

BACK TO BASICS 2.0

THE FUNDAMENTALS OF RAIL



2023 PWI NSW ANNUAL CONVENTION

THE PWI IS PROUDLY SUPPORTED BY ITS PLATINUM MEMBERS



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BACK TO BASICS 2.0 THE FUNDAMENTALS OF RAIL



President's Welcome Address 2023



Ladies and gentlemen, distinguished guests, colleagues, and fellow rail enthusiasts, I am deeply honoured to stand before you today as the President of the Permanent Way Institution (PWI) of NSW, representing a rail industry association that has been supporting the rail industry for nearly 50 years. This being our 49th Annual PWI Convention is a testament to our commitment to advancing the railways and celebrating the resilience and expertise of our industry and a great opportunity for us to support to our regional colleagues by hosting our annual conference here in Orange.

Our theme for this year, "Back to Basics 2.0", underscores the importance of our regional rail network and the extraordinary knowledge, skills, and experience that define our industry. I want to extend our gratitude to our partners and supporters, including NSW TrainLink, Sydney Trains, TfNSW, UGL Regional Linx, and ARTC, for their unwavering support in making this event possible.

Let us begin by taking a journey back in time. The Blue Mountains, located to the west of Sydney, presented a natural barrier to early European settlers due to their rugged terrain and dense forests. It wasn't until the early 19th century that explorers and surveyors began to search for a viable route over the mountains. In 1813, Gregory Blaxland, William Lawson, and William Charles Wentworth successfully crossed the Blue Mountains, opening up the western hinterland for exploration and settlement.

As settlement in the western regions of New South Wales expanded, there was a growing need for efficient transportation links to Sydney. In the mid-19th century, various proposals were put forward for railway lines to cross the Blue Mountains and connect with inland towns like Bathurst and Orange.

Construction of the railway line over the Blue Mountains began in the 1860s as part of the Main Western Line, which aimed to connect Sydney to Bathurst and beyond. The line reached Bathurst in 1876, significantly improving transportation of people and goods to and from the western regions. The railway line was extended from Bathurst to Orange in the 1880s, which further facilitated economic development and transport in the area. This extension helped Orange become a significant regional centre for agriculture, trade, and industry.

Throughout the 20th century, the railway line underwent various upgrades and modernisation efforts to improve its efficiency and capacity. The development of rail infrastructure in the region played a crucial role in the transportation of agricultural products, minerals, and other goods to and from the central west of New South Wales.

In the latter half of the 20th century, the railway industry in Australia experienced a decline in passenger services and freight transport via rail, with a shift towards road transport. This led to changes in the railway network, with some lines being closed or reduced in capacity.

Over the years, Orange and the surrounding areas has witnessed significant developments in its railway infrastructure. Major projects, expansions, and innovations have transformed this area into a hub of rail-related industries. These developments have not only improved transportation but have also provided countless employment opportunities for the local community.

Indeed, there are many examples of towns across regional NSW that are either founded on or thrived after they became 'railway towns' – Werris Creek, Nyngun, Bowral, and Tenterfield are just some examples. Werris Creek came into existence when 500 railway workers settled in the area in 1877 to build the railway line from Murrurundi to Tamworth, and later continued with the branch line to Gunnedah. As a result, Werris Creek is now a very proud and historic railway town with street signs shaped like railway signals, a huge and elegant railway station, an important railway museum, a monument to the workers who lost their lives on the railways, and a collection of statues celebrating the railway workers. And this is just one example of how the railways transformed many parts of regional NSW.

In recent times, it is worth noting that the management of the Country Rail Network (CRN) a critical component of our state's rail system has transitioned to UGL, working closely with the NSW Government. Furthermore, the decision to headquarter CRN right here in Orange reflects the city's strategic importance as a central hub for railway operations in regional NSW. This move underscores the commitment of both public and private entities to invest in and support our regional railways.



Looking beyond Orange, it is crucial to recognise the significance of our entire regional rail network. Regional NSW is currently experiencing a resurgence in rail projects, driven by the recognition of the pivotal role railways play in our economy. The construction of the new and upgraded Inland Rail route; the new intermodal hub at Parkes located in the central west, known as the Inland Rail Hub, and with other possible intermodals proposed at Narrabri, Dubbo, Narromine, and Moree; and the new Trains Stabling Facility at Dubbo for the New Intercity Fleet (NIF) – these are all noteworthy investments and growth opportunities for the regional NSW rail industry.

These projects encompass track expansions, modernisation efforts, and the implementation of cutting-edge technologies to enhance efficiency, safety, and sustainability as well as improving regional transportation services. They are essential for connecting the regions, facilitating trade, and ensuring the continued growth of our communities.

Orange, a city known for its vibrant culture and stunning landscapes, has played a vital role in the growth of our rail network. As we gather here in Orange, a place with a rich railway history and a bright future, let us reaffirm our dedication to the railway industry and its pivotal role in our society. Together, we will continue to share knowledge, foster valuable networks, and contribute to the growth and diversity of our industry.

In conclusion, I would like to emphasise the indispensable role of a strong and viable rail network in the economies of New South Wales and Australia as a whole. Our railways have been instrumental in the past, continue to shape our present, and hold the key to a prosperous future. The railway industry is not only about tracks, overhead wiring, signalling systems and trains; it is about connecting people, fostering economic and skills development, and driving progress.

Let us, as leaders and stakeholders in the rail industry, continue to work together to ensure that our railways remain at the forefront of innovation and development. By doing so, we can look forward to a future where our railways contribute even more significantly to the growth and prosperity for not only regional NSW, but for our great nation.

Thank you, and I wish you all a productive and enlightening convention.

Mark Harris - President, Permanent Way Institution
New South Wales



President	Mark Harris	Editor	Jenny Valentino
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	Mark White		

Subcommittee Members	Lewys Rees
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	Michael Hickey	Barry Lees	Tania Page
	Allan Pidgeon	David Roberts	Kevin Ryan
	Ken Sherwood	Ken Swan	

Background of Permanent Way Institution NSW Inc.

The Institution was formed in 1884 in England by a group of dedicated railway personnel, who were responsible for development of railway track across the British Isles, and who felt the need for an avenue for exchange of track design, construction and maintenance. They realised the educational and social value of communications between all levels of personnel engaged on the railway tracks and associated structures. The safety of rail travel has been brought to the present standards because of a better understanding of the behaviour of the tracks under load; the Institution has played a vital part in gaining this understanding.

Realising this, the New South Wales section was formed in 1974, not only to benefit from those who had gone before, but also to add to the development of still more efficient rail transportation in the years ahead.

Disclaimer

The views expressed by authors and/or presenters are not necessarily the view of the PWI Committee or PWI Members.

2023 Convention Program – Back to Basics 2.0



PRE-REGISTRATION EVENT – THURSDAY 12 OCTOBER, 2023 – Greenhouse Room, Orange Ex-Serviceman’s Club

Hosted by: UGL Regional Linx

From 10:30	Arrival for boarding the PWI Train
11:13 – 16:05	PWI Train departs Central Station, Platform 2 for Orange Station
16:10 – 16:30	Bus Transfer – Orange Station to Ex Serviceman’s Club
16:30 – 18:30	Pre-registration and Networking Event
18:30	Event Close

FRIDAY 13 OCTOBER, 2023 – Coral Sea Theatre Room, Orange Ex-Serviceman’s Club

From 7:30	Registration Desk Open	
8:30 – 8:45	Welcome Address	Mark Harris <i>PWI NSW President</i>
8:45 – 9:15	Keynote Address	The Honourable Jenny Aitchison MP <i>NSW Minister for Regional Transport and Roads Member for Maitland</i>

SESSION 1: **Chaired by David Robotham, General Manager, Rail – Laing O’Rourke Australia**

09:15 – 09:25	Introduction to Laing O’Rourke	David Robotham
09:25 – 09:55	Paper 1 - Country Rail Maintenance – World Class Expert Generalists	Jim Turner – UGL Regional Linx
09:55 – 10:15	Paper 2 - Utilising New Switch Grinding Technology to Install 1:20 Inclination in Switches – a Quality Process from a maintainer’s perspective	Mark White – Speno Rail Maintenance Aust
10:15 – 10:25	Discussion / Questions for all papers	David Robotham
10:25 – 10:45	Young Achiever Award 2023 Presentation	Julian Sharp
10:45 – 11:15	MORNING TEA	

SESSION 2: **Chaired by Paul Feris, Head of Development – Acciona Rail**

11:15 – 11:25	Introduction to Acciona Rail	Paul Feris
11:25 – 11:45	Paper 3 - Going back to basics to build rail industry resilience	Nev Nichols – Sydney Trains
11:45 – 12:05	Paper 4 - Exceedence (DefECT) Management or Corrective Maintenance Management	Phillip Imrie – Plateway

(continued over)

2023 Convention Program (continued)



12:05 – 12:25	Paper 5 - Leaving a Legacy Through Project Delivery – Back to Basics for Lasting Impact - Regional Rail - Mindyarra Maintenance Centre, Dubbo	Melanie Bowden – CPB Contractors
12:25 – 12:35	Discussion / Questions for all papers	Paul Feris
12:35 – 12:45	PWI Electrical Subcommittee – Industry Update	Louis Petroulias – Gazelle Advisory, Electrical Subcommittee
12:45 – 13:00	President's Award	Mark Harris
13:00 – 14:30	LUNCH	

SESSION 3: Chaired by Steve Naumovski, Chief Executive Officer – Wellm8 Pty Ltd

14:30 – 14:40	Introduction to Wellm8	Steve Naumovski
14:40 – 15:20	One-on One with the PWI President	Luke Cunningham Head of Asset and Engineering, UGL Regional Linx
15:20 – 15:40	Paper 6 - Inland Rail: Building the future of freight	Melvyn Maylin – Australian Rail Track Corporation Ryan Baden – Martinus Rail
15:40 – 16:00	Paper 7 - Sydney Trains Net Zero Emissions and Energy Efficiency Initiative	Rod Barber – Transport for NSW
16:00 – 16:15	Discussion / Questions for all papers	Steve Naumovski
16:15 – 16:30	Endnote and Announcements	Mark Harris

POST-CONVENTION NETWORKING EVENT: Sponsored by Wellm8 Pty Ltd

16:30 – 18:30	PWI Networking Event – The Greenhouse of Orange Rooftop, Orange Ex-Serviceman's Club
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BUS TRANSFER OPTION TO SYDNEY (for those not attending the Networking Event):

16:30 – 21:30	Bus Transfer – Orange Ex-Serviceman's Club to Central Station (via Katoomba, Penrith, and Strathfield Railway Stations)
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SATURDAY 14 OCTOBER, 2023 – ORANGE WINE TOUR

10:00 – 17:00	Bus departs from Orange Ex-Serviceman's Club Visiting: Heifer Wines, Borrodell Vineyard (lunch), Phillip Shaw Vineyard, historic Millthorpe Railway Station and Railway Hotel in Millthorpe. Returning to Orange Ex-Serviceman's Club
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BUS TRANSFER OPTION TO SYDNEY (for those not attending the PWI Wine Tour)

10:00 – 15:00	Bus Transfer – Orange Ex-Serviceman's Club to Central Station (via Katoomba, Penrith, and Strathfield Railway Stations)
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2023/2024 Enhanced Corporate Members



The PWI recognises the continued support we receive from our Enhanced Members:

Platinum Corporate Members



Gold Corporate Members





The PWI recognises the continued support we receive from our Enhanced Silver Members.

Silver Corporate Members



2023/2024 Corporate Members



PWI NSW would like to thank all its Corporate Members for their support. We look forward to your continued sponsorship in the future.

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2023/2024 Corporate Members





Keynote Address



The Honourable Jenny Aitchison MP

NSW Minister for Regional Transport and Roads

Member for Maitland



The Hon. Jenny Aitchison was appointed Minister for Regional Transport and Roads in April 2023 in the Minns Labor Government.

