



ARA SUBMISSION

South Australia's 20-Year State
Infrastructure Strategy:
Discussion Paper

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The ARA

The Australasian Railway Association (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 the region's sustainable development and growth, and know that the industry offers meaningful and rewarding careers for tens of thousands of people in the regions.

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.

The ARA thanks the Infrastructure SA for the opportunity to provide this submission.

Any questions regarding this submission should be directed to Simon Bourke, General Manager – Advocacy and New Zealand via sbourke@ara.net.au.

Consultation Questions

The following section outlines the ARA's responses to several of the questions posed in the Discussion Paper.

Freight and supply networks

Question 2: What infrastructure constraints are preventing a more efficient, accessible, and productive freight sector?

Rail freight in Australia is considerably constrained by the differences between jurisdictional networks. A lack or absence of interoperability across the country is the single most significant drain on productivity for the rail freight sector. It directly contributes to the increased cost of operating rail freight services, reduces operational efficiency and flexibility, dampens the uptake of new technology and pace of innovation, and ultimately hampers the ability to compete with other transport modes.

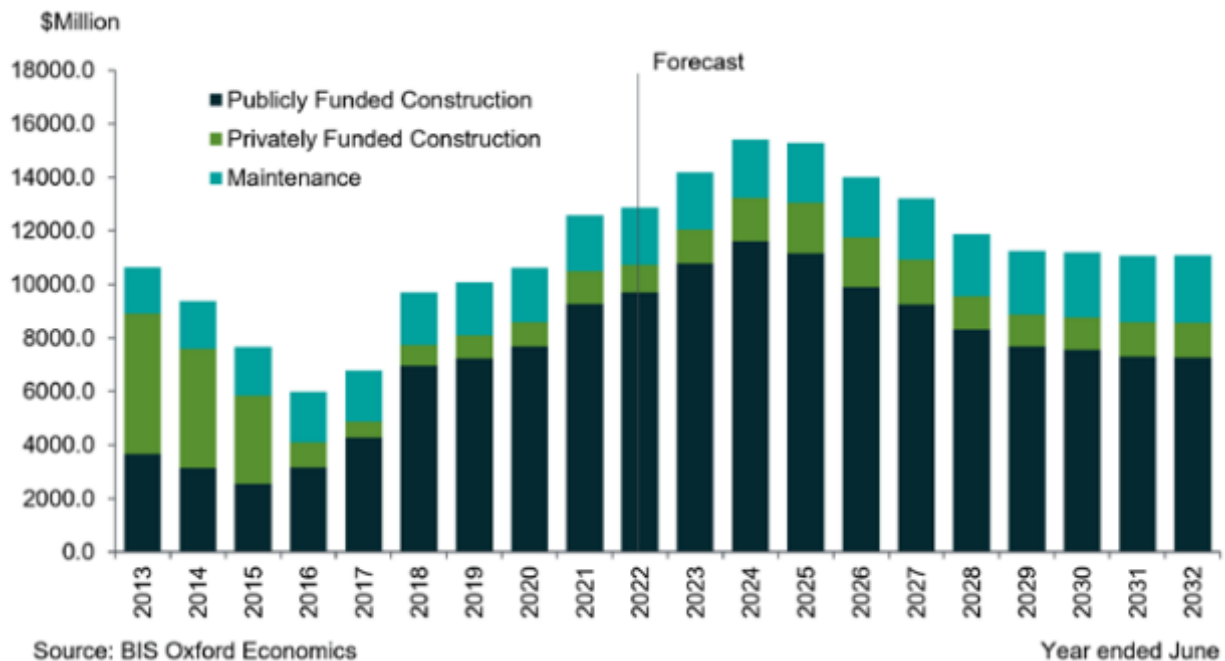
This lack of a national rail systems perspective is compounded by the increasing sophistication of below and above rail technology, rolling stock, signalling and communication systems. These factors stand to exacerbate interoperability issues over time.

Last year the Prime Minister, state Premiers, and territory Chief Ministers made the historic decision that "Improving the interoperability of rail systems" would become a National Cabinet priority. This decision signifies how important this issue is to governments across Australia to ensure our rail systems are able to operate more efficiently and be better utilised for the movement of freight. The decision is also reflective of the unprecedented level of investment in rail infrastructure projects across the country.

