

SUMMARY REPORT

# The future of freight

October 2023



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## About this report

This summary report outlines the key findings and recommendations of the research project Rail Freight Productivity Review: Establishing an Efficient Freight Transport Network. The project includes three workstreams focused on understanding the conditions influencing modal share, infrastructure and planning requirements, and safety and operations.

It also draws on insights from industry consultations as part of the 2023 National Freight and Supply Chain Strategy review.

To read the full research, go to [futurefreight.com.au](https://futurefreight.com.au)

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# Background

**The need for rail to play a greater role to meet the nation's growing freight task is significant and urgent.**



The growing demand ahead cannot be met by maintaining the status quo. For too long, initiatives to move more freight on rail have been frustrated by policy settings that limit rail freight productivity and efficiency, and underutilise the significant advantages rail has to offer.

This is no longer an acceptable option for the Australian economy and community. The pandemic laid bare the essential role strong national supply chains play, and the importance of rail as part of our national network. As we look to a net-zero future, we must make significant, meaningful changes to the way we operate to meet emissions reduction targets and create a sustainable freight network.

The Australasian Railway Association, Freight on Rail Group and Department of Infrastructure, Transport, Regional Development, Communications and the Arts have joined forces to deliver a landmark research project that makes the case for greater use of rail. This comprehensive project identifies the barriers to achieving modal shift and the opportunities to harness the significant benefits rail freight has to offer.

Our research has identified practical steps industry and government can take together to deliver a more reliable, efficient and sustainable rail freight network to meet growing demand that is to come.

Rail must be at the heart of our freight future.



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# Rail freight in Australia

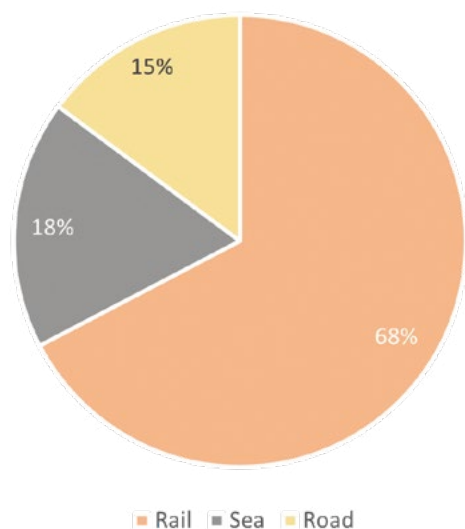
# What freight does rail move?

Rail is well suited to moving freight in large volumes over long distances. However, it has traditionally struggled to capture market share on key Australian freight routes between Sydney, Melbourne and Brisbane. New policy settings can and should help address the traditional barriers to using rail more to support a more sustainable, resilient freight network.

Rail moves almost three quarters of Australia's bulk commodities, but accounts for just 17 per cent of non-bulk freight.

## Bulk freight

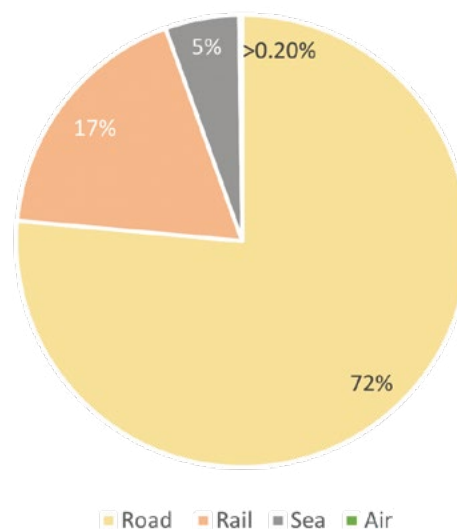
Commodities such as agricultural and mining products



Rail is well suited to moving large and dense volumes, such as commodities. It is most efficient over long distances, especially over 1500km. For shorter distances between 750 – 1500km, rail is well suited to non-time sensitive freight services.