Jenny served in Shadow Cabinet for seven years and was Shadow Minister for Regional Transport and Roads from 2021. She held a variety of diverse portfolios including Primary Industries, Investment & Tourism, Medical Research, Prevention of Domestic Violence & Sexual Assault, Small Business and Women.

Jenny grew up in Canberra and has lived in regional NSW for over 25 years, initially in Walcha, near Armidale on the New England Tablelands and then Maitland. Jenny was elected to represent the community of Maitland in 2015.

As an award-winning coach tour operator for nearly two decades before she entered Parliament, Jenny was a strong advocate for the bus and tourism industry, serving on State and Federal committees and presenting to conferences of Bus NSW and the Bus Industry Confederation on issues such as resilience, environment, critical incident and safety management, disability access, increasing patronage, tourism and economic development, and the transition to the National Heavy Vehicle Regulator.

Jenny has lived experience of the heavy vehicle industry and her husband, son and daughter are all coach drivers.

PWI GOLF DAY

1 March 2024

Bankstown Golf Club

Sponsor or play at the
PWI NSW
Annual Golf Day



Start preparing your teams and be ready to tee-off!

Winter Dinner

Friday 21 June 2024

*Join your colleagues and friends for fine food, drinks,
networking and entertainment at the*

PWI NSW Winter Dinner

Sponsorship available!



BACK ← **TO BASICS 2.0**

THE FUNDAMENTALS OF RAIL



FIRST SESSION

PWI Annual Convention 2023

Chairperson: David Robotham – Laing O’Rourke

Presentation: Country Rail Maintenance – World Class Expert Generalists

Jim Turner – UGL Regional Linx

**Presentation: Utilising New Switch Grinding Technology to
Install 1:20 Inclination in Switches – a Quality Process
from a maintainer’s perspective**

Mark White – Speno Rail Maintenance Australia

PWI Young Achiever Award – presented by Julian Sharp



Jim Turner

(UGL Regional Linx)

Jim Turner is Head of Infrastructure Maintenance for UGL Regional Linx, is a qualified Civil Engineer and brings substantial rail experience from across networks within Australia, having held leadership positions on both the client side and with contractors in Asset Management, Construction and Maintenance across various railways in WA, QLD now NSW.

Jim is passionate about infrastructure, railways and people and strives to improve work practices and further develop maintenance strategies and asset intelligence.

Jim has a strong Project Management background and practical working experiences which is instrumental in leading the Infrastructure Maintenance Team. Jim enjoys mentoring staff and developing a dynamic CRN workforce. He has been a member of the PWI since 2011 and in 2016 won the PWI Young Achiever Award for his Ground Penetrating Radar Survey of the CRN network.



Abstract – Country Rail Maintenance - World Class Expert Generalists

Country rail is a great way for any person to get a solid grounding in the fundamentals of railway practice. With over 2600km of main line operational track the network also covers almost 300,000 sq. km of NSW and takes about 10 hours to drive from one end to the other. All of that doesn't even include the over 3000 km of non-operational lines, isolated land parcels and extensive property portfolio.

On this vast network you will find a living museum of railway technology, with everything from 60lb/yard jointed track with timber sleepers to concrete sleepers with 60kg/m rail and everything in between. In fact, a substantial portion of our network was built secondhand from materials that had reached their serviceable life in other networks.

Despite this incredible size, our teams are relatively small. This means that everyone wears a lot of different hats. It's not enough to be an expert in just one thing; there's simply not enough work to justify the kind of specialisation that happens elsewhere in the industry. Instead, Country Rail creates rail professionals who are expert generalists, with a well-rounded skillset that makes them expert problem solvers.

You also get to be excellent at risk assessment in the Country Rail because our works programs are relatively small as well. You simply can't afford to buy-out risk or be conservative when your total annual works program combined would struggle to qualify for the dollar value thresholds of some industry award categories.

Country rail professionals know how to eke every last bit of useful life out of an asset because we have to know how to do that. There is a fine line though between aggressive risk management and risk complacency and so our people need an excellent grounding in the fundamental principles - the basics that everyone is getting back to. Those are our bread and butter.

We're also very close to our customers too - conversations with farmers over fences are routine and everyone is an amateur agronomist. This is important when one train service a week can sometimes be the difference between a line being viable or not viable. We understand why our network exists and we are strongly motivated to achieve outcomes for our network users.

For all of these reasons and many more, Country Rail produces world class expert generalists. To get back to basics, you could do worse than looking to your cousins in the country.

Paper 2 – Utilizing New Switch Grinding Technology



Mark White

Business Development Manager, Speno Rail Maintenance Aust



Mark White - Business Development Manager Speno Rail Maintenance Aust

Mark has been a specialist contractor for over four decades, gaining entry to our industry via a major US contractor in 1977, he found a technical niche which challenged his nature.

Following a technical career, Mark gained qualifications in X-Ray, Gamma Ray, Ultrasonic, Magnetic Induction, Eddy Current and LPI Inspection. (NDT Disciplines).

Working from the shop floor Mark spent his initial 12 years on track conducting NDT inspections on over 90% of the Australian/New Zealand Rail Systems. Further experience was gained in Japan, India and South Africa.

Furthermore, Mark's involvement with Main Line and Switch Grinding operations commenced in 1993 as well as managing Track Geometry contracts for the Victorian Government.

Mark finds himself extremely fortunate for the personal and working experiences he has experienced in our industry, not to mention being exposed to the vast expanse of our amazing Continent.

Abstract – Utilizing New Switch Grinding Technology to Instal 1:20 Inclination in Switches – a Quality Process from a maintainer's perspective

Items discussed in the presentation include:

- The process of installing the 1:20 inclination using a switch grinder.
- Efficiency Improvement when comparing the new technology over a rail bound machine.
- Discussion on loads and stresses applied to Rails in Switches when compared to normal 1:20/1:40 main line cant.
- Typical deterioration applied to switches inclined at zero degrees.
- Explanation regarding specialist grinding stones required to address 100% of the switch infrastructure.
- Rail profile application focused on quality.
- Grinding Strategies applied in switch grinding.
- Rectification of old switches inclined at zero inclination (the win/win scenario).
- Results of applied Contact, residual and shear stress on zero inclination, an NDT perspective.
- The importance of the asymmetric shape (50% of task) and the removal of 0.2mm (50% of task) from the contact patch.
- The Rail Surface Hardness issue – when has the rail surface hardness exceed the boundaries?



Judges

Julian Sharp, Chair – CPB Contractors

Lee Taylor – Martinus Rail

Matt Jones – John Holland Group

Anna Murray – Silver Edge

Rebecca Coffey – UGL Regional Linx

David Spiteri – UGL Regional Linx

Nagajyothi Lolla – Transport for NSW

The PWI Young Achiever Award is a prize of up to \$10,000 for the winner to go towards the cost of attending a relevant international railway conference. To be eligible for this award, an entrant must be 35 or younger at the 1 January of the year of entry. The aim is to encourage younger members into our industry and promote knowledge sharing. We have now broadened the judging criteria to make it more multi-disciplinary so that it includes for all members who are involved in the numerous rail infrastructure projects that are being delivered at the moment.

Judging Criteria

Judging is based on:

Relevant Criteria	Available Score
Relevance to Perway	10
Difficulties Overcome	20
Quality of Paper and/or Presentation	20
Amount of Innovation	15
Ongoing benefit to the transport industry	25
Technical Excellence	10
Total Score/Marks:	100

The Award is judged on either a Technical Paper that has been written (and preferably presented) or a Project or Program of Works that has been completed, within the last 18 months.

Following the initial judging of the applications, between 3 and 5 applicants are shortlisted to then present their paper to the judging panel. Each applicant has 20 minutes to present their paper and then answer questions for a further 10 minutes. The judges then make their final determination.

Award

Up to \$10,000, to cover:

1. Transport, registration, insurances and accommodation to a relevant railway conference (PWI approves the attendance at the nominated conference).
2. Award must be taken within two years of being presented or agreement reached with the PWI Committee to be deferred for a longer period.
3. The award may not be presented in a given year if entries are not considered suitable.

Conditions

Previous winners of this award (or similar such awards, e.g. the RTAA Frank Franklyn Award) will be excluded from re-submitting an application for this award for a period of no less than five years from the time of submitting their application for their winning award. The subject of the award must relate to the applicant's current employer who will be required to provide a reference. The successful candidate will present at the next relevant Technical Meeting, a summary of the attended conference and any associated industry visits.



Energising Digitalization of Railway Infrastructure Systems

**JOHN
HOLLAND**

Benson Wong
Site Engineer – Electrical (Power Engineering)
Bachelor of Electrical Engineering (Elec)
John Holland Group



Abstract

The More Trains, More Services Stage 2 T8 project is aimed at modernizing and transforming Sydney's rail network into a reliable and advanced mass transit system using cutting-edge digital technology. The project focuses on improving the T4 Illawarra, T8 Airport, and South Coast lines, which are some of the busiest lines on Sydney's rail network, serving over 410,000 round trips per day and catering to one-third of daily Sydney Trains customers.

This is enabled by a new Traction Substation constructed in Mascot. With an interconnecting 450-meter-long cable tunnel beneath the heart of Mascot CBD enabling connection to Mascot Train Station and supply power to the Airport Line's 33kV, 11kV and 1500V DC Feeders. The tunnel is walkable and provides easy access for maintenance and repair work.

A new Wolli Creek Traction Substation to supply 33KV, 11KV and 1500V DC Feeders into Illawarra Local, Illawarra Main and East Hills Rail lines.

Throughout the project, our team faced challenges such as the ever-changing COVID-19 climate LGA restrictions, Sydney 2022 floods and the inherent difficulties of building new Railway Infrastructure assets within a Brownfield environment. However, the team's resilience and innovative approaches were essential to the project's success. By integrating digital construction methodologies and applying lessons learned from previous projects, we were able to overcome these challenges and deliver a successful project.

The paper explores a digitalised approach towards pre-construction visualisation, asset management, procurement, and constructability sequencing. The team's efforts and experiences gained from this project can now be applied to future projects.



Automating Strategic and Tactical Asset Management Documentation for Rail Automating Strategic and Tactical Asset Management Documentation for Rail



Emily Lok
BSc, ME(Distinct)
KPMG



Abstract

Managing rail assets is complex; it includes gathering information about asset condition, asset performance, maintenance, finances and synthesising it all to create asset strategies, technical maintenance plans and other documentation. This data is dynamic, changing as the transport network runs, as assets age, are maintained or are replaced. Performance, cost and risk data is critical for decision-making, especially under the complex and real environments that include pressures of increasing costs. As such, technical guidance documents need to be updated, involving tracking of all the different documents and manually updating information in each one. The consequences of inadequately updated documents can have adverse impacts on the network and the commuter experience. Automation becomes an answer to this problem.

Automation provides the ability to take data from different sources and collate them into a single report without manual intervention. An automated process for compiling reports is powerful, especially when content is managed by different authors and the responsibility for updating documents is shared. To ensure timely decisions are made with accurate information and to mitigate conflict between multiple stakeholders, the latest information needs to be readily accessible. In this way, organisations can use automation to establish a single source of truth and ensure their documents stay up-to-date over time. Automating the development of documentation allows authors to store content once and have it repeatedly utilised, ensuring consistent messaging.

Microsoft Power Automate is a cloud-based workflow building tool, typically used for administrative workflows. In this instance, research was conducted to build workflows that could take text, images and tables from different sources and populate a Microsoft Word template. This investigation involved engaging with national and international colleagues within a multi-national organisation to understand the technical specifics. A proof of concept was created for the Victorian Department of Transport and Planning (DTP), as they were developing strategic asset management documents. This project included understanding client needs, Power Automate's licensing requirements and delivering the approach to embedding the tool and workflows into their business practices. This paper details the ability to take a standard solution, Power Automate, and re-purpose it to meet asset management needs within the evolving rail industry.

