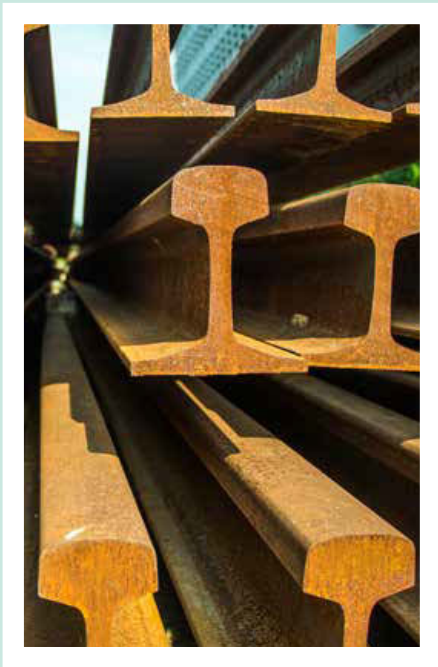


**DOING BETTER**  
**WITH LESS**



**2022 PWI NSW ANNUAL CONVENTION**

THE PWI IS PROUDLY SUPPORTED BY ITS PLATINUM MEMBERS



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**DOING BETTER  
WITH LESS**

## President's Welcome Address 2022



Good morning and welcome to the New South Wales, Permanent Way Institution's 2022 Annual Convention.

I'm Mark Harris President of the New South Wales Permanent Way Institution and it gives me great pleasure to welcome you all back for our first face to face convention in 3 years.

If you recall our last face to face convention we held was at Bathurst in 2019 where the theme was **"RAIL: Better by a Country mile"** and we had the privilege of having the Honourable Paul Toole MP, Minister for Regional Transport and Roads and Member for Bathurst as our key note speaker.

For anyone here today attending their first PWI Conference, Welcome! The PWI has been running our Annual Rail Conventions every year since the organisation's inception back in 1974 and this event has been established as one of the key dates in the rail calendar year in and year out and I am pleased to see quite the few new faces this year!

Unfortunately, the last two PWI conventions were live streamed events from the Museum of Contemporary Art in Sydney due to the ongoing impacts we faced dealing with the effects of the COVID 19 Global Pandemic.

Before I continue with the formalities for the convention, I would like to begin by acknowledging the Gadigal people of the Eora Nation, the traditional custodians of this land on which we meet today, and pay my respects to the Elders past, present and emerging. Our theme for this year's Convention is **"Doing Better with Less"** – really seeking to challenge an industry that has been fortunate to have a huge investment pipeline for well over the last decade, with much more to come for the next decade and beyond. Off the back of the last two years and the current economic challenges we face, we are questioning how well prepared we are to continue to deliver with the prospect of having less to do it with. Less capex and opex funding, less resources, less waste, less time, less room for mistakes. Have we become too complacent and are we therefore blindly walking towards failure? These are many of the questions we want to challenge today.

We are very fortunate to have Jim Betts, Secretary of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts as our key note speaker today and I'm sure Jim can set the scene for the conference and challenge us with his views from an infrastructure perspective.

I'm also joined here this morning with our Session Chairs, representing two of our Platinum Members: Paul Dudding, Operations Manager at CPB Contractors and Steve Butcher, Executive General Manger Rail and Transport for John Holland.

We have an exciting agenda planned for you today.

The first session this morning will be chaired by Paul Dudding from CPB Contractors. CPB is one of our inaugural Platinum Members and continues to provide great support to the PWI.

Our first speaker today is Rebecca Want, GHD's Market Leader for Transport in Sydney. Rebecca will be talking about optimising design and sharing the perspectives of the designer as an essential member of the supply chain and collaborative design solutions. Christina Levinson who is a Principal Organisational Consultant at iConnect Consulting will discuss Lean Construction and the opportunities to reduce time, effort and waste. Following Rebecca and Christina's presentation, Prath Nanthakumaran from Sydney Metro will introduce our PWI Young Achiever Award winner for 2022. The second session after morning tea will be chaired by Steve Butcher, Executive General Manger Rail and Transport at John Holland.

Like, CPB, John Holland is also one of our inaugural Platinum Members of the PWI and continues to provide us with great support. Kyle Forlong, Digital Engineering Manager at John Holland will provide us a detailed insight into their use of Digital Engineering and their application on projects.

Dr Natalie Galea who is a senior research fellow in the facility of Architecture, Building and Planning at the University of Melbourne will deliver a paper on a case study for a Monday to Friday work week and the mental health benefits.

Mike Hickey, a past President of the PWI and Director of Rail Planning Services will be provide some "historical" insights as to why the Transport Industry is currently faced with an avalanche of work and too few resources, Mike will discuss how the industry can rise to the challenge, as usual!

Before lunch Keith Middleton who is the MD of the Middleton Group and chair of the PWI Electrical Sub-committee will provide us with an update on what they are doing for electrical infrastructure people within the PWI. Craig Smith from Transport will also talk about innovations in traction power at Sydney Metro.

After lunch, John Armstrong MD of ARCH Artifex, will chair our final session for the day.

# President's Welcome Address 2022



We have an interesting panel session planned which will be chaired by Steve Fleck from the John Holland group and many of you would know Steve as he is the Chair of the PWI Steve Maxwell awards.

Our wonderful and insightful panel of Industry leaders today includes:

- Joeley Pettit – Director Corporate Affairs at the ARA
- Michael McLellan – Managing Director Knorr-Bremse
- Ainsley Simpson – CEO Infrastructure Sustainability Council
- Rebecca Want – GHD's Market Leader for Transport and,
- Mark Tait – Group Director at Investa
- Sean Bonham – Executive General Manager at Coleman Rail

Our final paper for the day will be presented by Emily Williams from Transport for New South Wales on Developing industry capability – Chullora Electrical Learning Centre.

Just a quick note to remind everyone that the PWI Awards night will be held on the 10th February at the IVY in Sydney early next year.

I encourage you all to push your teams to submit for the awards and note there a few new categories including that of a design award and electrical award that have been added to the program. This is a great opportunity for companies to show case their projects and be recognised as entrants and acknowledged as award winners. I encourage you all to apply for these prestigious industry recognised awards.

Last year the PWI also announced the formation of the OHW and Electrical Subcommittee. This subcommittee continues to provide a greater opportunity to integrate broader rail disciplines and increase our industry's capabilities. Our PWI new Cadet Program is going well with vast amounts of interest from our corporate members and with the next intake planned for later this year - if you have friends or colleagues with children finishing year 12, I encourage you and these young students to join our industry and apply for one of our cadet programs.

In closing, I wish to thank the hard-working PWI Committee, volunteers, sponsors and others who have worked to make the PWI's activities during the year such a wonderful success.

I would also like to acknowledge the PWI Convention Subcommittee, led by Steve Naumovski from Arch Artifex, who as always has organised a stimulating group of presenters and topics to challenge and inspire us around today's theme.

It is now my pleasure to introduce our Keynote Speaker for the convention, Jim Betts.

Jim was appointed as Secretary of the Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts in July 2022. Jim has spent over 30 years working in government agencies in the U.K, Victoria and (for the last eight years) New South Wales. Prior to becoming Secretary, Jim was a partner at strategy consultancy EY Port Jackson Partners, having previously led the New South Wales Department of Planning, Industry and Environment (DPIE) as Secretary for two and a half years. During that period, the Department undertook transformational reform in areas like land use planning, water, urban design, sustainability, climate change, biodiversity conservation and energy.

From 2013 through to 2019, Jim was Chief Executive Officer of Infrastructure NSW where he led the development of two State Infrastructure Strategies, oversaw the state's infrastructure program, delivered major state infrastructure projects and developed a state plan for the construction sector. Before moving to New South Wales, Jim spent five years in Victoria as Secretary for the Victorian Transport Department and four years as Victoria's Director of Public Transport. Jim strives to be a champion for inclusivity and social justice, not least for First Nations people. He is a supporter of St Kilda football club, but privately admits they are rubbish!

Would you all join with me in welcoming Jim to the stage to present the keynote address to the 2022 PWI Annual Convention.

I hope you all enjoy this year's convention.

**Mark Harris** - President, Permanent Way Institution  
New South Wales

# PWI 2022/23 NSW Committee



<b>President</b>	Mark Harris	<b>Editor</b>	Mark Xerri
<b>Treasurer</b>	Ben Crooks	<b>Membership Secretary</b>	Steve Naumovski
<b>Assistant Treasurer</b>	Mark Butler	<b>Website Manager</b>	Dan Collison
<b>Secretary</b>	Patrick Man		

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<b>Committee Members</b>	Gareth Beynon	Jonathan Chan	Scott Chapman
	Natalie-Eve Gambell	Sunail Hasnain	Neil Hobden
	Abdul Jamal	Keith Middleton	Prath Nanthakumaran
	Wade Perram	Sean Saranac	Julian Sharp
	Ray Slaviero	David Spiteri	Stuart Sutherland
	Jenny Valentino	Rebecca Want	Mark White

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<b>Subcommittee Members</b>	Lewys Rees
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<b>Life Members</b>	David Bull	Glenn Dewberry	Dennis Dobson
	Bob Ford	William Fowler	Kevin Golledge
	John Gorman	Don Hagarty	Mark Harris
	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.

# 2022 Convention Program – Doing Better With Less



## FRIDAY 4 NOVEMBER, 2022 – Grand Ballroom, Fullerton Hotel, Sydney

### 7:30 Registration Desk Open

8:30 – 8:45 Welcome Address

Mark Harris  
*NSW President*

8:45 – 9:15 Keynote Address

Jim Betts  
*Secretary of the Commonwealth  
Department of Infrastructure, Transport, Regional  
Development, Communications and the Arts*

### SESSION 1: Chaired by Piers Verman, Operations Manager - CPB Contractors

9:15 – 9:25 Introduction to CPB

Piers Verman

9:25 – 9:45 Paper 1 - Collaborating with intent

Rebecca Want and Rory Waddell

9:45 – 10:05 Paper 2 - What is Lean Construction and why should you care

Christina Levinson

10:05 – 10:20 Discussion / Questions for all papers

Paul Dudding

10:20 – 10:40 Young Achiever Award 2022 Presentation

Prath Nanthakumaran

### 10:40 – 11:20 MORNING TEA

### SESSION 2: Chaired by Steve Butcher, Executive General Manager Rail & Transport - John Holland Rail & Transport

11:20 – 11:30 Introduction to John Holland

Steve Butcher

11:30 – 11:50 Paper 3 - Digital Engineering – Practical Applications for Projects

Kyle Forlong

11:50 – 12:10 Paper 4 - Project5: A weekend for every worker

Dr Natalie Galea

12:10 – 12:30 Paper 5 - Embedded in Rail DNA

Mike Hickey

12:30 – 12:45 Discussion / Questions for all papers

Steve Butcher

12:45 – 13:00 Electrical Session

1. Electrical Subcommittee update

Keith Middleton – PWI

2. Sydney Metro – Innovations in traction power

Craig Smith – Sydney Metro

### 13:00 – 14:20 LUNCH

*(continued over)*

## 2022 Convention Program (continued)



### SESSION 3: **Chaired by John Armstrong, Managing Director - ARCH Artifex**

<b>14:20 – 14:30</b>	Introduction to ARCH Artifex	John Armstrong
<b>14:30 – 15:45</b>	<b>Panel Session</b>  Joeley Pettit – Director Corporate Affairs Australasian Railway Association  Ainsley Simpson - Chief Executive Officer, Infrastructure Sustainability Council  Mark Tait - Group Executive, Investa  Michael McLellan - Managing Director, Knorr- Bremse  Sean Bonham - Executive General Manager, Coleman Rail  Rebecca Want - Market Leader Transport, GHD	Stephen Fleck
<b>15:45 – 16:05</b>	Electrical Paper 6 - Developing industry capability – Chullora Electrical Learning Centre	Emily Williams - TfNSW
<b>16:05 – 16:15</b>	Discussion / Questions for all papers	John Armstrong
<b>16:15 – 16:35</b>	President's Award & Life Members	Mark Harris
<b>16:35 – 16:45</b>	Endnote and Announcements	Mark Harris

### **POST-CONVENTION EVENT: Sponsored by the ARCH Artifex**

<b>17:00 – 19:00</b>	Networking Event – Verandah Bar 55/65 Elizabeth St, Sydney
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# 2022/2023 Enhanced Corporate Members



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

## Platinum Corporate Members



## Gold Corporate Members





# 2022/2023 Enhanced Corporate Members



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

## Silver Corporate Members



## 2022/2023 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.**

Acoustic Studio	Kellogg Brown & Root
AECOM Pty Ltd	LINK Rail and Civil
Affective Rail	Linmag Australia Pty Ltd
Anric Group	Loram Pty Ltd
Anvelo	Martinus Rail
Arcadis	MCE
Arenco	Meadows Consulting Pty Ltd
Aurecon Group Pty Ltd	Mott Macdonald
Australian Mutual Bank	Multi Civil & Rail Services Pty Ltd
Beca Pty Ltd	Overmorrow Consulting
BloorRail Pty Ltd	Pidgeon Civil Engineering
Brefni Pty Ltd	Plateway Pty Ltd
Calibre	Preston Hire
CGC Recruitment	Quickway
CR Rail	Rail, Tram & Bus Union NSW
Degnan	Rhomberg Rail Australia Pty Ltd
Delkor Rail Pty Ltd	Robson Civil Projects
DiMattia Transport	Rocla Concrete Sleepers
Edilon Sedra Australia	RP Infrastructure
Enermech	RT Health Fund
Gartner Rose Pty Ltd	Shoal
Geoimage	STRAILlastic
Georgiou	Stantec
GHD Group Pty Ltd	Sydney Trains
Gilgandra Shire Council	Taylor Rail Australia
Hatch	Thermit Australia Pty Ltd
HKA	TSA Management
Holland	Turnbull Engineering
Infrastructure Nation Pty Ltd	VizionX Pty Ltd
International Lighting	voesalpine VAE Railway Systems Pty Ltd
Keltbray International	Willow Inc

# 2022/2023 Corporate Members





**DEGNAN**



**edilon)(sedra**



**GARTNERROSE**



**Georgiou**



**HATCH**

**HK>A**

**Holland**



# 2022/2023 Corporate Members



## 2022/2023 Corporate Members



## Keynote Address



### Jim Betts

Secretary of the Commonwealth Department of Infrastructure,  
Transport Regional Development, Communications and the Arts



Jim was appointed as Secretary of the Commonwealth Department of Infrastructure, Transport Regional Development, Communications and the Arts in July 2022.

Jim has spent over 30 years working in government agencies in the U.K, Victoria and (for the last eight years) New South Wales. Prior to becoming Secretary, Jim was a partner at strategy consultancy EY Port Jackson Partners, having previously led the New South Wales Department of Planning, Industry and Environment (DPIE) as Secretary for two and a half years. During that period, the Department undertook transformational reform in areas like land use planning, water, urban design, sustainability, climate change, biodiversity conservation and energy.

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Before moving to New South Wales, Jim spent five years in Victoria as Secretary for the Victorian Transport Department and four years as Victoria's Director of Public Transport.