Rail construction and maintenance activity in Australia rose to a record \$12.9 billion in 2021-22, with activity forecast to average \$14.4 billion over the next five years. Overall, \$129 billion in rail civil construction and maintenance is forecast for the coming decade to 2031-32, compared to \$96 billion over the last decade. Over the next 15 years, \$154 billion in rail construction work is expected.¹

¹ ARA Australian Rail Market Outlook, Bis Oxford Economics, 2022

Figure 1



With such a significant investment pipeline in place, it is essential that solutions to our interoperability challenges are addressed as soon as possible. It is also worth noting that much of this investment is being undertaken by state governments on passenger rail projects, largely isolated from other networks with little consideration for freight operations or interoperability. Improving interoperability will be critically important to avoid a 'digital break of gauge' in signalling systems, similar to the physical break of gauge that has plagued rail track infrastructure since Federation.

National Cabinet has now delegated Infrastructure and Transport Ministers (through ITMM) to progress the issue of improving the interoperability of rail systems. In December 2022 the Ministers of ITMM agreed that the National Transport Commission (NTC) focus on five priority areas identified as critical pain points for the rail industry.

These priority areas are:

- identifying the best mechanism for codifying a small number of critical national standards and complementary rules to make rail more competitive;
- aligning train control and signalling technology on the eastern seaboard;
- reducing the burden on drivers, crew, and maintenance workers;
- streamlining rolling stock approval regimes; and
- identifying the national/international pathways for digital skills required in Australia in the next five years.

At the most recent ITMM in June 2023, Ministers agreed to codify a small number of high-impact interoperability standards required to achieve nation-wide safety and productivity benefits. The standards will be performance-based with a priority focus on digital train technology, a single on-board interface for drivers and crew, and streamlining rolling stock approvals. Ministers also asked that a stocktake and gap analysis be undertaken of the current supply chain capacity in the Australian rail manufacturing sector, including identifying opportunities to support local suppliers to grow and have greater ability to deliver componentry to support local outcomes.

Further to this initiative, the Australian and Victorian governments, as well as the ARA on behalf of rail industry leaders, have come together to sign the historic Memorandum of Cooperation to address longstanding coordination issues between Australia's rail networks.

The agreement will improve rail's competitiveness, boost national productivity and improve connections between cities, regions and ports. The first signatories to the Memorandum of Cooperation include Australia's Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon Catherine King MP, Victorian Deputy Premier, the Hon Jacinta Allan MP, and the chair of the ARA, Danny Broad.

The Memorandum has now been signed by state transport Ministers, rail operators and manufacturers, including Siemens, Alstom, Aurizon, Metro Trains Melbourne, Tasrail and ARTC. Further signings between Australian transport Ministers and industry builders, operators, and manufacturers are being progressed across the country to maximise the opportunities from the investments to improve rail connections.

Given the significance of the rail interoperability challenge and the current focus from all governments on improving productivity, the ARA believes it is important that this issue be recognised in the Infrastructure SA Strategy. Rail is already responsible for the majority of Australia's freight task and if it is to become more competitive with road in the containerised freight market, as well as play a greater role in decarbonising the economy, then it is critical that we improve the interoperability of rail systems.

A decarbonised, sustainable economy

Question 17: What are the most significant challenges for decarbonising transport and how do we address them?

In 2022, the Australian Government committed through legislation to achieve Net Zero greenhouse gas emissions by 2050, with a target of achieving 43 per cent below 2005 levels by 2030. This ambitious goal will require a significant shift in traditional operations for several industries, including the transport sector.

In 2020, the transport sector accounted for 19 per cent of Australia's total greenhouse gas emissions. The vast majority of these emissions (85 per cent) were generated by road transport, with trucks alone accounting for 20 per cent of all transport emissions. Rail by comparison, accounted for only 4 per cent of emissions for the entire transport industry, despite moving 56 per cent of Australia's total freight.²

