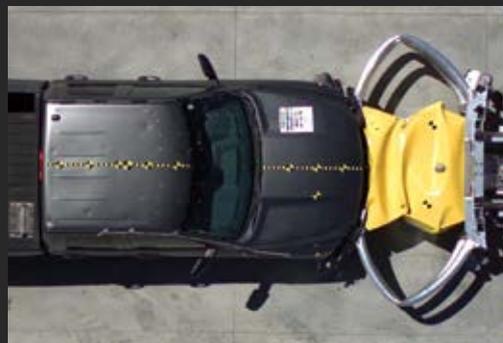
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GAME CHANGER

MASH TL-2 TESTED & APPROVED
ASBAP APPROVED & RECOMMENDED FOR USE IN AUSTRALIA





Building on the outstanding Australian and international success of the world-renowned Scorpion II® MASH TL-3 Truck Mounted Attenuator (TMA), the new Scorpion II® Metro MASH TL-2 TMA is now available in Australia.

Approved and recommended for acceptance throughout Australia by ASBAP (Austroads Safety Barrier Assessment Panel), the Scorpion II® Metro TL-2 TMA looks set to change the face of road works and traffic management throughout metropolitan and rural Australia, providing outstanding protection in workzones up to 70km/h.

WORLD'S FIRST MASH APPROVED TL-2 TMA

With the Austroads Safety Barrier Assessment Panel (ASBAP) Transition to MASH program now well progressed, and the final transition date of 31st December 2020 looming large,

there's never been a more important time for equipment purchasers to ask the critical question: **"Is it MASH Approved?"**

When it comes to the new Scorpion II® Metro MASH TL-2 TMA, the answer is a resounding **YES**.

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.

Janine Bartholomew, Manager with A1 Roadlines - the exclusive Australian distributor of Scorpion TMAs - explained:

The *Transition to MASH* represents a significant change in how safety barrier devices such as TMAs will be assessed for suitability for use on the Australian road network."

"With the MASH testing and assessment standards now being referred to in the Australian / New Zealand Standard AS/NZS 3845.2:2017 in place of the previous NCHRP-350 testing, it's extremely important that newly designed equipment is tested, passed and eligible under the MASH requirements," she said.

"Indeed, under the ASBAP *Transition to MASH* program, all TMA's purchased after the December 31st 2020 cut-off date are required to be successfully tested and approved to MASH Standards, rather the superseded NCRHP-350 testing."

"With the new Scorpion II® Metro TMA, equipment owners can be confident that their TL-2 TMA is both ASBAP Approved and Recommended for use throughout Australia and fully MASH tested and approved," she added.



'INFINITY TESTING' THE ULTIMATE TEST OF PERFORMANCE

Scorpion II® Metro TL-2 TMA underwent a total of four crash tests, three of which (MASH 2016 Tests 2-50, 2-51 & 2-52) were conducted as 'Infinity Tests' - widely regarded as *'the ultimate test of performance'* for TMA's. Janine Bartholomew explained:

"Infinity Testing' is without a doubt the harshest method of testing the performance of a TMA during an impact."

"In short, testing the TMA on a host vehicle which is anchored in place 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. It's a much tougher testing regimen and is considered a worst-case scenario test condition from the perspective of testing the TMA's capacity to absorb/dissipate 100% of the impact energy without the benefit of the host vehicle roll-ahead," she said.

"Using 'Infinity Testing' not only confirms that the



TMA alone is capable of absorbing the energy of the impact without having to rely on the host-vehicle rolling forward, it also means that the Scorpion II® Metro TMA is the only TL-2 TMA to be MASH certified with no upper weight limit for the host vehicle."

"What's more, the fact that the tests were conducted at 'TL-2 Plus' levels, means that this performance has been proven at 80km/h - which is a full 10km/h above the MASH TL-2 requirements," Janine added.

Needless to say, the Scorpion II® Metro MASH TL-2 TMA passed all four MASH tests with 'flying colours' and has been certified as 'fully tested, passed and eligible' - or in common terms, fully tested and certified - to MASH 2016 testing and assessment standards. The official eligibility letter (CC-158) is available from the U.S. Department of Transportation website for all to see.

All of the documentation, including full details of the MASH tests, is also available on the A1 Roadlines website: www.a1roadlines.com.au

MASH 2016 Test 2-53



MINIMAL ROLL-AHEAD DISTANCE

Not surprisingly, the Scorpion II® Metro TMA also performed extremely well during the fourth MASH crash test (MASH 2016 Test 2-53), in which it was fitted to a stationary unrestrained host vehicle in second gear and with the park brake engaged. The TMA was then impacted at an angle of 9.9 degrees by 2014 Dodge RAM 1500 with a curb mass of 2295kg travelling at 81.6km/h.

Impressively, even during this extreme impact, the host vehicle only measured a roll-ahead distance of 12.4 metres.



The Transition to MASH represents a significant change in how safety barrier devices such as TMAs will be assessed for suitability for use on the Australian road network."

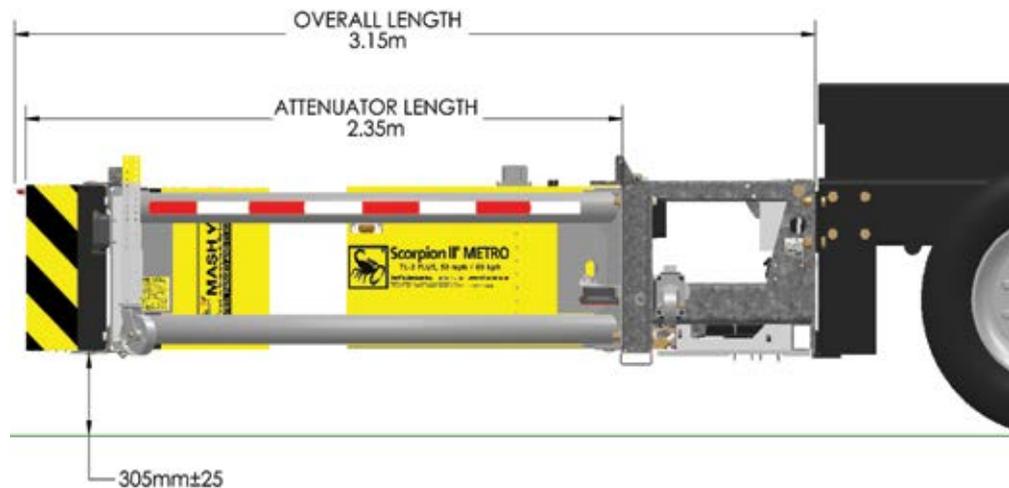
THE CHOICE IS YOURS SUITABLE FOR USE ON A WIDE RANGE OF HOST VEHICLES

Importantly, due to its compact size and low total weight (690kg), the Scorpion II® Metro TL-2 TMA is suitable for use on a wide range of host vehicles. Indeed, the Scorpion II® Metro TL-2 is recommended for acceptance throughout Australia by ASBAP on any suitable compliant host vehicle with a minimum vehicle mass of 3000kg including ballast.

What's more, thanks to the fact that the Scorpion II® Metro TL-2 has been successfully tested and approved to MASH TL-2 Plus (80 kph impact) using 'Infinity Testing', there is NO MAXIMUM HOST VEHICLE MASS requirement. As long as the support vehicle meets the minimum weight requirement and is compliant with local vehicle regulations, and the TMA mount is structurally certified, the Scorpion II® Metro TL-2 can be used - regardless of the brand of host vehicle.

A1 Roadlines are able to supply the Scorpion II® Metro TL-2 on a wide range of cab-chassis models from leading manufacturers including ISUZU, UD, FUSO and HINO to name a few, with trucks available in a range of body and wheelbase configurations to suit any application.

Additionally, as with the larger TL-3 variant, Scorpion II® Metro TL-2 TMA is compatible with the Doctor Air Brake® automatic braking system that instantly locks the brakes of the host vehicle upon impact, further protecting the driver of the TMA truck, occupants of the impacting vehicle, and any bystanders or workers near the crash.





MODULAR DESIGN REDUCES REPAIR COSTS

As with the larger TL-3 model, Scorpion II® Metro TL-2 TMA incorporates Scorpion's unique modular design. This not only plays a critical role in absorbing energy during an impact, it also plays a major role in helping to reduce the cost of repairs - particularly after moderate impacts and/or in the event of accidental damage - with only the damaged components requiring replacement.

With most non-modular units, even minor damage caused by a driver inadvertently reversing into an object or colliding with a stationary object while positioning the vehicle, can have

extremely costly consequences. In fact, with some units, even minor impacts can result in having to replace the majority of the TMA unit.

Needless to say, with very low speed and minor impacts accounting for around 80% of the total impacts into TMA's, the cost and inconvenience of having to replace an entire unit or the majority of a unit any time minor damage occurs can be considerable.

The Scorpion II® Metro TL-2 TMA is extremely quick and easy to repair, and with the greater majority of repairs coming in at only a fraction of the cost of a replacement unit, they deliver outstanding 'whole of life' value.

THE RIGHT TIME TO BUY

With the Australian Government's recently announced COVID-19 special 'Asset right-off' tax incentives for business, there's never been a better time to purchase new equipment.

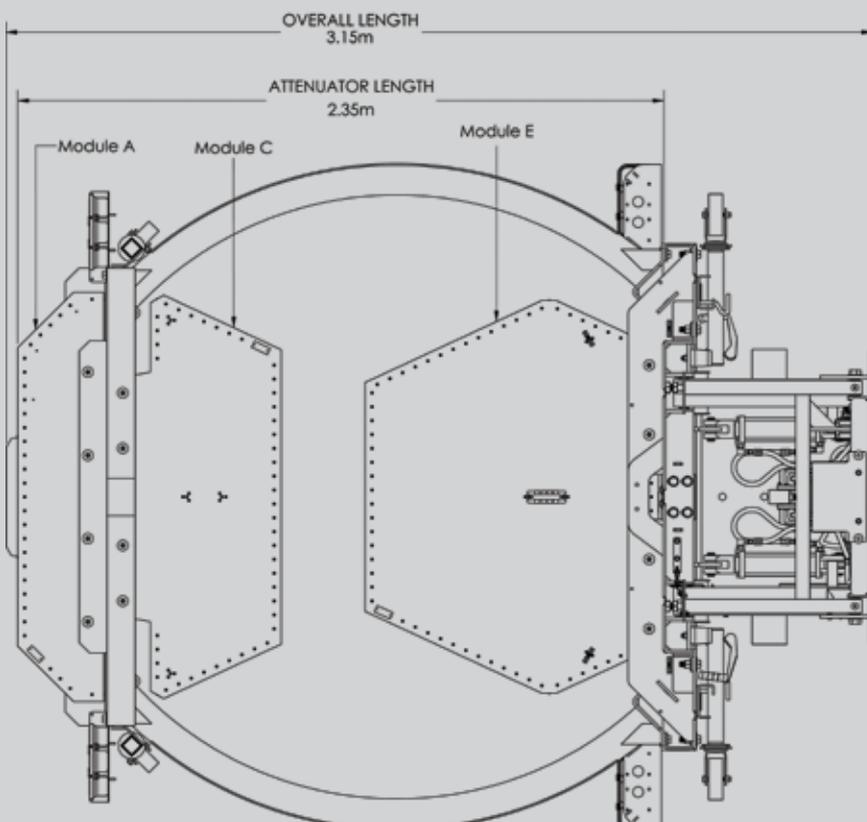
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WORLD-FIRST STUDY TESTS DISTRACTION AND FATIGUE IN DRIVERS

A landmark study analysing truck driver performance behind the wheel has provided a world-first window into fatigue and distraction among truck drivers.

In a world-first study, researchers from Monash University's Accident Research Centre (MUARC), in partnership with Seeing Machines, Ron Finemore Transport and Volvo Trucks Australia, tested fatigue prevention and driver-monitoring technology in working fleet trucks on the road, and in a new purpose-built truck simulator based at MUARC to measure truck driver performance.

The world-class Guardian technology, by Seeing Machines, actively monitors for and alerts commercial drivers to fatigue and distraction in real time. In this study, Seeing Machines' automotive grade technology was used alongside Guardian, to study driver behaviour and the team was able to accurately detect the drivers' level of fatigue well before a safety critical event like a microsleep occurred.

They also tested distraction monitoring in real-time - and the technology can now detect where the driver is looking, in a never done before breakthrough innovation. The team also created a comprehensive distraction warning system for drivers.

With the direct input of Ron Finemore Transport, the team fitted 10 fleet trucks with the technology and monitored drivers for nine months. Over 100 drivers enrolled in the study, collectively driving 22,000 trips across over 1.5 million kilometres, resulting in the largest and most comprehensive study of its kind in the world.

Using Australia's first Truck Simulator, Monash researchers conducted tests on 74 truck drivers under different conditions, using Big Data to fine-tune the technology that will be rolled out in future vehicles. The drivers were sleep deprived and then

intentionally distracted during driver simulation for two-hours. Researchers recorded 29 crashes in the simulator, with 21 (72%) in fatigue condition and eight (28%) of the crashes while drivers were alert. Drivers were twice as likely to crash when fatigued, but 11 times more likely to crash when fatigued and distracted at the same time.

The study provided a unique test-bed for the evolving sophistication of the sensor technology that aims to reduce heavy vehicle crashes in Australia, improve truck driver well-being and help truck companies better manage their drivers' fatigue.

The technology system consists of small cameras and connected sensors installed in the vehicle. It is so sensitive, it can detect the eyes blinking, head position, and where the driver is looking.