Transport agencies have vast amount of existing data and reports, and as reporting requirements also evolve, automated solutions will help reduce complexity. The paper will also discuss how this process can be made applicable to other rail organisation to improve their processes.



Sustainable Re-use of Railway Spoil

ARTC

James Dillon
Bachelor of Engineering (Civil)
Bachelor of Business –
The University of Newcastle
ARTC



Abstract

The Mount Murray Loop Extension project was profound in developing my management skills given the challenges experienced on the project. In future projects like the Port Waratah Reconfiguration Project and the Werris Creek Recondition Project, I have called upon the experiences learnt from this project to more quickly and effectively manage project issues as they arose. The same is said with issues experienced with recycling waste spoil, which I have improved on with time and experience.

Being a linear asset, railway construction and maintenance has historically relocated excess spoil material along the rail corridor along access tracks or in stockpiles. This is not environmentally considerate or viable in the long-term given that it can often lead to drainage issues and reduce the corridors envelope, hindering future maintenance activities and construction projects. Today, regulatory project planning approvals and assessment criteria, set by the Environmental Protection Agency (EPA), are required prior to commencing a project to limit the potential for environmental harm. This includes the consideration of waste spoil generation.

The opportunities drawn upon over the three nominated projects have led to more than 20,000 tonnes of spoil being beneficially re-used or recycled, reducing impacts to the corridor envelope and that of the environment.

In addition to my continual improvement journey, ARTC has also been on a journey to progress the tools and resources available to staff to equip them with the skills to appropriately manage spoil. These tools include a heatmap of spoil recycling opportunities in varying areas as well as estimation tools for haulage and waste testing.

The opportunity benefits of recycling waste spoil by all Rail Infrastructure Managers (RIM) nationally are immense. Considerate planning and re-use of railway spoil reduces the environmental impacts we have on our rail corridors and adjoining landowners.



Derailing Intruders on Sydney Metro Northwest

**JOHN
HOLLAND**

James Dowzard
BE Mechatronics / BSc Physics
John Holland Group



Abstract

Derailing Intruders on Sydney Metro Northwest focusses on how the approach to intrusion (trespass into the rail corridor) was developed from the ground up on Sydney Metro Northwest, Australia's first driverless metro system. The paper looks at the limitations of the existing standards and principles for this novel environment, the stakeholder engagement required to develop a best-for-project solution, and how the outcomes of this process has set the precedent for all future metro operations in Australia, including Sydney Metro City & Southwest.

As a challenging piece of work, this activity was a platform for a lot of personal and professional growth, learning about not only the technical considerations to get to a safe and best-for-project solution, but how to manage the people side, and have trying conversations with people who are protecting their scope, and championing their organisation's priorities.

The technical section of this paper presents the optioneering process undertaken including assessment of cost of modification to existing assets, reliability of detection technologies and operator considerations including false positives. This included the use of assessment techniques such as fault tree analysis, event tree analysis, and cost-benefit modelling to determine potential solutions that would manage the safety risk associated with intrusion So Far As Is Reasonably Practicable (SFAIRP) as required under Rail Safety National Law (RSNL).

This body of work not only resulted in an engineering solution for SMNW; the principles developed were done so to enable application across any network given the particular environment and constraints.

This lasting legacy of the intrusion management work is the motivation for providing this nomination, and demonstrates that there are still uncharted waters, even today, in the rail industry!



Waterfall Stabling Yard and Platform Extension Project



LAING O'ROURKE

Tyler Martin
Senior Project Engineer
Bachelor of Engineering –
BE Mechanical Engineering
MIEAust

Laing O'Rourke - Transport for Tomorrow



Abstract

As one of the first projects commenced under the More Trains More Services 2 South program of works, innovation was key to the successful delivery of the Waterfall Stabling Yard and Platform Extension Project. The Waterfall Project is a critical project which allows the increase in train frequency to Wollongong and its surrounds and allows for the upgraded Mariyung fleet of intercity trains to stop and stable at Waterfall.

With a focus on upskilling those new to the industry and introducing both simple and complex innovations to our works, I was part of a strong Laing O'Rourke team as part of Transport for Tomorrow, adapting to changes in staging and external impacts to deliver a complex project with excellence. During these works I was the Project Engineer and Senior Project Engineer for the OHW discipline and managed the planning and execution of lifting activities as the Lead Appointed Person for Cranes and lifting.

This report details some of the innovative ways the Waterfall team tackled complex challenges and interfaced with the existing network in a staged approach, coordinating track, OHW, signalling and civil delivery on both midweek and possession weekends to achieve a tight delivery program.

BACK ← **TO BASICS 2.0** **THE FUNDAMENTALS OF RAIL**



SECOND SESSION

PWI Annual Convention 2023

Chairperson: Paul Ferris – Acconia Rail

Presentation: Going back to basics to build rail industry resilience

Nev Nichols – Sydney Trains

**Presentation: Exceedence (DefECT) Management or Corrective Maintenance
Management**

Phillip Imrie – Plateway

**Presentation: Leaving a Legacy Through Project Delivery
– Back to Basics for Lasting Impact - Regional Rail - Mindyarra
Maintenance Centre, Dubbo**

Melanie Bowden – CPB Contractors

Presidents Award

Mark Harris

Paper 3 – Going back to basics



Nev Nichols

Executive Director Engineering and Maintenance
SydneyTrains



Nev joined Sydney Trains in October 2017 as Executive Director, Safety Environment & Risk, Group Rail and began leading the Engineering & Maintenance Branch in January 2020.

Nev has more than 30 years' experience in the rail industry in both technical and senior management roles in the UK and Australia. Before joining Sydney Trains, he was Chief Executive Officer, Country Regional Network for John Holland and his career highlights have also included time as Regional General Manager, Rail for John Holland, Alliance Manager, Trackwork Services Alliance for RailCorp/ John Holland and Operations Director, Major Projects for Jarvis Rail.

Nev holds a Bachelor degree (Hons) in Electrical/Electronic Engineering and has completed post-graduate studies in management. He is a Fellow of The Institute of Engineering and Technology (IET), a Fellow of the Institution of Railway Signal Engineers (IRSE) and a Member of the Australian Institute of Company Directors (AICD).

Abstract – Going back to basics to build rail industry resilience

Engineering and Maintenance (E&M) services a \$1.5 billion annual maintenance program of works, spanning the 1,600km Sydney Trains integrated heavy rail network, servicing the needs of passengers and freight.

We maintain \$41 billion worth of network assets within infrastructure, fleet, facilities and operational technology along with internal capabilities in engineering, asset management, construction (including major projects), maintenance, network incident and disaster recovery response and supply chain.

Safety, and a quality and assurance framework guides everything we do, supported by our 4,500 people - one of the largest workforces within Transport for NSW. This is complemented by our extended blended delivery workforce and accredited service providers.

The last few years have seen unprecedented challenges and resounding impacts on the way we operate.

The last few years have been particularly challenging for the front line across a range of industries, and the rail industry was no exception. In 2022, severe wet weather events causing flooding, significant landslips, and damage to track, electrical and signalling infrastructure across our network – and 10km of track infrastructure damage as a result of a major derailment right before Christmas. These events occurred within a 10-month window, and we really had to dig deep and work together to rebuild our infrastructure and services.

We've gone 'back to basics' on some of our operations, particularly in clearing our maintenance backlog, our rail repair plan and engaging our stakeholders in times of disaster. We are also embracing new technology to find smarter and safer ways to work.

We couldn't do any of this without the backing of the broader rail industry and our external workforce. Our contractors and industry suppliers not only provide essential expertise in niche technical areas day to day, they are always there to help us rebuild in times of disaster – we can't thank the industry enough.



Paper 4 – Exceedence Management

Phillip Imrie

Director and Founder of Plateway Pty Ltd



With nearly 40 years of extensive railway industry experience, Phillip has undertaken a remarkable portfolio of assignments and roles. He has held senior positions within the NSW Rail Industry, including Program Engineer and Country Renewals Manager in the 1990s. In 1997, he founded Plateway, a boutique rail engineering and management consultancy. Plateway specializes in engineering asset inspections and computer simulation of rail operations. In addition to the ongoing long-term management of the Cobar Private Rail network, recent work has included wheel rail interface reviews for FMG and BHP, detailed turnout examinations on the Rio Tinto and BHP networks, network capacity assessment for BHP and FMG.

Globally, Phillip is regarded as a leading rail operations engineer, with international experience spanning New Zealand, India, and South Africa. Phillip has a Bachelor of Engineering (with Honours Class 1 Civil) from the University of Technology Sydney, as well as a Master of Business Administration (Technology Management) from Deakin University. He has published papers including;

- CORE 2014 Productivity Goals – The Next Steps,
- PWI Convention 2016 the Cobar Private Network Long Term Performance of a Pioneering Track Structure,
- IT15 Rail Simulation of Large Freight Networks, and;
- NEXT Rail 19 Freight Marshalling Yard Operations Using OpenTrack, NEXT Rail 17 Advanced Freight Train Simulation.

Abstract – Exceedence (DefECT) Management or Corrective Maintenance Management - Back to Basics

The ECT's were the Way and Works Branch's Corrective Maintenance process management mantra. Inspect, Detect, Protect, Correct, sounds simple really, but was it? Have these basics been lost in the modern sophisticated approach of today?

An exceedence (which is a politically correct term for a defect) is a condition which has a value outside of the normal range within which the system is designed to operate. Some are trivial, some are critical and some only become critical over time. Others are trivial by themselves but when combined with exceedences in other parts of the system can contribute to a catastrophic event.

With the advent of generic work order management systems configured by those who are not the Permanent Way Management Practitioners are we in danger of forgetting the "ECTs" which form the basic exceedence management process of Inspect, Detect, Protect and Correct.

ECT	Effectiveness Criteria
Inspect	Inspect the entire asset. Inspect the asset at the correct frequency Inspect the asset at the right time to respond to conditions such as heat and rainfall. Perform the required level of inspection.
Detect	Inspection finds the defect. Locate the defect to enable correction (by measurement). Understand the defect exists under load. Check for "combination" of defects. Confirm the defect hasn't been masked.
Protect	Reduce the (energy) of trains travelling over the defect. Temporary repair (remove the symptom). Increase inspection frequency.
Correct	Remove the defect and underlying cause. Verify removal. Monitor location.



Melanie Bowden

Project Director
CPB Contractors



Melanie Bowden is a Project Director with CPB Contractors, with experience in rail infrastructure projects across Australia and the United Kingdom. Melanie is currently working on Dubbo Regional Rail Facility. Her other recent projects include Canberra Light Rail Depot Modifications and the Sydney Metro Linewide Works

Recipient of the 2021 Permanent Way Institute Young Achievers Award, a current member of Australasian Railway Association's Women in Engineering Board, and a past member of the Australasian Railway Association's Young Leaders Advisory Board (Y-LAB), Melanie is interested in supporting the growth and diversification of the rail industry.

Abstract – Leaving a Legacy Through Project Delivery – Back to Basics for Lasting Impact (Regional Rail - Mindyarra Maintenance Centre, Dubbo)

Mindyarra Maintenance Centre is the design & construction (and future operation) of a purpose-built rail maintenance facility in Dubbo. Through a period of unprecedented demand in metropolitan areas (and mobility challenges resulting from COVID), CPB, on behalf of CAF, Momentum Trains and TfNSW, has been constructing a purpose-built maintenance facility.