Jim strives to be a champion for inclusivity and social justice, not least for First Nations people. He is a supporter of St Kilda football club, but privately admits they are rubbish.

# PWI GOLF DAY

# 3 March 2023

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 16 June 2023

*Join your colleagues and friends for fine food, drinks,  
networking and entertainment at the  
PWI NSW Winter Dinner*

**JOHN  
HOLLAND**







# FIRST SESSION

PWI Annual Convention 2022

**Chairperson: Piers Verman – CPB Contractors**

**Presentation: Paper 1 – Collaborating with intent**  
Rory Waddell and Rebecca Want

**Presentation: Paper 2 – What is Lean Construction and why you should care**  
Christina Levinson

**Young Achiever Award 2022 Presentation – presented by Prath Nanthakumaran**

# Paper 1 – Collaborating with Intent



**Rory Waddell** – General Manager, Sydney Region GHD

**Rebecca Want** – Market Leader Transport, Sydney GHD



Rory is passionate about collaboration between all facets of our industry and challenging the established way of working. Rory has managed and delivered a wide variety of infrastructure projects including Rail and Water and Wastewater projects in Australia, the UK, Ireland and the USA in a wide variety of contract forms.

Rory is the General Manager for GHD's Sydney business and a member of GHD's Australian Leadership Team.



Rebecca received the Australian Rail Industry's Career Achievement Award 2022 and has been one of the industry's strongest advocates for change and continuous improvement. In her current role as Market Leader Transport, she has accountability for driving business development, something she excels in through her commitment to strong relationships with clients.

## Abstract

When we work as one, we can continue to deliver city-shaping infrastructure that will connect people to places for generations to come.

The challenges of the past two years coupled with the current economic uncertainty highlight the importance of collaboration, intention, and innovation in design solutions. We have an opportunity now to challenge the status quo in infrastructure, across the supply chain.

This paper shares the perspectives of the designer, an essential member of the supply chain, in delivering infrastructure for the community. GHD will share ideas from the current experience of designers along with opportunities to achieve more with less in NSW - so that together we can deliver excellence in rail infrastructure with less waste and greater certainty. We will focus on:

1. Enhancing the visibility of the pipeline in the rail industry
2. Uplifting industry engagement across the supply chain
3. Exploring how working in partnership brings value and allows optimisation.

We will share thought-provoking stories that illustrate both the challenges and opportunities that lie ahead and inspire intentional and collaborative design solutions.



### Christina Levinson

Managing Partner, Lean Construction Advisory

Christina is a Managing Partner at the Lean Construction Advisory (LCA) and has over nineteen years' experience as a consultant in the field of LEAN and Organisational Development and Excellence as a successful advisor, trainer, and facilitator. Since 2008 this experience has also included extensive collaborative contracting facilitation, coaching and advice.

Throughout her career she has worked across a diverse range of industries including engineering, construction, mining, utilities, building, manufacturing, science and technologies as well as community services.

In 2019 she accepted a position on the National Board of Lean Construction Australia and New Zealand (LCANZ), the Australian and New Zealand branch of the global Lean Construction Institute.

Christina is passionate about people, culture and leadership and the continuous improvement that is possible within them.



### Abstract

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The construction industry is one of the world economy's largest sectors, representing 13 percent of global GDP, but has an intractable productivity problem with a meagre productivity growth of only 1 percent annually for the past two decades. Time and cost overruns are the norm, and overall earnings before interest and taxes are only around 5 percent despite the presence of significant risk in the industry.

Lean construction is a way of designing production systems in a construction environment with the aim of decreasing time, effort, and a waste. This leads to projects being done quicker, safer and at lower costs whilst ensuring that we are not wasting the talent within our industry.

Worldwide, the use of Lean construction has proven to increase the productivity of the construction industry. So, could this be the difference between "Apocalypse Now" and "Being in the Pub at 5pm for Happy Hour"?

# 2022 PWI Young Achiever Award



## Judges

**Julian Sharp** – CPB Contractors

**Prath Nanthakumaran** – Transport for NSW

**David Spiteri** – Transport for NSW

**Anna Murray** – Sydney Trains

**Matt Jones** – John Holland

**Rebecca Coffey** – Lycopodium

**Lee Taylor** – Laing O’Rourke

**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
<b>Total Score/Marks:</b>	<b>100</b>

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.



## Designing Inland Rail A2IS2P in the virtual workplace.



**Melissa Bong**  
**Bachelor of Engineering (Honours)**  
**Bachelor of Science (MIEAust)**  
**WSP**



### Abstract

In 2019, I began on the Inland Rail Albury to Illabo and Stockinbingal to Parkes (A2I & S2P) Project as S2P Package Lead. As part of this enhancement project, spanning over 350km of the existing ARTC Rail Corridor, WSP were required to deliver reference and detailed design at a total of 34 discrete sites. This project was expansive, both in location and complexity.

A key challenge on this project was the number of individual sites and deliverables, needing to be produced concurrently and with pressure from the wider Inland Rail Program. As the designs progressed through 30% options assessment and some, 30% detailed design, 7 disciplines produced over 30 options and submitted more than 600 drawings. I took to the challenge of ensuring interdisciplinary coordination and communication, using my thorough understanding of stakeholder needs in these brownfield enhancement designs, and liaising with environmental client teams.

In early 2020, the global pandemic resulted in the lockdowns across Australia, sending the team into the permanent work-from-home environment for the first time. This event was pivotal in the project, proving the agility and resilience of the team. I swiftly worked to guide our virtual setup rolling out the tools to collaborate effectively. Early planning meant the shift online was quite simple, with the project founded on the use of digital coordination tools such as shared drives and BIM360.

Digital tools were the catalyst for our successful delivery. Efficient process' meant we were able to develop enhancement options quickly and accurately. One of which, was the use of automated track clearance and clash analysis, where clash detection between LiDAR data of existing infrastructure and various vehicle models were run at intervals to instantly highlight areas of concern. Using data such as distance, type of clash (environmental, structural etc) the team were able to quickly identify problem areas and develop feasible options. From the initiation of the project, digital tools and the team's adherence were the key to delivering a well-coordinated, quality project.

Overall, A2IS2P saw the delivery of 34 enhancement sites across 2 detailed and 5 reference design packages, delivered during an unprecedented transition in the working culture. During disruptive times, I was made to quickly evolve and adapt to successfully lead the team in a new business-as-usual. The challenges of such a board and complex project were met by a resilient and determined team in a well-planned project founded on strong digital processes.

## 2022 PWI Young Achiever Award



### Experience as an Intern and Graduate Engineer on Major Rail Projects



**Sam Oostendorp**  
**Bachelor of Civil Engineering (Honours)**  
**WSP**



#### Abstract

This journal entry will delve into my experience as an intern and then graduate on major railway infrastructure projects.

In 2018 I was employed by WSP as an intern. I was immediately placed on the Southern Program Alliance Joint Venture (SPA), which was a part of the wider Level Crossing Removals Project with a focus on the Frankston Line upgrades. I spent three years as an Intern and now 18 months as a Graduate Engineer working on a brilliant project improving people's lives by reducing congestion, increasing the reliability of our network, and most importantly, making communities safer.

In 2018 I had only completed one year of my Civil Engineering degree at Swinburne University of Technology and honestly had no idea what I was walking into. Little did I know that I was entering a team working on one of the most significant infrastructure projects Victoria had seen. My ability to assist my colleagues was minimal due to my lack of experience working in a company like WSP. My tasks at the start were to familiarise myself with rail systems theory whilst also looking over other engineers' shoulders to see how they operate.

I found that the professionalism that the engineers, admin staff and managers displayed on the SPA project around me seemed to make its way into my approach to my university studies and resulted in my grades becoming better the longer I was on the project. Not only did university benefit from my learnings at WSP, but other personal endeavours and non-engineering related goals in the same time period seemed to be more successful.

By the time I had graduated from university, my exposure and experience in the industry as a 22-year-old had set me up fabulously to hit the ground running when I started a full-time role in January 2021. I had already been involved in submitting permanent way track packages for the Cheltenham and Mentone level crossing removals. I also led a small multidisciplinary package and completed a high-level Combined Services Route (CSR) tender design for the Neerim and Glen Huntly Road level crossing removal. The learning curve that I have been on for nearly four and a half years at WSP has not once flattened and continues to grow.



## Computer Vision for Tramway Defect Detection



**Farhan Rahman**  
B-Com M.Eng  
KPMG



### Abstract

The Asset Condition Assessment Project is a statistically driven method that ascertains the condition of Victorian train and tram assets through targeted inspections. One such inspection technique involved computer vision to detect tramway defects via video capture. PowerBI.

First, an open-source model was systematically selected. A video stream of a tramway was captured through a vehicle driving over a shared tramway in normal traffic conditions. The video is spliced into frames, and 112 images were manually annotated to teach the model what specific defects look like. The algorithm was iteratively trained with batches of data; model parameters were updated accordingly until validation metrics reached an acceptable threshold. The model predicted on live data that was used to create a heat map of tramway defects.

For a total of 80 epochs of model run (2.5 days runtime), a mean average precision of 0.61 was achieved at an intersection of union of 0.5 - considered very good for a model with only 100 training images.

Failed embedment will lead to movement in the rails due to a change in the transverse load applied by the embedding material. The dashboard heat mapping provides Asset Managers with easily identifiable areas of potential rail displacement.

This inspection methodology eliminates assessing an entire tramway, leveraging digital technology to optimise asset management decision making. Asset management labour

safety is increased by reducing exposure to the danger zone. The inspection costs associated with labour and tram downtime are reduced. The model becomes more accurate with more data and is repeatable as it is standardised and agnostic of human subjectivity.

This project entailed resolution of the following challenges:

- Defining a consensus on a condition assessment guideline. This process involved extensive consultation and managing expectations of rail designers, operators, asset owners and asset managers.
- Coordination appropriate sites for data collection based on criteria.
- Creating a repeatable solution that can be applied to a number of different tramway contexts.
- Developing a novel solution with little adoptable or adaptable material in tramway condition monitoring using computer vision on open source algorithms.
- Generating visualisations for reporting for easily digestible formats so that asset managers and engineers without a data science background can make informed decisions.

The model is adaptable to be deployed on assets such as roads, light and heavy rail tracks, overhead wiring; it is suitable to any linear asset which can be video-graphed in detail.

# 2022 PWI Young Achiever Award



## Tracking through a Pandemic

**JOHN  
HOLLAND**

**Chris Wills**  
**Bachelor of Engineering (Civil)**  
**Bachelor of Commerce (Corporate Finance)**  
**John Holland Group**



### Abstract

“Tracking through a Pandemic” is centred on the Gudai-Darri Project Phase 1 which is a 180km regional greenfield rail project connecting the Gudai-Darri mine to the existing Tom Price mainline and on to the ports in Dampier and Cape Lambert. The railway alignment is located along the Fortescue Valley, immediately to the north of the Hammersley Range some 1200km+ Northeast of Perth.

I was the John Holland Construction Manager for the rail construction works and was responsible for managing superintendents, supervisors, engineers, and blue-collar workforce to ensure the successful completion of the scope.

I was part of a team who were constantly adapting to change amid an ever-changing COVID-19 climate inclusive of regular border closures. As an east coast-based resource, I had my own personal challenges with these closures and was working with the project team to come up with solutions to help those who were impacted.

The project while impacted by these challenges was able to still demonstrate technical excellence and achieve a positive outcome for both the Client and the Contractor.

This report explores the importance of innovative thinking and applying lessons learnt from previous projects and experiences to overcome challenges and deliver a successful project. It highlights the importance of planning and flexibility required in the rail construction industry, as well as the need for effective change management when challenging situations occur.





# SECOND SESSION

## PWI Annual Convention 2022

**Chairperson:** Steve Butcher – John Holland Rail & Transport

**Presentation:** Paper 3 – Digital Engineering – Practical Applications for Projects  
Kyle Forlong

**Presentation:** Paper 4 – Project 5: A weekend for every worker  
Dr Natalie Galea

**Presentation:** Paper 5 – Doing Better with Less, embedded in Rail DNA  
Mike Hickey

**Electrical Subcommittee Session** – Keith Middleton

**Presentation:** Sydney Metro – Innovations in traction power  
Craig Smith

## Paper 3 – Digital Engineering – Practical Applications for Projects



### Kyle Forlong

Digital Engineering Manager

John Holland Group

Kyle has 8 years' experience in the construction industry delivering projects across the residential, commercial, and infrastructure sectors of both Australia and Zealand. Some notable projects include the Delivery of Digital Engineering for WestConnex 3B, Sydney Gateway, and numerous support roles on large-scale road, rail and tunnelling projects in Australia. Kyle is formally trained as an architect and strives to use these skills to find and establish connections that are not obvious between different project disciplines, enabling efficiencies and deconstructing industry silos.



### Abstract

The Australian construction industry is in a state of Digital Transformation. Innovative digital principles are being adopted to improve productivity, efficiency, drive safer outcomes, and reduce costs associated with the construction, operation and maintenance of our built environment. At John Holland, our Digital Engineering (DE) approach is intrinsically focused on the use of Digital Information and methods that enable improvements in the way we design, build, and operate our assets. Our Technology Engineering and Knowledge (TEK) (Digital Engineering & Technology) team is the driving centre of digital excellence within our business supporting the delivery and implementation of key functional areas of BIM | VDC (Virtual Design Construction) | GIS (Geographic Information Systems), Survey, and Technology across Australia.

From an industry perspective the requirements for digital deliverables have matured significantly recently with clients now expecting a higher level of delivery by default. This results in data rich 3D models as the new normal opening avenues for significant advancements and efficiencies for construction. The question our teams are often asked on projects is no longer; **“can we do this?”, but instead, it’s “what more can we do with this?”** The following solutions are everyday innovations achieved by our project teams as a response to this very question.

**BIM | VDC** - Our teams regularly leverage 3D information to aid a variety of activities including Design Management, Coordination, Communication, Planning, Estimation, Safety in Design & Constructability. The core focus is to deliver process and solutions that enable and enhance the way we win work and deliver our projects.

**GIS & Geospatial** - GIS & Geospatial services and solutions provide geographical context to our work winning and delivery teams; allowing our users to augment a variety of information that is already present in siloed areas of a project. This enhances the geographical context of design and construction, allowing us to more accurately visualise the location and compliance restraints of constructability issues that may emerge, such as location of utilities. In addition, it provides us the ability to undertake activities such as permits to excavate or planning of occupations using all available contextual information.

**Technology** - As a critical part of DE&T strategy to enable John Holland to embrace the rapid technology developments and transform successfully for a digital future, our key technology focus areas include leveraging existing 3D content for Construction simulation (including supplementing Activity method statement approvals), Design Visualisation (for signal sighting digitally), Virtual Reality, Augmented Reality, Mixed Reality (for inductions, training, and toolbox talks)

Our “building virtually first” approach provides valuable insights, creates efficiencies, and delivers cost savings to every decision we make.



