## INQUIRY INTO PROCUREMENT PRACTICES OF GOVERNMENT AGENCIES IN NEW SOUTH WALES AND ITS IMPACT ON THE SOCIAL DEVELOPMENT OF THE PEOPLE OF NEW SOUTH WALES

Organisation:Australasian Railway AssociationDate Received:22 January 2024



15 December 2023

The Hon. Dr Sarah Kaine MLC Chair – Standing Committee on Social Issues NSW Parliament Legislative Assembly

### Inquiry into the procurement practices of government agencies in New South Wales and its impact on the social development of the people of New South Wales

Dear Dr Kaine,

I write to you to provide the following submission on behalf of the Australasian Railway Association (ARA) to the NSW Parliament Legislative Assembly Standing Committee on Social Issues' Inquiry into the procurement practices of government agencies in New South Wales and its impact on the social development of the people of New South Wales.

The ARA is the peak body for the rail sector in Australia and New Zealand, and advocates for more than 200 member organisations across the industry.

Our membership covers every aspect of the rail industry, including the:

- passenger and freight operators that keep essential rail services moving;
- track owners, managers, and contractors that deliver a safe and efficient rail infrastructure network; and
- suppliers, manufacturers, and consultants that drive innovation, productivity, and efficiency in the rail industry.

Our members are driven to support vibrant, sustainable and connected communities through greater use of rail across Australia and New Zealand. We bring together industry and government to help achieve this ambition.

Our advocacy is informed by an extensive research program to ensure we offer solutions that are grounded in evidence and focused on delivering tangible value in our daily lives.

We believe the rail industry has a crucial role to play in Australia and New Zealand's sustainable development and growth, and we know that the industry offers meaningful and rewarding careers for tens of thousands of people in both cities and regional areas.

Our significant program of work is focused on supporting a strong advocacy agenda, and creating opportunities for the rail industry to network, collaborate and share information, and maximise the benefits we have to offer the wider community.

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The Australasian Railway Association (ARA) is the peak body for the rail industry throughout Australia and New Zealand



The ARA thanks the NSW Legislative Council for the opportunity to provide this submission. The issue of government procurement practices and reforms has been a considerable focus area for the ARA in recent years and we hope the information in this submission is useful to the Committee's Inquiry.

Any questions regarding this submission should be directed to Simon Bourke, General Manager – Advocacy and New Zealand via

Yours sincerely,

Caroline Wilkie Chief Executive Officer



## ARA SUBMISSION

Inquiry into the procurement practices of government agencies in New South Wales and its impact on the social development of the people of New South Wales

#### Response to the Terms of Reference

- *a.* the *current state of procurement* by New South Wales government agencies
  - *i. the value of procurement, through whole of government or agency procurement arrangements*
  - *ii.* the policies, schemes and contracts of all categories that New South Wales government agencies procure, including labour
  - *iii.* the number of whole of government procurement arrangements available to New South Wales government agencies
  - *iv.* the application of the New South Wales Procurement Policy Framework and the devolved nature of the responsibilities and obligations of New South Wales government agencies under the framework
  - *v.* the value/volume of New South Wales government agencies procurement undertaken outside of whole of government procurement arrangements
  - vi. the accreditation program for goods and services procurement and construction procurement

The significant growth of the infrastructure market in the last 20 years has brought with it a legacy of relatively high costs compared to many of Australia's global peers. On simple metrics, the cost of building core infrastructure in Australia is expensive in world terms, with tendering costs in Australia estimated to be around 1-2% of a project's total cost, at least double the world benchmark of 0.5%.<sup>1</sup>

Reducing these costs would deliver multiple benefits: more bidders would be likely to join the tender process, increasing competitiveness; cutting red tape would see tender processes completed faster; and resources saved in the tender process could be focused on project delivery. Ultimately these costs are borne by taxpayers and infrastructure users.

The ARA therefore proposes that significant benefits could be realised if improvements were made to current procurement practices. Substantial improvements can be achieved through more streamlined and consistent tender processes that improve efficiencies for both suppliers and purchasers, from pre-qualification right through to contract award. In particular, to ensure that there is an efficient tender process that minimises the consumption of resources on redundant and non-productive outcomes.