The Mindyarra Maintenance Centre project provides insight to the conference's theme of "Back to Basics 2.0", whereby project success must include a lasting legacy to the regions in which the project operates, both for sustainable communities and a sustainable ongoing rail industry. Some items to consider:

- Increase in regional rail work means we need to think differently on how we resource our projects – how do we harness local and available workforce but also ensure we are upskilling to enable delivery of highly technical works?
- Leaving a skilled workforce for more regional projects and to operate and maintain these new essential facilities and assets.
- We should ensure the transitional workforce is integrated into delivery models, considering how rostering and locations impact our subcontracting workforce.
- As we win work, we need to identify opportunities that promote the Aboriginal Custodians of the land we work on and integrate their priorities into our offering to provide a lasting legacy that contributes to Aboriginal peoples economic advancement and improves respect and appreciation for Aboriginal cultures.
- Upskilling the workforce requires investment from existing personnel in the workforce; how do we communicate, educate, reinforce and engage our teams in this collective goal?

BACK ← **TO BASICS 2.0**

THE FUNDAMENTALS OF RAIL



THIRD SESSION

PWI Annual Convention 2023

Chairperson: Steve Naumovski – Wellm8 Pty Ltd

Presentation: Inland Rail: Building the Future of Freight

Melvyn Maylin – Australian Rail Track Corporation

Ryan Baden – Martinus Rail

**Presentation: Sydney Trains Net Zero Emissions and Energy
Efficiency Initiative**

Rod Barber – Transport for NSW

Paper 6 – Inland Rail: Building the Future of Freight



Melvyn Maylin – Australian Rail Track Corporation

Ryan Baden – Martinus Rail

With a background in project engineering, Melvyn has more than 20 years' experience in transport infrastructure leading multi-disciplinary teams in completing significant projects and driving organisational change. He has worked internationally in the UK, Canada, New Zealand and Hong Kong.

Melvyn first joined Inland Rail in 2020 as the Delivery Director accountable for delivery of all phases of the Albury to Parkes projects, and subsequently accepted a governance role with respect to the Tottenham to Albury projects (now delivered by ARTC Major Construction Projects), and also responsibility for finalising completion elements of the Parkes to Narromine project. Combined, these projects cover half the length of Inland Rail.

Prior to his role at Inland Rail, Melvyn was the Major Projects Manager Asia Pacific South for Cardno and held several senior roles at Opus International Consultants, including Group Director Transportation and Managing Director, Australia.

Melvyn has won numerous awards for his technical excellence, including several Association of Consulting and Engineers New Zealand Gold Awards and an AustRoads Bridge award.



With more than 15 years' experience delivering operational excellence within the rail industry, Ryan has successfully led and delivered major brownfield and greenfield rail projects across Australia and New Zealand. Armed with extensive technical know-how and an in-depth industry understanding, he plays a crucial role in expanding Martinus and bringing together a strong team of rail professionals. Ryan is a visionary leader who is passionate about the rail industry and its people. His focus remains on ensuring Martinus remains an industry leader in rail construction.

Abstract – Inland Rail: Building the Future of Freight

Inland Rail is a fast freight rail line that will enhance our national freight and supply chain capabilities, connecting existing freight routes through rail, roads and ports, and supporting Australia's growth. Spanning approximately 1,600km through regional Victoria, New South Wales and Queensland, Inland Rail will connect Melbourne and Brisbane and cut rail freight travel time between the two cities by almost a third, from 33 hours to less than 24 hours.

With the sections from Parkes to Narromine complete and Narrabri to North Star nearing completion, focus turns to the sections between Beveridge in Victoria and Parkes in New South Wales, which have been prioritised by the Australian Government for completion by 2027.

Inland Rail is committed to using local suppliers, skills and labour, where possible, and ensuring environmental, community and economic considerations are embedded in our procurement process. In New South Wales, more than 4,080 jobs have been created for local and First Nations people and more than \$380 million has been spent in regional economies.

Martinus Rail has been awarded a contract to design and deliver enhancement works on the Albury to Illabo and Stockinbingal to Parkes sections of Inland Rail.

Inland Rail Director Program Delivery (Albury to Parkes), Melvyn Maylin and Martinus Rail Chief Operating Officer, Ryan Baden will provide a project update and discuss current and upcoming procurement opportunities, timeframes, the procurement process and how you can stay informed about the latest developments on Inland Rail tenders.



Rod Barber

Transport for NSW



Rod is the Director Environment & Sustainability Sydney in the Transport for NSW Environment & Sustainability Branch. Rod is a senior environmental specialist with more than 20 years' experience in the environmental services, transport and waste management sectors. Rod joined Sydney Trains in 2013, before transferring to Transport in 2021. Prior to joining Transport & Sydney Trains, Rod held previous roles as National Sustainability Manager at DP World and as the Environment Quality and Safety Manager at SITA Australia's NSW Infrastructure Business Unit, and at WSN Environmental Solutions. Rod holds a BEng Environmental Engineering and BSc from the University of Newcastle. He is a Chartered Professional Engineer as a Member of the Institution of Engineers Australia.

Abstract – Sydney Trains Net Zero Emissions and Energy Efficiency Initiative

Sydney Trains and NSW TrainLink together use approximately 874GWh of electricity per annum (around 1.3% of NSW's total electricity consumption). This equates to the electricity usage of approximately 158,000 Sydney households. Through the Net Zero Emissions Initiative, all electricity used across the Sydney Trains network is 100% renewable, removing approximately 708,203 tonnes of CO₂-e emissions each year.

The initiative has reduced Sydney Trains' total emissions footprint by 98%, the remaining 2% of emissions will be offset before 2025.

The initiative makes Sydney Trains the first heavy rail passenger service in Australia to transition to net zero emissions from electricity. We are proud to have been able to make rail transport an even more sustainable mode of transport. The travelling public in Sydney will now have a net zero emissions public transport option across greater Sydney.

To address the scale of Sydney Trains' energy profile, energy efficiency and emissions reduction are a key focus. Sydney Trains set dual targets of Net Zero Emissions from electricity consumption by 2025 and a 10% reduction in the rate of energy consumption (kWh/car km) over five years. Innovative energy efficiency initiatives for rollingstock HVAC, maximizing energy recovery from regenerative braking and onsite solar PV projects will improve the energy consumption profile.

The Net Zero project is a direct example of Sustainable Leadership. Sydney Trains aimed to achieve an ambitious implementation of Net Zero ahead of the 2025 target in a fiscally responsible manner whilst providing leadership and incentive for further renewable energy market development. This has been achieved 4 years ahead of target.

BACK TO BASICS 2.0

THE FUNDAMENTALS OF RAIL



PWI Awards

9 February 2024



You are invited to the Annual PWI Awards

Celebrate our industry's successes in 2023 with awards in the following categories:

- Ken Erickson Innovation Award
- Alan Barham Maintenance Award
- Steve Maxwell Platelaying Awards
- Welders Award
- Design Awards
- Electrical Safety & Quality Award

Note: the Young Achiever Award winner will be presented at the PWI Annual Convention in Oct 2023

Keep an eye on the PWI NSW website and get your entries in!

The 2022 PWI Awards Night



The PWI NSW was proud to celebrate some of the best projects, innovations, individuals and teams in the rail industry at the 2022 PWI Awards Night, held on Friday 10 February at the Ivy Ballroom.

Congratulations to all the award winners and those recognised as high commended. The calibre of the entries continues to impress the judging panels and highlights the amazing work that's being done by our industry.

Make sure you look out for the 2023 PWI Awards applications and start thinking about what you could put forward to be recognised at this great industry event.

<https://www.pwinsw.org.au/awards/>










The 2022 PWI Awards Night was a sell-out success, recognising the outstanding achievements of the rail industry from the past year.









PWI NSW President, Mark Harris, addresses the 2022 PWI Awards Night.

The 2022 PWI Awards Night



Award Category	Project/Individual	Company	
2022 PWI Welders Award Winner	Guy Rowles Johnson	Quickway	
2022 PWI Ken Erickson Innovation Award Highly Commended	Train Examination System (TRES)	Future Maintenance Technologies	
2022 PWI Ken Erickson Innovation Award Winner	Measurement and Inspection Digital Twin	Sydney Trains	
2022 PWI Steve Maxwell Award (Platelaying Category) Winner	Gunning Derailment Emergency Repair Works	John Holland	
2022 PWI Steve Maxwell Award (Minor Works) Highly Commended	Interstate North Coast Rail Upgrade – Kendall	ARTC	
2022 PWI Steve Maxwell Award (Minor Works) Winner	Installation of 805/806/807/808 Scissor Crossover – Sydenham Station Junction Works	Laing O'Rourke / John Holland (JHLOR Joint Venture)	
2022 PWI Steve Maxwell Award (Major) Winner	Construction of the Pacific National Intermodal Rail Facility at St Marys	Rhomberg Rail Australia	



Award Category	Project/Individual	Company	
2022 PWI Design Award (Design Fees < \$1m) Highly Commended	Wheel Squeal North Shore Line, Sydney	GHD	
2022 PWI Design Award (Design Fees < \$1m) Winner	25 TAL Upgrade: Scoping, Planning, and Designing for Narrabri to Walgett and Stockinbingal to Griffith	Lycopodium	
2022 PWI Design Award (Design Fees > \$1m) Recognition for Contribution to Permanent Way	Coalcliff Tunnel Track Reconstruction	SMEC & Rhomberg Rail	
2022 PWI Design Award (Design Fees > \$1m) Winner	Sydney Metro Central Station	GHD & Aurecon Design Joint Venture	
2022 PWI Electrical Safety & Quality Award Winner	Electrical Learning Centre (Chullor)	Transport for NSW	
2022 PWI Alan Barham Maintenance Award Highly Commended	South Coast Civil Maintenance Team	Sydney Trains	
2022 PWI Alan Barham Maintenance Award Winner	City West Track Maintenance Team	Sydney Trains	
2022 PWI Young Achiever Award Winner (announced in 2022)	Chris Wills	John Holland Group	

2023/2024 Enhanced Corporate Members



The PWI recognises the continued support we receive from our Enhanced Members:

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The collective benefits of rail to the Australian economy, the community and environment are undeniable.

That's why we're proud to be delivering rail infrastructure across the country.

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We deliver impactful global solutions to create a more connected, sustainable world — from intelligence to infrastructure, cybersecurity to space exploration. Our 57,000 employees across 40 countries work every day, challenging the expectations of today to reinvent the way we'll all live tomorrow.

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We're a globally recognised leader in the safe and efficient delivery of rail and transit solutions, helping rail clients plan, manage, develop, finance, design, construct, maintain, and operate rail infrastructure that connects people and businesses around the world. We have the right mix of management, design, engineering, strategic advisory, regulatory, and business expertise to help clients solve their most pressing challenges, including decarbonisation, digitisation, physical and cyber security, and project delivery, and capitalise on every opportunity to challenge today and reinvent tomorrow.

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Julian Small

Executive Regional Market Director - Rail
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- Morristet to Vale Point Resignalling – detailed signalling design, replacing life expired interlocking with a new Westrace MKII CBI.
- Tarcoola to Kalgoorlie – detailed signalling design and construction, deploying ARTC’s Automatic Train Management System across a remote 1200km line spanning South and West Australia.
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ABOUT MIDDLETON GROUP

We are a Transport for NSW Technically Assured Organisation (TAO) for the following areas:

- Earthing, bonding, electrolysis and lightning protection
- Electrical network planning and modelling
- Electromagnetic compatibility
- High voltage cables
- Traction substation and sectioning huts
- Distribution substations
- High voltage protection systems
- Low voltage power systems and low voltage protection
- Electrical control systems (SCADA)

Complementing our technical expertise, we also offer extensive experience managing complex rail projects.