### Dr Natalie Galea

Senior Research Fellow  
University of Melbourne

Dr Natalie Galea is a Senior Research Fellow in the Faculty of Architecture, Building and Planning at the University of Melbourne. She studies human rights and gender justice in the construction sector and human rights in elite sport.

Natalie recently completed a study on the effects of a five day working week on the wellbeing of construction workers and their families. She has undertaken major industry and government funded research focused on policy, practice and gender equity in the Australian construction sector.

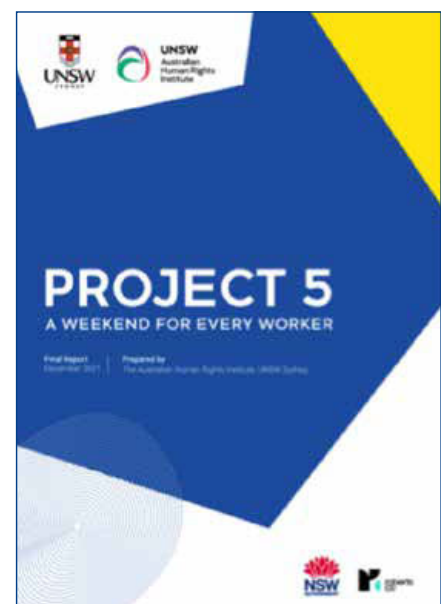
Prior to commencing her career in academia, Natalie worked for almost two decades as construction project manager in Australia and the Middle East. She is also an Australian Olympian.



### Abstract

The Australian construction industry is a powerhouse of the nation's economy. With more than 1.15 million workers, it is Australia's third largest employer. However, despite its importance to the economy, construction sector conditions are not kind to workers. Every second day in Australia, a construction worker dies by suicide. A strong body of evidence suggests that working conditions are harmful to the physical and mental health of construction workers. For the long-term sustainability of the industry, and the health and wellbeing of the wider community, it is vital that these conditions are improved. Currently in Australia, it is standard practice for construction workers to work at least a half-day on Saturdays, meaning they miss out on leisure activities with their family and friends who work in other industries.

'Project 5: A weekend for every worker' examined the potential impacts and benefits to workers at the \$341 million Concord Hospital Redevelopment, which trialled a Monday-Friday work week and opened to patients on time and on budget. The two-year study's findings demonstrate the success of providing a weekend for workers in the construction industry and the positive social benefits of innovating as a sector to improve work/life balance while ensuring the economic viability in delivering our projects. The study was funded by Health Infrastructure NSW and Roberts Co.



## Paper 5 – Doing Better with Less, embedded in Rail DNA



### Mike Hickey

Director  
Rail Planning Services



Mike Hickey has worked for over 50 years in the Transport Industry in a variety of senior positions in both government and private organisations.

He has a degree in Civil Engineering, a Graduate Diploma in Personnel Management and Industrial Relation, various Diplomas, and a Certificate IV in Training and Assessment .

He is a Fellow of the Institution of Engineers, on the National Engineers Register and registered to practice as an engineer in Queensland and Victoria, He is also a Life Member of the PWI.

He is currently a Director at Rail Planning Services and a Lecturer at the University of Tasmania in Rail Engineering.

### Abstract

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The presentation will provide some “historical” insights as to why the Transport Industry is currently faced with an avalanche of work and too few resources. The presentation will also discuss how the industry can rise to the challenge, as usual.



In 2022, the PWI NSW Electrical / OHW Subcommittee launched with an electrical forum and technical meetings.

### **Purpose of PWI Electrical / OHW Subcommittee**

It is our purpose to bring together the electrical and OHW rail community, to share knowledge, build community, and to support industry capability development.

### **Overview of the PWI Electrical / OHW Subcommittee**

The Permanent Way Institution NSW is offering an opportunity for like-minded colleagues to access networking opportunities in addition to industry leading technical workshops to promote knowledge sharing and build capability within the OHW and rail power sector. Opportunities to integrate with our broader rail disciplines will also be integral to increasing the overall industry capability within the PWI NSW Network.

Keep an eye on the PWI NSW website [pwinsw.org.au](http://pwinsw.org.au) for more details regarding industry events and OHW and Electrical specific technical workshops.

### **For more information, please contact:**

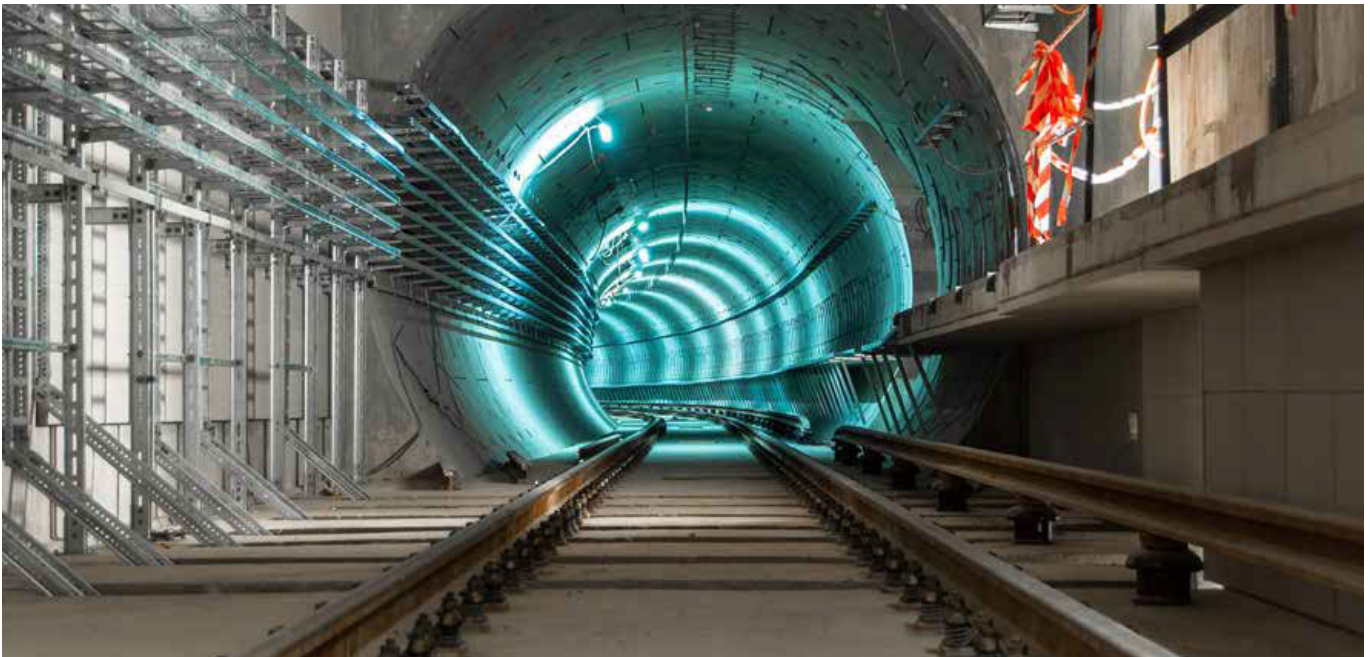
Keith Middleton, OHW and Electrical Subcommittee

[Keith.Middleton@middletongroup.com.au](mailto:Keith.Middleton@middletongroup.com.au)

Or sign up via our website

### **Specific Events and member benefits** • Regular Technical Meetings with world class speakers

- Regular Networking Events
- Multiple site visits planned for 2023
- Electrical Innovation Award presented at the PWI annual awards ceremony



# Sydney Metro – Innovations in Traction Power



## Craig Smith

Director of Engineering  
Sydney Metro



Craig Smith is currently the Sydney Metro Director of Engineering, managing Mechanical and Electrical disciplines enterprise wide.

Craig brings with him nearly 40 years of Engineering and Railway and experience, having started on the tools as a fitter and turner and progressing to a Bachelor in Mechanical Engineering with studies in pure mathematics and currently working on a doctoral thesis for quantitative risk and multi layered co dependencies. Craig is also involved in the tertiary education field lecturing in Advanced Manufacturing and being a member of the Professional Advisory Board for the Faculty of Engineering and IT at UTS, as well as a sitting member on the Deans Judging Panel for academic awards.

In addition Craig is also the product champion and initiator, for the introduction of mechanical gap filler into curved platforms in brownfield conversion.

## Abstract

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### Sydney Metro – Innovations in Traction Power

The utilisation of 25 KV AC for traction power on future Sydney Metro projects has a number beneficial outcomes, directly relating to better outcomes for less resources.

The first saving is in cabling and volume of copper for the equivalent power delivered. Power is a simple voltage time current for Kilowatts of power. Operating at a higher voltage results in a lower current value for the same power consumption, which respectively equates to smaller cross section of the cabling.

Traditional 1500 volt DC traction systems require additional traction substations along the corridor to maintain the appropriate contact wire voltage. Utilising 25 KV AC, reduces the need for these additional infrastructure elements and the expensive corresponding real estate and construction costs.

The next saving is the conversion of the bulk infeed power into tractive effort at the wheel. 25 KV AC systems have a higher energy efficiency with reduced losses of electrical energy.

These simple examples directly correlate to achieving, more for less by introduction of a different traction power strategy.



# THIRD SESSION

PWI Annual Convention 2022

Chairperson: John Armstrong – ARCH Artifex

Discussion Panel Member Biographies

# Discussion Panel – Doing Better with Less

## Panel member biographies



### Sean Bonham

Executive General Manager  
Coleman Rail

Sean's rail industry experience started some 38 years as a trainee train driver and has progressed through various operational and management roles including the Group General Manager Operations for the Melbourne Metropolitan rail network. In 2010, Sean decided to move into rail construction and joined Coleman Rail where he currently holds the role of Executive General Manager and has the national responsibility for the management and leadership of the business. In 2017, Coleman Rail was acquired by the ACCIONA.

During his tenure, Coleman Rail has grown from a local Victorian subcontractor into a national head contractor and overseen significant business growth. Sean currently sits on 6 alliance boards and other various project executive committees. He is a hands-on leader and is strongly committed to continually building an environment where his team can 'be their best'.



### Michael McLellan

Managing Director  
Knorr-Bremse Australia Pty Ltd

Michael McLellan has been Managing Director of Knorr-Bremse Australia Pty Ltd since 2004, including leading the acquisition of Sigma Air Conditioning in 2010. Knorr-Bremse Australia employs 480 people in Australia and is part of the German head quartered Knorr-Bremse Group, which employs 28,000 people in 30 countries globally.

Michael served as a Director on the Rail Manufacturing Cooperative Research Centre (RMCRC) board from 2016 until 2020. He has been a Director of the Australasian Railway Association (ARA) since 2018. Prior to joining Knorr-Bremse, Michael's experience includes various senior management positions with GUD, Honeywell and Caterpillar. Michael holds a Bachelor of Engineering and a Post Graduate Diploma of Business.



### Joeley Pettit

Director Corporate Affairs, Passenger Rail and Sustainability  
Australasian Rail Association

Joeley is a corporate affairs and sustainability leader with experience working in large and complex organisations across many industries.

She leads the ARA's corporate affairs, passenger rail and sustainability portfolios, working closely with members to support the advancement of the rail industry.

She believes rail has a crucial role to play in the sustainable development of our cities and communities and is focused on highlighting the essential work of our industry to support the nation's growth and success.





# Discussion Panel – Doing Better with Less

## Panel member biographies



### Ainsley Simpson

CEO

Infrastructure Sustainability Council



Ainsley joined the ISC in May 2016. Ainsley works across the infrastructure industry to advance sustainable outcomes through the deployment and development of the IS rating scheme. Ainsley is committed to making a real impact in organisations that anchor in their core values, develop their people and support the advancement of women with leadership aspirations.

### Mark Tait

Group Executive, Head of Commercial Developments  
Investa Property Group



Mark is a Group executive and Head of Developments for Investa, specialising in complex large-scale developments. He has worked across a number of Investa's major development assets and leads the team on new development opportunities for both internal and external clients. Mark has over 20 years' experience in the construction and property industry.

Mark has specialised in the successful delivery of major projects across multiple stakeholders including owners, construction and design teams, clients, tenants and authorities.

### Rebecca Want

Market Leader Transport, Sydney  
GHD



With 20+ years' experience across transport and infrastructure projects, Rebecca brings specialist knowledge in Business Case Development, Construction, Customer Strategy, Design & Delivery Management, Program Management and Station Development across both public and private transport infrastructure projects.

She is passionate about developing and nurturing an innovative business environment where client-focused professionals can contribute to highly liveable, progressive and sustainable cities, and is motivated by creating strong leadership cultures throughout GHD, with a particular devotion to the professional development and advancement of younger members of the business. Rebecca has completed a Masters of Business Administration with high distinction average and holds a Masters of Engineering Science in Project Management and a Bachelor of Engineering (Civil).



# **PWI Awards Night**

**February 2023**

You are invited to the 2023 PWI Awards

- **2022 PWI Ken Erickson Innovation Award**
- **2022 PWI Welders Award**
- **2022 PWI Alan Barham Maintenance Award**
- **2022 PWI Steve Maxwell Platelaying Award  
(Minor & Major categories)**
- **2022 Electrical Safety and Quality Award**

**Note: The Young Achiever will be announced at the 2022 Convention this year**



# PWI YEAR IN REVIEW

## PWI Annual Convention 2022

**Executive Breakfast**

**Awards Night**

**Welders Award**

**Steve Maxwell Platelaying Award (Major)**

**Steve Maxwell Platelaying Award (Minor)**

**Alan Barham Maintenance Award**

**Ken Erickson Innovation Award**

**Winter Dinner**

**Technical Meetings**

# Executive Breakfast

5 May 2022



Having been postponed several times over the last couple of years, we finally saw the return of the Executive Breakfast on Thursday, 5 May 2022. We had the privilege of having Rob Sharp, Secretary of Transport for NSW as our keynote speaker.

Rob provided a short presentation on the future of rail and transport in NSW. It was a pleasure to hear from Rob on Transport's priorities over the medium term, how Transport for NSW is working to improve engagement with industry, and some great insights on his favourite parts of the role!

We then had an interactive Q&A session to dive deeper into those topics and other key themes as we work together to deliver the transport network of tomorrow, including authentic discussions around challenges and opportunities, particularly for the construction industry.

We had a great morning of networking and feedback for the event was overwhelming positive. Join us for our next Executive Breakfast by becoming an Enhanced or Corporate Member to receive an invitation to this exclusive event in 2023.



# Awards Night

11 February 2022



After two years of mostly online events, we had the amazing opportunity to celebrate the people of our industry and their achievements in-person at the 2021 PWI Awards Night on Friday, 11 February 2022.

We had a great evening of networking with 230 people in attendance. The night was hugely successful with positive feedback from all those in attendance.

We also had some excellent award presentations, which were a testament to the great talent and work ethic in our industry that we can all be proud of.

Congratulations to all the award winners and those who were recognised as 'Highly Commended' in the respective award categories. The calibre of the entries continue to impress each year.

Make sure you look out for the 2022 PWI Awards applications and start thinking about what you could put forward to be recognised at this great industry event.