Improved efficiencies would also reduce procurement cycle times, further reducing costs and releasing industry capacity for delivery. Further, tendering on the basis of more standardised contracting models, with appropriate risk allocation frameworks for delivery, will also reduce tender development and negotiation

<sup>&</sup>lt;sup>1</sup> Rail Express, The Sustainability of Rail Contracting in Australia, 2012



costs. Creating a consistent and well understood delivery environment will also lead to more successful project delivery outcomes.

**b.** the effectiveness of whole of government and agency procurement arrangements, including standing offers, panels and prequalification schemes, in ensuring that suppliers and their subcontractors deliver value for money and comply with relevant policies and regulations, including labour laws, at the qualification, contract negotiation stage and contract management stages of procurement

Policies and regulations that govern the rail industry vary significantly state by state across the Australia. For the local rail supply chain, operating in multiple jurisdictions of Australia is akin to operating in different countries, necessitating an understanding of each jurisdiction's requirements which raises compliance costs. Achieving greater harmonisation within Australia lowers barriers to participation for the local supply chain, enabling sustained operations which can build scale and expertise and opportunities for growth.

Given the practical challenges involved in national rail coordination, and the key role of state governments in delivering and operating rail assets, effort should be focused on achieving broader consistency in policies, regulation and planning across the jurisdictions. The Infrastructure and Transport Ministers' Meetings (ITMM) have begun this process through the National Rail Action Plan, as well as the recently launched National Rail Manufacturing Plan, however a commitment from the NSW government will be required to ensure improved coordination across jurisdictions. Improved harmonisation would support more viable economies of scale for Australian owned businesses, which in turn would foster an environment that allows them to invest and viably compete.

Greater consistency reduces supply chain risk and promotes innovation, research, and the adoption of technologies that will provide sustainable opportunities for Australian businesses to participate and invest in the rail industry.

The future of Australia's rail construction sector hinges upon driving down the high costs of tendering, more consistent project planning on behalf of governments, and greater industry collaboration. A sustainable rail industry is vital to deliver the rail infrastructure pipeline.

It is estimated that \$154 billion of rail investment is planned in the next 15 years.<sup>2</sup> This will require specialist skills, at a time of skills shortages, to devote towards the procurement and delivery of projects. This will amplify the need to develop more productive and efficient approaches to procurement. If processes do not improve, contractors may be more selective in which tenders they will bid on. Procurement practices that are resource intensive, expensive, high risk, or likely to be delayed are considered less attractive.

It should also be acknowledged that the Australian rail industry operates within a global market, with many other countries competing strongly for investment, resources and technical support. If the Australian market is

<sup>&</sup>lt;sup>2</sup> BIS Oxford Economics, 2022



seen as too expensive or uncertain for rail infrastructure, then international companies will redirect their interest and resources into other more favourable locations.

In consultation with rail infrastructure constructors, the ARA developed and published <u>Best Practice Principles</u> for Rail Construction Procurement in 2020, which summarises the principles that would help achieve improved outcomes for both governments and industry. Implementing these principles would aid rail construction procurement efficiencies for both procurers and tenderers, assist in reducing costs, get more rail projects off the ground faster, and create more jobs. Principles include:

- Ensuring tender size and requirements do not obstruct tier 2 and 3 contractors bidding
- More transparent evaluation and weighting of tender criteria
- Streamline the pre-qualification process
- Reduce red-tape while still meeting probity obligations, by ensuring probity requirements are riskbased and that the costs and impact of mitigations are proportionate to the risks involved
- Standard contracts and standardised T&Cs could save time and reduce administration costs
- Contract models need to support a collaborative partnership approach for the benefit of both parties
- Risk needs to be defined, quantified, fair and capped
- Key performance indicators (KPIs) need to be proportionate to the margin of the contract
- Reasonable recompense should be provided to all tenderers to help recover costs associated with a competitive tender process through a claims process
- Consistent implementation of progressive cost reimbursement during the tender process
- Ensure commercial model and tender processes do not limit productivity and project outcomes, but support new technologies and processes

There are clear signs that the industry is facing capacity challenges in delivering the pipeline of projects. Resources consumed in the procurement process are taken away from the industry's capacity to deliver. With every rail infrastructure project, there will be subsequent requirements for supporting operations and maintenance tenders. The rail industry requires relatively specialist, scarce and high-value technical skills, which are also drawn on significantly during the procurement process.