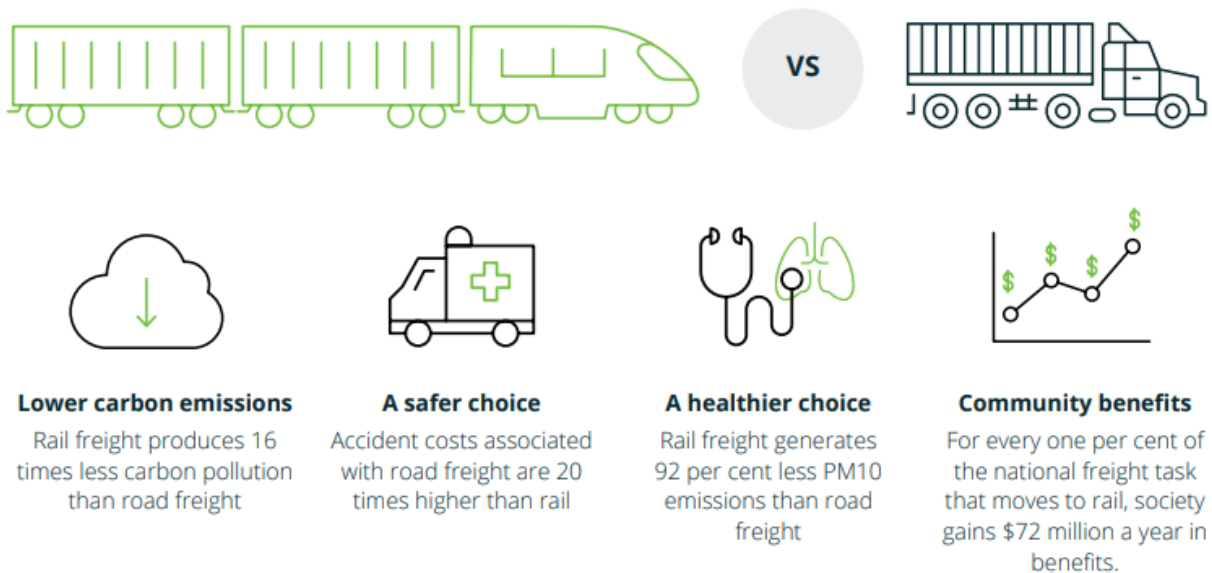
With rail freight producing 16 times less carbon pollution per tonne kilometre than road freight, it is essential that the SA Infrastructure Strategy recognises the need to shift a greater amount of freight off the road and onto rail. While road freight will always play an important role in our national supply chain, particularly for last-mile connections, there is a significant opportunity to increase the role of rail in moving non-bulk freight.

In 2020, of the total freight moved by rail only 5.6 per cent was non-bulk freight, which highlights the significant opportunity to consider mechanisms for rail to play a greater role in moving non-bulk freight through our supply chain, particularly on the east-coast of Australia. This would reduce the transport sector's greenhouse gas emissions, as well as improve road safety through reduced heavy vehicle congestion.

² Australia's emissions projections 2022, DCCEEW, December 2022

Figure 2

Getting more freight onto rail delivers significantly better outcomes for the community, and should be a national priority.



There is an opportunity to improve rail’s modal share through the development of incentive schemes that encourage a greater uptake of rail for the movement of freight. There have been examples of successful incentive schemes in Australia, most notably the Fremantle container rail subsidy in Western Australia.

In 2006-07, the WA State Government established the Fremantle Container Rail Subsidy in an effort to lower the cost and increase the proportion of container freight on rail in and out of the Port of Fremantle’s Inner Harbour. The Subsidy is one of the policy tools Government uses to help reduce total costs associated with moving containers by rail, making it more competitive with road. The scheme has been very successful, lifting rail freight modal share from 2 per cent to over 20 per cent.

The Infrastructure SA Strategy should consider the establishment of a rail freight modal shift incentive scheme. Doing so would assist South Australia in reducing the number of carbon-intensive heavy vehicles on the road network and reduce traffic congestion, while improving the decarbonisation of the state’s transport sector.

Improved resilience

Question 20: How do we better account for the impacts of climate change in our infrastructure, to support improved resilience?

Question 21: What are the critical resilience issues that South Australia needs to address?

Over the last three years we have witnessed the devastating impacts that severe weather events and flooding have had on communities around the country. These events have also heavily impacted the rail freight network and resulted in significant disruptions to our national supply chain.

The interconnectedness of rail to other freight modes is a critical factor for consideration. Rail plays an essential role in moving large amounts of freight around the country to both ports and intermodal terminals, where it is then transferred to either road or sea to reach its destination. The Rail infrastructure in South Australia provides a critical link between the east and west coast of Australia, as well as into the Northern Territory.

When these critical rail links are disrupted, the flow on effects to other modes and the broader supply chain is significant. Below are just a few examples of the real-world impacts experienced by supply chain businesses from weather related disruptions to rail infrastructure over the last two years.

- Critical supply shortages of basic pantry items and consumer goods in major supermarkets in Western Australia and the Northern Territory, with supermarkets forced to introduce buying limits on pasta, meat, frozen food, toilet paper and sanitary products.
- Rail outages caused by flooding resulted in Austrans customers experiencing 6 - 8 week delays on good being delivered, with a number of customers cancelling their contracts completely due to the impacts on their businesses.
- In Whyalla, South Australia, Liberty Primary Steel lost approximately 90 days of rail access to transport structural steel and reinforcement products to key projects across the east coast of Australia. This resulted in considerable economic loss to the manufacturers, distributors, logistics partners, project owners, and communities.
- Interstate deliveries of steel products produced by InfraBuild, which are critical to the nation's ongoing infrastructure renewal and construction program, have been compromised numerous times over the past 18 months due the effects of ongoing weather-related rail outages.