OUR VALUE PROPOSITION

- Outstanding technical capability
- Extensive experience across a range of challenging projects
- Proven ability to design and assess against industry standards as well as client-specific standards
- Strong stakeholder engagement and relationship management

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OUR SERVICES

Engineering and design services

- Power network strategy
- EMI and EMC modelling for DC and AC railways
- Earthing, bonding and electrolysis mitigation for DC and AC railways
- Traction power modelling (AC and DC systems)
- DC and AC railway short-circuit and protection studies
- Project development and scoping
- DC and AC traction substation layout/design (concept to detail), including protection and control systems
- Rail operation and maintenance
- Traction and signalling interface analysis
- Energy-consumption modelling for AC and DC railways
- Rail negative infrastructure system modelling and design for DC railways

Delivery review services

- Tendering and procurement of power system equipment
- Review, approval and integration of vendor data
- Construction phase engineering support
- Project and construction management services
- Analysis of AC/DC interface issues and solutions
- Stakeholder consultation (e.g. rail transport operators, network service providers, standards committees)

OUR EXPERIENCE

New South Wales

- Sydney Trains – Network electromagnetic compatibility risk assessment audit (1500V DC)
- Sydney Metro Western Sydney Airport Line – Traction power modelling (25kV AC)
- Central Precinct Renewal Program (CPRP) – Earthing, bonding and electrolysis strategy (1500V DC)
- Lidcombe Station 33kV aerial relocation feeder 7A6 – Harmonic study, earthing and bonding detailed design

Aotearoa New Zealand

- Auckland Cross Rail Link – EMC and earthing and bonding strategy, independent verifier (25kV AC)
- Wellington Metro Upgrade – Traction power modelling, independent verifier (1500V DC)
- Wiri to Quay Park Project – EMC and earthing and bonding detailed design and verification as part of Auckland electrified area (25kV AC)
- KiwiRail – Technical advice on the implementation of a staged autotransformer supply system for the Auckland network

Victoria

- Suburban Rail Loop – Power supply and traction power system (25kV) AC development
- Independent SME for EMC and validation traction power modelling (25kV AC)
- Level Crossing Removal Project – Traction power modelling and earthing and bonding detailed design and verification (1500V DC)
- Metro Tunnel Project – Independent SME for EMC and technical advisor for earthing and bonding strategy and design review (1500V DC)





Quality Workforce Quality Outcomes.

MP Rail Pty Ltd looks for ways to ensure all stakeholders benefit from the quality of our work by meeting and exceeding the client's requirements in service provision.

We ensure we have relevant information and resources on hand to support our operations while continuing to develop services, improve systems and operations that affect its quality, efficiency and productivity to ensure regulatory compliance.

Our quality of service starts with our office staff and continues through to the frontline workers, so we can guarantee client satisfaction from the initial contact to the conclusion of a project.

6-TIMES WINNER PWI
WELDER OF THE YEAR



Mission

Our goal is to provide our customers with first class service, acting with honesty, integrity and thoughtfulness.

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Vision

To be the most reliable service provider and enhance what your business does with quality and expertise.

We believe to effectively contribute and provide impactful service to our clients, we must take an all-inclusive approach to any project and work flexibly as part of your team.

Values

We inspire Team Member growth through continued learning, happiness, innovation and an uncompromising focus on impact and excellence.

Our success is dependent upon the collective energy, intelligence and contributions of all our Team Members.

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INFRASTRUCTURE

Progress Rail covers the complete value chain for railroad infrastructure. As one of the largest suppliers of infrastructure products and services, we deliver a comprehensive line of solutions with a highly specialized focus on track structure and maintenance.

This includes specialty trackwork, rail and other track material (OTM), fasteners, signals and signal engineering, rail welding and Maintenance-of-Way (MOW) equipment.

TRACKWORK & FASTENERS

We offer a full line of trackwork, components and fasteners for heavy haul and transit railways, with state-of-the-art manufacturing facilities located strategically around the globe. We are a leading manufacturer of specialty trackwork in North America, the United Kingdom and Australia, and have 100-plus years of experience designing and manufacturing cast manganese crossings for our global customer base.

Our high performance fastening solutions serve as fundamental components for rail infrastructure, playing a crucial role in enhancing reliability and minimizing track downtime.

TRACKWORK PRODUCTS

- Complete Turnout Panels
- Crossing & Switch Components
- Asymmetric Switch Points
- Solid Monoblock Crossings
- Fixed and Sliding Buffer Stops
- Rodding Solutions - Design and Supply
- Stretcher Bars
- Hollow Steel Sleepers

FASTENER PRODUCTS

- Rail Anchors
- Bonded Direct Fixation Fasteners
- E-clips
- ME Series of MACRO Armor for Concrete Ties

RAIL SERVICES

RAIL WELDING

With more than 25 million welds completed for Class I railroads over a 60 year history, Progress Rail has rail welding covered. Our fixed plant and mobile welding units feature a robust design and modern control systems for unmatched productivity. We also offer continuously welded rail trains, rail unloading and specialized welding support equipment.

Our newly designed narrow head welder can accompany our extended boom trucks while welding turnouts in tight spaces. Our 250-ton AC mobile welders have external pullers for closure welds, expanding our mobile offering of 180-ton fully integrated heads, extended boom units and excavator mounted welders.

RAIL SALES

Whether you need new or recycled rail, Other Track Material (OTM), complete turnout packages or a single trackwork component, our facilities can fulfill your requirements. As an authorized distributor for ArcelorMittal and Evraz Rocky Mountain Steel, we carry extensive new rail inventory at two steel mill locations – in Steelton, Pennsylvania, and Pueblo, Colorado – and can supply customized rail lengths to meet your specific requirements.

MAINTENANCE-OF-WAY & VEGETATION MANAGEMENT

Progress Rail is a global supplier of Kershaw Maintenance-of-Way (MOW) equipment, helping maintain rail infrastructure around the world. With the flexibility to lease or buy, we supply MOW equipment ranging from our industry leading Kershaw Ballast Regulator to tie cranes, scarifiers, tie replacers, shoulder ballast cleaners, sand and snow removal machines, utility and vegetation control machines and Hi-Rail equipment.

We also have dedicated aftermarket parts and service to ensure the reliability and extended life of your equipment.

SIGNALING

With more than 15,000 systems installed worldwide, Progress Rail has signal technology designed to keep trains running safely, while protecting vital infrastructure. We serve the signal industry from start to finish – whether you need signal engineering and project management support, signal design or software, train inspection, asset protection or installed grade crossing and wayside structures. We also offer specialized signal integration solutions, and can deliver comprehensive wayside packages to meet your needs, including on-site installation, commissioning services and quality control.

Our predictive condition-based monitoring for wayside structures takes innovation to the next level.



TrackSales.AUS@progressrail.com • progressrail.com • @Progress_Rail • @progressrail

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2023/2024 Enhanced Corporate Members



The PWI recognises the continued support we receive from our Enhanced Silver Members.

Silver Corporate Members





BUILDING BETTER
CONNECTED RAIL
INFRASTRUCTURE
AND FACILITIES



Abergeldie designs and delivers multi-disciplinary rail projects including rail formation rehabilitation, points and crossing renewals, 1500V OHW, HV Traction, station infrastructure, bridges and rail infrastructure: the complex infrastructure to build better communities.

- Track, points and crossing track slab reconstruction
- Rail civil works
- Railway station upgrades
- Geotechnical works
- Bridge and culvert construction
- Rail OHW and HV power works



WATER



BRIDGES



TRANSPORT



UNDERGROUND



ENERGY



REMEDIAION

AUBURN MAINTENANCE CENTRE 'ZERO' ROAD

"Possession of works were delivered in a safe and timely manner. Thank you for the effort that was provided in securing a great outcome." - Downer EDI

Abergeldie delivered heavy civil, building services, rail drainage remediation, HV services and retractable OHW wiring works.

To provide access to maintenance road "Zero" from the West, Abergeldie supplied and installed a 1 in 9 turnout and approximately 280m of new AS60kg track. Abergeldie was responsible for all resurfacing and shunt testing arrangements as well as overhead wiring and signalling construction. Testing and arrangements occurred over a staged programme over two possessions and included supply and installation of approximately 500m of system 9 overhead wiring, the installation of two shunt signals, one route indicator and the provision of electrical interfaces between the signalling interlocking and depot protection systems.

The Auburn Maintenance Centre operates 24 hours a day, 365 days of the year for the on-going maintenance for Sydney Trains along with driver training and fleet modifications. An integral asset of Sydney Trains' rail operations, the upgraded maintenance centre caters to the new fleet of Waratah Trains allowing for either two four-car trains or one eight-car train and enables use of the road for both maintenance and shunting.



HUNTER VALLEY TRACK RECONDITIONING WORKS FY19/20

"Abergeldie worked collaboratively with ARTC to successfully deliver both projects [and] demonstrated they are capable of delivering two large and complex track reconditioning projects in the one Closedown to a high-quality standard" - ARTC

As part of ARTC South Works FY19/20, Abergeldie delivered two track reconditioning projects over a three-day possession during the Hunter Valley Major August shutdown.

Farley - 330m track recon involving excavation and replacement with new formation to a depth of 1.9m BTOR on the Down Main. The site possessed many constraints including a haul route of 7600 metres for material backfill during the recon, significant infrastructure proximity issues, a heritage culvert, significant subgrade soft spot impacts and adjacent worksite interfaces.

North Fork - 230m dual track recon involving excavating 1.4m dual top of rail in tight confines, rail adjustment in a tight radius curve, installation of new steel level crossing panels, new culvert handrails and earthworks.

Abergeldie continues to collaborate with ARTC delivering major track reconditioning projects across the Hunter Valley region.





Creating Collective Success

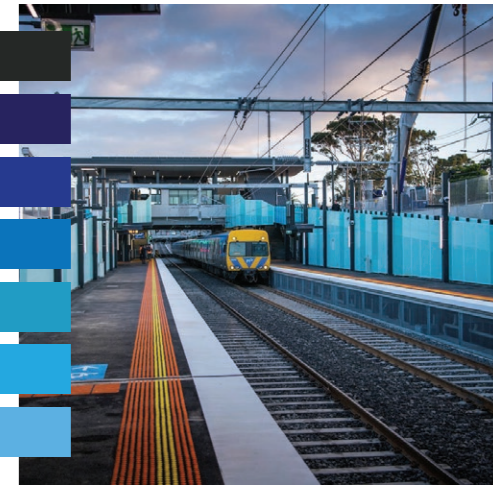


Agonis Group was formed out of a desire to assist clients to develop, design and deliver their projects safely and efficiently while still achieving a profitable outcome.

We are able to do this by combining our decades of rail experience in technical, commercial and managerial disciplines.

We will show you how to reduce project cost and manage risk with minimum contingency, through our range of specialist services:

- Constructability Assessment
- Estimating and Value Engineering
- Risk Management and Safety Assurance
- Commercial and Contract Management
- Project Management
- Business and Continuous Improvement Programs
- Asset Management



Agonis Group's expertise lies in connecting all parts of the railway system from project initiation through project development, delivery and the asset management phases.

We do this through the lens of construction and project management professionals which enables us to identify risk and create opportunity.

Realising innovation is a key factor in our success and a reason many organisations partner with Agonis Group. Our team has proven abilities to add real value through their depth of experience in both development and delivery of some of the largest railway projects in the country.



Systems Engineering & Safety Assurance

CORE CAPABILITIES



2.5K SAFETY HAZARDS CONTROLLED

160K REQUIREMENTS MANAGED

"The ARCH Artifex team possesses exceptional expertise in providing comprehensive support across the project lifecycle. Their team members consistently uphold the highest standards, demonstrating exceptional skills, a high-performing attitude, and an unwavering commitment to achieving the best project outcomes." - DEGNAN

Project Services

CORE CAPABILITIES

150+ PROJECTS DELIVERED



SYDNEY | MELBOURNE | BRISBANE

New in 2023



Human Factors Services. We have expanded our team's human factors capability and now have four human factors professionals **led by Antoine Jdeidani**. Our current work includes multiple Sydney Metro engagements, signalling upgrades and various other rail infrastructure commissions. Our team comes with an exemplary track record for industry-leading integration of HF processes, standards and principles across Transport, ICT, Medical and Energy sectors.