Ensuring a more efficient tender process that minimises the consumption of resources on redundant and nonproductive outcomes would also reduce procurement timeframes, reducing costs and releasing industry capacity for delivery of projects. Further, standardised contracting models and risk allocation frameworks for delivery will also reduce tender development and negotiation costs. Creating a consistent and well understood delivery environment will also lead to more successful project delivery outcomes.

In consultation with rail manufacturers and suppliers, the ARA also developed and published a <u>Best Practice</u> <u>Guide to Rollingstock and Signalling Tendering in the Australian Rail industry</u>. Many of the principles in this guide, reflect those highlighted in the construction guide. Inevitably, the benefits arising from any process optimisation and standardisation are multiplied when adopted across Australia's procurement agencies. The ARA therefore supports the national convergence and practical standardisation of procurement practices across jurisdictions to the greatest extent possible.



A national accreditations scheme that supports pre-qualification, could enable suppliers to input information once, so contractors as well as purchasers can easily identify registered suppliers and access necessary supplier information, including accreditations. Harmonising accreditation recognition across jurisdictions will assist in addressing costly inefficiencies. There are some basic examples of national pre-qual schemes in roads and bridges as well as non-residential building, but there are certainly opportunities for more sophisticated nationally coordinated sector accreditation schemes internationally (such as in the utilities and rail sectors in the UK) and support by an online portal and platform to minimise duplication and streamline processes.

Procurement models used for major rail projects increasingly shift risk from (mainly public sector) clients to head contractors or OEMs, which in turn then are passed down the supply chain to sub-contractors and suppliers of materials and equipment.

Rail projects in Australia are becoming increasingly complex, involving overbuilds rather than greenfield developments, as well as a large number of interfaces. It is important that procurement models to deliver rail projects in Australia are chosen to encourage participation and sustainability of Australian rail businesses and do not assign risk where it cannot be effectively managed.

Partnership and alliance procurement models have proven to be the most successful models. There are positive case studies for procurement in the rail industry, with Victoria's Level Crossing Removal Project's (LXRP) program alliance approach demonstrating industry-leading cost and time outcomes.

These program alliances have been successful due to the visible potential pipeline and improved collaboration. The engineering solutions have led to cheaper unit rates as a result. The procurement models used for Inland Rail have also demonstrated these attributes, with a focus on collaborative risk mitigation from the procurement phase to deliver an equitable share of risk.

Ideally, more complex rail projects or programs with additional risk should be contracted under more collaborative arrangements, while simpler projects can still be procured through hard dollar contracts. Broadening the participation of smaller contractors is important for industry diversity, competitiveness and sustainability. Innovation is also best enabled through collaborative models, program alliances and early contractor involvement.

The cost of tendering both construction projects as well as procuring rollingstock in Australia is estimated to be double international averages.<sup>34</sup> The costs of reducing these costs would deliver multiple benefits: more bidders would be likely to join the tender process, increasing competitiveness; cutting red tape would see tender processes completed faster; and resources saved in the tender process could be focused on project delivery. Ultimately these costs are borne by taxpayers with rail predominantly procured by Government agencies or Government operators.

Type Approvals require new and/or novel technologies to pass through discrete due diligence testing prior to being adopted by railway operators. Significant improvement could be realised in standardising the Type

<sup>&</sup>lt;sup>3</sup> Rail Express, The Sustainability of Rail Contracting in Australia, 2012

<sup>&</sup>lt;sup>4</sup> Deloitte Access Economics, Opportunities for Greater Rollingstock Efficiency, 2013



Approval Process across rail networks for the benefit of both the network operators and the suppliers and manufacturers. Currently, new technology, products and construction/maintenance processes, must pass through each railway operator's specific approval process prior to being rolled out, regardless of whether the technology, product or process has been approved or applied elsewhere. Type Approval with one operator does not currently serve as a 'trust marker' to another rail operator. This adds a further hurdle to those that are developing innovative technology and proposing technology across different networks.

The lack of consistent and equivalent Type Approval processes between jurisdictions and customers leads to significant inefficiencies, costs and potential barriers for contractors and suppliers. There is opportunity to develop a more harmonised approach to Type Approval processes applied through cooperative agreement, on a set of standardised principles and approaches. Addressing the weaknesses of the current Type Approval processes will ensure more resilient supply chains and support the growth of the domestic economy.