We look forward to seeing your nomination for the 2022 PWI Awards when applications open.



# 2022 Welders Award



## Judges

**Ross Ginn**, Rogin Ultrasonics Pty Ltd  
**Ben Muscat**, Sydney Trains  
**Mark White**, Speno Rail Maintenance Australia Pty Ltd



The PWI introduced this Award in 2002 to recognise the efforts of field workers in the area of rail welding.

This award attracts entries from all over the State, which is testimony to the wide geographic base of PWI members. This Award is proudly sponsored by two of our Corporate Members, Pandrol and Thermit.

Judging Criteria is based on:

- Minimum 70 welds in the last financial year (2020/2021)
- Failure Rates of Ultrasonic and alignment defects
- Site presentations post welding process
- Safety
- Consideration of the environment
- Difficulties overcome i.e., access to site

## 2021 PWI Welders Award Winner

The winner of the 2021 PWI Welders Award was announced at the PWI Awards Night in February 2022.

The winner of the 2021 PWI Welders Award was **William Stapley** from **MP Rail**. Congratulations to William who was also the winner of the award in 2020!



Nominee	Company	Total Welds	Ultrasonic Defects	Alignment Defects
Guy Johnson	Quickway	319	0	1
Annuneita O'Vaai	MCR	211	0	0
Adam Davidson	ANRIC	191	0	0
Chris Walton	Sydney Trains	80	0	0
William Stapley	MP Rail	933	0	0
Zac Pace	MP Rail	862	0	0
Anthony Furness	MP Rail	640	0	1
Geoff Hopkins	MP Rail	651	0	0
Kisina Sitiveni	Quickway	235	2 (Dips)	0
Josh Ward	Quickway	75	0	0
David Edward	Quickway	104	1	0

The closing date for submissions for the 2022 PWI Welders Award is on 15 December 2022. Please contact Mark White (Markw@speno.com.au / 0407 940 577) for submissions or enquiries.

# Steve Maxwell Platelaying Award



## Judges

- Stephen Fleck** – John Holland
- Mark Harris** – Coleman Rail
- Cory Gray** – John Holland
- Jason Walmsley** – Jacobs
- Richard Morgan** – Rhomberg Sersa Rail Group



Steve Maxwell

Steve Maxwell was a Member of the Permanent Way Institution Committee for many years, and his hard work and dedication enabled the PWI to continue during some difficult times. Steve was an informed Judge of the Platelaying Award, and also an entertaining speaker and presenter.

Steve's rail career began in NSW after graduating in Civil Engineering in 1970 and he progressed from District Engineer to become General Manager Engineering for CityRail, covering the suburban and interurban areas of Sydney. He made a huge contribution to the rail industry through his early advocacy of asset management as a key part of the rail engineering discipline, and with the introduction of numerous new infrastructure maintenance and asset management techniques and capabilities.

Steve's untimely and premature death in 1997 was a great loss to the PWI and took from the industry a great engineer, friend and personable and supportive leader.

The Committee deemed it appropriate to name the prestigious Platelaying Award after Steve Maxwell.

This annual Award is made to encourage excellence in platelaying, and to bring to public notice the skills required to gain such excellence. The Award is made to the staff responsible, who in the opinion of the Judges, best demonstrate this excellence. In other words, the Award will indicate a permanent way job well done.

Eligible projects are any track renewal, or construction work, completed in the last financial year by, or under the control of, a Member of the NSW Section, whether on a government or private railway system.

There are two Platelaying Awards – one for Minor Works (less than \$3m in value) and one for Major Works (greater than \$3m in value).

<b>Judging Criteria:</b>	<b>Scoring Category</b>	<b>Available Score</b>
	Accuracy to Design and Survey	50
	Site Presentation	50
	Neatness of Fit of Components	50
	Difficulties Overcome	25
	Safety	25
	Consideration of the Environment	25
	Closeness to Planning and Timetable	25
	Closeness to Budget	25
	Level of Client Satisfaction	25
	<b>Total Score/Marks:</b>	<b>300</b>

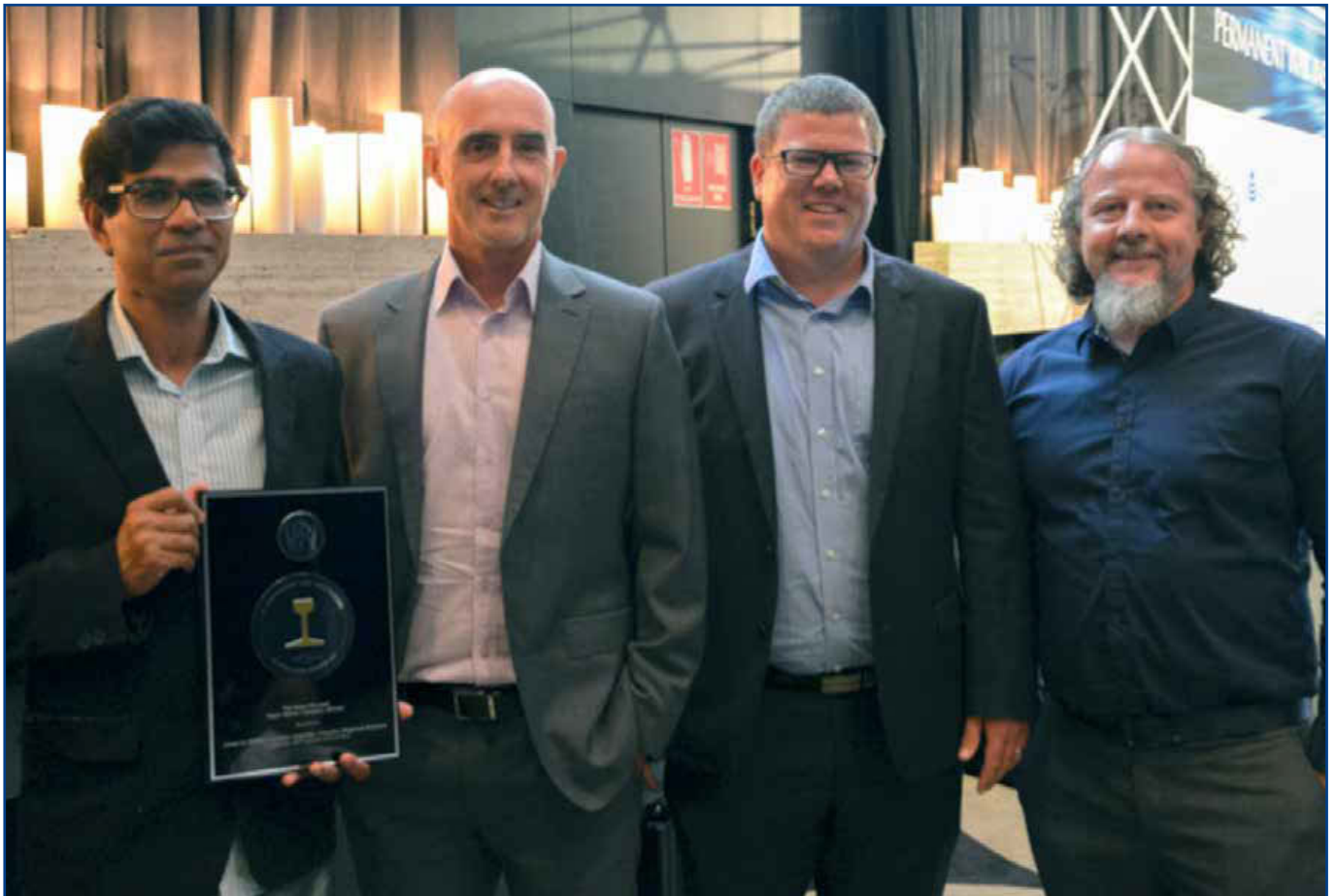
## Steve Maxwell Platelaying Award



### 2022 Awards Night – 2021 Steve Maxwell Award Winner – Major Works Category

The 2021 Steve Maxwell Award – Major Works Category was presented at the PWI Awards Night in February 2022.

**Transport for NSW** and **John Holland CRN** were the winners of the 2021 PWI Steve Maxwell Award for the Major Works Category for their outstanding work on the **Junee to Griffith Corridor Upgrade**.



Representatives from the Junee to Griffith Corridor Upgrade Team.



# Steve Maxwell Platelaying Award

## MAJOR WORKS CATEGORY



### Junee to Griffith Corridor Upgrade

The project scope was to upgrade the section of brown field railway from 20.25TAL to 25TAL.

The specific deliverables included:

- Refurbishment of 21 turnouts
- Installation of 1 repurposed turnout
- Resleepering and respacing
- Rail grinding of 172km of second-hand rail
- Upgrading of 6 transom top bridges
- Resurfacing of 40km of track
- Superelevation improvement of 6 curves
- Detailed scope and design development
- Development of engineering waiver
- Development and implementation of speed study to increase to 140km/h
- Recovery and relocation of 132km of second-hand rail
- 32km of rerailing using second-hand rail
- Upgrade of 17 level crossings
- Upgrade of 6 sidings



The other finalists in this category were:

- Riverina Intermodal Freight and Logistics Hub – Track Construction | **Laing O'Rourke Australia**
- Wells Street Junction: Redfern 258 & 260 Crossover Renewals | **Sydney Trains**
- WE26 Erskineville Crossovers | **Next Rail**

# Steve Maxwell Platelaying Award

## MINOR WORKS CATEGORY



### 2022 Awards Night – 2021 Steve Maxwell Award Winner – Minor Works Category

The 2021 Steve Maxwell Award – Minor Works Category was presented at the PWI Awards Night in February 2022.

**Sydney Trains** were the winners of the 2021 PWI Steve Maxwell Award for the Minor Works Category for their achievements on the renewal of the **Strathfield 528 ABD Diamond Crossover**.



Representatives from the Strathfield 528 ABD Diamond Crossover Renewal Team.

# Steve Maxwell Platelaying Award

## MINOR WORKS CATEGORY



### Strathfield 528 ABD Diamond Crossover Renewal

The project scope included:

- Replace existing 528A with a 500:12 turnout, 528B with 250:8.25. 60kg tangential crossover utilising concrete jointed bearer arrangement. 528A and 528B points moved. Custom Curved Diamond.
- Full-depth reconditioning (to 910mm below rail level).
- 88 aluminothermic welds, with 5 sets of continuous welded rail adjustments.
- Electrical adjustments and signal upgrades.



These works were delivered according to the following program:

- 4th to 15th of January 2021 – Preassembly of turnout panels
- 19th to 22nd January 2021 – Transport panels and store between the Locals during special overnight possession.
- 25th to 29th of January 2021 – DESEC loading of fully assembled switch panels onto tilt wagons.
- 30th and 31st of January 2021 – Installation of 528ABD diamond crossover during weekend possession.



The other finalists in this category were:

- Performance Maintenance Program | **Sydney Trains**
- Dora Creek Track Renewal | **John Holland**
- Goulburn Yard Turnout Upgrades | **ARTC and John Holland**
- Redfern 643 644 Double Slip Diamond Renewal | **Sydney Trains**
- Islington Junction 116A/B and 117A/B | **John Holland**

# Alan Barham Maintenance Team Award



## Judges

**Scott Chapman** – Australian Rail Track Corporation

**Anthoni Elmargi** – Vertex Group Australia

**Rodney Masman** – John Holland Group

**Kirsty McGeachie** – Sydney Trains

## Alan Barham

Alan Barham commenced service as a trainee Civil Engineer with the NSW Government Railways in 1965.

He spent time at Cowra as a District Engineer before becoming Division Engineer Tamworth, a position he held for several years.

When FreightRail was created in 1989 Alan became the Infrastructure Engineering Manager and continued in that position until June 1996 when he joined the newly created Rail Access Corporation as Senior Asset Manager for the Hunter, North Coast and North West areas.

Alan died in early 1997 from cancer.

Alan was an advocate of the importance of the local routine maintenance performed by fettling gangs to deliver safety and reliability for the Railway. It was for this reason that the PWI named the Maintenance Team Award (or Best Kept Length as it was formerly known) in his honour.

The Award was established to recognise Maintenance Teams and the pride taken in maintenance of the track and associated structures. While Alan was a Committee Member of the PWI he promoted this Award throughout New South Wales and was also involved in the judging.

A typical Routine Maintenance team undertakes surveillance inspections, servicing, minor corrective maintenance and emergency response, for track, bridges, right of way assets and possibly signal assets. The team needs to be operating in NSW.

## Judging Criteria

Applicants are assessed against People, Safety, Organisation and Leadership, and Achievement criteria. Judges evaluate outcomes and conditions which are within the Maintenance Team's control as far as possible. It is recognised that track configuration, investment programs, operating parameters and to a large extent general infrastructure condition are outside the Maintenance Team's control.

The Judges seek to identify the best use of management and technical expertise, and the most effective use of resources in maintaining the track to meet operational requirements.

Due to Covid restrictions during the judging period, the assessment of the applications was performed virtually, with each entrant presenting to the judging panel followed by a Q&A session.

Both in their nomination and during judging Maintenance Teams describe the reasons and provide evidence as to why they deserve to be recognised for excellence in Routine Maintenance. The judging criteria is detailed on the following page.



## 1. Achievement

- Innovation
- Challenge
- Covid-19 Resilience

## 2. Team Leadership, Readiness and Engagement

- Capability
- Responsiveness and Commitment
- Engagement
- Succession Planning
- Leadership

## 3. Compliance and Assurance

- Workplace Safety
- Infrastructure Compliance
- Operational Assurance
- Environmental Compliance

## 4. Productivity (Effectiveness and Efficiency)

- Scoping
- Short term work plan (2-3 weeks)
- Long term work plans (12+ months)
- Strategic Engagement
- Effectiveness and/or Efficiency Strategies

## Alan Barham Maintenance Team Award – 2021 Entries

This year, four teams nominated: two from Sydney Trains and two from John Holland Group Country Regional Network. As always, the judges were extremely pleased with the calibre of the teams judged, and their commitment to safety, productivity and maintenance effectiveness was outstanding. All the teams who have nominated for this year's award are to be congratulated for their outstanding performance.

### Metropolitan

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Sydney Trains – City North Civil Maintenance Team  
Sydney Trains – Central Coast Civil Maintenance Team

### Regional

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John Holland Group – Bathurst and Tamworth Routine Maintenance Team  
John Holland Group – West Wyalong Routine Maintenance Team

## Alan Barham Maintenance Team Award



### 2022 Awards Night – 2021 Alan Barham Maintenance Award Winner

The **John Holland Group West Wyalong Routine Maintenance Team** were the winners of the 2021 PWI Alan Barham Maintenance Team award.

The **Sydney Trains Central Coast Civil Maintenance Team** were noted as Highly Commended in this award category.





## Alan Barham Maintenance Team Award

### 2021 Nominations Overview

#### JHR Bathurst and Tamworth Routine Maintenance Team

The Bathurst and Tamworth Routine Maintenance Team consist of 24 track staff and 7 administrative staff responsible for maintaining 558 kilometres of Class 1 operational and 640 kilometres of non-operational track over sizable portions of the western and northern boundaries of the CRN.