An alarm signals driver fatigue or distraction and the driver seat vibrates rapidly. An alert is also sent by satellite immediately to the Seeing Machines 24/7 monitoring centre, accessible by the truck company in real time, so they can contact the driver and initiate a fatigue management plan.

The \$6.5m *Advanced Safe Truck Concept* (ASTC), a Co-operative Research Centre

Project, was funded by the Australian Government in partnership with Canberra-based driver monitoring technology company Seeing Machines, the Monash University Accident Research Centre (MUARC), Ron Finemore Transport Services and Volvo Trucks Australia.

The Hon Scott Buchholz, Assistant Minister for Road Safety and Freight, visited MUARC at the University's Clayton campus to announce the findings.

"The Australian Government is proud to have funded this study through the Cooperative Research Centre Project," Mr Buchholz said.

"The Advanced Safe Truck Concept represents the largest and most comprehensive study into driver behaviour using naturalistic (real-life) driving. Our government is proud to support initiatives like this project that allows industry, academia and government to work to not only explore best technologies available but also make a real contribution to road safety."

Speaking about the project, Associate Director of MUARC Associate Professor Michael Fitzharris, said: "It's the first time this type of technology has been tested in a fleet





“This research will enable the implementation of highly advanced and sophisticated driver monitoring technology that will play a key role in reducing the number of people killed and injured on our roads in the future.”

of trucks going about their normal business operations – and because of this, drowsiness and distraction can be detected earlier and with incredibly high accuracy.”

“Driver Monitoring Systems of this type and sophistication will have significant road safety benefits, not just for trucks but for future passenger vehicles.”

“With driver distraction and drowsiness known to be key contributors to road fatalities and injuries globally, this research will enable the implementation of highly advanced and sophisticated driver monitoring technology that will play a key role in reducing the number of people killed and injured on our roads in the future.”

“This is not just for trucks, but all passenger vehicles. This will improve the safety of all road users, including pedestrians and cyclists,” he added.

Associate Professor Fitzharris said the research would allow a re-think of current best practice in managing driver fatigue and distraction levels for commercial drivers, and has major implications for policy.”

“This research will enable the implementation of highly advanced and sophisticated driver monitoring technology that will play a key role in reducing the number of people killed and injured on our roads in the future.”

“Our research at MUARC played a role in seeing the introduction of frontal and head protecting side air bags in all new vehicles, as well as Electronic Stability Control. I hope that history can repeat itself with this

technology included in all new vehicles here in Australia, and around the world,” he said.

The comments were echoed by Seeing Machines’ Program Lead, Dr Mike Lenné, who added: “Advances in the technology made possible by this research means the driver can be alerted to fatigue and distraction much earlier, and then take immediate steps to avoid a safety critical event like the vehicle leaving the lane and being involved in a crash.”

“Through satellite the driver’s truck company is also alerted and can start communicating directly with the driver to minimise harm.”

Dr Lenné, said the project gives Australia a competitive advantage to position the technology globally.

“The project has resulted in the pioneering of advanced technology that positions Australia as a leader in driver monitoring technology innovation. It will allow Australia to influence the global approach to the regulation of professional driving and improve heavy vehicle safety.”

“This is a great example of industry working together, with the support of our government, to enhance safety with a proven policy approach and see it put into practice,” Dr Lenné said.

Speaking about their involvement with the project, Managing Director of Ron Finemore Transport, Mark Parry spoke of the Company’s proactive approach to safety.

“Ron Finemore Transport is extremely proud to have been part of a project that addresses a critical need to develop validated solutions to better manage truck driver behavior and safety.”

“This technology is central to Ron Finemore’s approach to safety. The company places the highest priority on safety and this technology gives us the tools to ensure our drivers are operating safely and efficiently. By allowing researchers to work with our truck drivers directly, they now have a detailed understanding of their tasks, needs, and driving environments,” Mr Parry said.

“We see this approach as the future for regulating fleet safety across the board. To meet the needs of communities by ensuring that daily necessities such as food and fuel are available when needed our fleet operates across a 24-hour, 7 day a week operation.”

“Keeping our drivers safe and being able to detect fatigue and distraction prior to an incident or accident will help keep our drivers and other road users safe. This will support our company’s proactive approach to driver safety and wellbeing – which is at the centre of our business from culture to operations,” he added.

In closing, Director of MUARC, Professor Judith Charlton, spoke of the huge social impact of road trauma, and the benefits that this type of technology is expected to deliver in the future.

“Road trauma is an enormous social harm that needs to be addressed urgently. This need was reinforced last month at the 3rd Global Ministerial Conference on Road Safety in Sweden,” Professor Charlton said.

“Addressing key risk factors such as distraction and fatigue will be critical in reducing the number of people killed and injured on our roads. In-vehicle technology will play a key role in achieving this.”

“This project is an example of MUARCs commitment to working hand-in-hand with industry to solve real-world problems. MUARC has a proud history of supporting policy-makers with sound advice based on world-leading research. The ASTC program continues this tradition,” Professor Charlton added.

ABOUT SEEING MACHINES

Seeing Machines is an industry leader driver monitoring technology for multiple transport sectors globally, and delivers the next generation of fatigue prevention and driver monitoring technology for the commercial transport sector in Australia and around the world.

Their Guardian system uses advanced computer vision technology to detect and minimise driver fatigue and distraction events and associated accidents in commercial fleet applications. The system has demonstrated it can achieve over 90% reduction in fatigue and distraction related driver events based on studies of worldwide deployment experience.

ABOUT MUARC

The Monash University Accident Research Centre (MUARC) is one of the world’s foremost comprehensive injury prevention research institutions. The Centre’s research is interdisciplinary, applying a systems-based framework across transport, workplace and community sectors. Stakeholder engagement and the delivery of relevant research with real-world solutions has been a key to MUARC’s success since its inception in 1987. The Centre’s research has helped keep the Victorian road fatality rate to one of the lowest in the world and has also contributed to a diverse range of workplace and community safety initiatives.

ABOUT RON FINEMORE TRANSPORT

Ron Finemore Transport (RFT) is a regional based carrier specialising in transport of food and fuel products. Employing over 500 people and with over 250 prime movers in service, RFT travels over 52 million kilometres annually.

RFT maintains a strong safety culture, supported by industry best practice compliance accreditations, a safe and modern fleet incorporating the latest safety technology and the use and installation of Seeing Machines across its entire fleet to minimise and reduce the risks associated with fatigue and distraction.

Fighting Road Fatalities and Injuries with Better Crash Data: New Road Safety Observatory for the Asia-Pacific Region

The establishment of the first regional Road Safety Observatory in the Asia-Pacific region was announced in Stockholm recently on the eve of the *3rd Global Ministerial Conference on Road Safety*. The conference gathers ministers and policymakers from across the world to set the future direction for road safety action.

The *Asia-Pacific Road Safety Observatory* (APRSO) will support countries of the region in boosting their capacity to collect, analyse, and share reliable road crash data, with the objective to drastically reduce the number of number of road deaths and crash injuries in the region.

The road safety crisis in Asia and the Pacific has reached epidemic proportions. More than 2,000 people lose their lives on the road every day in the region, according to estimates. Many more sustain serious life-changing injuries.

Road crashes cause enormous human suffering; they also result in significant economic and social losses. Halving the number of fatalities and injuries over a 24-year period could increase the GDP per capita by up to 22 percent in some Asian countries, according to recent research by the World Bank.

Measuring the performance of road safety interventions is essential to ensure investments are effective. Yet the availability and quality of crash data that can guide effective policies varies significantly across Asia-Pacific countries.

The Asia-Pacific Road Safety Observatory (APRSO) will address the data gap. It will also promote cooperation, the use of best practices, and the scaling up of effective policies and evidence-based interventions across the region.

The APRSO will build on the experience of the Latin America and Caribbean Road Safety Observatory (OISEVI) launched in 2012 and the African Road Safety Observatory (ARSO) launched in 2018. It is a joint initiative of the World Bank, the *Fédération Internationale de l'Automobile* (FIA), the International Transport Forum (ITF), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and the Asian Development Bank (ADB). The APRSO receives financial support from UK Aid through the Global Road Safety Facility (GRSF). Technical support also comes from the World Health Organization and UNESCAP.

"The gathering of reliable road safety data can drive long-lasting policy changes. I am pleased to see that a joint initiative of the FIA, the World Bank and the ITF has led to the creation of the Asia-Pacific Road Safety Observatory," said Jean Todt, the UN Secretary-General's Special Envoy for Road Safety and FIA President.

"It represents a new opportunity for governments in the region to work with their partners in public health, transport, law enforcement, civil society and the private sector to promote targeted interventions to reduce the number of deaths and injuries on the roads."

Young Tae Kim, ITF Secretary-General, said: "The ITF looks forward to bring all our know-how on crash data to the Asia-Pacific Road Safety Observatory and making it available to the countries of the region."

"Better data will make a big difference in securing political support for effective evidence-based road safety interventions in a world region that is more affected by the road crash epidemic than many others."



Launch of Vaccines for Roads V

The tragic face and true extent of life-changing road crash injuries incurred every single day was revealed for the first time recently in an iRAP Vaccines for Roads V road safety resource released in Stockholm. Every day, 56 people are left quadriplegic, 161 are rendered amputees, 914 are 'degloved', 932 suffer severe acquired brain injuries and 20,865 suffer limb fractures. In total 102,835 predominately young people suffer life changing injuries or death. USD\$6 billion is added to health, insurance and welfare costs daily.

iRAP's Big Data Tool www.vaccinesforroads.org shines a light on the true human impact of road trauma with estimates of the actual injury types and real victim impact stories. The resource unlocks the potential of the world's largest road infrastructure safety database to explore how safe the world's roads are and provide the Business Case for 3-star or better roads for all road users worldwide.

Speaking from the Launch, iRAP Chief Executive Officer Rob McInerney said we commonly talk about death rates – that over 3,600 people die on our world's roads each day – but fatalities are just the tip of the iceberg.

"For the first time, the often hidden and equally tragic consequences of road crash injury are revealed. If we can shine a light on the true personal impact of road crash injury, the type of those injuries and the financial burden placed on health systems around the world we will finally respond with the scale and urgency needed," Mr McInerney said.

Applying the iRAP Global Standard to meet the UN Road Safety Performance Targets 3 and 4 for 3-star and better roads for all road users worldwide stands to save 450,000+ lives a year and 100 million deaths and serious injuries over the 20 year life of the treatments with \$8 of savings for every \$1 invested.

"With knowledge of the human and financial impact, the current condition of the world's roads; the Business Case for Safer Roads and case studies of success, we have the moral imperative, the policy setting, funding mechanism and recipe for scale," Mr McInerney added.

The International Road Assessment Programme (iRAP), a global charity operating in more than 100 countries, launched the Vaccines for Safer Roads (fifth edition) during the 2020 Innovation Workshop, an official side event of the 3rd Global Ministerial Conference for Road Safety.

For more information, visit: www.vaccinesforroads.org or download the brochure at: https://resources.vaccinesforroads.org/Vaccines_for_Roads_V_Brochure.pdf



Tunnel fire safety: with only minutes to respond, fire education really counts

Global risk management experts are calling for fire education initiatives to be included in driver safety programs so that drivers are better prepared for an emergency if faced with it on the roads.

The call follows a new research study where researchers from University of South Australia and the National Technical University of Athens assessed fire safety mechanisms of road tunnels, finding that risks to human life could be reduced through greater awareness and education.

Using a newly developed evacuation model, researchers were able to simulate the behaviours of trapped-commuters and their movement to estimate potential outcomes and fatalities following a fire in a road tunnel.

UniSA Adjunct Associate Professor Konstantinos Kirytopoulos says being able to forecast human behaviour in a fire-risk scenario provides critical information for safety analysts and tunnel managers.

“To mitigate potential fire accidents and disastrous consequences in road tunnels, safety analysts not only have to fulfil standard regulatory requirements, but also need to conduct a complex risk assessment which includes defining the issues, identifying hazards, calculating and prioritizing risks, and doing so for different environments,” Assoc Prof Kirytopoulos says.

“An evacuation simulation model such as ours is particularly valuable because it lets analysts thoroughly inspect all parameters within an emergency.

“Uniquely, it also simulates human behaviour and movement in conjunction with the use of safety mechanisms, letting us project the likelihood of successful evacuations under different combinations of human behaviour, safety procedures implementation and safety infrastructure employed, which provide an extremely useful tool for tunnel safety analysts.

“Safety levels are dictated by the operation of the whole system - organisation, technical and human elements - so anything we can do to increase the success rates of these individual factors can have a massive impact on the whole.

“Having a familiarity with emergency protocols in a confined or enclosed space such as a road tunnel can help trapped-commuters to appropriately respond, and this, we believe will improve successful evacuations.”

Road tunnels are fundamental elements of road transport systems contributing to profitable economies and societies. Given the sheer number of vehicles on the road - about 262 million passenger cars in the European Union; more than 272 million vehicles in the United States; and an estimated 19 million vehicles in Australia - safety is paramount.

Fire accidents in tunnels can have disastrous consequences in terms of human losses and structural damage. Although tunnel safety has increased significantly since previous fire tunnel tragedies such as the Mont Blanc Tunnel fire (France, 1999 with 39 fatalities), Fréjus tunnel fire (France, 2005 with 2 fatalities and 21 injuries) and Yanhou Tunnel fire (China, 2014 with 40 fatalities), these incidences highlight the severity of potential impacts and provide insights for mitigating future risks.

The Road to Relevant Research

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CIMIC'S CPB CONTRACTORS SELECTED FOR TWO REGIONAL ROAD PROJECTS

CIMIC Group company CPB Contractors has been selected to deliver upgrades to two major regional highway projects.