*c. current capacity of procurement officials* in government agencies to assess suppliers and ensure they, and their subcontractors deliver value for money and comply with relevant policies and regulation, including labour laws, at the qualification or contract stage and throughout the contract management stage

A skilled and experience workforce is required in all aspects of procurement. Lessons learnt from each project needs to be captured and enacted on. Industry report that procurement processes, requirements and standards not only vary from state to state and agency to agency, but also project to project. This lack of consistency not only creates inefficiencies for the supply chain but also increases the risks to the procurer, and emphasised further if the capacity and capability of government agencies officials is limited. There often can be a tendency to also include the standards and requirements within a contract because they have always been captured, as opposed to question their currently value and whether they are in conflict with new standards and requirements included in the tender. On occasions industry report that there appears limited confidence to make appropriate decisions. This often leads to risk being transferred more and more to industry, who are not always best placed to manage.

Many of the solutions and decisions that can lead to more cost effective and efficient outcomes rest with government agency officials who often do not feel empowered or incentivised to enact appropriate change.

# *d.* any *opportunities* that may exist for co-regulation, and other incentives to improve labour market governance and enforcement through the procurement process to ensure the process delivers both value for money and social outcomes

Industrial relations are an important aspect to safe guard workers rights, but this needs to be balanced with the appropriate recognition of training, and transitioning more sustainable roles, supporting the adoption of new technologies and ensuring the safe and efficient running of railways.

Recognising the value of migrant workers for specialised skills deficits in projects needs to be supported by policy. The importance of cadetships and apprentices to equip and train new entrants also needs to be supported by a smooth and transparent project pipelines to provide confidence and assurances for businesses to invest.



There are also several opportunities to increase the number of workers employed in rail manufacturing in Australia noting that this requires a collaborative effort from industry, government, and educational institutions to attract and develop a skilled workforce that meets the needs of the industry.

- Collaboration with educational institutions: Rail manufacturers can collaborate with educational institutions to develop training programs and apprenticeships that equip students with the skills needed for jobs in the rail manufacturing industry.
- Upskilling of existing workers: Companies can invest in upskilling their existing workforce by providing training and development opportunities that enable them to learn new skills and technologies.
- Government support: The government can provide financial incentives and subsidies to companies that invest in training and development programs for their workforce.
- Regional development initiatives: Rail manufacturers can collaborate with regional development initiatives to attract workers to regional areas where there may be a shortage of skilled workers.
- Promotion of the industry: The industry can work to promote itself as an attractive long term career option for young and diverse people, particularly those interested in technology and engineering. The <u>ARA's Work in Rail website</u> is an example of an industry initiative seeking to promote careers in rail.
- Consistency of skills and recognition of skills across jurisdictions: Government needs to work with industry to ensure that the required safety qualifications are harmonised across jurisdictions.
- *e.* the *evaluation criteria used in tenders and how they are weighted* in making a decision to award a contract, in particular consideration of:
  - i. local content
  - ii. value for money
  - iii. social, economic and labour market outcomes
  - *iv. environmental considerations, such as sustainable sourcing, energy efficiency and waste reduction*
  - v. innovation
  - vi. subcontracting arrangements

The ARA encourages procurers to be open about the objectives of the project and the relative significance of the intended evaluation criteria. Often tenderers are not aware of the weighting of the evaluation criteria, and while aspects such as innovation, sustainability, energy optimisation, local content, are all very important they are not necessarily appropriately or transparently valued. The ARA believes there is value in governments increasing transparency around the weighting of these various aspects outlined in tenders.

Feedback from industry has also recommended that procurers not unrealistically emphasise non-price evaluation criteria if price factors will dominate the purchase decision.

Industry and government can collectively have a significant impact on sustainability outcomes during the planning and procurement phase. The application of consistent sustainability performance standards as part of procurement would support this outcome and ensure a transparent approach to improving sustainable outcomes in the development of new projects. This may also include consideration of whole of life impacts on development when assessing solutions during the procurement process.



- *f. current approaches to transparency and accountability of procurement by New South Wales government agencies, in particular:* 
  - *i.* function and requirements of the New South Wales Government Procurement Board and the New South Wales Procurement Policy Framework
  - *ii.* record keeping arrangements for procurement activities
  - iii. Agency annual self-reports and outcome reports

The ARA has no specific comments on the transparency and accountability of procurement by NSW government agencies, however we do believe that increased transparency and accountability only leads to improved outcomes.