Infrastructure resilience is an issue that has come to the forefront for several industries in recent times and rail is no exception. The Australian rail industry has an overarching goal to improve Australia's productivity and help make rail the mode of choice in the national logistics supply chain, however this goal is becoming increasingly difficult due to the state of rail infrastructure.

It is critical that rail infrastructure managers (RIMs) be enabled to promote the greater use of rail by delivering a safe, more reliable and robust rail network which meets customer expectations and provides capacity for growth. Unfortunately, severe weather-related events are increasing in frequency, highlighting the need to improve the national freight rail network through a greater understanding of network vulnerabilities and plan for resilience improvements.

This issue is perhaps best highlighted by the major flooding event that impacted over 300km of ARTC's track between Crystal Brook and Kalgoorlie in January last year. The repair cost for the 18 sites impacted by this event alone was close to \$40 million, however the direct economic cost was far greater, estimated at \$320 million or \$13 million per day. Importantly, this event has had a negative impact on rail operators, the reputation of RIMs and freight on rail more broadly, as well as having wider economic impacts. A **case study** on this event is provided on the following page.

This type of event highlights the growing importance of network resilience in the face of more extreme and frequent climatic events, in particular where areas are classified as critical network, with no, or poor alternative options.

Unfortunately, much of our rail freight infrastructure was built more than 100 years ago and was simply not constructed to modern design standards capable of withstanding the effects of climate change and increasingly extreme and frequent weather events. This has highlighted the need to improve the national freight rail network through a greater understanding of network vulnerabilities and plan for resilience improvements.



Industry efforts to-date have focused on measures to improve resilience but have largely been limited to reducing the probability of infrastructure failure. Future proofing rail supply chains will require concerted effort to identify, fund and deliver a program of rail infrastructure upgrades across the country which improve network redundancy, reliability and resistance, particularly in response to climate risk. The emphasis has to be on reducing whole of life costs, even where the upfront ask is higher.

It is important that the SA Infrastructure Strategy recognises the critical role rail infrastructure plays in the movement of essential goods for communities across the country. In particular, it must be recognised that the rail infrastructure in South Australia forms an essential part of the national rail network with main trunkline connections to Western Australia and the Northern Territory.

The SA Infrastructure Strategy should recognise the ongoing work being progressed by the Australian Government's Road and Rail Supply Chain Resilience Review. This should include a commitment to engage with the Australian Government on progressing detailed business cases and investment into improving the resilience and reliability of critical rail freight infrastructure.

Case study: 2022 South Australia floods

The January 2022 flooding event which impacted over 300km of ARTC's track between Crystal Brook and Kalgoorlie underscored the urgent need for investment and decisions to improve the resilience of Australia's national rail freight corridors to secure national supply chains.

As a direct result of this flood event there was an unprecedented 24-day outage and coordinated repair operation which included 18 locations across 300km of track requiring major repairs which cost close to \$40 million. Importantly, the network west of Crystal Brook has no alternative route, making goods that rely on this route particularly vulnerable in case of protracted outage. Rapid recovery of this line, in case of major damage, is also compromised by the relative absence of intermodal terminals that could be used to facilitate land-bridging if a section of track is compromised.

A snapshot of the event impacts is outlined below.

- 200mm of rainfall was recorded in a one-day period causing washouts and ballast scouring.
- The track was closed for 24 days while repairs were carried out across a 300km section of track.
- Road freight was also suspended due to flooding for two weeks, owing to the proximity of road and rail routes.
- Typically, 80 per cent of Western Australia's land-based freight arrives by rail. Supermarkets in Western Australia and the Northern Territory faced supply shortages and were forced to introduce buying limits on pasta, meat, frozen food, toilet paper and sanitary products.
- Woolworths was forced to use sea freight for deliveries in Western Australia for the first time in decades.
- NSW water utilities faced supply shortages for critical chemicals used in water treatment processes.
- **The economic cost to the nation was evaluated at approximately \$320 million, or over \$13 million per day.**

Whilst the 2022 flood event impacting East-West rail traffic was unprecedented in scale and duration, increasingly extreme and frequent weather events have been observed on the network with increasing regularity.