The projects, worth a total of \$164 million in revenue to CPB Contractors, are the:

- South Gippsland Highway Upgrade between Koonwarra and Meeniyan in Victoria. This project is funded by the Victorian and Australian governments and will involve the realignment of the highway to improve driver safety and provide more reliable journeys.
- Mackay Northern Access Upgrade at Mackay Queensland. This project is funded by the Australian and Queensland governments and will target congestion on the Bruce Highway. The project will improve traffic efficiency by creating



additional capacity north of Mackay and be more sustainable to cope with population growth and increases in traffic volumes over the years to come.

CIMIC Group Chief Executive Officer, Juan Santamaria, said: "Through CPB Contractors, the CIMIC Group has a long track record of delivering high-quality road projects."

"These highway upgrades will provide significant safety and economic benefits for regional communities," Mr Santamaria said.

CPB Contractors Managing Director, Diego Zumaquero, added: "CPB Contractors continues to play a key role in delivering vital infrastructure for regional communities across Australia."

"We're committed to working closely with local communities and the governments of Victoria and Queensland to deliver these important upgrades safely and efficiently."

Both projects are underway, with completion for the South Gippsland Highway Upgrade scheduled for 2022 and for the Mackay Northern Access Upgrade in 2022.

MASTER BUILDERS AUSTRALIA CALLS FOR ACTION ON INFRASTRUCTURE

"Last year was the weakest for engineering construction activity since 2007," said Master Builders Chief Economist Shane Garrett.

ABS data released during February indicated that the volume of engineering construction work done during 2019 dropped by 11.8% compared with the previous year to record its lowest calendar year total since 2007.

"Master Builders latest forecasts predict a substantial upswing in the volume of engineering construction work particularly on transport infrastructure in the next 12 months. But this is contingent on state and territory governments working with the Federal Government to push shovel ready projects out the door," Shane Garrett said.

"This is a call that Master Builders has reinforced in our Pre-Budget Submission," Shane Garrett said.

"The weak construction results come on the same day that the updated Infrastructure Priority List was published by Infrastructure Australia. This year's Infrastructure Priority List is the largest ever and identifies 147 specific projects which would assist in meeting Australia's future infrastructure needs. Of these, 42 are considered high priority projects."

"The new Priority List has added 37 new proposals compared with last year's list, which call for action on transport, education, telecommunications, water and flood defences," he said.

"With 2019 representing a particularly weak year for engineering construction, the Infrastructure Priority List is a timely reminder that there is no shortage of crucial projects that we could be getting on with to ensure that living standards are preserved over the years ahead," Shane Garrett said.

"While engineering construction had a glum 2019, the same cannot be said about commercial building activity which hit a new record high last year. Residential building finished 8.1% lower during 2019," he said.

"The newly released set of Master Builders Australia forecasts to 2024/25 envisage that a recovery in new home building activity is not too far off and that new dwelling starts will again top 200,000 by the middle of the decade," Shane Garrett said.

"With our population set to hit the 30 million milestone by the year 2030, meeting our future building and infrastructure needs will be a huge challenge," Shane Garrett said.

UPGRADES PAVE WAY FOR AIRPORT REDEVELOPMENT

Infrastructure upgrade works for the Townsville Airport redevelopment are underway, paving the way for the terminal upgrade to begin later this year.

The works are an important step in the transformation of the terminal, involving the terminal roof upgrade, as well as water, fire and sewer upgrades - which are required to address current capacity constraints and accommodate future growth.

Builder Lendlease is progressing with the roof works, while Townsville-based CES Civil has just been awarded the contract for water, fire and sewer upgrades, which will commence next month.

Townsville Airport Chief Operating Officer Kevin Gill said the upgrades were critical enabling works for the terminal redevelopment.

"We are pleased about moving forward with the core infrastructure works, as an important step in the overall redevelopment," he said.

"There was an emphasis on planning and design in 2019 and this year will be a busy year of delivery for Townsville Airport.

"This is a crucial project for Townsville Airport and for our community."

Townsville Airport reached financial close on a \$50 million loan from the Northern Australia Infrastructure Fund (NAIF) last December.

The water, fire and sewerage works include construction of a new sewer rising main, upgrades to existing pumps, new water mains, installation of an internal fire supply main and new fire tanks.

Infrastructure upgrade works are expected to be completed by the end of the year. In addition to these works, a road project is underway which will streamline the entryway to the airport precinct by extending Meenan Street to meet John Melton Black Drive, creating a new direct, more appropriate and attractive entryway to the precinct for residents and visitors. All together the roof, core infrastructure and road works represent a \$9 million investment.



Roof works are underway at Townsville Airport

SILENT STEAM CLEANER DOES THE JOB!

Australian Pump is bringing out a new version of the silent 3000 psi Steam Cleaner already used by many Councils and contractors around Australia. The machine offers real steam cleaning power used for sanitising amenities and removal of graffiti.

The low noise levels are achieved in the area of 75 to 76 dBA in the washing phase and 73.4 to 74 dBA in bypass phase (when the pressure cleaner gun is not operating). The machines can be mounted on light trucks or trailers with water tanks to supply water for the cleaning process.

Sydney City Council is one of a number of local government bodies that use these machines and have had excellent service from them over the years. The new version being brought out by Australian Pump Industries offers a wide range of improvements that make the machine easier to both operate and service.

“Noise level is quite generic and usually for the “perception noise” at the humans around the appliance” said Australia Pumps Chief Engineer John Hales.



The Aussie Team prepares a V200 “Silent High-Pressure Steam Cleaner” before delivery and handover.

“While the sound level at the source is fixed, the sound level depends upon the distance from the source and the acoustics characteristics.”

“We worked with the engineers in Europe to develop refinements of the machine to get better results and quieter operation” he said.

Some of the new developments are the increased size of the on-board generator. The generator alternator is used to provide

electricity and is belt-driven from the Kohler diesel engine that provides the main power. The old version of the generator was 2.14KVA whilst the new generator is larger and produces 5.5KVA. That’s more than double the electrical power.

Other refinements include the relocation of the electric box for easier accessibility, a new position for the softener tank that makes it easier to access, and water tank being placed so as to provide positive feed to a high-pressure piston pump.

The new versions of the machine join Australian Pumps range of Aussie Hydro-Tek Clean and Capture Systems but are designed specifically for high-pressure cleaning in urban spaces. Companies operating existing machines can get service and parts support from Australian Pump High-Pressure Water Blaster Division.

Further information is available from Aussie Pump Distributors throughout Australia, or from the Australian Pump Industries website at: www.aussiepumps.com.au

TYPE-APPROVED ON-BOARD MASS SYSTEMS

A market of type-approved OBM systems now available

A selection of type-approved on-board mass (OBM) systems is now available through the National Telematics Framework.

Type-approved OBM systems deliver the levels of accuracy and reliability that transport operators demand.

Look for the TCA type-approval logo when choosing an OBM system for your vehicle:



Use type-approved OBM systems to manage:

- ✓ Safety
- ✓ Vehicle loading
- ✓ Chain of responsibility obligations.

Service Providers



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Call (03) 8601 4600 or email tca@tca.gov.au.

TRAMANCO OFFERS FUTURE-READY INTELLIGENT MASS CAPABILITY WITH NEW OBM SYSTEM

Transport Certification Australia has announced that Tramanco is the first to be type-approved for a new generation of smart on-board mass (OBM) system.

Smart OBM systems are capable of collecting and sharing axle mass data with other telematics systems and services, and heralds the introduction of Intelligent Mass through the National Telematics Framework.

By leveraging common digital infrastructure, such as the Telematics Data Dictionary and the Telematics Data Exchange, these OBM systems can be used across all applications of the Framework.

Tramanco is a leading supplier to the heavy transport industries in Australia, New Zealand and South East Asia, and is a specialist in the supply and installation of on-board weighing systems for heavy vehicles since 1975.

Details of the new type-approved OBM system are listed below:



“The smart CHEK-WAY Eliminator OBM system is an Australian product with a good return on investment, demonstrating repeatable accuracy and longevity,” said Roger Sack, Managing Director of Tramanco Pty Ltd.

“All a transport operator wants to know is whether the system offers the highest levels of accuracy, and the answer is yes.”

“The CHEK-WAY Eliminator has now been further developed to support the demands for data for a range of purposes across the transport sector, as well as supporting new applications like the Telematics Monitoring Application,” said Mr Sack.

The Department of Transport in Victoria has already announced the use of smart (Category B or C) type-approved OBM systems for High Productivity Freight Vehicles (HPFVs).

Under Victoria’s *Moving More with Less* policy, 30-metre and 36.5-metre A-Doubles can operate up to 85.5 tonnes. Read more about the Victorian High Productivity Freight

Vehicle Scheme on the TCA website, www.tca.gov.au.

Similarly, the Tasmanian Department of State Growth requires new generation type-approved OBM systems for 30-m A-Double and 30m-B-Double PBS vehicles in Tasmania.

There are three categories of type-approved OBM systems (categories A, B and C) which meet the needs of different stakeholders. Categories B and C are smart OBM systems that allow for the collection and sharing of data with other telematics data. This makes them ready to support future policies and programs.

All categories of type-approval are subject to an assessment of the performance-based requirements contained in the OBM System Functional and Technical Specification.

A list of type-approved OBM systems is available on the TCA website: www.tca.gov.au

For more information on the National Telematics Framework, contact TCA on (03) 8601 4600 or by email tca@tca.gov.au

Supplier	OBM system model	Category	MSU model	
Tramanco	The CHECK-WAY Eliminator	Category B	5200-1314-6 5200-1324-6	

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At A1 Roadlines we understand that our customers have a range of preferences when it comes to fleet vehicles. That's why we fit and service the Scorpion II TMA across a full range of suitable host vehicles from world-leading manufacturers including **ISUZU, UD, FUSO** and **HINO** to name a few.

So, 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 (Austroads Safety Barrier Assessment Panel), the only name you need to remember is **Scorpion II® TMA** from **A1 Roadlines**. When it comes to the brand of host vehicle... that's up to you!



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GET THE FACTS!

on TRUCK MOUNTED ATTENUATORS (TMA's)

BEWARE OF 'FAKE NEWS'

With the move from NCHRP350 testing to MASH (Manual for Assessing Safety Hardware) as the preferred testing for Truck Mounted Attenuators (TMA's) in Australia currently progressing there has been confusion amongst some equipment owners as to what equipment is compliant and, perhaps more importantly, what the status of their equipment will be after Australia moves to MASH as the testing standard.

This situation has no doubt been inflamed by the inaccurate information and spurious claims that have surfaced over the past 12 months - including claims that some units will no longer be permitted to be used after December 31, 2020.

With that in mind, the following fact sheet has been developed to provide key FACTS as to the current status of the 'Transition to MASH Guidelines'.

FACT!

The move by the Austroads Safety Barrier Assessment Panel (ASBAP) towards MASH testing and certification is a complex process that will take some time to implement. The Panel is transitioning the current suite of accepted road safety barrier systems and devices within the Australasian market to MASH guidelines over an extended timeframe, with Part 2 Products (which includes TMA's) to be completed by 31 December 2020.

FACT!

The transition to MASH guidelines is a lengthy and ongoing process and lists of 'Austroads Approved Products' are currently a Work in Progress. If a product does not currently appear on a jurisdiction's list, or is not currently recommended for acceptance at an Austroads level by ASBAP, it **DOES NOT** mean that it has not been successfully tested and certified to MASH guidelines, or that it is not acceptable for use in that jurisdiction. It may simply have not yet been assessed by ASBAP.

FACT!

This **DOES NOT** by any definition mean that non-MASH tested equipment is suddenly obsolete or can no longer be used. It also **DOES NOT** render TMA's that have been previously approved as tested under NCHRP350 guidelines obsolete or unusable - **to suggest otherwise is simply NOT TRUE.**

FACT!

The Scorpion® II Truck Mounted Attenuator was the **first TMA to be fully certified as Tested, Passed and Eligible to MASH 16** by the U.S. Department of Transportation Federal Highway Administration. The U.S. Department of Transportation Federal Highway Administration *Safety Eligibility Letter CC-132* for the Scorpion® II TMA can be viewed online at: https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/barriers/pdf/cc132.cfm

FACT!

While there is a formal agreement on the transition to MASH testing from NCHRP350 testing, there is **NO CUT-OFF DATE** for using equipment that has been certified under the NCHRP350 testing while it is operational - **to suggest otherwise is simply NOT TRUE.**

FACT!

The Scorpion® II Trailer Attenuator is also fully certified as Tested, Passed and Eligible to MASH 16 by the U.S. Department of Transportation Federal Highway Administration. The U.S. Department of Transportation Federal Highway Administration *Safety Eligibility Letter CC-138* for the Scorpion® II Trailer Attenuator can be viewed online at: https://safety.fhwa.dot.gov/roadway_dept/countermeasures/reduce_crash_severity/barriers/pdf/cc138.cfm

FACT!

Even if a TMA is recommended for acceptance at an Austroads level by ASBAP, it must still be approved for use in individual jurisdictions by the relevant State Authority. The State Authorities are responsible for approving the use of TMA's in their individual jurisdiction.

CHECK THE FACTS

Scorpion II® TMA

Truck Mounted Attenuator



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AUTONOMOUS VEHICLES AND AUSTRALIAN ROADS: ARE THEY READY FOR EACH OTHER?

The iMOVE project *How automated vehicles will interact with road infrastructure* has concluded, and the final report has been completed, and released.

This study was carried out to investigate the infrastructure needs of automated vehicles now and in the future. The study methodology included training state-of-the-art artificial intelligence (AI) algorithms to help accurately localise the vehicle and recognise Australian road signs, road lines and traffic lights. For the first time in Australia the methodology also extended to compare results with and without the use of annotated prior maps (sometimes referred to as high-definition maps).