#### g. the New South Wales Government's procurement practices, in particular its ability to:

- *i.* prioritise local content, local manufacturing, and local jobs
- *ii. improve opportunities for quality training and workforce participation*
- *iii.* provide opportunities for diversity, inclusion and the participation of disadvantaged groups, including women and minorities
- iv. support local suppliers, and small and medium enterprises

Existing investment and procurement processes are highly fragmented, with each state's planning and policy developed in isolation from the other states. Most firms in the Australian rail industry operate across state borders and are therefore in direct competition with other local firms over human and capital resources, a situation which is exacerbated by uncoordinated local content policies, indigenous and workforce requirements, and social requirements. This poses risks to both the number of tenderers, delivery timeframes and quality of supply to Australian rail projects, as well as the growth and sustainability of local firms and jobs.

It is also important to acknowledge that the challenges with the fragmented nature of local content policies are exacerbated by the unpredictable way in which governments award extensions to rolling stock projects (and other projects more broadly).

Ensuring that individual pipelines are developed in recognition of other investment plans allows Australian rail firms to plan, prepare, and coordinate several projects in multiple jurisdictions. Coordination of the project pipeline would also better support industry's capacity to efficiently deliver against government project milestones.

The ARA's Value of Rail Report 2020 stated that the rail rolling stock manufacturing and repair industry has revenue of just over \$2.4 billion and a direct value-added of \$515 million. In 2019, the rail rolling stock manufacturing and repair industry supported around 4,087 FTE workers, similar to the amount in 2016. For every million dollars spent by the rolling stock manufacturing and repair industry, around 1.32 (direct and indirect) FTE roles are generated.

The rail rolling stock manufacturing and repair industry spends five times more on intermediate inputs than wages, whereas the average across the entire economy is closer to two times. For example, it spends more than \$300 million on intermediate inputs from the structural metal product manufacturing industry and professional, scientific and technical services industry. The rail rolling stock manufacturing and repair industry's



expenditure on intermediate inputs also boosts employment, especially for labour-intensive industries such as the iron and steel manufacturing industry. This shows that rail rolling stock manufacturing can play a significant role in boosting activity all along the supply chain.

It is also important to know that rolling stock manufacturing accounts for 11 per cent of rail employment in Australia and that regional centres are the major employment hubs for rolling stock manufacturing and repair across Australia.<sup>5</sup> Employment is largely concentrated in the Sydney and Melbourne metropolitan areas, which together account for 50 per cent of the national total but tends to be in outer-metropolitan areas. The main non-capital city employment bases can be found in Newcastle, Maryborough and Lake Macquarie.<sup>6</sup> There are also many other rail manufacturing facilities across Australia dedicated to producing rail infrastructure components such as rail, signalling equipment, sleepers, fastenings, points and crossings to name just a few.

In terms of the future of rolling stock manufacturing in Australia, it is worth noting that while a 2013 Deloitte Access Economics' study envisaged a future where imports dominate Australian rolling stock supply due to the domestic sector's lack of competitiveness, this has not eventuated.<sup>7</sup> Instead, the widespread adoption of local content policies since the release of the study has protected the domestic sector from this eventuality, with the import share of rolling stock manufacturing supply for final uses having fallen, rather than increased, over the last decade.<sup>8</sup>

A National Local Content Policy, as opposed to a series of State local content policies, offers the key to unlocking the benefits of scale, componentry harmonisation and design efficiencies. These could amount to a cut of some 19 per cent in rolling stock manufacturing procurement expenses, which would be of considerable benefit across the country, allowing state governments to increase spending in areas such as education and health care.

The rail supply chain is spread throughout Australia's eight states and territories. Overall, much of the rail supply chain is largely concentrated in New South Wales and Victoria – reflecting that these most populous states will tend to be centres for passenger and freight rail operations. Many firms operate across borders. In achieving a more sustainable, and competitive rail supply chain, any artificial cross-border barriers that may be preventing effective transfer of capacity or skills between Australian jurisdictions should be reviewed. Implicitly, restricting market access prevents the access to opportunities to achieve costs of scale and a sustainable rail supply chain.