## Non-bulk freight

Packaged items such as consumer goods



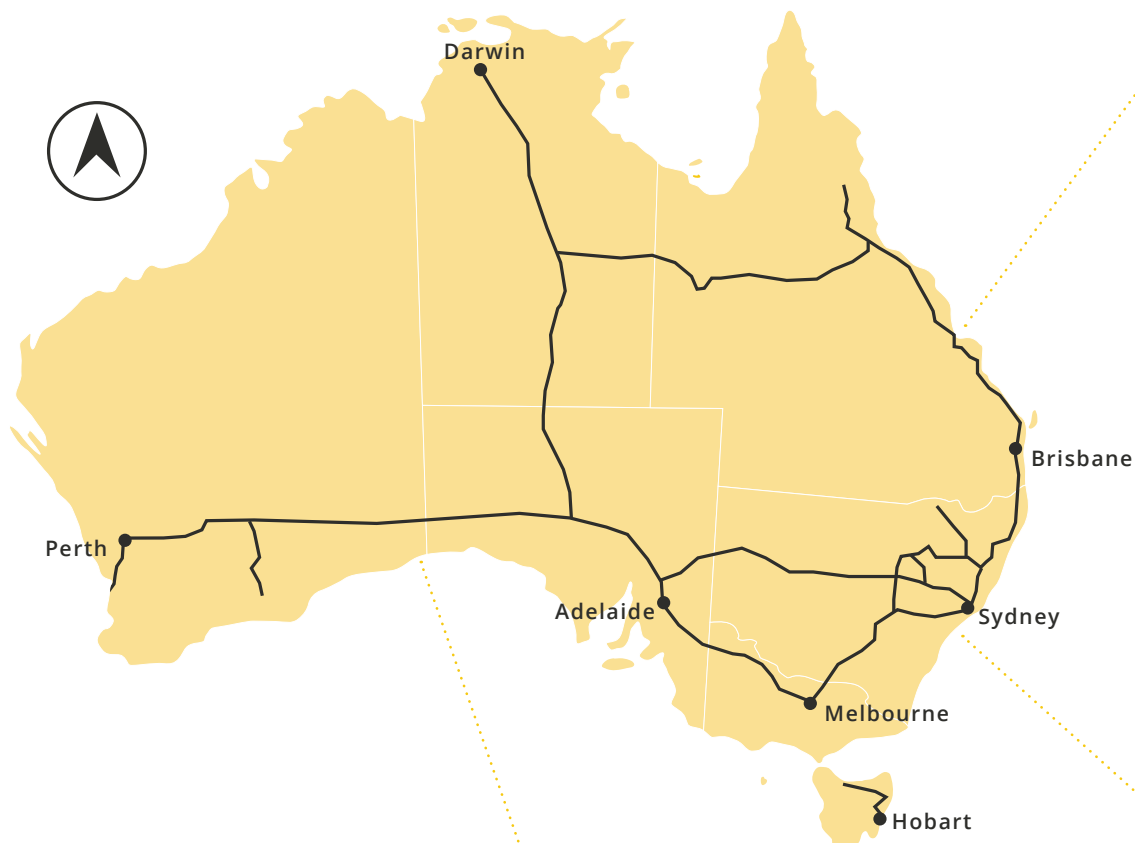
Traditionally, road has been the primary mode used for transporting smaller volumes over shorter distances. Policy changes that make it easier for rail freight operators to move across networks and jurisdictions would help rail play a greater role in meeting these needs. This is critical to meet future demand - road alone cannot fulfill our national freight requirements.

# Current use of rail freight

**Rail's mode share varies on key freight routes across Australia.**

## North Coast Line

- Headhaul mode share: 53 per cent
- Backhaul mode share: 42 per cent
- Intense competition between road and rail.
- Rail is dominant in distances over 1500km, while road is most used for distances of less than 1000km.



## East-West Corridor

- Headhaul mode share: 65 per cent
- Backhaul mode share: 77 per cent
- Rail dominates this corridor, especially between Melbourne, Sydney and Perth.

## North-South Corridor

- Headhaul mode share: 11 per cent
- Backhaul mode share: 7 per cent
- Road captures most of the market share due to the shorter distances of key routes.
- Rail's modal share is strongest on the Melbourne – Brisbane route.

\* Headhaul: The one-way destination for a freight load.  
\* Backhaul: Freight that is transported on the operator's return journey.



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Achieving  
mode shift

# Influences on modal choice

Freight modes are chosen by customers based on a range of factors. Many of these factors can be influenced by government policy settings affecting the freight sector.



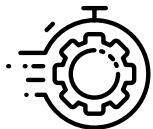
## Reliability

The likelihood that services will be on time and operate as planned



## Frequency/availability

Whether the service is available at the right time, with frequent services and sufficient capacity



## Transit time

The total end-to-end transit time, including pick up and delivery to the freight terminal



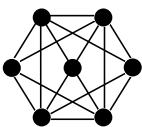
## Price

The end-to-end price for moving freight, including pick up and delivery to the freight terminal



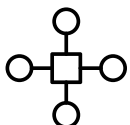
## Sustainability

The emissions intensity of a chosen freight transport mode. Rail freight offers significant sustainability benefits compared to road



## Complexity

The complexity of the overall transport mode of choice

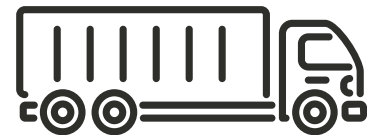


## Risk/diversification

The ability for customers to manage risk by using a variety of freight modes

# The importance of greater use of rail

Greater use of rail freight can deliver safer, more sustainable outcomes. Just a 10 per cent mode shift from road to rail between major Australian cities could save more than \$700 million per year in social costs. Our national freight task is growing, and we can't rely on roads alone.



## Road

More road freight means more trucks on the road. Approving bigger trucks can lead to more traffic, safety concerns and pollution.