The study data was gathered along multiple routes in and around Brisbane, using a test vehicle dubbed ZOE1. The car, a Renault Zoe, was equipped with three forward-facing cameras, a 360-degree camera, a roof-mounted 32-layer LIDAR, GPS (Global Positioning System) sensors and two on-board data-logging computers.

ZOE1 completed just over 1,200 kilometres in this endeavour, across three months in 2019.

"The QUT study, in partnership with the Department of Transport and Main Roads, was the first step in understanding infrastructure requirements of our vast and varied road network for new vehicle technologies," said Queensland Transport and Main Roads Minister Mark Bailey.

"As researchers drove the car across South-East Queensland, onboard sensors collected some 20 terabytes of raw data which was used to train and refine AI algorithms."

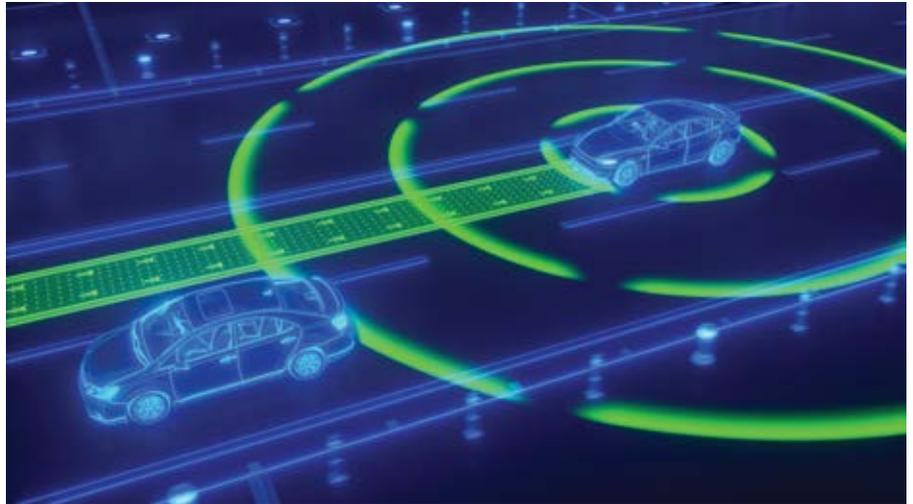
"Artificial Intelligence technology and smart road infrastructure have potential to transform the way we travel in Queensland and reduce road trauma." The Minister added.

What was the project looking to do?

The project was led by Queensland Department of Transport and Main Roads, with research conducted by the Queensland University of Technology.

The project looked to answer the following four questions:

- How well can state-of-the-art computer vision and deep learning algorithms retrospectively account for correct human-level driving behaviour and decisions with respect to recognising and obeying road signage and road surface markings, and how and in what situations do they fail to do so?



- How will existing built and signed infrastructure affect the accurate (automation enabling to a few centimetres precision) positioning capability of an automated vehicle?
- What types of infrastructure improvements could address shortcomings identified in this study?
- How will the answer to the above three questions change depending on the technology solution deployed on the automated vehicle, with a primary focus on the spectrum of possible range-based (laser, radar) solutions versus primary vision-based (MobilEye® for example) solutions?

"The primary goal of the study was to consider how current advances in robotic vision and machine learning – the backbone of AI – could enable the research car platform to see and make sense of everyday road signage and markings that we, as humans, take for granted," said the research project leader, Queensland University of Technology's Professor Michael Milford, deputy director of QUT's Centre for Robotics.



Report findings

In what will surprise very few people, note was made of differences in the appearance (and categories) of some Australian road signs, line marking, and traffic lights. Training the car's tech did improve the detection system's ability to make a better read of the infrastructure, but still *'... only to a level that would be insufficient for safe autonomous operation of a vehicle.'*

Using the camera system alone, the system only detected approximately 40% of speed, give way, turn, pedestrian crossing, and speed hump signs. These were either missed entirely, or incorrectly identified. Adding annotated-prior maps to aid the camera system, the figure improved to 97%.

"This finding is consistent with the majority of approaches that use prior maps, with a few notable exceptions," Professor Milford said.

"It is likely that these map systems will need to have real-time updates on temporary obstructions and changes to signs and roads, and to ensure the navigation systems used by autonomous vehicle receive those updates instantly," he added.

The report does go on to say that, *'Failure cases were mostly caused by the limitations of our approach; first and foremost the relatively small amount of training and development of the algorithms, and in not having techniques to deal with the highly varied lane marking configurations at intersections.'*

The full 133-page report is available for download from: <https://imoveaustralia.com/wp-content/uploads/2020/02/P1-007-Milestone-6-Final-Report-Second-Revision.pdf>

TRANSPORT OF TOMORROW 2020 CONFERENCE CANCELLED



It is with regret that we announce that we are cancelling our upcoming *Transport of Tomorrow 2020* event due to be held on 24 and 25 March, 2020 in Sydney.

Increasing concern about people's well-being plus the need to restrict movement due

to the COVID-19 pandemic make the delivery of a safe, valuable event impossible for the foreseeable future.

'We join the growing list of organisations, including the F1 Grand Prix, ALC Forum, ATA Conference, and ADVI, which have concluded

that the risks are too great to proceed with their events,' says Ian Christensen, iMOVE Managing Director.

'Along with our own concerns for attendee well-being, there is widespread falling confidence in the safety of public gatherings and travel to them. This has meant many speakers and registrants are understandably unable to participate.

'We are obviously very disappointed to not be able to deliver as promised, and all registrants will receive a full refund shortly.'

'All is not completely lost though, after all the hard work. We had locked in a well-rounded and current set of topics and great speakers in both smart mobility and freight and logistics. Over the coming weeks we will work with them to see how we can still deliver some of this content. There are already interviews with some of our speakers available to read on the iMOVE website and we aim to add more,' Mr Christensen, added.

For information: www.imoveaustralia.com

The New Road Infrastructure Management App Is Here

The Road Infrastructure Management (RIM) is a new application of the National Telematics Framework.

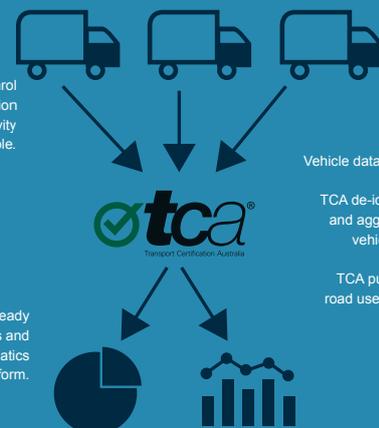
It is an efficient, low cost way of collecting road use data from vehicles to optimise the management of road networks.

Registration is simple, no charge.

RIM provides the right level of assurance needed for road usage reporting, by focusing on 'big data'.

Transport operators can now enrol vehicles into the RIM application and take advantage of productivity opportunities now available.

Road managers are already accessing vehicle data reports and analysis through the Telematics Analytics Platform.



Vehicle data to TCA

TCA de-identifies and aggregates vehicle data

TCA publishes road use reports



Technology providers registered for RIM are recognised by the 'RIM Registered Provider' logo.

Visit TCA's website for further information:
www.tca.gov.au/rim

Talk to us about RIM –
call TCA directly on (03) 8601 4600.



ACRS 2-STAGE CERTIFICATION

INDEPENDENT VALIDATION FROM SOURCE TO SITE

Not all steel available on the Australian market is supplied to the minimum requirements of Australian and New Zealand Standards. And even the best steel can easily be ruined by inappropriate processing or fabrication. Too many specifiers, suppliers and builders don't realise that they not only need to confirm they are ordering the right steel, but also that the steel as delivered has been cut, bent and welded correctly so it is still fit for purpose.

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

A simple check for the ACRS logo on the certification supplied with the steel, and matching

the documentation to the markings on the material, gives builders, designers, specifiers, and clients confidence the materials being used meet the relevant AS/NZS Standards and Codes.

The ACRS integrated, 2-stage certification scheme was adapted for Australian and New Zealand conditions from European best practice for high-risk building materials. The ACRS system certifies both the steelmaking at the mill and the last point at which the steel properties can be changed before delivery and installation in the structure. It has been specifically developed as a "bookended" system that provides a 'Chain of Certification'.



ACRS certification provides the highest available level of assurance to industry and public by ensuring that:

1. Organisations who wish to hold ACRS Certification must achieve full certification for all products and all locations supplying material into Australia and New Zealand. ACRS certificate holders cannot have only some materials or some sites certified. It is all or nothing. Users and specifiers of steel construction materials should ensure they demand full details of the suppliers' ACRS certification status. This can then be checked and validated by visiting the ACRS website (www.steelcertification.com) where you can see full details of all companies holding ACRS Certification.
2. Where a certificate holder does not have manufacturing or processing facilities for one or more construction products covered by the ACRS scheme, but wishes to supply them, they may be able to resell such products, if all the products are sourced exclusively from other ACRS certificate holders. Such arrangements would, with the approval of ACRS, achieve ACRS certification on behalf of the reselling company for that product under the ACRS scheme. This prevents "shandying" of materials - so you don't receive some ACRS Approved steel mixed with other non-approved steels.
3. The ACRS 2 stage system inherently includes full traceability for both reinforcing and prestressing steels and for certified welded sections manufacturers (covering up to CC4 to AS/NZS 5131).

ACRS Certification assessment is performed on each layer of the supply chain from manufacture to dispatch of the finished product to the building site, and material is marked to enable traceability. Also, ACRS Approved firms are required to display the ACRS logo on delivery tags and other applicable documentation to ensure that the material is easily identifiable. (See ACRS website for marking and tag details for each Certified supplier).

THE VITAL LINK

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

- All steel is from an approved source and satisfies the requirements of the relevant product Standard.

- Steel is correctly handled and processed so materials performance is not compromised during subsequent rebar processing or steelwork fabrication.
- The necessary procedures and documentation are in place to ensure full product traceability from steel mill through materials scheduling and fabrication to delivery to site.

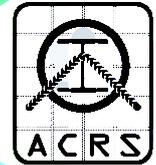
For builders, designers, and specifiers - whether on major construction or a simple house extension - tight schedules and precise tolerances are not a unique challenge; they are a standard practice. Unfortunately, many in the industry continue to wrestle with quality issues, often running just to stay in place. ACRS takes care of steel conformity for you.

With so many sources of different quality materials available in the market, documentation is of critical concern to any specifier or purchaser of steel reinforcement - it's your duty of care! If something goes wrong, you don't want to be without assurance of compliance.

So, how does the designer, specifier or builder know that all the steel delivered to their project meets their minimum requirements?

Unfortunately, the simple answer is that today, it's not easy to be sure. At the same time, all branches of the construction industry have greater responsibilities than ever to meet their duty of care.

ACRS independent certification is a valuable aid to any industry professional in this task.



WHY IS ACRS INDEPENDENT 2-STAGE STEEL CERTIFICATION HERE?

Philip Sanders, speaking on behalf of independent certifier, ACRS says: "Historically, Australia and New Zealand have had a more relaxed regime than most countries with less onerous requirements, saving builders significant time and money in checking and testing."

"This was largely due to the traditional confidence the market has had with product quality."

"However, with today's more dynamic market giving us global supply from a multiplicity of sources, and potentially different Standards of production, we can only maintain our traditional 'documentation-lite' culture through the use of expert, independent third-party certification systems, such as ACRS,

which enable product users to compare 'apples with apples'. If not, it is highly likely we will end up having to follow a US-style 'site-test' model to provide proper assurance that structures are being built according to the appropriate Standards," he said.

Quality building not only requires quality construction methods, it also needs quality materials - which in turn, rely on quality manufacturing and handling.

"It does not matter how well you build, or how much you spend if you have built in a high risk of structural failure from using non-conforming materials," Mr Sanders added. "Is it worth risking that investment for a few dollars?"

THE ACRS CHAIN OF CERTIFICATION

Construction steels manufactured to AS/NZS Standards can be rendered non-conforming by poor transformation, e.g. through such processes as cutting, bending and welding. Certification systems that only assess the mill of manufacture do not provide for validated performance to Standards of the as-delivered product.

ACRS 2-Stage Certification provides a rigorous mechanism linking the initial manufacture and final transformation of construction steels via the 'ACRS chain of certification' including mill, through supply, to processing or steelwork fabrication. ACRS provides a vital, unbroken chain of certification between the steel manufacturer and the construction site.

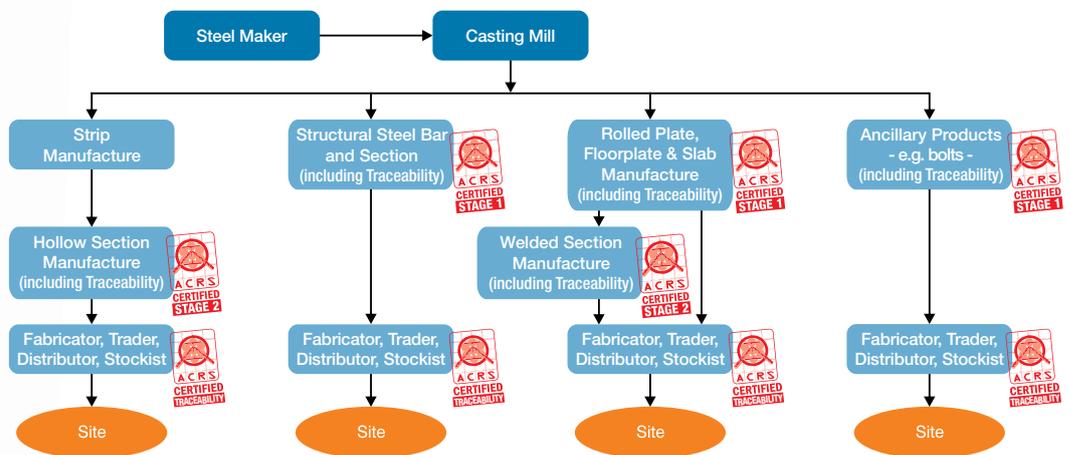
For any steel to be ACRS certified, it must have been manufactured by an ACRS Certified supplier.