New in 2023



Environment & Sustainability. Our new and thriving service line **led by Gareth O'Brien** expands from the water and aviation sector into rail and roads. We are very excited to be providing holistic environment and sustainability services across all major infrastructure sectors.



Arup is at the forefront of transformative rail, helping shape tomorrow's sustainable travel.

Rail can transform lives, businesses and communities – we believe that we have a joint-responsibility with our clients, to do the best possible job for current and future generations.

Working in more than 140 countries, more than 15,000 designers, engineers, architects, planners, consultants and technical specialists collaborate with clients on projects of the highest quality and impact. We work across every mode of rail including light rail, metros and heavy rail. Our approach combines systems-thinking, the latest digital technologies and decades of experience.

Rail projects demand a complex mix of skills and insights – from initial strategy and economics, through to engineering, people-centred design, operations and asset management. Success depends on bringing all these elements together – brilliantly. That's why our technical expertise is always backed by sharp strategic thinking, whether we're optimising existing assets and services, or designing whole new railways.

We are a client-centric organisation with a reputation for pioneering innovations and for fresh approaches to age-old challenges. We bring together diverse professionals from around the world, as well as local experts from railways and maintenance backgrounds. We offer a range of services across rail structures (tunnels, bridges, station boxes), rail systems (track, electrification, signalling and train control), operations modelling, depot planning, and systems engineering and assurance.

Arup established a presence in Australasia over 50 years ago when entrusted with the structural design of the Sydney Opera House. The firm opened its first office in Sydney in 1963 and has been operating in New Zealand for over 30 years. We now employ over 2,500 staff in the region working from 13 offices across Australia, Singapore, Indonesia, Malaysia and New Zealand.

Arup seeks ever better ways to imagine, reimagine and reshape the built environment.

For more information contact
Anna Squire
Australasia Rail Leader
anna.squire@arup.com

We shape a better world | www.arup.com



ARUP

TRANSFORMING RAIL PROJECT LIFECYCLE THROUGH RISK ASSURANCE, IMPACT ASVISORY AND DIGITALISATION



Assurance in Rail:

Design, construction, safe integration and commissioning of rail systems require integrated compliance and risk-based approaches to address regulatory demands and safety risks. This continues to be essential during operation and maintenance. When rail stakeholders embrace technical and operational changes, that impact on systems and the safety of end users must be evaluated and assessed. Whilst innovative solutions emerge and rail assets become both physical and digital, assessment of cybersecurity risks becomes paramount.

Advisory in Rail:

Lifecycle optimization management of rail assets is underpinned by an integrated approach to design, construction, operation and management. Definition, apportionment, implementation of system requirements and validation thereof must be combined with sound management of the supply chain. Major rail projects with complex stakeholder relationships require a thorough systems' approach to succeed. Early management of safety, security and cybersecurity, human factors and EMC are key factors. In addition, rail stakeholders operating and maintaining the railway systems must address innovations and process changes for continued efficiency and safety to

the end user. Rail has a transformative potential as it can impact a single commuter journey as much as it can affect a country's wider economy. Faced with the ever-increasing demand for mobility and the effects of climate change, rail represents a sustainable long-term investment.

Digital Solutions in Rail:

Railways are seen as a sustainable and efficient transport mode. To capitalize on greener market demands, the industry must advance in a safe and secure way thus highlighting the need for digital services powered by domain expertise and best-in-class use of technologies. New digital solutions are changing how to design, construct and maintain railways.

Addressing transformations in the rail lifecycle, DNV can partner with you to:

Assurance Services:

- Conformity assessment services to railway subsystems and safe integration. Notified Body (NoBo), Designated Body (DeBo) and Assessment Body (AsBo) services.
- Certification of Entities in Charge of Maintenance (Rolling Stock ECM's)
- 2nd / 3rd party assessment of railway assets

- Independent Safety Assessments (ISA's)
- Independent Checking Engineer (ICE) / Independent Certifier (IC)
- Independent Verification and Validation (IV&V) of major railway projects (greenfield and renewals)
- Product certification against rail industry standards
- Certification of Safety Management Systems for railway undertakings (RU's), Infrastructure Managers (IM's) and other stakeholders
- Independent design reviews
- Railway product inspection at system, subsystem and component level
- Certification of critical processes (like welding)

We at DNV offer certification services for the certification of a quality system for welding of railway vehicles and components according to EN15085-2

Advisory Services:

- Railway RAM (Reliability, Availability and Maintainability)
- Railway Safety: risk analysis via a diversity of techniques and methodologies; management of system lifecycles and deliverables thereof (safety case, hazard log, etc.)
- Railway Verification and Validation at system, subsystem or component level
- Noise and vibration reduction advice
- Railway RAM (Reliability, Availability and Maintainability)
- Railway Safety: risk analysis via a diversity of techniques and methodologies; management of system lifecycles and deliverables thereof (safety case, hazard log, etc.)
- Railway Verification and Validation at system, subsystem or component level
- Noise and vibration reduction advice
- Ergonomics and Human Factors advisory services
- Systems engineering/integration support, within and without system boundaries (all interfaces)
- Project management support
- Electromagnetic compatibility (EMC) support

Why DNV?

DNV is an independent assurance and risk management provider, operating in more than 100 countries. Through assessment and digital assurance solutions, DNV helps companies build trust and transparency around products, assets, supply chains and ecosystems.

Whether certifying products, verifying claims or optimizing and decarbonizing supply chains, DNV helps companies manage risks and realize their long-term strategic goals, improving ESG performance and generating lasting, sustainable results. Driven by its purpose, to safeguard life, property, and the environment, DNV helps tackle the challenges and global transformations facing its customers and the world today and is a trusted voice for many of the world's most successful and forward-thinking companies.

Contact us:

DNV Business Assurance Australia Pty Ltd
 Mark Downey – mark.downey@dnv.com
 Amit Verma – amit.verma@dnv.com

- Support in developing and implementing Safety Management Systems for RU's, IM's and ECM's
- Operation performance optimization
- Maintenance performance optimization
- Running dynamics optimization
- Lifecycle costs (LCC) optimization
- Training

Digital Solutions: Digital services powered by domain expertise and best-in-class use of technologies and paradigms:

- IA / machine & deep learning
- Big data
- Blockchain
- BIM and digital twin
- LoT
- Sandboxing
- Cloud
- Safety, Security & Cybersecurity
- Digital strategy, transformation and assurance services
- Digital train paradigm for maintenance and operation optimization use cases
- Railway station 4.0 paradigm for maintenance and operation optimization use cases
- Application of Veracity for data storage, exchange, management, processing to facilitate connection between domain experts and data scientists, thereby resulting in valuable information for decision making
- Security/cybersecurity advice and assessment for protection of railway critical assets (control centres, rolling stock, technical and maintenance centres, etc.)

The science of solving engineering problems.

From design, engineering and construction, through to asset management and maintenance services, we enable infrastructure projects to fulfil their life-changing, community-enriching potential.

Who are we?

Lycopodium is a leading project management and engineering consultancy committed to providing timely and cost effective infrastructure solutions. We are trusted by private and public transport operators across the nation. Lycopodium staff have direct management experience on a range of rail and port infrastructure from heavy haul coal networks to mixed freight & passenger interstate networks, rail and port terminals as well as restricted grain lines.

What do we do?

Lycopodium specialises in rail engineering and operations that deliver quality through the provision of fit-for-purpose services and provides innovative solutions for integrated rail logistics. We provide a full suite of rail engineering design, rail project management and rail infrastructure management services. Our extensive rail delivery experience includes a host of projects for both major rail network owners and private rail operators.



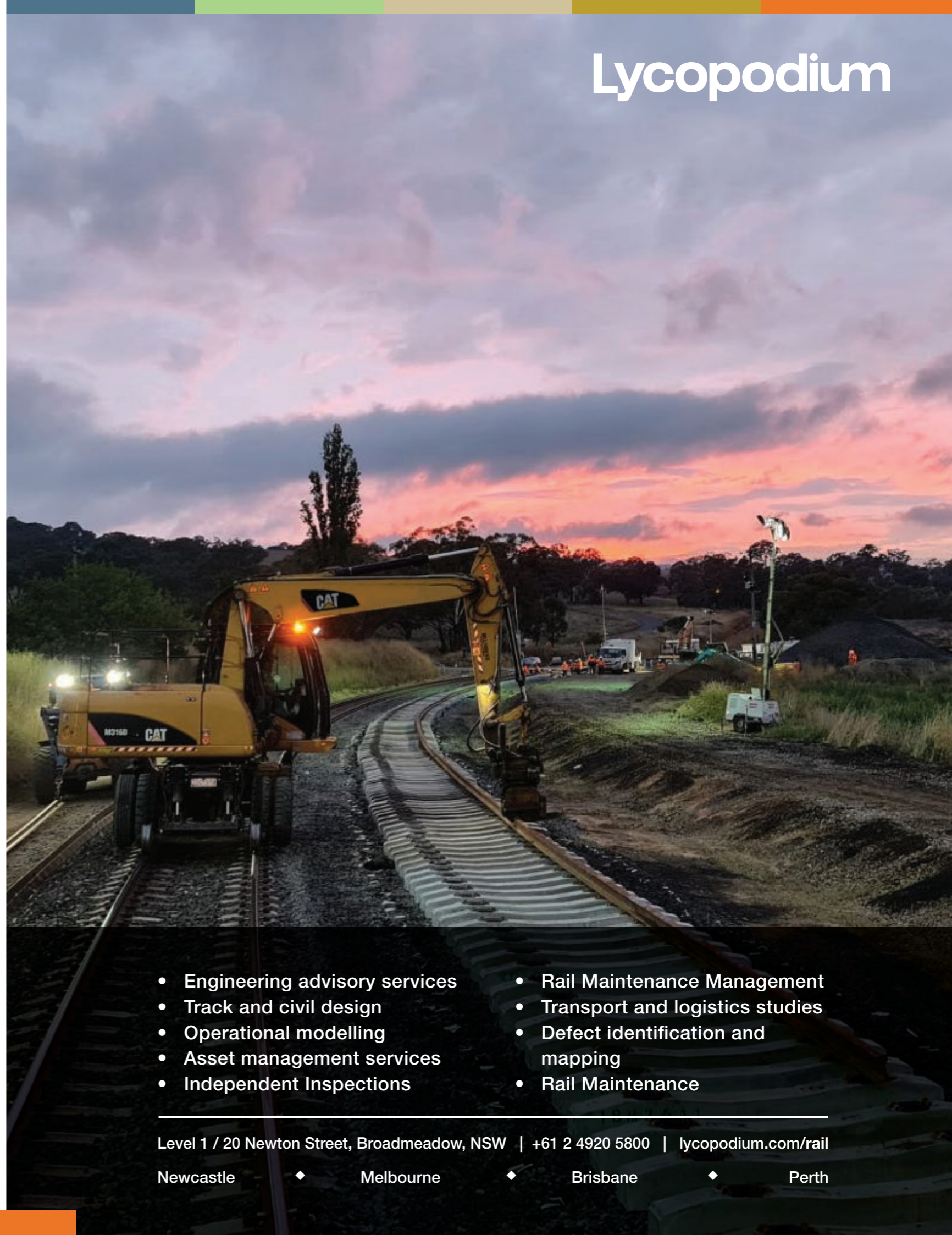
Engineering Design



RIM Services



Project Management



- Engineering advisory services
- Track and civil design
- Operational modelling
- Asset management services
- Independent Inspections
- Rail Maintenance Management
- Transport and logistics studies
- Defect identification and mapping
- Rail Maintenance

CREATED FOR RAIL



NEW ERA
ELECTRICAL SERVICES



Transport for NSW
Authorised Engineering
Organisation

OUR SERVICES:

LV | HV | OHW | E+B | TELCO

JENNY VALENTINO
Sales+Marketing Manager
0404 343 092



Life Enhancement

Smart services for an optimised machine service life

The continuous advancement of technology creates opportunities to increase machine efficiency. At the same time, the market is constantly changing. This requires an ability to adapt. You can also take advantage of these opportunities with your time-tested machines! We offer extensive and innovative services that will extend your machine's service life. In addition, you can ensure its performance or even improve it in a specific way.