**JOHN  
HOLLAND**

The Bathurst and Tamworth sections of the CRN services both freight and passenger train services with over 44MGT through their maintenance area each year.



JHR Bathurst Team



JHR Tamworth Team

## Alan Barham Maintenance Team Award



### Sydney Trains City North Network Operations Civil Maintenance

The City North Territory is responsible for the maintenance of fixed rail infrastructure assets from North Strathfield to Berowra and Waverton to Hornsby and covers 169km of track and 159 turnouts, including Hornsby Maintenance Centre which comprises of 16 roads for fleet maintenance. Operational responsibilities encompass track structures, signalling equipment, overhead wiring, transmission line and substations. The City North Civil maintenance team is one of the three discipline teams (Civil, Signals and Electrical) that make up the City North Territory located at the Hornsby Network Base and is responsible for the inspection, certification, and routine maintenance of all track infrastructures within the territory.



Sydney Trains City North Network Operations Civil Maintenance Team





## Alan Barham Maintenance Team Award

### JHR West Wyalong Routine Maintenance Team

The West Wyalong team is a close-knit team that has a great team focus and culture and has kept its great work ethic and “can do attitude”. David Scealy Maintenance Superintendent has created a tight knit family environment during his time as manager at West Wyalong.

David’s passion and pride for the rail network shines through all the team members as demonstrated by their safety results, work ethic and production. The diverse range of tasks this team perform ensures that staff do not get bored or complacent in their duties.

**JOHN  
HOLLAND**



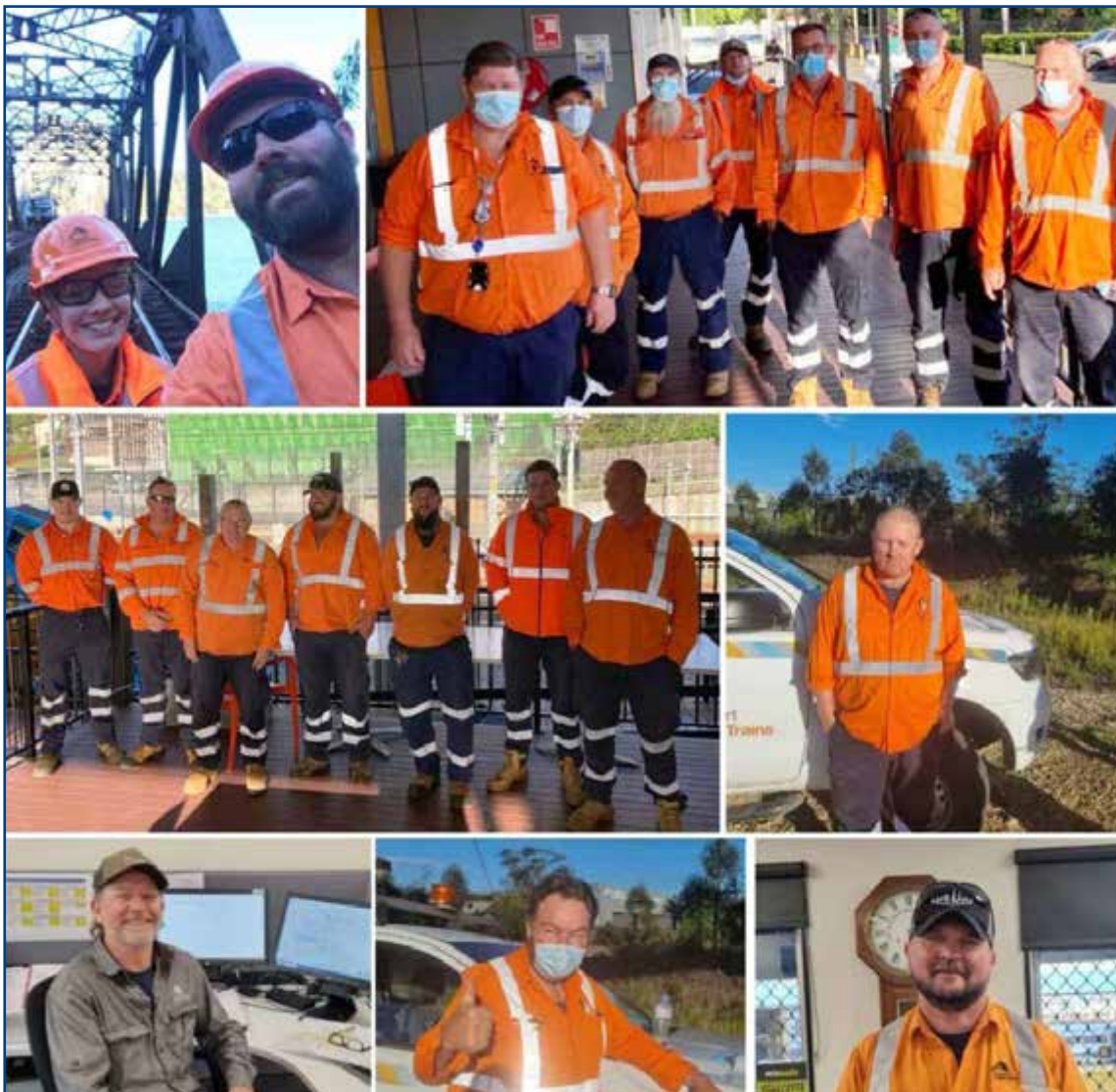
West Wyalong Team

## Alan Barham Maintenance Team Award



### Sydney Trains, Central Coast Civil Network Maintenance Team

The Central Coast Civil Team are situated at Gosford Network Base and Hamilton Network Base and consists of the Structures Team and the Track Team. The Structures Team operate within the North Region, whilst the Civil Team operate within the Central Coast Territory only. The Track Team maintain all of Sydney Trains track assets from Newcastle Interchange to Berowra which is in excess of 280km of track which services passenger and freight traffic.



Central Coast Civil Network Maintenance Team



## Judges

**Gareth Beynon** – LINK Rail and Civil

**Raquel Rubalcaba** – Transport for NSW

**Sunail Hasnain** – Sydney Trains

## Ken Erickson

Ken Erickson was elected as a Fellow of the New South Wales Permanent Way Institution on 30 November 1981. He was a member of the Committee from 1981 until his untimely death on 25 November 1988. In his 7 years on the Committee he was an Editor, with wry humour and then Secretary, with sparkling wit.

Ken was a dynamic member of the committee and a gifted speaker. His “summing up” of our only conference at Kings Cross will always be remembered by those lucky enough to be present.

Ken was always trying to provide new ideas or concepts to the PWI, hence it is fitting that this Achievement Award, which particularly looks for new ideas, is named in his honour.

This Annual Innovation Award has been incorporated in the PWI Awards to recognise an initiative or significant advance in rail technology which has promoted improvement in any part of the Rail Industry during the last year. The Award recognises the contribution of a business or individual who has implemented a novel approach, strategy, or tool that has improved outcomes in the rail industry. Successful applicants are not necessarily required to have generated a new product, rather, this award equally considers the use of current technologies and approaches in new ways to solve problems within the Rail Industry.

The field is open to all relevant disciplines within the rail industry, this could include perway, stations, systems, management, design, electrical and signaling. Eligible entries may focus on areas such as design, componentry, techniques, construction, maintenance, mechanisation, or automation.

Entries must have been completed in the last financial year by, or under control of, a member of the NSW Section, whether on a government or private railway system.

## Judging is based on:

<b>Scoring Category</b>	<b>Available Score</b>
Difficulties overcome	10
Contribution / Impact to Rail	20
Technical Input	20
Degree of Innovation in Rail Aspects	20
Contribution to Safety	10
Systems Assurance	10
Commercial benefits	10
<b>Total Score/Marks:</b>	<b>100</b>

## Ken Erickson Innovation Award



### 2022 Awards Night – 2021 Ken Erickson Innovation Award Winner

**Sydney Trains** were the winners of the 2021 PWI Ken Erickson Innovation Award for the **Electronic Rail Lubricator Project**.

**Next Rail** was noted as Highly Commended in this award category for the **Davit Arm Guide Roller Combination**.



The other finalists in this category were:

- Phone Based Accelerometers | **Sydney Trains**
- Parramatta Light Rail | **Parramatta Connect**



## Ben Muscat

A/Network Rail Engineer, NMD Track Engineering, Sydney Trains

### Electronic Rail Lubricator Project

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Sydney Trains is the first in Australia to embark on a suburban network-wide electronic lubrication project to upgrade all mechanical rail lubricators with highly efficient, modern electronic rail lubricators. The project replaced all 428 mechanic lubricators (6 legacy lubricator types) with 114 new electronic units improving whole-of-life asset cost and performance, safety and operational and maintenance practices.

Unlike mechanical rail lubricators, the electronic lubricators are controlled remotely through an on-board system (mobile reception at 100% of locations) that enables remote switching and monitoring of lubricant application levels (quantity and frequency of grease droplets) and battery performance trending. This pro-active approach to lubrication ensures the most efficient and future-proof rail lubrication performance, through decreasing rail and wheel assets (mitigating excessive wear and tear), reducing the re-fuelling requirements (increased storage capacity), increasing the longevity of the assets, improving safety (less staff required in the rail corridor reduced Signals Passed at Danger (SPADs) and reducing maintenance costs (preventative condition-based maintenance) across the Sydney Trains network.

To ensure rail sustainability, we embraced a holistic approach to the lubricator supplier arrangements. Based on our focus on financial sustainability and asset longevity, we entered into a fixed-price, integrated supplier contract to optimise sustainability and balance capital and consumables expenditure; meaning the supplier had vested interest in ensuring the lubricator design was sustainable. The selected product and rail lubricant combination has been type approved with electronic controls and a remote performance monitoring system.

The project offers an innovative, safe, efficient and environmentally conscious solution to rail lubrication, through:

- Optimised and efficient on-board system for efficient inspection and monitoring of lubrication (remotely controlled).
- Increased storage capacity, minimising replacement and re-fuelling requirements.
- Predictive maintenance processes and practices.
- Environmentally conscious design and disposal practices including re-using or recycling old mechanical units and reducing noise pollution.
- A reduction to SPADs and maintenance teams being on track.
- Future-proofing the railway through the use of technology for remote switching, monitoring, and trending of lubrication and battery levels.
- The use of solar power which eliminates the need to connect the systems into the electrical network – further increasing service reliability.
- Reduction to the total number of lubricators required to be maintained by 74%, whilst improving overall rail lubrication performance to 100% compliance with the new rail lubrication standard.
- Development of a new unit design to accommodate diverse range of network locations where access is constrained (applicable industry-wide).

## Ken Erickson Innovation Award



### Key improvements

- Reusing some of the parts from deactivated mechanical units to sustain other units required to operate until the complete rollout of new units.
- The on-board system enables monitoring and trending of parameters including lubricant level and battery performance.
- Dual units – single unit that control two applicators (i.e. two tracks) reducing the level of track side equipment.
- Electronically controlled units enables further distance between unit and applicator. This provides flexibility in physical placement of the lubricator, away from the 'danger zone'.
- Freight operators will benefit from reduced wheel wear and fuel consumption, resulting in a reduction in the fuel usage of freight services (estimated to be a 15% benefit to the 10 freight operators that use the network).
- Improvement to noise impacts from freight and passenger traffic (noise reduction factor of up to 5db).
- Increase in storage capacity, minimising replacement and re-fuelling requirements.
- Predictive maintenance processes and practices (through remote trending and analysis) and a significant reduction in assets that will require maintenance.

The experience and type approval of this rail lubrication solution can be shared with wider railway maintainers / operators and across the broader industry.



# Winter Dinner

17 June 2022



Our 2022 Winter Dinner was held on Friday 17 June at Doltone House Hyde Park and was proudly sponsored by GHD. The PWI NSW Winter Dinner has become a fixture on the rail industry's calendar, with tickets selling out fast again

Over 300 PWI members, partners and guests swapped the hard hats and hi-vis for gowns and tuxedos for a night of fine food and wine, great entertainment and networking, with a live band, photo booth, magician and cartoon artist.

A big thank you to our 2022 sponsor GHD for helping to make this event such a success.



# Winter Dinner

17 June 2022





# Technical Meetings



## November 2021 Technical Meeting – Sponsored by Arch Artifex

Our November Technical Meeting was held on Thursday 11th November 2021 and was sponsored by ARCH Artifex. Andy Petrie and Jonathan Luey, Directors of Systems Engineering and Safety Assurance at ARCH Artifex provided an excellent insight into the world of SE&SA, explaining what they are, dispelling some of the common myths along the way and explaining how SE&SA, applied right, can add real value to a project.



Andy provided a brief background to the history of System Safety which incorporates human factors to consider the safety of a system as a whole, distinct from work health and safety. He explained how Systems Safety is about how all the component parts within a project and external to the project work together as a safe integrated system.

Continuing on to Safety Assurance, Andy provided some very helpful distinctions as to what Safety Assurance is and what it is not -Safety Assurance is the output to show that you did what you said you would and achieved the outcomes as intended.

Within the Plan, Do, Check, Act framework, importantly, Andy noted that System Safety is part of the Plan component, and Safety Assurance is part of the Check component.

Andy had some great pointers for those involved in System Safety: make a plan and stick to it; scale your approach; check the outcomes; accept positive assurance; good enough is good enough; ask for guidance; justified confidence; ensure safety is managed; and lastly, keep it simple stupid.

Jonathan Luey then talked through Systems Engineering. He explained that Systems Engineering includes Requirements Management, Verification and Validation. The initial focus of the process is the right parties getting the right requirements that they need to deliver against, including an allocation process. Then the focus is on designing to those requirements and evidencing the requirements. Finally, the focus is on delivering the requirements through compliance with design and validation.

Jonathan left us with some key points for requirements management: capture decisions in requirements that have been appropriately considered, use requirements management for technical compliance, not contract compliance; use the right tools for the number of requirements and complexity; allow time for allocation and review of requirements; and don't assign multiple owners to requirements where it can be avoided.





## May 2022 Electrical Forum – Sponsored by Middleton Group

The first PWI Electrical Forum was held on Thursday 12 May 2022 and sponsored by Middleton Group. The session started off with the introduction of the PWI Electrical Subcommittee and its goal to bring together the rail electrical community to share knowledge, develop industry capacity and enhance safety outcomes. The Forum included three presentations on key learnings from projects and their impact on our growing rail industry, which were followed by a panel session with the presenters.



The first presentation was from Ian Prescotte (Operation and Maintenance Manager at Laing O'Rourke) on the topic of *Capability Development Issues in Railways*. Ian discussed the importance of capability development in the railway industry, but also the challenge of getting people interested in joining the industry and providing the knowledge and skills to enter their fields. Ian shared the story of his pathway into the rail industry and encouraged the Forum to consider how to attract, develop and retain professionals to join the rail industry.

The second presentation was from Colin Kenny (Engineering Manager at CPB Contractors) with the title, *How to Build an Electrified Railway*. Colin highlighted the niche skill set and understanding required to build an electrified railway or to work in an electrified system. The safety critical nature of the electrical systems and their importance to operations mean that these systems must be robust. He proceeded to discuss the challenges to the industry from facing a skilled worker shortage in electrical fields, which has resulted in impacts and delays to design and construction on projects.