Any break in the ACRS chain of certification between the ACRS Certified mill (ACRS Stage 1 certification) and the ACRS Certified rebar processor, mesh manufacturer, or ACRS Certified structural welded section fabricator (ACRS Stage 2 certification) means the steel delivered to site is not covered by ACRS certification.

You must have both the ACRS Stage 1 and ACRS Stage 2 certificates for all steel from all suppliers.

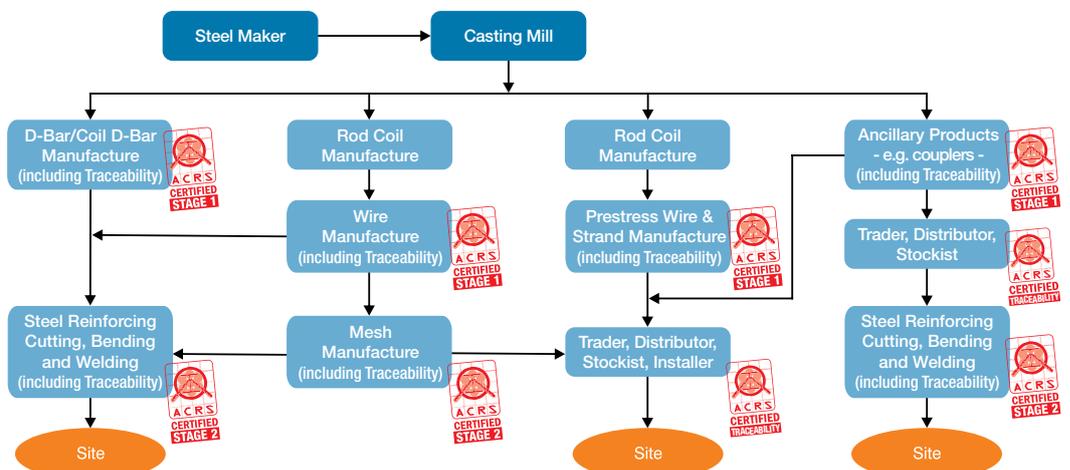
Check your steel suppliers' Stage 1 and Stage 2 certificates at: www.steelcertification.com

ACRS Structural Steel Chain of Certification



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

ACRS Reinforcing Steel Chain of Certification



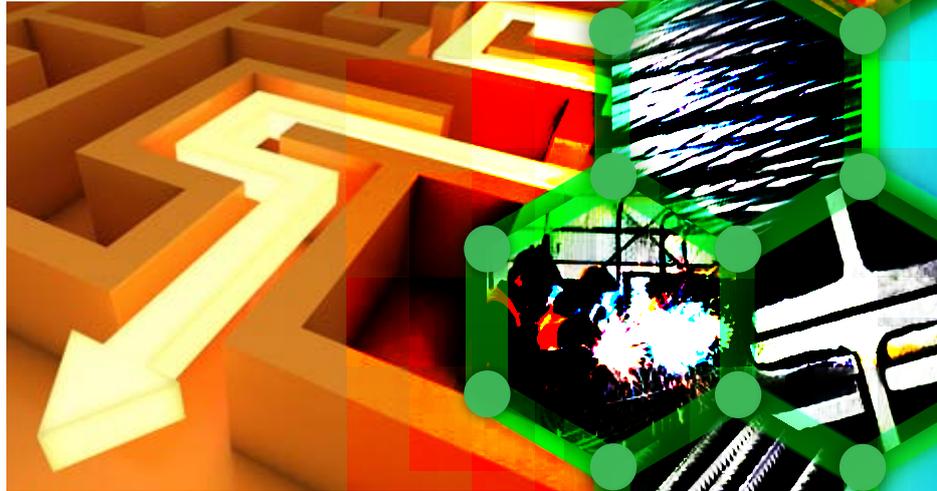
For reinforcing steels, ACRS certifies BOTH the steel mill that manufactures the steel AND the steel reinforcement processor and mesh supplier. Verification of the outputs of both these supply streams is essential for any steel reinforcing materials claiming to conform with the Standards.

ACRS END-TO-END TRACEABILITY SCHEME

In July 2019 ACRS introduced a new end-to-end steel traceability scheme to provide a uniform assessment framework across the supply chain for structural steels and accessories.

Recognising the often greater complexity in the structural steelwork supply chain, this scheme extends the existing traceability provisions in ACRS 2-Stage Product Certification Scheme to allow other parties in the supply chain, such as, suppliers, traders, distributors and stockists to demonstrate to their customers that they have the necessary controls to continuously supply ACRS Approved steels.

The ACRS Traceability Scheme is compatible with both the ACRS Product Scheme and also the ASI SCA fabricator scheme and equivalent NZ SFC fabricator scheme.



ABOUT ACRS

ACRS was established in 2000 with the support and endorsement of leading engineering and construction groups, such as Austroads, Engineers Australia, Consult Australia, Master Builders Association, and the Housing Industry Association, as a not-for-profit consumer-based product certification system independent of steel suppliers.

ACRS (Australasian Certification Authority for Reinforcing and Structural Steels) has become the leader in the field of steel conformity assessment and certification to Australian and New Zealand Standards. Indeed, with over 2,000 audits and 5,500 materials assessments undertaken. ACRS is recognised locally and internationally for both its rigorous

and practical scheme, and especially for its expertise in the compliance of construction steels to AS/NZS Standards and government specifications.

ACRS gives specifiers, purchasers and consumers the widest available choice of construction steel materials that are demonstrably compliant with Australian and New Zealand Standards. ACRS presently certifies over 150 production locations belonging to 80 steel mills, manufacturers, processors and suppliers, in 23 countries, covering over 60% of construction steels supplied into the market.



Please contact ACRS, free of charge, if there is any aspect of steel specification, procurement, and supply that your team would like to discuss. All enquiries are confidential.

**Email: info@steelcertification.com
or call +61 2 9965 7216.**



ASSOCIATIONS SUPPORT EARLY INTERVENTION FOR LEARNER DRIVERS IN AND AROUND ROAD WORKSITES

The Traffic Management Association of Australia (TMAA) and its collaborative Associations and Organisations, RIAA, CCF, Roads Australia and AAPA are advocating learner drivers experience more theory and practical applications of 'driving in and around road worksites'. This initiative was the brainchild of the collective EOs and CEOs of these organisations and the federal, state and territory governments have responded positively and pro-actively.

CCF National CEO Chris Melham, Roads Australia CEO Michael Kilgariff, RIAA General Manager Paul Robinson, AAPA CEO Carlos Rial, & TMAA EO Louise Van Ristell have lobbied the governments since late 2019 and their suggested program inclusions for learner driver education are:

- Safety at Roadworks theory be embedded in the learner driver manuals/and be applied by qualified driving instructors.
- Practical application with driving instructors (on site and in virtual sites).
- All roadwork site speed signs, ahead signs, and slow down signs etc are understood as mandatory with penalties applying for non-compliance.
- Symbolic signs, showing workers on foot, vehicles ahead etc warn drivers of people on roads and to be extra diligent and slow down.
- Motorists must comply with the portable traffic lights, barriers and boom gates on roadwork sites and penalties apply for non-compliance.



- Signage recognition (eg 40 km ahead, workers on road etc).
 “With so many infrastructure projects planned across states and national jurisdictions, it is timely we emphasise the mandatory protocols for driving through and near worksites to ensure both driver and worker safety,” said TMAA EO Louise Van Ristell.
 “We feel it is paramount the addition of a learner driver ‘Safety at Roadworks’ education program is implemented in driver’s licensing, school programs and virtual training, both in theory and practice, for learner drivers across the country. The questions we have outlined above will go some way to starting this process,” she said.
 The TMAA has also launched its Your

Speed is Our Safety Project which airs a three-part story regarding speeding and its consequences in and around roadwork sites, to further promote the message of Safety at Roadworks.

Watch the three-part story at:

Part One - www.youtube.com/watch?v=bWflJmwZGBc&feature=youtu.be

Part Two - www.youtube.com/watch?time_continue=12&v=uB-VAg6nWwc

Part Three - www.youtube.com/watch?v=RfDraRjMxjw

For more details, please contact TMAA at tmaa@tmaa.asn.au or on 1300 798 772.

YOUR SPEED IS

OUR SAFETY
 SLOW DOWN FOR ROAD WORKERS.





MAXITRANS ANNOUNCES DISTRIBUTION OF ROADWEST TRANSPORT PRODUCT NATIONALLY

Leading Australian transport equipment specialist MaxiTRANS recently announced that it is now the distributor for Roadwest Transport product. The full range will be made available and distributed across the entire MaxiTRANS Dealer Network, providing customers with access to a wider range of transport solutions across the nation.

Established in 1970, Roadwest Transport specialises in the design and manufacture of high quality, heavy duty side tipper, end tipper, water tankers and low loaders, for the mining, agriculture and infrastructure segments. The company has built its reputation within the industry by manufacturing trailers that are designed and manufactured to suit specific requirements.

Distribution of Roadwest Transport's portfolio of trailer offerings will take effect

immediately within the MaxiTRANS dealer network, which includes independent dealers Trailer Sales and the Mildura Truck Centre group, with customers having the ability to highlight their interests and enquire on the expansive range on offer.

"We are once again delighted to build on our relationship with MaxiTRANS to jointly distribute our leading brands nationally," says Peter Lombardi, Managing Director of Roadwest Transport. "It is great news for both Roadwest Transport and MaxiTRANS, as it collectively gives us the ability to offer and better serve the industry with a wider choice of purpose-built high quality Australian-made products."

Last month, MaxiTRANS announced that G&A Lombardi had joined the MaxiTRANS Dealer Network, distributing the full

MaxiTRANS range within the West Australian region in addition to its existing product offering, which includes Roadwest Transport.

"This decision is a fantastic opportunity for our customers to benefit from having greater access to an expansive range of transport equipment that complements segments within our industry. To be a distributor for a brand such as Roadwest Transport, enables MaxiTRANS to further provide customers with solutions for niche operations. Furthermore, the Roadwest Transport brand shares the same focus on delivering products that are durable, superior in quality and aftersales support," says Dean Jenkins, Managing Director & CEO of MaxiTRANS.

"We were thrilled to welcome G&A Lombardi back to the MaxiTRANS family and now equally as excited of this latest expansion to the MaxiTRANS product portfolio. MaxiTRANS places great value in its customers and we want to ensure that as a partner, our customers can rely on us to help them deliver the needs of a nation."

To see the full range of products available, please visit: www.MaxiTRANS.com or www.roadwest.com.au

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Gawk Panels



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For further information, please contact **Nondrill Pty Ltd**

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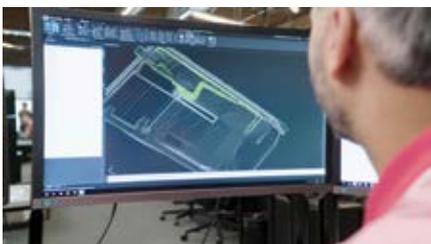
AUTODESK AND VIRGIN HYPERLOOP ONE PARTNER ON ADVANCED ROUTE OPTIMISATION, DESIGN, AND CONSTRUCTION TECHNOLOGY

Autodesk, Inc. and Virgin Hyperloop One, a leader of hyperloop technology and the evolution of how the world moves people and goods, announced an alliance to explore new opportunities in extending the value of Building Information Modelling (BIM) for transportation route optimisation and improved digital engineering and construction workflows.

"Virgin Hyperloop One is pushing the boundaries of transportation efficiency," said Josh Giegel, Co-Founder and Chief Technology Officer of Virgin Hyperloop One.

"Together, with our global teams and shared customers, Virgin Hyperloop One and Autodesk will explore ways to optimise hyperloop routing and operations - in a way that not only propels the hyperloop industry forward, but also has ancillary benefits to more traditional forms of transportation such as railway and highway route optimisation."

Virgin Hyperloop One's visionary technology features depressurised tubes that carry on-demand passenger or cargo pods at speeds of up to 670 miles per hour, powered by magnetic-levitation and electric propulsion. Its depressurised tube infrastructure eliminates the impacts of air-drag and friction, requiring less energy and cost to operate, and allows travel to occur at exceptionally high speeds.



"Autodesk technology is in the DNA of much of the built world everywhere - and I mean everywhere," said Nicolas Mangon, Vice President of AEC Business Strategy at Autodesk.

"With the global population expected to hit 10 billion by 2050, the way infrastructure is designed and constructed, and how we move people and goods, must change. We have a choice to either accommodate the expected growth or become overwhelmed by it."

"I believe Virgin Hyperloop One and Autodesk together will help to tackle the challenges ahead," he added.

Since 1984, Autodesk has been recognised as a leader in BIM and an innovator of technology used by architects, engineers, and construction teams globally. Autodesk technology connects all stakeholders on infrastructure and building projects from design through construction to operations and maintenance.

Autodesk technology has been used on some of the most complex building and infrastructure projects on the planet, including Pan Borneo Highway Sarawak, New York Metropolitan Transit Authority's East Side Access, the San Francisco Airport Terminal 1 redevelopment, Dubai's Museum of the Future, and the world's tallest skyscrapers including the Shanghai Tower, and many others around the world.