Plasser Datamatic 2.0

Controlling operation and servicing digitally

Plasser Datamatic 2.0 is a modern fleet management system for track maintenance machines. The collected data will be stored in a central cloud platform, the MCO MachineConditionObserver makes it easily accessible via the web browser. The evaluation of the data in long-term observations makes it possible to detect signs of wear early on. All participants involved in the operation and maintenance of machines benefit from Plasser Datamatic 2.0.

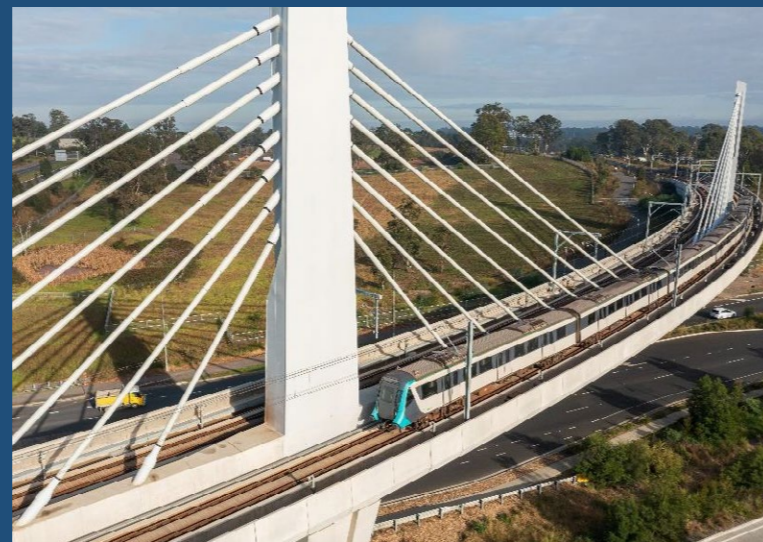


TRUSTED ADVISOR

Rail Planning Services is an independent consultancy, specialising in transport infrastructure projects. We provide project management and technical advisory services, solving challenging problems for both public and private sector clients.



Sydney Metro
West
Project Management



Sydney Metro
Engineering Design and Assurance (ED&A)
Constructability



Cross River Rail
Brisbane
Project Management & Constructability



Moorebank
Intermodal Precinct
Delivery Management



Over the last decade, Rail Planning Services has established itself as a trusted advisor, providing high value services to our clients.

We offer a combination of technical knowledge, hands-on site experience and management expertise across all phases of the project lifecycle.

Our flexible, multidiscipline teams drive projects, large and small, to successful delivery.

- Project Feasibility and Concept
- Project Management
- Constructability
- Asset Management and Assurance Services
- Technical Services
- Testing & Commissioning
- Operation & Maintenance

Glenn Bentley
Chief Executive Officer
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railplanning.com.au



Delivering technical excellence and innovation across Australia's rail network

Through our specialist expertise, we deliver advanced Rail and Metro infrastructure solutions for our clients and partners.

We are global specialists in a broad range of rail, metro and underground projects, having designed and delivered technical firsts in many countries. Our extensive experience in railway engineering consultancy services includes high capacity metro, passenger railways, light rail, freight and heavy haul railways.

Our strength lies in the wealth of knowledge within our extensive team of rail specialists.

SMC's large team of rail professionals has the capability and experience to bring practical and innovative technical solutions to challenging projects. The rail team comprises of highly qualified and experienced railway engineers, rail systems engineers, and technical officers, focused on delivering tailored solutions that meet individual project and client requirements.

Our Expertise

- Track
- Over-head Wiring
- Traction Power and HV/LV Electrical Engineering
- Civil and Drainage Engineering
- Combined Service Routes
- Structural and Specialist Bridge Engineering
- Buildings and Buildings Services
- Tunnels and Geotechnics
- Systems and Safety Assurance

Project Highlight

Innovative design delivering world-class Metro services to Western Sydney

- Sydney Metro West, Western Tunnelling Package

The Sydney Metro West project is a 24-kilometre metro line between Paramatta and the Sydney CBD, doubling rail capacity and improving connectivity for commuters.

The Western Tunnelling Package (WTP), will help deliver the key metro infrastructure necessary to support the future growth and economic development of Greater Sydney and contribute to the sustainable transport network, which provides mobility as a service for all.

The project encompasses nine kilometres of metro rail tunnels running between Sydney Olympic Park and Westmead, including two spur tunnels from the main running tunnels. SMC and our joint venture (JV) partner GHD have provided the client, Gamuda Australia and Laing O'Rourke Consortium (GLC), with substantial value through numerous design innovations.

Improving community outcomes

A tunnelling system built underground, the WTP provides an overall benefit to the Parramatta City area, constructed with minimal impact to local communities and surface infrastructure. This streamlined metro network is supported by the Clyde Stabling and Maintenance Facility (SMF), which will serve as a base for Sydney Metro West to control the state-of-the-art driverless system.

To create better connectivity, the team diverted an existing road alignment (via an overpass bridge) over the railway line entering the Clyde SMF area, minimising any traffic disruptions.

Alternative Tunnelling Alignment

The spur tunnel construction was positioned under an existing one-hundred-year-old sewer main at Clyde. By tunnelling underneath the pipeline, the Clyde Dive Structure will save approximately six months of construction time, as this solution does not require the current sewer system to be diverted to a new location.

Rigorous 3D structural analysis was completed to model the alignment of the existing sewer main and the spur tunnel. This technique identified the exact zone where the two components are likely to interact with each other. Following strict authority design guidelines, the design team has demonstrated that the spur tunnel can be constructed while ensuring impacts to the existing sewer will be kept within acceptable design limits.



Learn more about the Sydney Metro West (WTP)

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SOUTHERN CROSS CIVIL & RAIL TRAINING



SOUTHERN CROSS CIVIL RAIL TRAINING &

WHAT WE DO?

- Nationally accredited and non-accredited rail training
- Approved training providers for TfNSW & ARTC Network
- Providing rail training services for over 25 years
- Curriculum & tailored course material development to meet client's specific requirements
- Training facility located at Chullora, NSW
- Capability to deliver training nationwide

OUR MISSION

To facilitate and deliver the highest quality of accredited and non-accredited training in a supportive, cost effective, compliant and professional learning environment to rail industry stakeholders nationally, that meets client's needs and Rail Industry Regulatory, Standards and nationally endorsed Training Packages.

Summary of courses available

- TLIF0020 Safely access the rail corridor
- TLI27121 Certificate II in Rail Infrastructure
- Track Certification & Examination
- TLIB3102 Adjust Rail + ETM-06-10
- TfNSW Protection Officer Level 1 to 4
- TfNSW Handsignaller Level 1 & 2
- ARTC Protection Officer Level 1 to 4
- ARTC Handsignaller Level 1 & 2
- ARTC Track Vehicle Operator (TVO)
- Road Rail Vehicle Operator (TMO)
- UETDREL006 Overhead Power
- TLI42615 Certificate IV in Train Driving
- Shunting/Wagon Maintainer/Examiner



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CHULLORA, NSW, 2190

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SPENO
Rail Maintenance
Australia

When it comes to rail grinding in Australia and New Zealand, Speno Rail Maintenance Australia stands above all others.

Since 1969, Speno Rail Maintenance Australia has been supporting the world's biggest companies with rail grinding services, from the remote Pilbara region to Sydney's bustling CBD, and everything in between.

With over 50 years of experience in Australia, SRMA are world leaders in rail maintenance technology, diagnostics and rectification. We partner with our customers to offer premium service and products, seamlessly embedding into their operations and delivering quality work every time.

Australian-designed, manufactured and locally supported equipment and personnel, SRMA also provides ultrasonic rail flaw testing and track measurement systems.

Longevity



Unparalleled local experience: We draw upon decades of experience to provide expert advice

Partnership



We seamlessly partner with our clients and become embedded in their operations

Quality



We deliver a premium quality product to the highest level of precision and efficiency



Get your career on track



For an exciting and challenging career,
search for 'Sydney Trains careers' online.

Changing How we Move

Building an equitable, green and efficient future for rail



With expanding populations in the cities and regions, and Net Zero imperatives that are shaking industries, rail is an integral part of Australia's networks, and of delivering sustainable mobility solutions.

We bring together more than 67,000 multidisciplinary experts to deliver Future Ready™ solutions for our clients and the community.

SOME OF OUR PROJECTS



Parramatta Light Rail *Pictured below*
Sydney Metro City and South West
Southern Program Alliance
Inland Rail

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LEARN MORE



wsp.com/en-au/sectors/rail-and-transit



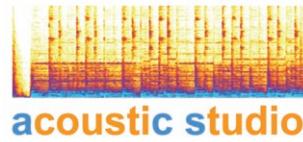
2023/2024 Corporate Members



PWI NSW would like to thank all its Corporate Members for their support. We look forward to your continued sponsorship in the future.

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Affective Rail	Overmorrow Consulting
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Holland	
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2023/2024 Corporate Members





2023/2024 Corporate Members



ACOUSTIC STUDIO

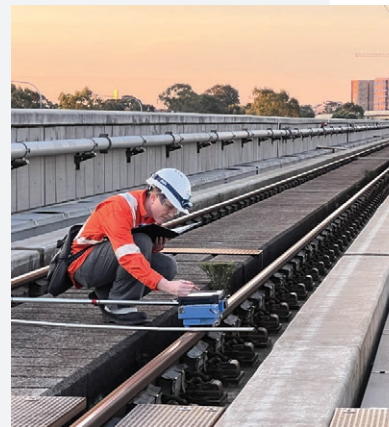
Passionate. Experienced. Innovative.

Acoustic Studio's team of dedicated rail noise specialists share a passion for rail.

We have in-depth experience across the full life cycle from route selection and concept design through to detailed modelling, procurement, delivery, operation, maintenance, policy, and regulation.

We work with a wide range of government and corporate clients across all rail modes – metro, passenger, freight, and light rail. We're experienced with rolling stock, track, the wheel-rail interface, tunnels, bridges, civil, stations, PA systems and electrical infrastructure – if it's rail then it's in our remit.

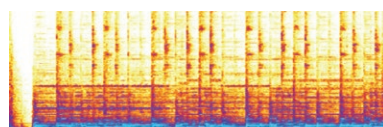
We thrive within a collaborative team to foster innovation and to seek win-win outcomes, where noise management delivers broader efficiencies and improved productivity.



Check out our website at www.acousticstudio.com.au and let's explore how Acoustic Studio can help your rail business or project "do better, with less" in acoustics, noise, and vibration.



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acoustic studio

acousticstudio.com.au



Critical Data and Reports on Rail Networks

Supporting better practices in railway maintenance, planning, operations and construction through practical applications of rail corridor imagery and LiDAR data.

Who We Are

Agonics is a wholly Australian owned rail technology and services business with locations in Sydney, Melbourne and Sunshine Coast. We work with some of Australia's leading rail networks and their Tier 1 contractors.

We integrate railway domain knowledge with market leading technologies to deliver solutions and services that make a tangible difference to your projects and operations.

Why Choose Us



Deep Industry Experience

Our team has completed many projects on Australian railway networks. We will bring our experience from other networks to optimise outcomes on your project.



Our Capability

Our team's deep spatial expertise, in house technologies and railway domain knowledge will ensure that we deliver the right project outcomes to you.



Low Risk

We are experts at mitigating risks in large scale LiDAR projects and in delivering fit for purpose information datasets to your organisation.



Delivering Insights, Not Just Data

When we commit our resources to your project, our focus is on delivering actionable information, not just data for data's sake.