• There are also a number of critical factors that determine the health of the local supply chain, including the procurement processes, partners and technologies chosen, and the connections with local suppliers. These factors all have potential long-term impacts on the ongoing maintenance associated with projects, as well as the specific skillsets required. Given the connections these firms already have with local operations and maintenance suppliers, it is important that rail procurers (particularly in government) are aware of the capabilities and skills of these firms and recognise the longer-term economic benefits that can accrue from utilising locally based

<sup>&</sup>lt;sup>5</sup> ABS Census (2016) Place Of Work (POW) ANZSIC Industry Data

<sup>&</sup>lt;sup>6</sup> Ibid

<sup>&</sup>lt;sup>7</sup> Deloitte Access Economics 2013, <u>Opportunities for Greater Passenger Rolling Stock Procurement Efficiency</u>

<sup>&</sup>lt;sup>8</sup> ARA 2023, <u>Benefits of a National Local Content Policy</u> report



manufacturing and construction businesses. The domestic rail industry has numerous legacy issues that impact its ability to scale up and operate at optimal efficiency. While some of these problems are due to the unique development of the rail industry in Australia, others are the result of persistent mismanagement, misallocation of resources and poor national transport policy. Threats to the local supply chain include:

- Historically fragmented sub-national markets in terms of regulations, standards, systems, technologies and competencies that stymie scale economies, innovation and skills development.
- Regulatory, funding and pricing models that disproportionately favour investment in road freight haulage at the expense of rail freight, considering rail's economic and social benefits.
- Procurement processes that are inconsistent between jurisdictions, increasingly complex, increasingly allocate risk from procurers to the supply chain and do not effectively support innovation nor local participation and investment.
- Local content policies that tend to amplify challenges wrought by fragmentation and work against developing a strong national supply chain, exacerbated by manufacturing facilities being duplicated in various jurisdictions.
- Volatility of investment in fixed rail assets, as well as rollingstock, which also inhibits private sector investment in long term capacity.

Critically, many of these issues are interlinked. While the fragmentation of the Australian rail industry is a historical legacy issue, subsequent regulatory, innovation and procurement policies have continued to hamper industry sustainability and growth. It is the culmination of these issues that has created a significant barrier to achieving requisite scale in the Australian market for many rail manufacturers. Only with sufficient scale can local industry invest in skills, undertake necessary investment in innovation, and build more reliable and internationally competitive advanced manufacturing systems and processes that can more readily compete in global markets.

This is important as international markets are a source of more stable, supplementary demand that can support growth and sustainability in Australia's rail supply chain. Unfortunately, the pathways for local Australian suppliers into global supply chains is not clear or available for most. Foreign companies tend to rely on their own local subcontractors and supply chains where they are most familiar with quality and other risks and challenges. Unless Australian firms team up with major international suppliers, being more integrated with global supply chains is extremely difficult in practice.

Australia should be selective of where it should invest in manufacturing capacity. Australia will be uncompetitive internationally if it attempts to compete on cost in low-value, low-design, and low-tech manufacturing, due to its high input costs. However, there are significant manufacturing investment opportunities in high value add sectors. There are many examples of Australian manufacturing capabilities that have shown they can compete internationally.

*h.* procurement best practice to encourage ethical conduct and promote social development in other jurisdictions, both nationally and internationally



Consistent application of requirements that support ethical conduct and social development, including modern slavery considerations and appropriate community engagement, is important. With rising reporting requirements on a range of ESG issues, it is important to ensure standards and reporting requirements align with existing and emerging national and international approaches to streamline these processes where possible.

#### i. any other related matters

Government must also be conscious of climate change commitments when considering investment in assets such as rolling stock, which typically have a service life well in excess of 30 years. Accordingly, any new motive power for rail (locomotives and multiple-unit passenger trains) purchased from now on would be expected to remain in service until at least 2050. The necessary transition away from diesel fuel in order to achieve net-zero emissions by 2050 must be factored into rolling stock procurements starting now. Clean motive power technology for rail therefore represents a significant and immediate opportunity to establish new capabilities and businesses in Australia's manufacturing sector to support the rail industry's energy transition.

The increasing interest in sustainable and innovative technologies within the rail sector, including lightweight materials, energy-efficient systems, and digital technologies, offers Australian manufacturers an opportunity to be well positioned to secure contracts in the Australian market to offer these technologies. Further, Australian rail manufacturers may also have export opportunities in Asia, where there is significant demand for rail infrastructure and a growing interest in sustainable and innovative technologies.

While this represents a great opportunity for the Australian industry, the time horizons outlined above highlight the urgency of the issue. Collaboration between government and industry will be required to realise the benefits and potential new markets decarbonising rollingstock can deliver, and ensure a just transition from current approaches.