By bringing in the context of the real world into the design and engineering phases of a project, Autodesk and Virgin Hyperloop One hope to more efficiently calculate costs across the entire lifespan of a project - design, construction, operations, and maintenance.

More advanced design and engineering tools may allow for simpler optioneering.

For example, quickly determining whether a hyperloop system should be placed adjacent to an existing highway or beneath the ground or above - and how these decisions may impact the adjacent cities or communities.

Virgin Hyperloop One currently leverages many Autodesk solutions in design, including *Civil 3D*, *InfraWorks*, *Revit* and *Inventor*. Virgin Hyperloop One is also adopting Autodesk's *BIM 360* project delivery platform and global cloud collaboration tools.

ABOUT AUTODESK

Autodesk makes software for people who make things. If you've ever driven a high-performance car, admired a towering skyscraper, used a smartphone, or watched a great film, chances are you've experienced what millions of Autodesk customers are doing with our software. Autodesk gives you the power to make anything.

For more information, please visit: www.autodesk.com

ABOUT VIRGIN HYPERLOOP ONE

Virgin Hyperloop One is the only company in the world that has successfully tested its hyperloop technology at scale, launching the first new mode of mass transportation in over 100 years.

The company successfully operated a full-scale hyperloop vehicle using electric propulsion and electromagnetic levitation under near-vacuum conditions, realising a fundamentally new form of transportation that is faster, safer, cheaper, and more sustainable than existing modes.

The company is now working with governments, partners, and investors around the world to make hyperloop a reality in years, not decades. They currently have projects underway in Missouri, Texas, Colorado, the Midwest, India, and the UAE.

Learn more about Virgin Hyperloop One's technology, vision, and ongoing projects at:

www.hyperloop-one.com



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Intelligent Transport Systems

ITS SPECIAL FEATURE

Intelligent Transport Systems
News and Feature Articles



EASTLINK RELEASES SELF-DRIVING & ELECTRIC CAR SURVEY RESULTS

For the first time in EastLink’s Annual Victorian Self-Driving & Electric Car Survey, motorists prefer hybrid power for their next car over a traditional petrol engine.

While the EastLink survey shows that use of the latest driver assistance functions is growing each year, some motorists are disillusioned with fully self-driving cars.

Most motorists “definitely want” a connected car for traffic warnings, road condition warnings and vehicle security features.

However, the EastLink survey also indicates that most motorists remain unconvinced by road use charging.

Key survey findings:

- For the first time, more motorists would prefer hybrid power for their next car over a traditional petrol combustion engine.
- The preference for 100% fully electric power is not far behind, also growing strongly.
- 68% of motorists think that Governments should provide incentives to encourage the take-up of electric vehicles.
- More and more motorists are using the latest driver assistance functions each year.
- Some motorists are disillusioned with the concept of fully self-driving cars.
- Six out of ten motorists want a connected car for traffic warnings, road condition warnings and vehicle security features
- Meanwhile, 63% of motorists continue to be unconvinced by road use charging.

EastLink corporate affairs and marketing manager Doug Spencer-Roy said, “More than 22,000 Victorian motorists fully completed the latest survey in late 2019, which is a 22% increase on the previous year.”

“The EastLink survey is the world’s largest annual tracking study of motorists’ attitudes to self-driving and driver assistance technologies,

vehicle connectivity, vehicle electrification and road use charging – technologies which are expected to converge in cars of the future,” he added.

HYBRID AND FULLY ELECTRIC CARS

For the first time in EastLink’s annual survey, more Victorian motorists prefer hybrid power than a traditional petrol combustion engine for their next car. The desirability of 100% fully electric power is not far behind hybrid, and is also growing strongly.

The EastLink survey indicates that motorists think the biggest barrier to owning a 100% fully electric vehicle is purchase cost (72%), followed by the lack of charging facilities away from home (58%), and then vehicle range before re-charging (47%).

To address the cost barrier, 68% of motorists think that Governments should provide incentives to encourage the take-up of electric vehicles.

Doug Spencer-Roy noted, “In particular, motorists told us they want Government incentives that will reduce the up-front purchase price as well as reduce the cost of annual registration for electric vehicles.”

Charging facilities at home are seen as a less significant barrier. Most motorists said they park their car overnight in their private garage or on their private driveway, leading to two thirds of motorists having these as their preferred charging locations.

THE LATEST DRIVER ASSISTANCE FUNCTIONS

The EastLink survey demonstrates that more and more Victorian motorists are using the latest driver assistance functions each year.



Doug Spencer-Roy said, “Functions like collision warning, lane departure warning, adaptive cruise control, lane keeping assistance and automatic emergency braking are expected to deliver significant road safety benefits long before fully self-driving cars become commonplace.”

“This is because the latest driver assistance functions will reduce the likelihood of collisions, as well as reduce the severity of collisions.”

The EastLink survey indicates that female motorists increasingly want the latest driver assistance functions in their next car, which is closing the gap in demand for these functions compared to male motorists.

“These survey results support EastLink’s expectation that use of the latest driver assistance functions will become commonplace long before we see lots of fully autonomous vehicles on our roads,” said Doug Spencer-Roy.

FULLY SELF-DRIVING CARS

However, a number of results in the EastLink survey indicate that some Victorian motorists are disillusioned with fully self-driving cars.

For example, there has been a sizeable decrease in the proportion of motorists who could imagine using hands-off driving on a freeway.

Demand for fully self-driving on all roads remains significantly lower than it was two years ago.

And there has also been a decrease in the proportion of motorists who would take a ride in a fully self-driving vehicle, even when there is a driver in the vehicle constantly monitoring and ready to take control.

CONNECTED CARS

Connected cars are expected to become widely available in Australia over the next few years.

The EastLink survey shows that a majority of Victorian motorists continue to “definitely want” their next car to be connected to a data network for traffic warnings, road condition warnings and vehicle security features.

Doug Spencer-Roy commented, “Freeway operators – public and private – across Australia should come together to plan infrastructure-to-vehicle communications in a more co-ordinated and consistent way. Otherwise we risk having various roads communicating with vehicles and motorists in different ways, which could cause some confusion among motorists.”

ROAD USE CHARGING

The popularity of road use charging is unchanged compared to the previous year’s survey.

With more and more vehicles expected to be hybrid powered or 100% fully electric in the coming years, government fuel excise (tax) revenue is expected to reduce.



Road use charging – which would apply to all vehicles irrespective of power type – has been put forward as a solution to this tax revenue gap, as well as a means of more fairly charging motorists according to their actual road use and their individual impact on the road network.

“However, despite efforts by a range of organisations to promote road use charging, 63% of Victorian motorists continue to be unconvinced, which is unchanged compared to the previous year,” said Doug Spencer-Roy.

Find more information and download the full survey results at: <https://www.eastlink.com.au/news-media/402-results-of-2019-annual-victorian-self-driving-and-electric-car-survey>

“Functions like collision warning, lane departure warning, adaptive cruise control, lane keeping assistance and automatic emergency braking are expected to deliver significant road safety benefits long before fully self-driving cars become commonplace.”



ACCESSING TRAFFIC DATA HAS NEVER BEEN EASIER

2016 - 2019 TRAFFIC FLOW DATA FOR OVER 2,000 AUSTRALIAN SUBURBS NOW AVAILABLE FOR ONLINE PURCHASE

Historical traffic flow data files for over 2,000 Australian suburbs covering a four-year span, from 2016 to 2019, are now available for online purchase thanks to Melbourne-based technology company Intelomatics.

Intelomatics, Australia's leading provider of real-time traffic information for the past 12 years, is now making traffic data accessible and giving civil engineers the ability to better understand and harness traffic flow data for their projects; from road safety audits, to construction traffic and operation management plans, and tenders. Now, there is no need to use data that dates back to 2015 to inform new road and traffic management projects and modelling.

For example, a civil engineer could use Intelomatics' traffic flow data to determine the optimal time frame to conduct a road upgrade on a busy highway, so that the project minimises disruptions to traffic flow and mitigates the risk of road accidents. Having the flexibility to access data at any point in time also removes the need for a third-party on-site vendor, therefore

enabling greater operational efficiency and reducing costs.

Take the recently completed Hoddle Street Streamlining project as an example. The project was designed to improve the travel experience for 330,000 people who travel along and across Hoddle Street, in Melbourne every day. Using Intelomatics' data, a before and after analysis was performed that proved afternoon peak hour congestion has improved by 14% thanks to the upgrade.

Intelomatics' Senior Product Manager, John Cardoso, says that the new offering provides rich traffic flow data, delivered straight to customers' inboxes.

"We believe there's a need in the market for accessible, high-resolution data that doesn't cost a fortune, or take months to plan and prepare. So, for the first time, we are making traffic flow data available for purchase directly through the Intelomatics website. It's completely self-service and the best part about it, you don't have to be a data-scientist to decipher the data.

"What makes our offering so unique is that it's incredibly easy to interpret. By doing the decoding for you, the data clearly shows traffic flow, speed, speed limits and delays by correlations between suburbs and street names, kilometres per hour, geographic coordinates and time of day, which can be viewed at the click of a button. We have also split the time series into a manageable size, allowing people without expert data knowledge to be able to use the data in regular business applications such as Microsoft Excel.

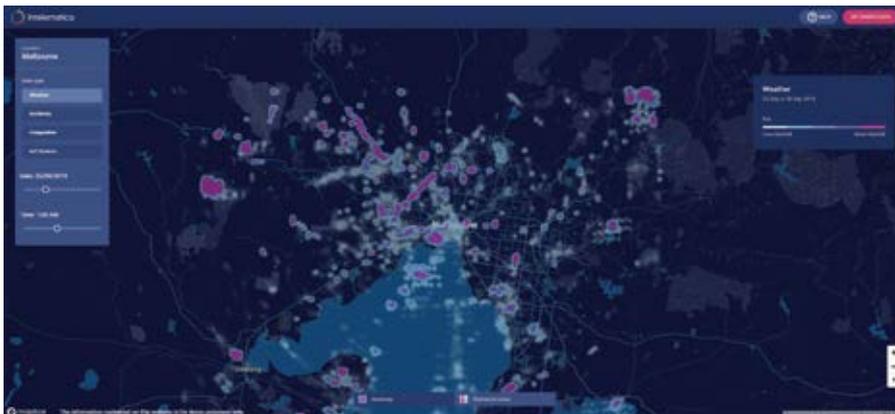
"The data is available in 15-minute increments. However, if you need nine-minute, six-minute, or three-minute increments we have that too. In addition, each file purchased captures one year's worth of traffic flow data – many companies only offer three months," said Mr Cardoso.

Today, data files are available by year from 2016 to 2019. Come April this year, Intelomatics will roll out traffic flow data by month consecutively, allowing customers to access the most up-to-date data and analyse 2020 road and traffic projects without having to wait a full year. In addition, historical traffic volume data files showing vehicle counts in all directions across the road network in 15-minute intervals will also be available by month, year and suburb from July 2020.

"We're able to offer such granular information as we capture data through thousands of sensors located on roads, in vehicles and infrastructure. The data we capture provides context around traffic trends, accident blackspots, the most congested areas, the most dangerous roads and more. We're now making this data available to all engineers, not just those with access to data analysts and software developers," said Mr Cardoso.

By making its traffic flow data available for purchase, Intelomatics is opening the door for new ways of thinking that will help make our cities safer, less congested and more sustainable.

Data files from 2016 to 2019 for over 2,000 Australian suburbs are available to purchase from the Intelomatics website: www.intelomatics.com



ABOUT INTELEMATICS

Intelomatics delivers the intelligence behind connected services to keep people moving. Since its establishment in 1999, Intelomatics has continually been at the forefront of the telematics industry with a presence in Australia, North America and Europe. Intelomatics' expertise is delivered via a suite of scalable, multi-tenanted solutions. This includes connected transportation services such as real time insights and predictive services, connected motoring applications on vehicle dashboards and specialist safety and security services.

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HOW TO DESIGN AN ON-DEMAND MOBILITY SERVICE RIDERS LOVE

by David Wall, A/NZ Country Manager, Via

The world is entering the golden age of embracing Mobility as a Service (MaaS), with cities around the globe turning to shared bikes, scooters, and on-demand vehicles to move around their communities.

Perhaps one of the biggest trends in MaaS, however, is the dramatic adoption of shared on-demand transportation. Previously, individuals were likely faced with two often unappetizing choices: either sink enormous sums of money into owning a car, or spend valuable time navigating bus travel that may be inconvenient, if available at all.

The result: overall transit ridership has declined by nearly five per cent over the last decade, driven by a cumulative 15 per cent decline in bus ridership over the same period, according to KPMG.

That's why many cities are considering dynamically routed, demand responsive transport (DRT) solutions, which blend the best of public transport with ride-hailing's

most popular features. Travellers can request an inexpensive shuttle that picks them up at a nearby corner within a few minutes. Vehicles are then dynamically routed to the final destination, picking up other travellers heading in the same direction along the way.

On-demand transport networks can either blanket a whole city or work in tandem with existing transportation infrastructure, acting as an on-demand link to high-frequency transit hubs and light rail stations.

The idea is nothing new, but the task is difficult to perfect. Dial-a-ride services like Australia's Telebus offered "on-demand" rides a decade ago, but customers needed to book 24-hours in advance, and it was notoriously unreliable, and failed to gain traction with riders. In New York City, lawmakers are calling-out Access-A-Ride for failing to provide anything close to high-quality service for its 170,000 paratransit riders.

For transit networks to effectively reverse declining bus ridership, they'll need to design a bespoke service that meets the unique needs of their riders.