Our Services

Network Integration of New Trains

With specialist workflows we assess sighting distances for signals at stop/in motion and platforms for stopping locations and DDA compliance.

Automated Measurement Reporting

We automate rail corridor measurement to reduce reliance on manual methods. We offer customised reports to meet your engineering standards.

Digital Asset Inventories for EAM

We digitise and update asset inventories while preserving critical legacy asset information.

Design Datasets

We deliver digital datasets of curvature, grade and assets to support digital systems and track upgrades.

Dilapidation and Completions Surveys

We document the rail corridor in 3D before and after construction work to ensure contractual compliance.

3D Visualisation

Our cloud-based visualisation solutions are the ideal way to visualise, collaborate and measure from within imagery and LiDAR point cloud datasets.

Contact Us



agonics



www.agonics.com


AGONICS

**Smaller,
Faster,
Safer.**



TRTTM

TRAC RAIL TRANSPOSER

Transforming your next rail construction project.

**AFFECTIVE
RAIL** 



PIONEERING PROGRESS:
**WHERE SUSTAINABILITY
MEETS CAPABILITY**



WE AREN'T JUST AHEAD OF THE CURVE – WE'RE SHAPING IT.

As pioneers in hi-rail technology, rail constructions, and civil works, we're propelling the industry forward while charting a sustainable course for the future, through electric / hybrid plant and advanced methodology.

TO LEARN MORE VISIT [ANRICGROUP.COM.AU](https://www.anricgroup.com.au)



RAIL



PILING



CIVIL



CONSTRUCTION



ENGINEERING



HIRE



UNLOCK YOUR PROJECT SUCCESS



Your trusted ally for project success, protection, and achievement

Our seasoned professionals offer tailored expertise for developers, contractors, builders public sector clients and more, ensuring you work with experts who grasp your field.

Experts who understand your industry

Anvelo understands challenges across industries like Energy, Rail, Metro, Water, Mining, Building and more.

Our services

- Contract Advisory
- Commercial Management
- Quantum Claims
- Planning & Project Controls
- Delay Analysis
- Expert Witness
- Dispute Resolution

Why choose Anvelo?

Our reputation is built on a foundation of excellence, reliability, and a commitment to your success.

When you partner with Anvelo, you're not just getting advisory services – you're gaining a trusted ally who will champion your projects, protect your interests, and ensure you step towards achievement.

- Simplify Complexity
- Holistic Solutions
- Tailored Excellence
- Expert Guidance
- Deep Industry Knowledge
- Propelling Progress
- Mediating Solutions
- Maximise Claims
- Enhanced efficiency

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L30, 91 King William St

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Robert Angus

**Principal and Group Capability Leader
Rail and Mass Transit, Aurecon**

Across Australia every transport strategy from the public sector calls for more freight to be carried on rail. This is nothing new, it has been this way since trucking became reliable and it's increased productivity became legal. Typically, the arguments to increase rail freight are around three central factors: safety and congestion is improved through reduction of truck movements; trains are much less carbon intensive (75% less) per tonne kilometre; and rail is more productive than trucks due to the cost per tonne kilometre.

That said, with more than forty per cent of freight tonnage on rail, rail is a critical haulage player in the Australian context.

If we then split the task between bulk and intermodal it is widely known that 90 per cent or more of bulk goods on the national network are by rail.

It is clear then, that it is the intermodal opportunity for rail that needs to grow. Aurecon is a very broad and large business, working across water, energy, waste, resources, buildings, transport, education, defence, health, logistics, digital, policy, regulation, economics and other disciplines for public and private clients.

A lot of those clients have responsibilities for road and rail based logistics as users, recipients, legislators, regulators, designers, builders, operators or owners.

The most informative of those clients are those that are not of the rail family, but are commercial enterprises making nuanced decisions about where to spend their money for the transport of their goods.

Rail is but a part player. After all, nobody should build a railway because they want a railway, but rather create the connections needed by society and economy to thrive in the most efficient manner.

And what that tells us is that while rail freight is often the most cost effective carrier once freight is on the railway, being cost effective at tonnes per kilometre is only a very small part of what makes a carrier attractive.

Rail is not a real player in the fastest exploding freight market domestically and globally, it is the rapid distribution to door and that solely belongs to airfreight, overnight intercity haulage and light commercial vehicle to the door.

It now is a multi-operator, multi-price taking of the delivery supply chain which can be achieved at a price consumers are willing to pay for 1-3 day delivery windows.

While that is terrible for the planet and costs more per tonne kilometre than rail, it is growing very rapidly and profitably.

Pushing efficiency for intermodal rail is possible by integrating customer information from multiple data sources, something that Aurecon is expert at, using standard data architecture and systems tools combined with leading edge AI capability.

Linking different parts of the system together with package tracking can also vastly increase the efficiency of the intermodal transaction between rail and road, and the resulting insights from that data can be used to reduce cost per transaction while also lifting client satisfaction. To be truly competitive requires embracing rail as a part of a complex client chain that starts and ends with the client's transactions and then working to thoroughly optimise around that reality.



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CONTACT

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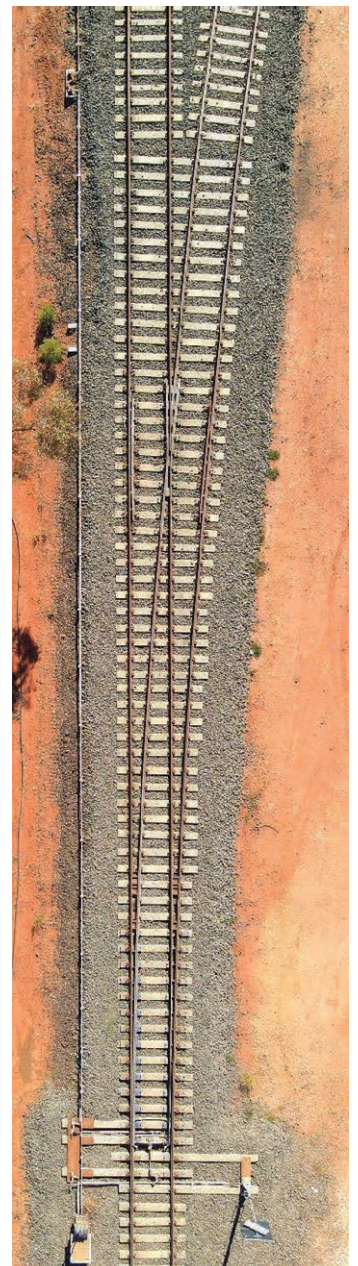
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RTBU members are committed to::

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- you being treated with respect at work;
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- the community's right to have a safe and effective transport industry; and
- working with industry partners and lobbying governments for investment in sustainable transport developments.

Find out more about the RTBU by visiting our website at www.rtbuexpress.com.au or by talking with your local workplace representative.

If you have any questions or would like to get directly involved with the union, contact us directly on (02) 92642511 and ask to speak to one of the RTBU's organisers.



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- **Discounted Home Loans** As an RTBU member you have access to discounted home loans through Endeavour Bank.
- **Members' Union training** Training programs are regularly conducted by the RTBU for members and workplace activists to assist them to get involved in organising their local workplace.
- **Funeral Benefit (on application)** Families of deceased financial members are entitled to a funeral benefit of \$2,500 to assist with funeral expenses.
- **Wills** Members have access to a free will service.
- **RTBU Holiday Cabins** RTBU members have access to the RTBU Holiday Park located at Jervis Bay within the national park. Members can also book holidays at the USU Aquatic Resort Port Macquarie at discount rates.
- The **RTBU Womens Campaign Committee** works across all sectors of the industry to identify, challenge and improve the working conditions of women members.

“The purpose of the RTBU is to organise workers in the transport industry to protect and build their rights at work”

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Versatile:

- Can be used for virtually all types of permanent way (narrow, standard, wide gauge, rapid transit, low- and high-speed railways).
- The simple design of the structural elements allows individual components to be specifically modified to suit the track configuration.

Efficient:

- Greater availability of components thanks to the simple, standardised design of the structural elements.
- Universal component design (or any necessary adjustments can be done at relatively little cost).
- High degree of mechanisation is possible due to simple step-by-step installation.
- Interruption of construction is no problem, as the installation steps are not time-dependent.
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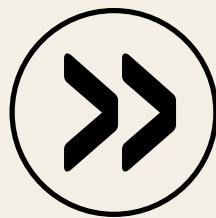
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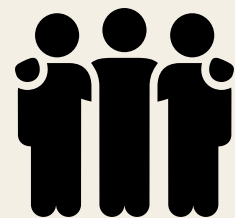
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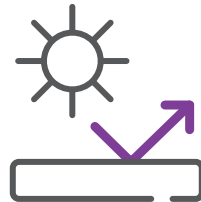
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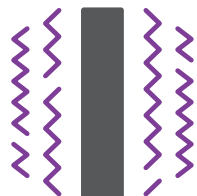
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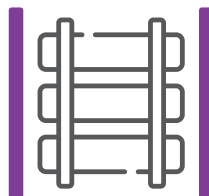
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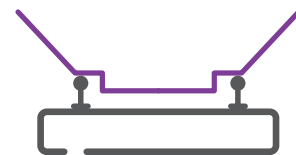
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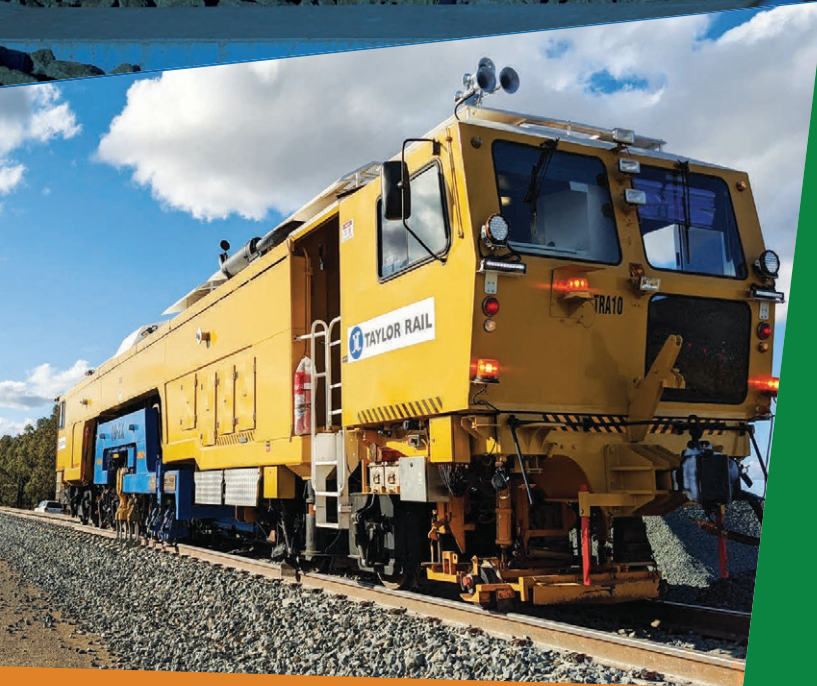
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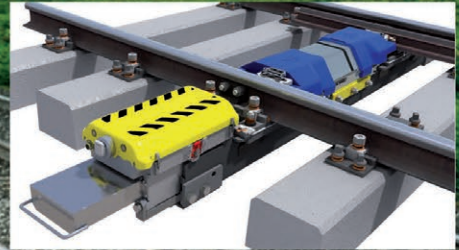


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this is a railway line.

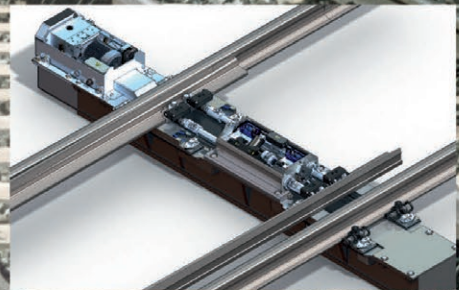
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