Qazi Raham (Senior Engineer at Middleton Group) then continued with a presentation on *Arc Flash Hazards in our Railways*. Qazi highlighted that recent arc flash incidents in the electrical industry have been of concern to Australia's various safety regulators. An arc flash is a serious hazard that has the potential to cause death, serious injury, damage to equipment and loss of electrical supply. Qazi proceeded to provide an overview of why proactively managing arc flash risk is an important obligation of asset owners and potential approaches to manage this risk.



Following this, the three presenters returned for panel session covering the content that was discussed and other issues by the rail industry. panel session enabled greater interaction the audience and meaningful discussions share knowledge across the industry and enhance safety outcomes in design and delivery of electrical assets.



# Technical Meetings



## June 2022 Technical Meeting – Sponsored by WSP

The June Technical Meeting was sponsored by WSP and held on Thursday 9 June 2022. This meeting was jointly held with the IRSE. Oliver Wong (Principal Track Engineer), Moemedi Goitseman (Technical Executive, Signalling) and Phil Gurney (Associate Overhead Wiring Engineer) shared valuable insights into delivering projects in the Southern Program Alliance in Melbourne.



The presenters started by explaining that the Southern Program Alliance (SPA) is part of the Victorian Government’s Big Build investment in the Frankston Line to remove 20 level crossings and to build 13 new stations by 2025. SPA comprises of Acciona, Coleman Rail, WSP, Metro Trains Melbourne and the Level Crossing Removal Project (LXRP).

Oliver, Moemedi and Phil went on to share some of the key benefits from working in an Alliance environment for around four years, which included having a more consistent workload, improved connections within teams and with clients, and more diverse experiences for career development. At the same time, resourcing and breaks had to be carefully managed, especially when teams are constantly delivering work packages.

Oliver continued with a focus on the track design and illustrated the challenges encountered on SPA by using several instances of track-led design changes to optimise construction works. The examples highlighted the need to balance various elements to achieve a best-for-project outcome, and the importance of identifying, discussing and testing alternative solutions early to achieve a coordinated design.

Following this, Phil presented on the overhead wiring solutions adopted for SPA, including key constraints encountered, such as the use of bespoke architectural steelwork, interfaces with non-compliant existing infrastructure and limited clearances under road bridges. Phil also explained the design solution developed by the project team to minimise the project’s environmental impact to the endangered Eltham Copper Butterfly.

Finally, Moemedi explained the signalling scope on the Frankston Line as part of the Alliance, with a gradual shift from geographical interlocking to a centralised signal control centre in Kannanook. Moemedi also demonstrated some of the 3D modelling techniques used to support signal sighting analysis at various speeds in complex area around Caulfield Junction.



The presenters left us with their reflections on factors that they believe have contributed to the success and continuous improvement within the Alliance, which included the use of digital tools to support design reviews, greater construction involvement in design meetings, and knowledge sharing between Alliance groups.





## Technical Meetings

### September 2022 Technical Meeting – Sponsored by Shoal

The September Technical Meeting was held alongside the AGM on Thursday 1 September 2022 and was sponsored by Shoal. Tim Carter (Principal Systems Engineer) and Thomas Jacquier (Systems Engineer) presented on a complex systems perspective of digital engineering in rail.

# SHOAL

Thomas began by highlighting the complexity of rail projects and the large volume of information of data that needs to be managed through the design phase. As a result, Systems Engineering is a critical tool to manage this complexity by working closely with stakeholders, design engineers and specialists to decompose complexity in the system design, and to ensure greater control and awareness of project requirements and interfaces.

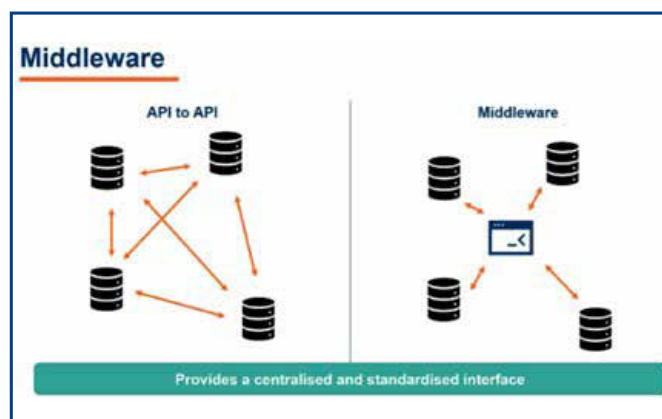
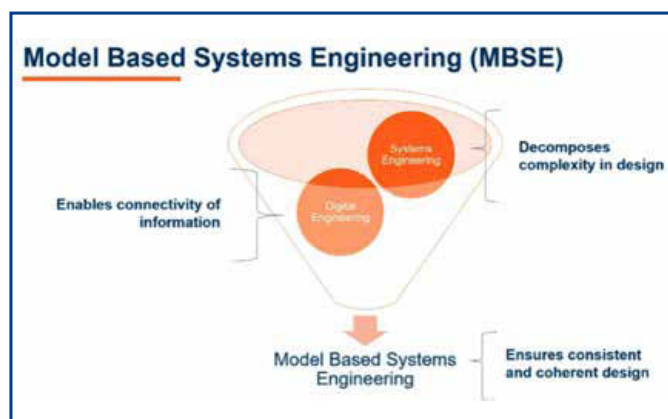
He continued by discussing the challenge of managing information from the rapid uptake of digital engineering tools on rail infrastructure projects. Each tool generally serves its own purpose for specific disciplines. Digital engineering enables consistent data architecture with semantic interoperability, so that the right level of information at the right time regardless of tool to the relevant designer and stakeholders.

Thomas then proceeded to explain the approach implemented by Shoal to federate engineering data in rail across the entire infrastructure lifecycle. He introduced model-based systems engineering (MBSE) as the confluence of systems and digital engineering to ensure consistent and coherent design by providing insight into the connectivity of information.

To clarify the approach, Thomas provided an example of an information framework and its structure, which highlighted the information types and allowable relationships. Using this framework, it is possible to identify which tools and disciplines provide the authoritative source of truth and where this information is reused as an input elsewhere.

As an approach to the complexity of managing information, Thomas presented on the concept of 'middleware', which is a centralised and standardised interface between the tools, that is a promising way to enable more efficient data federation. He also highlighted the advantages for maintainability and extensibility by using the 'middleware' approach to ensure consistent information can be provided to managers, designers and stakeholders.

The systems perspective on digital engineering demonstrates how rail infrastructure projects can improve integration between their disciplines, data and tools to ensure consistent information is used to inform designs, interfaces and decision making.



# 2022/2023 Enhanced Corporate Members



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

## Platinum Corporate Members



## Gold Corporate Members



# ACCIONA in Australia

ACCIONA is a global company headquartered in Spain with a presence in more than 40 countries. With a business model based on the sustainable development of the communities in which it operates, ACCIONA's aim is to respond to society's main needs through the provision of renewable energy, infrastructure, water and services. Its vision is to meet the challenge of achieving sustainable development in all business areas, so that the generations of today and the future will have a better life.

Since establishing a presence in Australia in 2002, ACCIONA has invested more than AUD\$1 billion through local investment opportunities and project development. As a national business ACCIONA employs more than 1,000 people across the country.

In April 2017, ACCIONA acquired leading diversified civil engineering services business, Geotech Group. The investment saw the formation of a new company, ACCIONA Geotech Holding, which is led by Bede Noonan. This acquisition built upon and brought together ACCIONA's future construction pipeline in Australia and New Zealand and Geotech's complementary businesses (Geotechnical Engineering, Coleman Rail and John Beaver Australia).



## ACCIONA Subsidiary: Coleman Rail

Subsidiary Coleman Rail provides construction services for major rail and transport infrastructure projects Australia-wide.

The expertise covers construction, upgrades and maintenance, complemented by an in-house capacity to undertake civil, mechanical, utilities, services relocation and building works. Most projects are delivered within live operating environments and constrained sites. The highly skilled and experienced resources include a large permanent direct labour workforce as well as experts in engineering, commercial, construction, safety and environmental management.

Our teams are currently involved in major infrastructure projects for both the public and private sectors in several states. These include Victoria's flagship level crossing removals and upgrades to some of Victoria's regional rail network, multiple upgrades to sections of Melbourne's extensive tram network, works programs across South Australia's rail system and in Western Australia, the Koodaideri North Rail project, which involves extending the rail infrastructure from Rio Tinto's Koodaideri mine to the company's existing rail network.

Since it was established in 2002 Coleman Rail has grown to maintain a strong presence throughout Australia supporting and supplying the country's rail infrastructure and has offices in Melbourne, Sydney, Adelaide and Perth.

# Our projects build careers.

CPB Contractors is building a huge range of exciting infrastructure projects including new railways, airports, tunnels, motorways, metros, hospitals, schools and office blocks.

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# Connecting Australasia

**We're the leading provider of end-to-end rail and transport solutions in Australia and New Zealand. From designing and constructing transport networks to operating them, we're transforming the way people travel and providing better connections across the country.**

Every day, more than a million passengers travel on our networks. Our long-standing experience in mass transport means we know how to put together the right solution - from start to finish. Focused on the future of transport, we innovate today for the best outcomes tomorrow. From digital engineering and digital asset management, to targeting zero-emission transport modes; we're in it for the long haul.



# The Power of Experience

Laing O'Rourke is a \$6 billion international operation with 50 years of involvement in the Australian construction and infrastructure sector. By leveraging the right technology, we know we can spark positive change for our clients, their projects and the wider industry. That's why our 2025 mission is to be the construction sector's recognised leader for innovation and excellence.



## Central Station Metro Works, NSW

This \$955 million project is transforming Sydney's Central Station, delivering new Sydney Metro platforms beneath the station and an extensive pedestrian concourse, known as Central Walk. The project will revitalise and transform Australia's busiest commuter hub. The team has maintained a focus on delivering the project in the most sustainable way. In July 2021, the project achieved a 6 Star Green Star Design Review rating from the Green Building Council of Australia, representing World Leadership in sustainable building design.



## More Trains More Services (South Works Package), NSW

Transport for NSW's More Trains, More Services (MTMS) program is simplifying and modernising the rail network, creating high capacity, turn up and go services for many customers. The main construction contract for MTMS on the South Coast is being delivered by Transport for Tomorrow, comprising of Laing O'Rourke and KBR, who are working in partnership with Transport for NSW to deliver projects between Kingsgrove and Kiama. This package includes work on the T4 Illawarra Line in preparation for a new fleet of longer trains and more frequent services.



## South Eastern Program Alliance (SEPA), Vic

The South Eastern Program Alliance (SEPA), as part of the Victorian Government's Level Crossing Removal Project (LXRP), is currently delivering multiple projects in the south east of Melbourne. The Alliance consists of Laing O'Rourke, Jacobs, Metro Trains Melbourne and LXRP as the Project Owner. SEPA is further developing several other projects as part of LXRP's program of works. Laing O'Rourke's involvement in this successful alliance is evidence of our ability to work in a truly collaborative contracting environment on a long term program of work. We continue to drive initiatives and strategies to deliver best for project outcomes in terms of cost, program and risk.



## Parramatta Light Rail, NSW

The Parramatta Light Rail is one of the NSW Government's latest major infrastructure projects being delivered to serve a growing Sydney. Laing O'Rourke is delivering the design and construction of the stabling and maintenance facility and the above ground fit-out of the 16 light rail stops, traction power substations and overhead wiring. To create real efficiencies and ensure on-time delivery, we're taking learnings from a previous Laing O'Rourke light rail project in Manchester, UK, and designing a modular kit of parts for the 16 light rail stops.



## Laing O'Rourke Our gender agenda



As we strive to achieve our mission to become the recognised leader for innovation and excellence in the construction industry, we are committed to developing and nurturing a more diverse workforce that reflects the society and communities we serve.

Laing O'Rourke was awarded the prestigious Workplace Gender Equality Agency's Employer of Choice for Gender Equality in 2020 and again in 2022. This followed the release of our Gender Diversity Action Plan in 2019 and our global sustainability strategy in 2021. We set a number of deliberate and bold targets and initiatives, including a commitment to reach gender parity by 2033.

We are making a real, tangible difference to our business and to this industry. Over the past four years we have consistently increased the number of women being recruited into and staying in our business. Today, working on a Laing O'Rourke project, you are twice as likely to work for a female manager than four years ago - but there is still a lot to be done.

Our industry is best when we have diversity across all business

and project roles, including more women represented at senior levels. We must change the way we design and deliver work to attract a broader demographic of people to the industry and provide them with meaningful and long-term careers.

That's why we remain committed to our Action Plan which includes delivering the targets we set for the number of women in leadership roles across our business, and delivering construction projects with flexible working as a requirement.

As a business that is engaged on some of Australia's largest and most complex infrastructure projects, we have a responsibility to demonstrate that meaningful and rewarding career paths are available in this industry, regardless of a person's gender.

### Other initiatives introduced at Laing O'Rourke include:

- Pay parity across all like-for-like roles in the organisation, as well as a commitment to continue to lessen the organisational wide pay gap by 5% per year by increasing the number of women in senior roles;

- Every employee who is a primary carer has access to six months' parental leave on full pay. This leave is also available for parents who adopt or welcome a baby via surrogacy;
- Flexible work programs, including a flexibility toolkit and flexible work practices training for all people managers to enable our people to think differently about the way we go to work and redesign the outdated work practices inherent with the construction industry;
- Inspiring STEM+ - a school engagement program designed to encourage more girls into STEM courses at university and ultimately careers in construction and engineering; and
- A Connecting Women network designed to build engagement and greater visibility of our female leaders and to provide a forum for connecting our women, role modelling careers, and building new networks for support and advice.

# RAIL EXPERTS

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## ABOUT US

The Brimble name is synonymous with rail operations. This family-owned business spans three generations bringing with it over 100 years of local rail construction and maintenance experience.

## CORE PRODUCTS & SERVICES

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  - ✓ TAMPING, REGULATING, STABILIZING & BALLAST CLEANING
- ✓ ENGINEERING SERVICES
  - ✓ ASSET MANAGEMENT SYSTEMS, MACHINE PURCHASING & IMPORT, NETWORK COMPLIANCE TESTING, NETWORK REGISTRATION & SPECIALISED CONTROL SYSTEMS UPGRADES
- ✓ RESURFACING IMAGING
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- ✓ MACHINE MODIFICATION



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Brimble is focused on increasing safety & performance of rolling stock operations through innovation & technology.



# Creating a more connected, sustainable world

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.

## Helping rail clients move forward

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.

In Australia and New Zealand, we have a team of around 3,700 highly skilled professionals across design, engineering, planning, sustainability and consulting disciplines, working with clients to support some of the biggest rail projects currently underway in ANZ.