DETERMINE WHAT RIDERS NEED

Every city is different, and therefore has specific and unique problems it is trying to address with on-demand public transportation.

Cities like The Ponds, NSW and Cupertino, California offer concessions for students, seniors, and those with disabilities, often cutting ride costs by 50 per cent, or making them entirely free for qualifying riders.

In the Boston suburb of Newton, MA, the city launched a new on-demand transport service called NewMo that caters specifically to its growing population of seniors over 60 years old. To accommodate seniors with limited mobility, NewMo includes wheelchair accessible vehicles (WAVs), and all vehicles are retrofitted with a



stepping stool and additional handles to facilitate an easy and safe boarding experience.

In collaboration with Newton's Senior Center, all drivers provide high-touch support, including proactively assisting riders with bags and automatically opening the van's sliding door upon arrival. Plus, in recognition of lower smartphone adoption among older adults, the service allows riders to book on-demand or pre-scheduled rides through the mobile app or over the phone. All phone operators receive senior sensitivity training, including expectations to speak slowly and repeat instructions.

There is no clear blueprint for developing a DRT service, and that each one can and should be quite different in order to make it successful.

CREATE ZONES THAT BENEFIT THE MOST RIDERS

The first step of building an on-demand transport service is choosing the right operational boundaries. First determine what the goal is: to operate a first- and last-mile network around transit hubs, fill transportation gaps on weekends, cater to weekday commuters? What the service aims to achieve will paint a picture of where to operate.

But be careful: bigger isn't always better. The larger the zone, the larger the number of possible route combinations. That means doubling the size of the service zone may necessitate tripling the number of vehicles on the road to maintain the same quality of service.

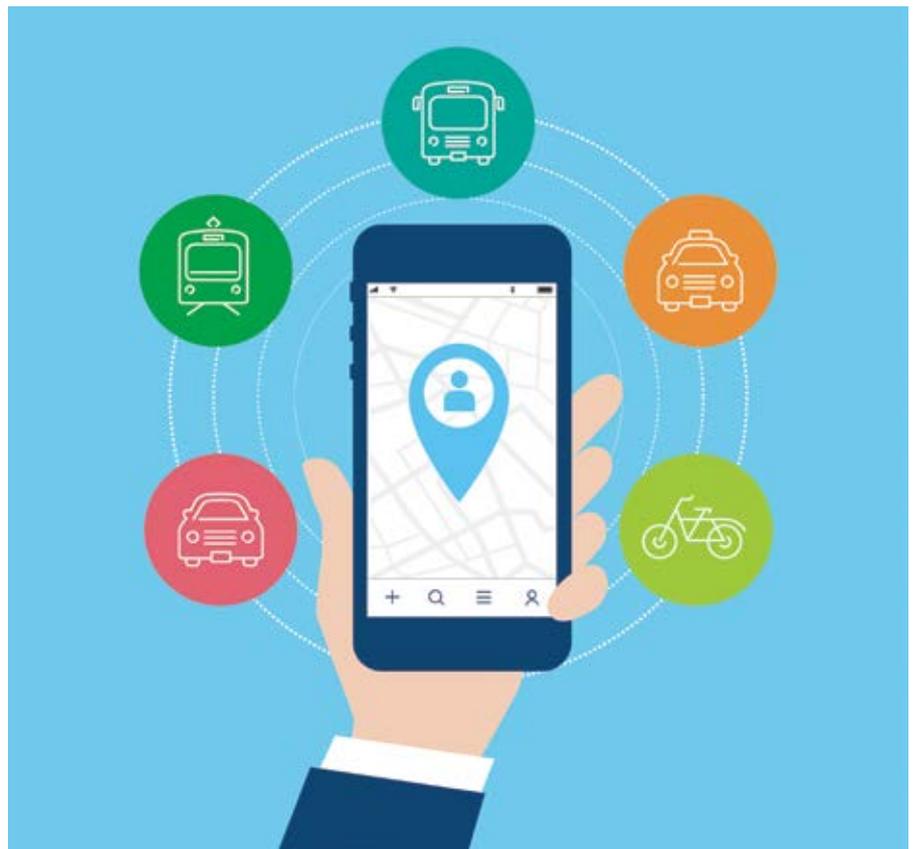
The shape of the service zone also plays a role. A square or circle may seem right in theory, but it may be harder to aggregate shared rides compared to a more strategic zone that captures riders travelling in the same direction.

DESIGN SPECIFIC SERVICE ELEMENTS

Next, it's important to consider quality of service metrics like the time it takes a vehicle to arrive and the distance riders could walk to meet their drivers for pickup at a virtual bus stop.

Via's data shows that first- and last-mile commuter services, or those in urban environments, carry an acceptable wait time of about 4-6 minutes. However, for rural areas, wait times closer to 15 minutes can be acceptable, as other public transportation alternatives can easily be an hour if they exist at all.

Once an appropriate wait time is established, determine the acceptable walking distance to a virtual bus stop. On-demand mobility deployments can be drastically streamlined if riders walk a short distance to meet their driver, but the acceptable distance is impacted by a number of variables, like steep terrain, extreme weather, or target population (e.g., if the service is primarily geared toward the elderly). If the service is catering to those needing wheelchair access, maybe meeting at a virtual bus stop isn't an option at all.



These service decisions, designed with the rider in mind, as well as choosing the type of vehicles and number of drivers, can quickly contribute to building an on-demand service riders love.

UNDERSTAND HOW PEOPLE WANT TO PAY

Because the new on-demand system can act as an extension of the greater public transportation network, the price of rides should reflect other modes of transit. For example, in Seattle, on-demand rides are automatically applied as a transfer toward a trip on a bus or a light-rail train.

And while riders can pay through the app with a linked credit card, it's vital to ensure the service can accept a variety of payment methods such as cash, voucher payments, or a full integration with the transit system's native payment system.

King County Metro and Sound Transit fully integrated their new on-demand mobility service with the transit system's ORCA Card, allowing customers to use a single payment method across the full King County transportation network. On-demand rides are automatically applied as a transfer toward a trip on a bus or a Link light rail train.

In suburban Sydney, the service Cooe Busways became one of the first demand-responsive transportation providers in Australia to fully integrate with Opal Connect, a new account-based ticketing system by Transport for New South Wales (TfNSW).

FIND THE RIGHT PARTNER

It's one thing to power a dial-a-ride service with a few vehicles; it's another thing entirely to power a demand-responsive transport service at scale with dozens or even hundreds of vehicles delivering hundreds or thousands of rides every day.

The ability to do the former usually doesn't transfer to the latter. As the number of vehicles and rides increase, the number of possible rider/vehicle assignments and routing options grow exponentially, which requires both an algorithm and automated service management tools built to handle scale.

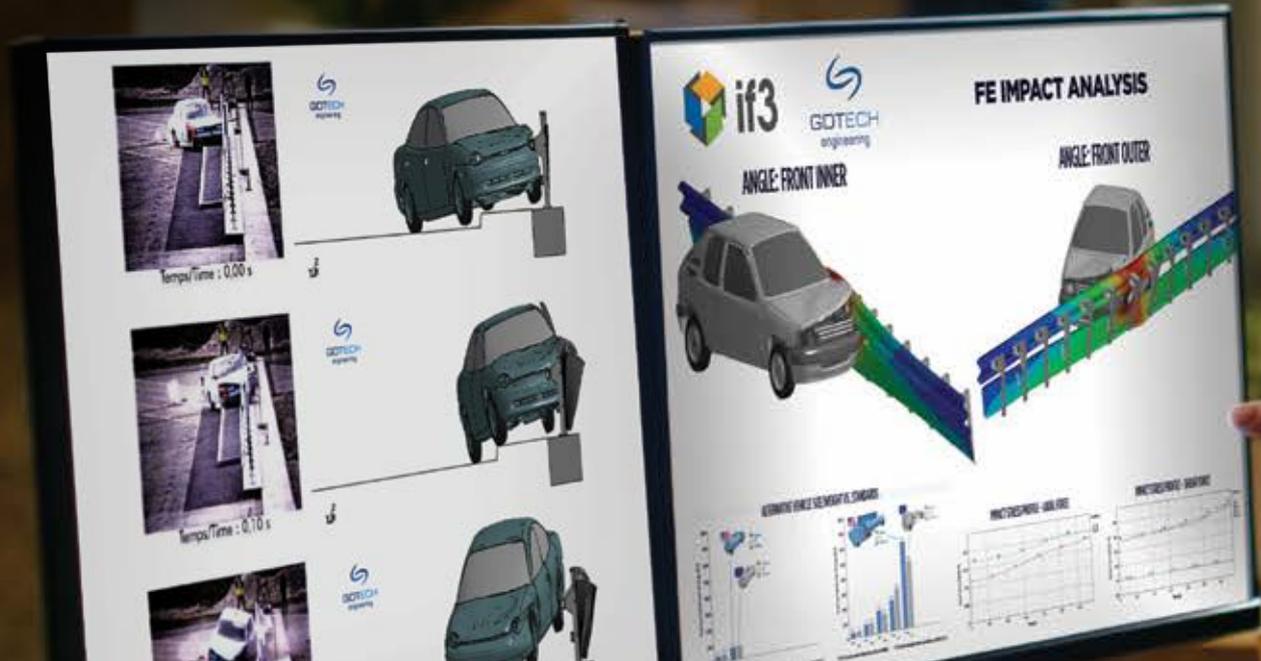
It's also important to note that not every mobility technology company chooses to share their data. Some guard it closely in the name of protecting key business indicators like revenue, pricing models or demand from competitors, or in order to shield their actual environmental impact.

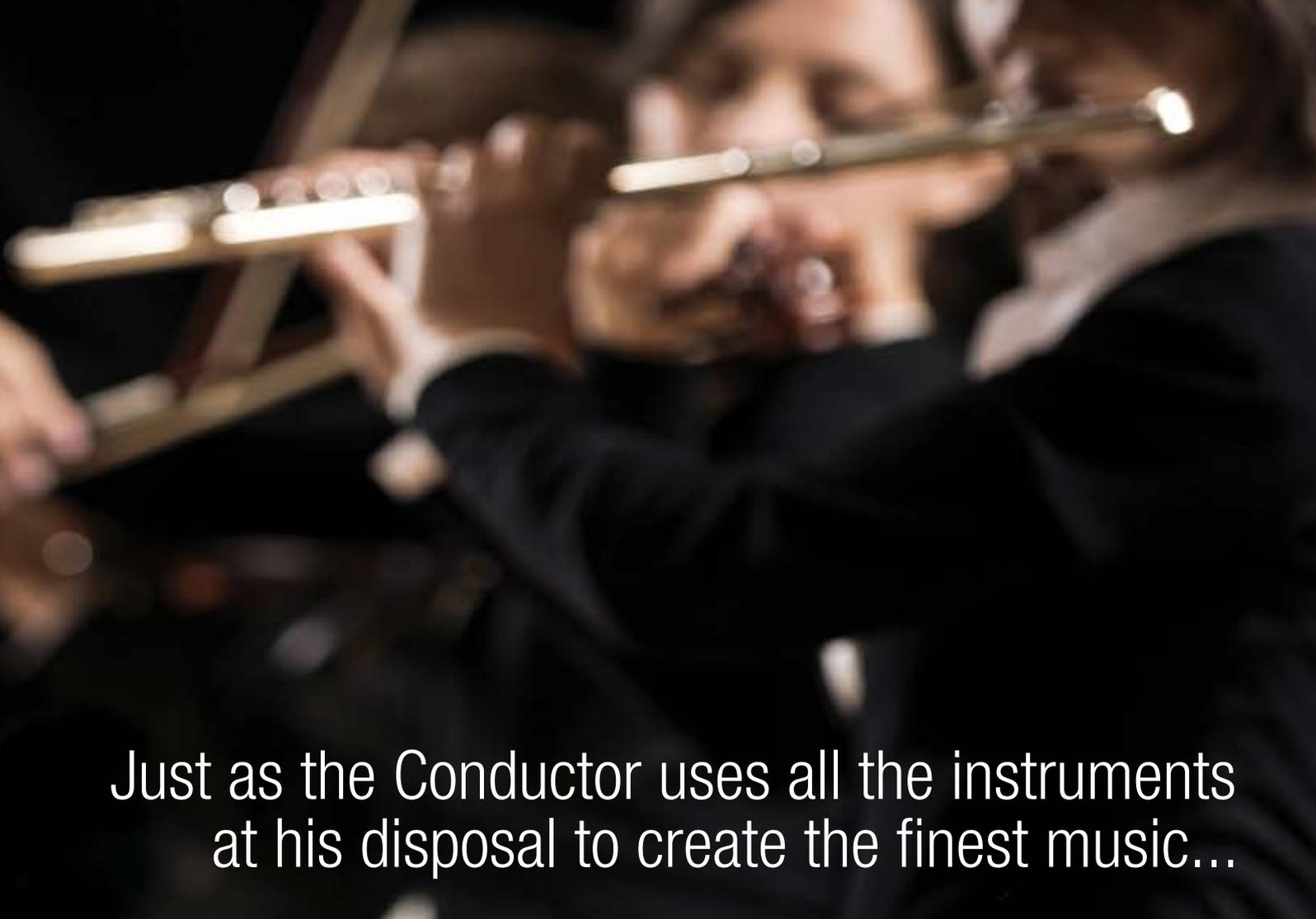
But those that choose to share data do so in the name of helping municipalities and transit agencies create a better place for everyone to live and work. By partnering with a company that agrees to share its data, cities can maximize the value of the on-demand transport service — because with so many ways to use the data, DRT isn't just a transportation improvement; it's a way to improve the entire municipality.