In February 2021, the Wooroloo bushfire impacting a 6km section of the East-West line managed by Arc Infrastructure resulted in a six-day outage. In the same month, flooding at Nana Glen resulted in a 10-day outage on the North-South line in northern NSW, saw the derailment of two locomotives and 18 wagons and required the rebuild of 300m of track to restore operations.

A stronger infrastructure industry

Question 23: How can government and industry work together to support the supply of skilled labour needed to deliver a transparent infrastructure pipeline?

The review of Infrastructure Australia (IA) last year identified the need for IA to take a more active and leading role in working with jurisdictions to develop a coordinated national infrastructure plan. This is an initiative that the ARA supports. The development of a national investment plan, allowing for the coordination of the project pipeline across jurisdictions, would greatly improve industry's capacity to deliver, given supply chain constraints and current skills shortages (particularly in key specialised skill roles).

It is widely recognised that the unpredictability of government infrastructure investment inhibits private sector investment in long term capacity. The [ARA's Australian Rail Supply Chain report](#) published in 2020 highlighted the importance of this issue, recommending that infrastructure pipelines be regularly reviewed and published well before procurement phases commence. This would ensure local firms have adequate time to prepare and invest to meet the forecast demand.

This issue is broader than just having a visible long-term pipeline of work. The promise of work is not enough. The supply chain cannot make commercial decisions to invest in specific capacity and capability until they are contracted to a project. Therefore, delays in the procurement process and the execution of contracts can be an impediment to timely delivery of project milestones. In the absence of a national coordinating body, state governments should regularly review and re-publish their rail investment pipelines, as well as committing to the priority project recommendations of Infrastructure Australia.

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.

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.

Rail construction and maintenance activity in Australia rose to a record \$12.9 billion in 2021-22, with activity forecast to average \$14.4 billion over the next five years. Overall, \$129 billion in rail civil construction and maintenance is forecast for the coming decade to 2031-32, compared to \$96 billion over the last decade.

Over the next 15 years, \$154 billion in rail construction work is expected.³ Given the current significant levels of investment, it is vital that the rail investment pipeline is transparent, has long lead times for major projects, and provides sustainability to encourage private investment in capacity and capability building.

The ARA would encourage Infrastructure SA to collaborate and coordinate closely with Infrastructure Australia and other i-bodies across the country in the development of infrastructure strategies and investment plans. Greater coordination and alignment between jurisdictions on the major infrastructure projects and timelines would provide industry with a much higher degree of certainty. It would enhance the ability to better plan and manage capacity, and in doing so ensure more projects are delivered on schedule and within budget.

Question 25: How can government continue to encourage collaboration and innovation in procurement?

The powerful 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%.⁴ 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 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 construction industry is vital to deliver the rail infrastructure pipeline and reboot Australia's economy.

Given this period of uncertainty due to the global pandemic, governments are faced with tighter budgets while also needing to progress initiatives to stimulate employment. In these difficult circumstances, it is vital that we strive to improve procurement processes with increased clarity, collaboration, and efficiency. COVID-19 should be utilised as the catalyst for change.

It is estimated that \$155 billion of rail investment is planned in the next 15 years.⁵ 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.

³ ARA Australian Rail Market Outlook, Bis Oxford Economics, 2022

⁴ Rail Express, The Sustainability of Rail Contracting in Australia, 2012

⁵ BIS Oxford Economics, 2020

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 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 [Best Practice Principles 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.

The key considerations outlined in this document 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 risk-based 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 faces 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. This is particularly true in the areas of rolling stock and signalling. The typical procurement process requires high levels of access to the most skilled of these specialists.

Ensuring a more efficient tender process that minimises the consumption of resources on redundant and non-productive outcomes would also reduce procurement timeframes, reducing costs and improving productivity outcomes. 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 developed and published a [Best Practice Guide to Rollingstock and Signalling Tendering in the Australian Rail industry](#). 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 registration portal that supports pre-qualification, (for example, with expanded functionality of Tenderlink, or Industry Capability Network Gateway, or Aust Roads pre-qualification scheme) 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 (as well as internationally) will assist in addressing costly inefficiencies.

The development of such a scheme requires close consultation and support from state and territory government transport agencies, Rail transport Operators, OEMs and Tier 1 contractors. The ARA has commenced investigating the benefits of a national pre-qualification scheme (including options for mutual recognition) for the rail industry and is consulting with all relevant stakeholders to progress this important initiative.

The Infrastructure SA Strategy should recognise the importance of greater coordination and harmonisation of procurement practices across jurisdictions. Achieving a greater level of consistency and streamlined processes would reduce cost associated with infrastructure delivery for both governments and industry, as well as improve productivity and reduce unnecessary regulatory burden.