**#1** in Mass Transit & Rail in 2021, 2020, and 2019  
ENR's list of Top 500 Design firm

### Our services:

- STRATEGIC CONSULTING
- BUSINESS CASE AND FEASIBILITY PLANNING
- ENVIRONMENTAL SERVICES
- TRANSPORT PLANNING
- ENGINEERING DESIGN
- RAIL SYSTEMS
- ARCHITECTURAL DESIGN
- INTEGRATED PROJECT DELIVERY SERVICES  
(cost, schedule, risk, project, program)
- ASSET MANAGEMENT, OPERATIONS MANAGEMENT & FACILITY SERVICES

### Let's find out what we can achieve together.

#### Julian Small

Executive Regional Market Director - Rail  
Julian.Small@jacobs.com

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# Gain traction with middleton Group

Middleton Group specialises in the design and delivery of traction substations and rail-related power systems.

## 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

## CONTACT US



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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.

Trusted by industry leaders to deliver a top quality job, on time and on budget.

## 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.

Call 0407 930 158 | Email [mark.stapley@mprail.com.au](mailto:mark.stapley@mprail.com.au) | Visit: [www.mprail.com.au](http://www.mprail.com.au)



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# INFRASTRUCTURE



## 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.



- MAINTENANCE-OF-WAY
- RAIL SERVICES
- SIGNALING
- TRACKWORK & FASTENERS
- ASSET PROTECTION

**Progress Rail**  
A Caterpillar Company

TrackSales.AUS@progressrail.com • progressrail.com • @Progress\_Rail • @progressrail

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# 2022/2023 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

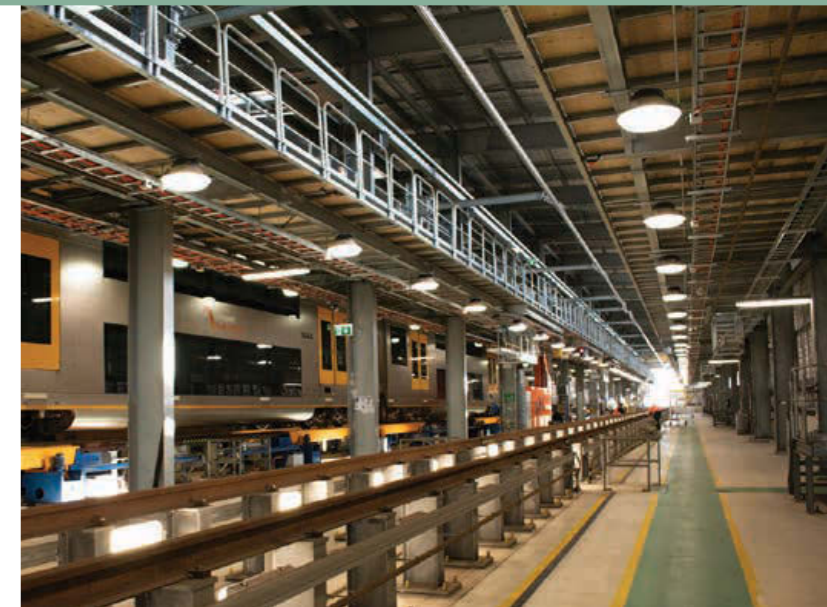
### AUBURN MAINTENANCE CENTRE 'ZERO' ROAD

*"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

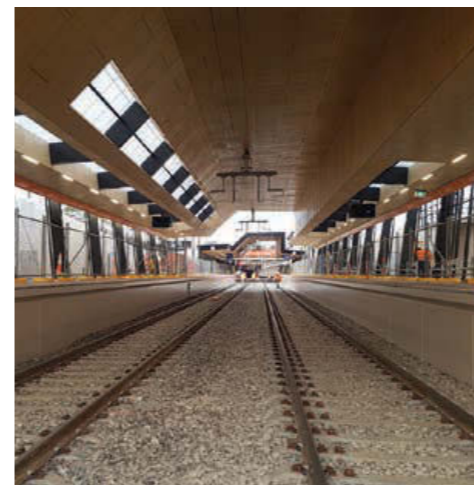
Risk Management and Safety Assurance

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

*"We at Haslin have utilised the ARCH Artifex team on our TfNSW infrastructure projects and have found their skills in Safety Assurance and Requirements Management, Design Management and P6 Programming to be exemplary. Their expertise assists us in delivering quality projects for the people of NSW"* Colin Woods, Managing Director – Haslin Constructions Pty Ltd

# Project Services

## CORE CAPABILITIES

**150+** PROJECTS DELIVERED



SYDNEY | MELBOURNE | BRISBANE

### New in 2022

**Interstate Expansion.** At the end of 2021 we took the decision to open offices in both Brisbane and Melbourne. In Victoria we have had early success and now have a number of major commissions which is seeing our team grow rapidly. In Brisbane we continue to pick up smaller commissions and are growing our brand recognition.

### New in 2022

**Environment & Sustainability.** This newly created team led by Gareth O'Brien will supplement our existing project services. We are very excited to be expanding the services we can provide to our clients and their projects.



# 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](mailto:anna.squire@arup.com)

We shape a better world | [www.arup.com](http://www.arup.com)



**HAYS** Recruiting experts  
in Engineering

## FAST-TRACK YOUR CAREER RECRUITMENT EXPERTS IN RAIL

Hays are the largest recruitment agency in Australia and New Zealand and are the market leader in rail recruitment. We have long-term partnerships with both public and private sector organisations across Australia and our 1,000+ recruitment consultants across 38 locations allow us to provide unrivalled expertise.

Our recruitment methodology and our Find and Engage model applies our long-established best practices in understanding essential requirements of each organisation, building relationships deep into talent pools, and underpinning them with the most sophisticated technology to enable us to identify, connect and attract the highest quality candidates for any given role. Each year we make over 14,000 permanent hires and 71,000 temporary/contract assignments, with a database of over 3 million candidates built over 41 years across Australia, making us true experts.

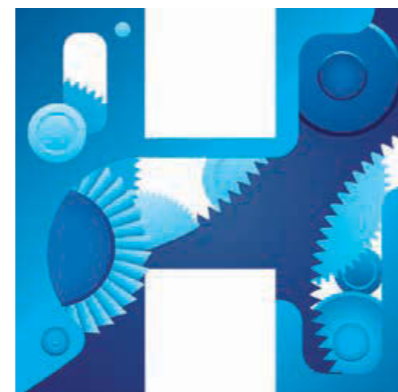
Within the rail industry we specialise in the recruitment of qualified and experienced professionals from Site Engineers through to Senior Executives. Our local and global expertise covers both design and delivery across all types of rail projects and with particular focus on the following disciplines:

- Track and civil engineering
- Signalling
- Systems assurance
- Traction power
- Rolling stock
- Safety
- Automation and CBTC
- Digital engineering
- Project engineering
- Project & program management

Contact us for further information.

**Hays Sydney**  
**T: 02 9249 2210**  
**E: [eng.sydney@hays.com.au](mailto:eng.sydney@hays.com.au)**

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**RAIL INDUSTRY PROVIDER OF CHOICE FOR ALL ENGINEERING SERVICES INCLUDING, CONSULTANCY, DESIGN, CONSTRUCTION, AND TRAINING.**

**RECENT PROJECTS**

**WHAT WE DO**

- More Trains More Services – Waterfall – complex signalling design and construction, testing and commissioning, supporting 12 possessions and a final 9 day commissioning.
- More Trains More Services – Wollongong, Thirroul, Mortdale, Kingsgrove, Kiama, Port Kembla, Dapto – signalling support, including construction, test and commissioning.
- 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.
- Waratah to Sandgate - signalling civil construction, manufacture of signalling location, installation, testing and commissioning.

- Comprehensive Multi-Discipline Rail Engineering Services
- Expert Signals Concept and Detailed Design Services
- Signalling Construction, Location Wiring and Site Installation
- Testing and Commissioning Activities from Planning to Handover
- Multi-Discipline Rail Project and Interface Management
- Engineering Assurance and Independent Verification
- Technical Standards Authoring, Development and Review
- Authorised Competency Assessors for ARTC, MTM, VLine and IRSE licenses
- CAD / MicroStation Design and As-Builts
- Authorised RTO Delivering Rail Safety Training on behalf of the Australian Rail Operators

**CONTACT US: MAIL@JMDR.COM  
VISIT OUR WEBSITE AT WWW.JMDR.COM**



**SAFETY BY CHOICE, NOT BY CHANCE!**



**WAREHOUSE, ASSEMBLY, TESTING AND TRAINING FACILITY - NSW**

**WHO WE ARE**

We are a global Railway Engineering Services provider operating in Australia, New Zealand, India, UK, and North America. JMDR’s team of over 440 industry-leading professionals deliver multi-discipline railway solutions, featuring the strongest Signals Engineering team in Australasia.

**JMDR IS AN EXPERIENCED RAIL ENGINEERING COMPANY AND A TECHNICALLY ASSURED ORGANISATION (TAO) PROVIDING COMPREHENSIVE ENGINEERING SERVICES TO MANY VALUED CLIENTS.**

**WE OPERATE GLOBALLY**



**JMD RAILTECH GROUP**

**TAO, IRSE LICENSING AGENCY**

**ISO 9001, 14001, 18001 AND RISQS CERTIFIED**

# 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



## 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.

## Upgrade

Increased performance for time-tested machines

### Our services:

- State-of-the-art technologies for existing machines
- Adapting upgrade systems to existing machines
- Installation by Plasser Australia service technicians
- Fixed service offers - fixed price

### Your benefit:

- Increased performance
- Improved safety
- Extends your range of services
- Optimises your fleet's cost-efficiency



## Retrofit

New power for machines that are past their peak

### Our services:

- Modernisation of old machines
- Retains the intact substance of the machine
- Accurately pre-defined reconditioning and renewal
- Installation of additional functions

### Your benefit:

- Improved safety standards
- Increased output
- Improved energy efficiency
- Valid homologation



## Refurbishment & Repairs

Longer service life for components and machines

### Our services:

- Refurbishment of components, assemblies and machines
- Reconditioning of components and work units
- Fixed service offers - fixed price

### Your benefit:

- Increased availability
- Extended service life
- Cost benefits compared to new purchase





# 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  
Western Sydney Airport  
Technical Procurement Support



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



Cross River Rail  
Brisbane  
Project Management & Constructability



V/Line  
Melbourne  
Asset Management Advice



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  
m: 0400 818 282  
e: [info@railplanning.com.au](mailto:info@railplanning.com.au)

[railplanning.com.au](http://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.

SMEC'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 experience

### Maintaining the next generation rolling-stock

— Intercity Fleet Maintenance Facility

A state-of-the-art Maintenance Facility situated between Ourimbah and Tuggerah on the NSW North Coast Line provides expansive operations support for the newest generation of rolling-stock, the New Intercity Fleet (NIF).

SMEC was engaged by the John Holland Group (JHG) to provide engineering design services which encompassed: civil and track works, CSR, utilities, buildings and structures, bridges and piling design, verification of access bridge and roadworks for enabling works, geotechnical investigations and reporting.

The new facility has the capability to accommodate heavy and light maintenance of rolling-stock on four maintenance roads, standing room on four outside tracks, each accommodating one long NIF train (205m), wheel lathe facilities, and operational support systems.

An innovative design was required to enable the construction of heavy-duty foundations to support the train maintenance building and bridge abutments needed for heavy vehicle and rail access in challenging ground conditions, including deep, soft compressible soils. A slab-on-ground solution was developed which utilised coal bottom ash. Innovations like this have led to the project achieving a 'Leading' Infrastructure Sustainability (IS) Design Rating from the Infrastructure Sustainability Council of Australia (ISCA).

### Designing rail for a climate-resilient future

— Crows Nest Metro Station

Sustainable and resilient infrastructure is a vital aspect of rail engineering design in moving towards a climate-smart future. SMEC was the lead consultant for the Crows Nest Design Consortium (CNDC); undertaking the detailed design of Crows Nest Station, part of the Sydney Metro City and Southwest Metro Line.

In addition to delivering detailed designs for excavation, foundations, drainage, structural works (including the station box), utilities, systems, over-station-development integration structures, precinct, interchange and landscaping; a key objective of the Crows Nest station was to achieve a minimum Five-Star Green Star rating with the Green Building Council of Australia (GBCA).

As part of developing sustainable infrastructure, Crows Nest Station incorporated active transport facilities to promote a sustainable way of life that also encourages health and wellbeing for commuters and increases the liveability of the area. Indoor and outdoor secure bike storages spaces and end of trip amenities, including shower and locker spaces, were also integrated into the station.

Due to the outstanding engineering design utilising sustainable materials wherever possible, energy efficient light and equipment, potable water efficiencies, and addressing climate change risk the design has achieved an outstanding Six-Star GBCA rating.

## Key contacts

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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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**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





# Question today Imagine tomorrow Create for the future

WSP's approach to planning and designing light rail systems is focused on complementing the urban environment and being responsive to the needs of both residents and local businesses.

We challenge ourselves to design resilient systems that meet the standards of sustainability, cost-efficiency and innovation. Our solutions are backed by comprehensive modelling data and tested planning principles to manage the complex intersection between road and rail.

WSP's expertise spans all aspects of the project lifecycle. Clients can benefit from our planning experience which encompasses every recent light rail project in Australia, including Newcastle, Canberra, Gold Coast, Perth and Parramatta Light Rail systems.

For more information, contact Stuart Allabush, WSP's Regional Executive, Rail - NSW email [stuart.allabush@wsp.com](mailto:stuart.allabush@wsp.com), phone +61 2 9272 1427, or visit our [www.wsp.com/en-au/sectors/rail-and-transit](http://www.wsp.com/en-au/sectors/rail-and-transit) on our website.



## 2022/2023 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.**

Acoustic Studio	Kellogg Brown & Root
AECOM Pty Ltd	LINK Rail and Civil
Affective Rail	Linmag Australia Pty Ltd
Anric Group	Loram Pty Ltd
Anvelo	Martinus Rail
Arcadis	MCE
Arenco	Meadows Consulting Pty Ltd
Aurecon Group Pty Ltd	Mott Macdonald
Australian Mutual Bank	Multi Civil & Rail Services Pty Ltd
Beca Pty Ltd	Overmorrow Consulting
BloorRail Pty Ltd	Pidgeon Civil Engineering
Brefni Pty Ltd	Plateway Pty Ltd
Calibre	Preston Hire
CGC Recruitment	Quickway
CR Rail	Rail, Tram & Bus Union NSW
Degnan	Rhomberg Rail Australia Pty Ltd
Delkor Rail Pty Ltd	Robson Civil Projects
DiMattia Transport	Rocla Concrete Sleepers
Edilon Sedra Australia	RP Infrastructure
Enermech	RT Health Fund
Gartner Rose Pty Ltd	Shoal
Geoimage	STRAILlastic
Georgiou	Stantec
GHD Group Pty Ltd	Sydney Trains
Gilgandra Shire Council	Taylor Rail Australia
Hatch	Thermit Australia Pty Ltd
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Infrastructure Nation Pty Ltd	VizionX Pty Ltd
International Lighting	voesalpine VAE Railway Systems Pty Ltd
Keltbray International	Willow Inc

# 2022/2023 Corporate Members





**DEGNAN**



**edilon)(sedra**



**GARTNERROSE**



**Georgiou**



**HATCH**

**HK>A**

**Holland**





# 2022/2023 Corporate Members



# 2022/2023 Corporate Members



# ACOUSTIC STUDIO

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**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.