Powering a flexible service that is continuously optimized in real-time is a big technical challenge. Transit agencies should find a partner who is not only up to the challenge, but proven in multiple markets they know how to deliver results.



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 the Conductor uses all the instruments
at his disposal to create the finest music...



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BUILDING BRIDGES IN THE AFTERMATH OF THE BUSHFIRE CRISIS



Between September 2019 to March 2020, bushfires burnt over 18.6 million hectares across Australia. The path of destruction has left towns desperately trying to pick up the pieces of their communities. Homes, buildings and infrastructure are now beginning to be rebuilt after the damage.

For many regional towns, bridges are the only ways in or out of their community. When a bridge has been damaged, the impact on the local community can be significant, particularly if the bridge is one of only a handful of access points connecting the region.

Bridges form a vital part of Australia's transport network, with around 30,000 timber road bridges in service throughout the country. However, due to heavier and faster moving vehicles and more recently, damage by bushfires, many of these ageing timber structures have deteriorated or damaged beyond repair and Councils are needing to look at ways to reconstruct the infrastructure with a time and budget effective solution.

As a way to extend the life of existing timber bridges or build replacement bridges, Australian timber specialist and plywood manufacturer, Big River Group, has developed an engineered timber system consisting of bridge decking, girders, headstocks and corbels along with many other engineered sections that replace existing timbers size for size, a structural grade Engineered plywood bridge deck system which acts as an alternative to steel and concrete decks being less expensive, faster to install, and a critical measure of success for those locations who are lacking council funding and are needing a quick

response. The system is an Engineered substitute for traditional hardwood decking and is manufactured to AS/NZS 2269-2008 from sustainable Australian plantation pine.

The key feature of the *Big River Engineered Bridge Decking* is that it is manufactured in continuous lengths to the full width of a bridge hence providing excellent load distribution utilising the full structure and extensively extending the life of existing structures when used as a deck replacement. When the fully Engineered system is used with the combination of Engineered LVL: girders, headstocks and corbels etc this delivers a full Bridge system that complies with loadings and AS:5100 T44 deflection limits as well as M1600.

As a retrofit solution that can help extend the life of timber bridges by decades, Bridge ply, offers a low-cost option for rehabilitating existing, older timber structures without needing to replace the entire bridge – meaning only components that are failing need to be replaced, saving time and material costs. Cedar Creek Bridge, in the Hunter region of New South Wales, was restored in three days – four days ahead of deadline, with council contracting two work crews around-the-clock to complete the job quickly.

The larger size of Bridge ply helps to absorb much of the extra vibration of heavy vehicles while also tying together the other timber components of the bridge better than solid hardwood planks. What's more, the material holds fire resistant qualities which have the ability to withstand temperatures that reach 1,000°C for up to 50 minutes.

Providing a time efficient solution due to its lightweight feature, Bridge ply can be moved in large sections with the same machinery used for alternative materials, so less trucks are required for delivery and less crane movement is needed in order to connect the components. Additionally, as a timber-based product, most of the machinery alterations, can be done on site with hand tools, such as drilling. All of these benefits, together with its lightweight material, means installation can occur in a timely manner with minimal disruption to the local community. Big River Group are offering drop-in services and temporary bridges for immediate solutions to reconnect communities, whilst strengthening and recovering existing timber bridge assets quickly and within council budget.

For more information visit: www.bigrivergroup.com.au/product/structural-plywood-bridge-decking



ABOUT BIG RIVER GROUP

Big River Group manufactures and distributes timber and steel formwork products, timber flooring, structural plywood and related timber products, and distributes a broad range of other building products, including MaxiWall and MaxiFloor, primarily to the commercial and residential, non-residential and infrastructure construction market segments.

Big River owns and manages 17 sales and distribution outlets including Sydney, Gold Coast, Brisbane (2), Sunshine Coast, Townsville, Illawarra, Melbourne, Canberra, Geelong, Adelaide, Perth and New Zealand. The Company also owns and operates manufacturing facilities at Grafton and Wagga Wagga in NSW, Geelong, Perth and Auckland NZ.

Big River provides customers with the security of a full support network, and technical expertise at every stage of the product lifecycle. This is the guarantee of quality and service that Big River has based its 110 years of success on.

BUILDING A NEW ICON – TURKEY’S NEW KÖMÜRHAN BRIDGE

Constructed over the Karakaya Dam Lake, the Kömürhan Bridge will soon forge part of the Malatya-Elazığ State highway in Eastern Turkey. Measuring 600 metres in length, the bridge features a cable-stayed design with a single pylon, which stands at 165 m in height. This special type of bridge, which is the fourth single pylon cable-stayed bridge in the world, will also serve an important regional role as a logistics corridor, not only connecting Malatya and Elazığ, but also serving as a strategic crossing for the 16 provinces of Eastern Anatolia.

Located approximately 700 kilometres east of the Turkish capital of Ankara and 400 kilometres north of the Syrian border lies the province of Malatya, a region famed for its apricots and now the tallest pylon in the country.



The Kömürhan Bridge, with 660 m length and 360 m span, is designed as cable-stayed. It will be connected to the pylon with 42 tensioned cables. ©2020 Doka

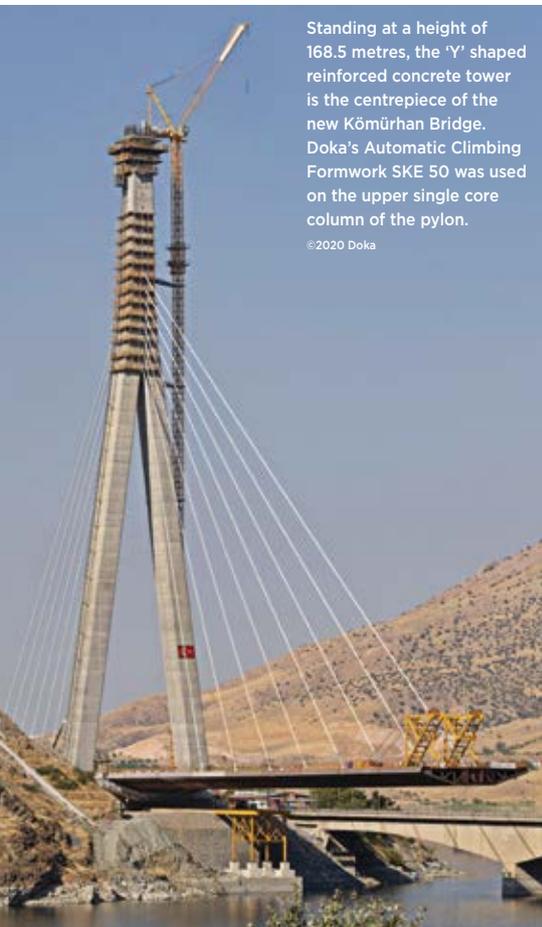
Standing at a height of 168.5 metres, the ‘Y’ shaped reinforced concrete tower is the centrepiece of the new Kömürhan Bridge, a suspension structure traversing the Fırat River and the Malatya-Elazığ regional borders. Stretching just over half a kilometre at 660 metres the bridge has an edge opening of 180 metres, a middle opening of 380 metres and a width of 24 metres. The deck cross-section will be orthotropic steel, while the superstructure of the bridge will be connected to the pylon with 42 tensioned cables. In context of the wider project, it is part of a 5,225 metres four-lane highway that includes a 120-metre viaduct and a 2,400 metres tunnel, providing passage to the Karakaya Dam a few kilometres to the south. The existing old bridge and crookedly connected roads will be preserved. The new bridge and the tunnel will be developed next to the existing route. It is planned that the Kömürhan Bridge is scheduled to be completed in July 2020.

Working under the joint venture of Doğuş and Gülsan, Doka Turkey was awarded the contract to design and supervise the execution of formwork, which commenced in August 2017. With the bridge scheduled to open in 2020, we spoke with project manager, Mr. Taha Özdilek, who commented on his experience with Doka Turkey.

“Safety was our main priority on this project and Doka has maintained an excellent track record where this is concerned. Most of my team were accustomed with Doka’s products and systems and knew that the solution presented, and the site support received would add much value. Our team was also familiar with Doka’s solution for a similar project (Nissibi Bridge), which was delivered in 2015 and therefore knew they would be well suited for the job.”

In terms of the practical formwork solution, the major challenge was focused on the pylon, specifically its unusual shape. Doka’s Automatic Climbing Formwork SKE 50 was used on the upper single core

column of the pylon, while a specially adapted double set was used on the lower half with bespoke solutions created at junction points to maintain the highest standards of quality and safety. Large-area formwork Top 50 was used for the pylon with Doka D2/D3 and Load-bearing Towers Staxo 100 shoring systems for the approaching viaduct. While a tower and mobile crane were used for the pylon and viaduct respectively, the formwork solution was otherwise self-sufficient and delivered its portion of the project safely, on time and on budget.



Standing at a height of 168.5 metres, the ‘Y’ shaped reinforced concrete tower is the centrepiece of the new Kömürhan Bridge. Doka’s Automatic Climbing Formwork SKE 50 was used on the upper single core column of the pylon.

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QUICK FACTS

Project:	Kömürhan Bridge
Location:	Malatya-Elazığ, Turkey
Type of Structure:	Cable-Stayed Bridge
Length:	660 metres
Main Span:	360 metres
Height of Pylon:	165 metres
Concrete:	160,000 m ³
Reinforcement:	6,000 tons
Developer:	Republic of Turkey General Directorate of Highways (KGM)
Contractor:	Doğuş and Gülsan Holding
Systems Used:	Automatic Climbing Formwork SKE 50, Large-area formwork Top 50, Load-bearing tower Staxo 100, Load-bearing Tower d3

ABOUT DOKA

Doka is a world leader in developing, manufacturing and distributing formwork technology for use in all fields of the construction sector. With more than 160 sales and logistics facilities in over 70 countries, Doka has a high-performing distribution network which ensures that equipment and technical support are provided swiftly and professionally. An enterprise forming part of the Umdasch Group, Doka employs a worldwide workforce of 7,000.

CLEARING THE AIR

AUSTRAL PRECAST DELIVERS PRECAST SOLUTION FOR SYDNEY'S M5 EXHAUST VENT BUILDING



Project: Exhaust Vent Building for West Connex M5 Motorway tunnel

Precaster: Austral Precast

Location: Arncliffe, NSW

Client: WestConnex Delivery Authority on behalf of NSW Roads and Maritime Services

Builder: CPB Contractors, Dragados and Samsung Joint Venture

Engineer: Aurecon

The new tunnel has been designed to be taller and wider than the previous tunnel, increasing safety for travellers. Importantly, the tunnel is equipped with efficient and modern ventilation systems, meeting strict global air quality standards within and outside of the tunnel.

VENTILATION AND EMERGENCY SMOKE EXTRACTION KEY TO TUNNEL SAFETY

Ventilation and emergency extraction of smoke is an essential element of any tunnel system. In the case of the M5 Arncliffe, this is achieved through an exhaust vent building and supply vent building that operate continually in conjunction with one another.

A new section of the M5 Motorway tunnel is set to more than double the capacity of the M5 East Motorway corridor. Located in Arncliffe in Sydney's inner-south, the 9-kilometre-long twin tunnel between Kingsgrove and St Peters started construction in July 2016 and will open to commuters in 2020.





Above: The buildings are directly connected to the tunnel via two 35-metre-diameter underground shafts that descend more than 60 metres from ground level.

The exhaust vent building treats and removes “used air” (vehicle exhaust) from the tunnel, whilst the supply vent building introduces “new air” into the tunnel. The buildings are directly connected to the tunnel via two 35-metre-diameter underground shafts that descend more than 60 metres from ground level. Several levels of the exhaust vent building below ground support the large mechanical ventilation equipment. While the above-ground portion is only 12 metres tall, there are four 25-metre-tall stack chimneys that disperse the exhaust air in the ambient environment higher than the nearby roof lines.

Below: Consisting of two precast reinforced concrete shells connected by a reinforcement-bar lattice girder, which forms a cavity between the two shells, Austral Precast’s double wall system is an excellent solution for loadbearing walls, and will form a solid concrete structure after the cavity is filled with premixed concrete.

LIMITED SPACE CALLS FOR UNCONVENTIONAL USE OF DOUBLE WALL SYSTEM

The limited space around the exhaust vent building proved challenging for undertaking formwork, and the 12-metre-tall walls would have been difficult to pour full-height in-situ.

As an ideal solution for the space limitations, National Precast member Austral Precast was contracted to manufacture its double wall system for the monolithic structure of the building.

Not traditionally used in infrastructure projects, this particular system is a structural system of relatively large and lightweight panels that provides an off-form ready-to-paint finish. It consists of two precast reinforced concrete shells connected by a reinforcement-bar lattice girder, which forms a cavity between the two shells. It is an excellent solution for loadbearing walls and will form a solid concrete structure after the cavity is filled with premixed concrete.

With less weight than solid precast panels, the double wall enables savings in installation costs and time, eliminates the need for scaffolding, and construction activities are mainly performed within the boundary.

OFFSITE DELIVERS SAFETY AND SPEED BENEFITS

As an offsite precast product, the walling system also delivered benefits for the speed and safety of construction. The panels were installed by mid-2019, achieving a more efficient construction time and method over the alternatives, namely solid precast panels or in-situ formwork.

According to Austral Precast State Sales Manager, Sanket Das, “The exhaust vent building is a very tall structure containing restrictions with the amount of space available for efficient construction activity. The project was also under strict construction timeframes, and conventional formwork methodology did not solve any of these challenges.”

“The double wall system provided all the benefits of off-site factory production, with the client gaining a greater amount of space on the construction site,” he added.



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