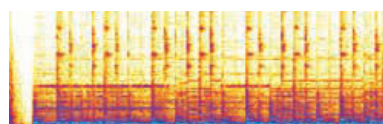
We thrive within a collaborative team to foster innovation and to seek win-win outcomes, where noise management delivers broader efficiencies and improved productivity.



Check out our website at [www.acousticstudio.com.au](http://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](http://acousticstudio.com.au)



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Faster,  
Safer.**



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*Transforming your next rail construction project.*

**AFFECTIVE  
RAIL** 



ANRIC  
RAIL

EXPERTS IN

# RAIL+**CIVIL**

## RAIL SERVICES:

WELDING | ULTRASONICS | CERTIFYING  
PROJECT DELIVERY | WIRE FEED WELDING

## CIVIL SERVICES:

OHWS | FORM, REO, POUR  
COMBINED SERVICES ROUTES  
PLATFORM RECONSTRUCTIONS  
UNDER LINE CROSSINGS | PILING | EARTH WORKS



[ANRICDEVELOPMENTS.COM](http://ANRICDEVELOPMENTS.COM)

[INFO@ANRICDEVELOPMENTS.COM](mailto:INFO@ANRICDEVELOPMENTS.COM)

# Bringing connected communities *to life*

A better future begins when we put the end user first.

We want to make choices now that will change our world tomorrow.

At Aurecon, we bring ideas to life through good design to co-create a better future for people and the planet. It's in our DNA.

When we look at rail and mass transit infrastructure, we see much more than its component parts. We see its potential to connect people and goods by providing an efficient transport backbone across our landscape and within our urban areas.

We see opportunities to build industries and strengthen economies by ensuring the efficient and cost effective transportation of goods. And we see the importance of involving communities in shaping rail and transport networks in ways that will maximise their connectivity and ease of use.

Our transport experts have shown this passion on countless rail and mass transit projects in many parts of the world, across heavy haul, freight, passenger and metro networks.

[aurecongroup.com](http://aurecongroup.com)



**aurecon**  
*Bringing ideas to life*



AUSTRALIAN  
MUTUAL BANK

## Australian Mutual Bank - we're here for the Rail & Transport Industry

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## CONTACTS:

**Inland Rail Project Manager  
Randall Medd**

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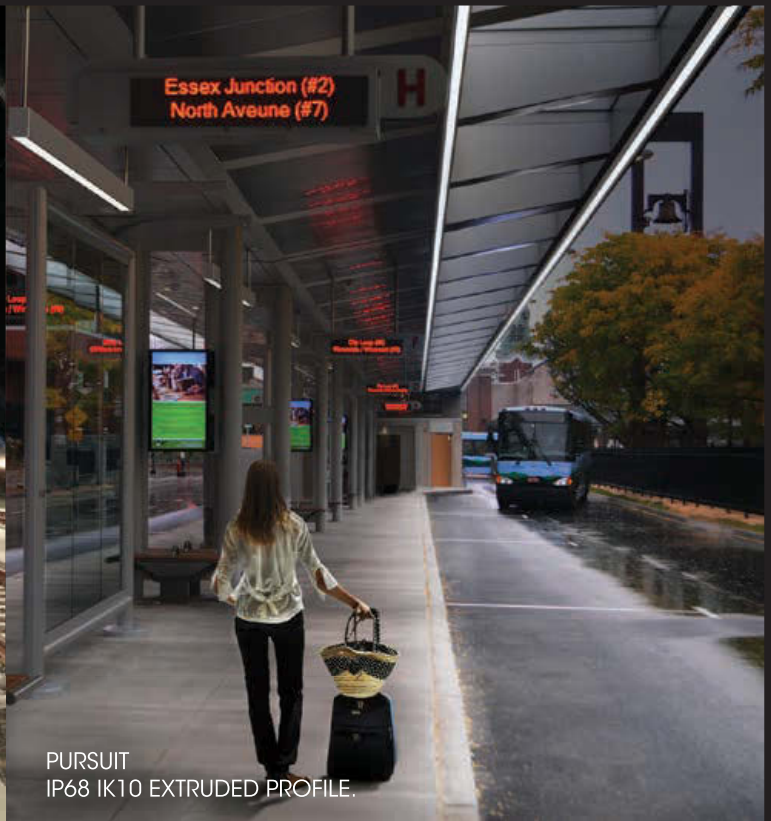
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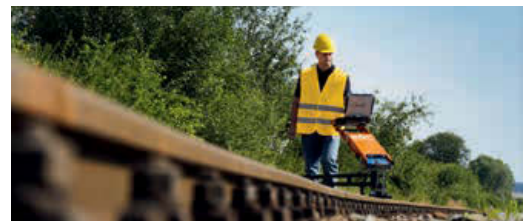
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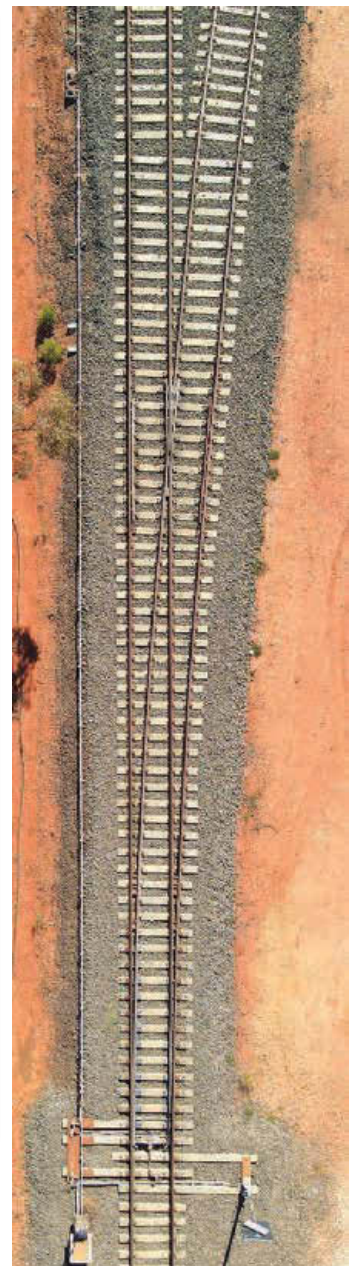
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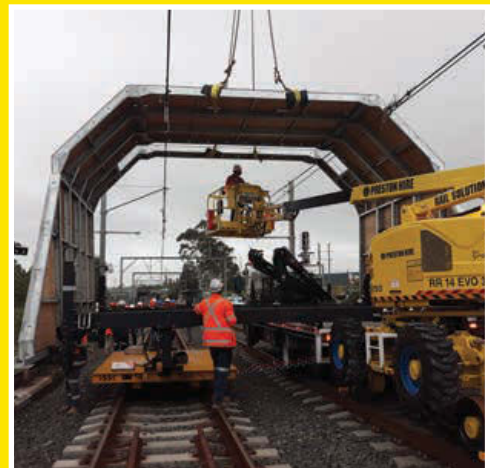
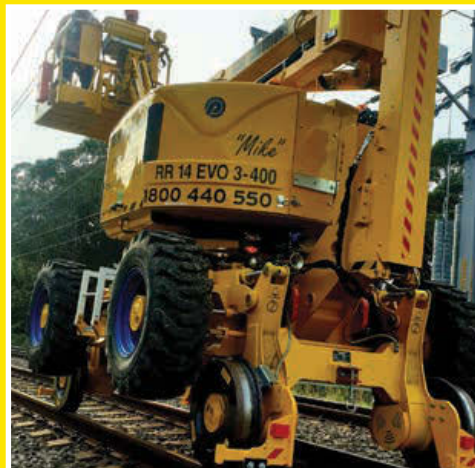
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- working with industry partners and lobbying governments for investment in sustainable transport developments.

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- 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”**



# IVES Universal application

## Different railway types – same track system:

The IVES slab track system can be used for almost any type of permanent way (all track gauges, rapid transit, low- or high-speed railway). Because of its simple form of construction, any required modifications can be made quickly and easily.

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## The IVES system at a glance

### Intelligent:

- Flexibility of adaptation to suit the state of technology available at the installation site through its relatively simple and functional construction: structural layers and elements can be generally constructed on site, wherever run-of-the-mill road-building and manufacture of simple prefabricated elements can take place.
- Flexibility of tailoring the amount of work involved to suit project resources through a simple step-by-step approach to installation: can be constructed equally well using low-tech equipment or highly mechanised plant.

### 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.
- Short waiting times between each installation step
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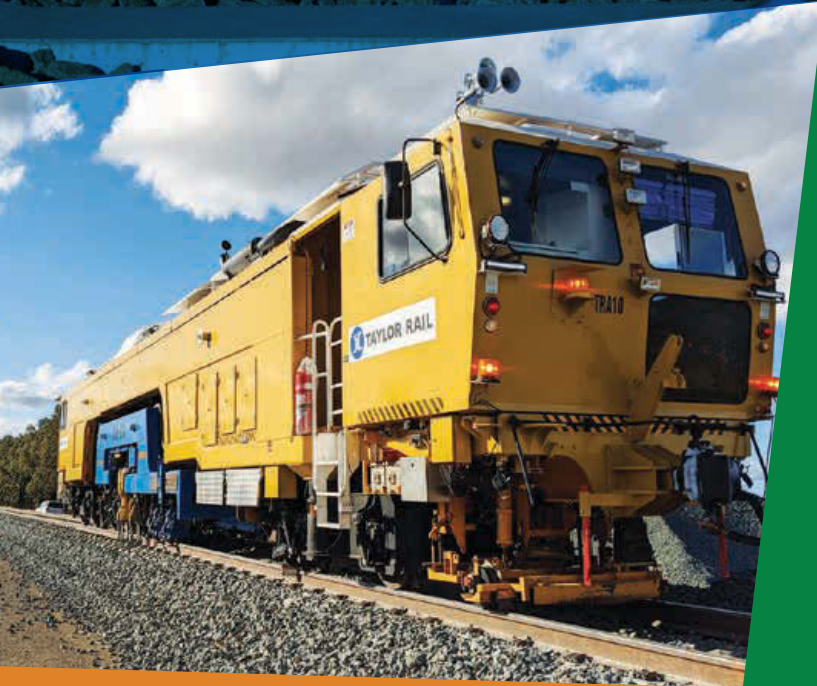
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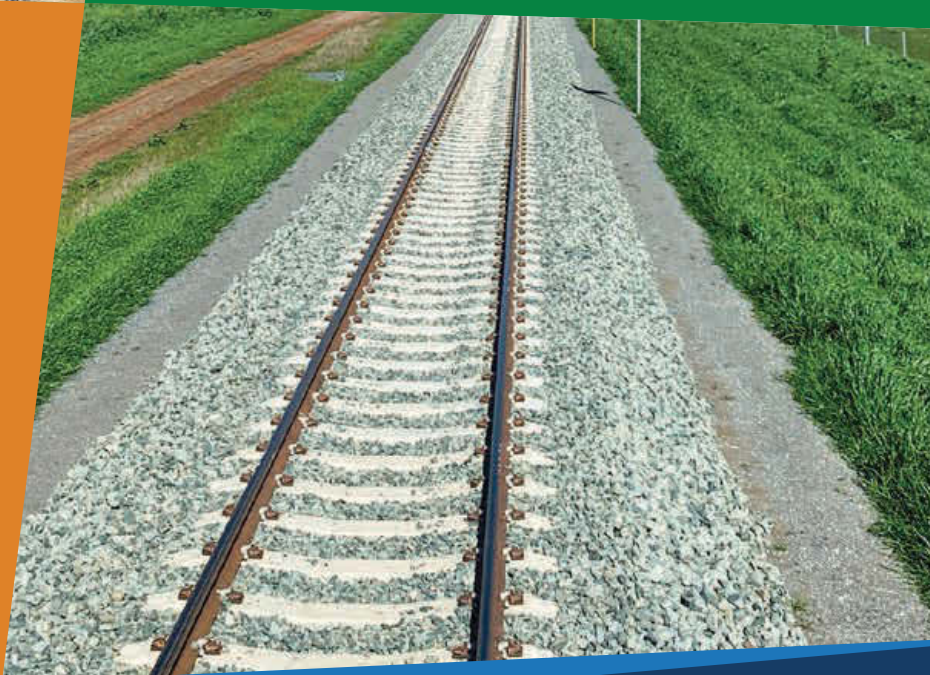


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# TURNBULL ENGINEERING

*Take a closer look at our rail capabilities*

## OUR RAIL DESIGN DISCIPLINES

- Permanent Way
- Civil
- Structures
- Utilities
- Drainage/Flooding
- Geotechnical

## WE KNOW YOU LIKE NUMBERS...

**40**

Our team have experience in 40 different areas of rail design and asset management.

**67%**

More than two thirds of our people have worked on major rail infrastructure projects.

**80**

We have a team of 80 people who are ready to work on rail projects.

**50**

Our team have experience in over 50 rail projects in the last 10 years!

## DID YOU KNOW?



### We're accredited

Our company is a TfNSW AEO and holds ARTC competencies.



### Our team have worked for many rail clients

Sydney Metro, TfNSW, ARTC, Sydney Trains, QUBE, Country Rail Network and Pacific National.



### And we're big on technology

We use the latest 3D tools to integrate our technical processes and communication methods on projects.





For other people  
this is a railway line.

For us, the factory for our  
customers' success

New on the horizon:  
After the SPHEROLOCK®  
VAE Railway Systems now  
introduces in-bearer  
and on-bearer solutions  
with a new generation of  
switch machines

ECOSTAR &  
SPHEROLOCK®



UNISTAR



What first appears simple, reveals itself upon closer inspection, to be the key for the success of our customers. A product that fulfills the highest technical and safety requirements and that secures economic success over its entire life cycle through the lowest possible operating costs. A product that is tailor-made for our customers. And for the future.

voestalpine VAE Railway Systems Pty Ltd  
[www.voestalpine.com/vaers](http://www.voestalpine.com/vaers)

voestalpine  
ONE STEP AHEAD.



# WillowTwin™ for Rail

The digital twin for rail



Heavy haul



Metro rail



Light rail



Unify your rail systems and access comprehensive data to improve the management and availability of your rail network

**WillowTwin™ draws upon spatial, static and live data to create living digital replicas of rail networks.**

WillowTwin™ provides rail operators, managers and engineers detailed insight into the real time performance of networks, to improve decision making and enable predictive maintenance.

Through WillowTwin™, our customers have experienced:

- ✓ Improvement in track availability from 97% to >99%
- ✓ Reduction in track geometry defects by up to 50%
- ✓ Reduction in maintenance costs by up to 20%
- ✓ Improved safety

Download our whitepaper to find out more



willow  
know your world



THE PWI IS PROUDLY SUPPORTED BY ITS PLATINUM MEMBERS