## Rail

Rail is a safer, more sustainable choice and is essential to support Australia's growing freight needs. We can't rely on roads alone.



## Shipping

Some international companies offer cheap coastal shipping. It's affordable but risky. During the COVID-19 pandemic, many stopped serving Australia, weakening our supply chains.

# Why policy change is needed

**Governments across Australia have confirmed we need to move more freight on rail to support a sustainable freight network and meet future demand. To achieve this, new policy levers are required to ensure the best modal choice for the nation. This starts with how infrastructure investment is assessed.**

Traditional Cost Benefit Analysis (CBA) methods used to assess infrastructure investments don't always consider the significant social, environmental and safety benefits rail has to offer. Guidelines

endorsed by the Infrastructure and Transport Ministers Meeting (ITMM) say rail projects should consider their impact on mode shift, but the same isn't required for road projects.

**The industry is concerned that the range of external benefits rail freight has to offer are not always fully considered when evaluating investment decisions. It is essential that the social, environmental and safety benefits - or costs - are explored when both road and rail projects are assessed. Governments may also wish to consider broader policies to support our journey to net zero, by drawing on existing carbon value or carbon credit schemes to maximise the use of rail freight and support the sector's decarbonisation focus.**

## **The solution**

Our approach to CBAs should be reviewed to ensure the economic, social and environmental benefits of road and rail projects are fully considered when making investment decisions. Improved data and road and rail use and service reliability data would support this focus.

This process should support an overall objective to support efficient investment in freight infrastructure and promote the right mode for each freight task, with full consideration of the direct and indirect costs of each mode. This will maximise the long-term benefits to freight customers and the wider community.

A worker in an orange safety vest and hard hat is shown from the back, holding a large roll of blueprints. The background is a blurred industrial factory environment with yellow railings and overhead lights. A large yellow triangle is overlaid on the left side of the image.

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## Infrastructure and planning

The rail freight sector has been impacted by persistent capacity constraints on the east-west corridor, while increased extreme weather events such as flooding have contributed to extended delays of rail freight services. New infrastructure and upgrades are needed to address these issues and improve rail freight outcomes.

Inland Rail will create significant time savings and efficiencies for rail services from Melbourne to Brisbane. But this alone cannot guarantee a shift to rail. Additional, complementary investments in rail infrastructure are needed to make the most of the freight network.

## Improving access to intermodal terminals

Well-located intermodal terminals supported by improved technology and systems can make a significant difference to rail freight productivity. New investment is required to address high-priority gaps for intermodal terminals and improve efficiency.

New investment is required to improve the efficiency of contestable bulk freight services. There are a wide range of investments that would achieve this, and support greater use of rail.

### How to address the infrastructure gaps

#### Network reliability and resilience

Network improvements and asset management strategies to support more reliable services

#### Interstate intermodal terminals

Connecting Inland Rail in Melbourne and Brisbane

#### Rollingstock fleet capacity

Increasing capacity and leveraging new technologies

#### Long-term corridor protection and preservation

Securing capacity to meet future demand

#### Digital train control system

An integrated solution to improve safety, reliability and speed

#### Optimised network planning and scheduling

Automating systems to improve responsiveness

#### Turnaround times

Improving container turnaround times to drive better outcomes, addressing delays and poor asset utilisation

#### Allowable train configuration

Improving regional networks to adopt more standardised approaches and increase speed and efficiency

# Investing for the future

The rail freight sector is operating on legacy infrastructure that has been built to different standards. These different approaches impact the trains that can be used and the policies and procedures that impact how freight services operate across the country.

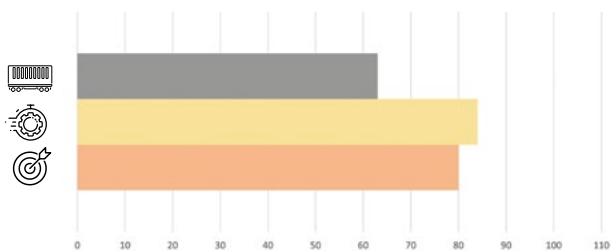
The Commonwealth Government has an opportunity to leverage its investment in state-based rail projects to support a national approach that would improve interoperability, reduce capacity bottlenecks and boost rail's modal share.

## Transit times

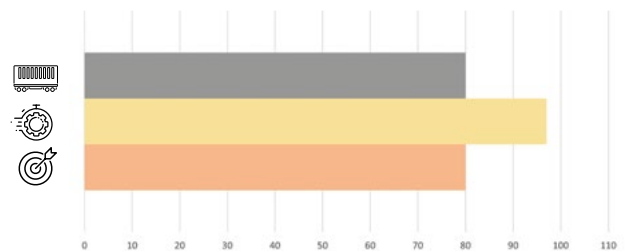
Australia's most productive freight services operate on the east-west and Tarcoola – Darwin corridors, with double stacked, 1800m trains operating at an average speed of 70km/hr. The Inland Rail will provide this capability for services from Melbourne to Brisbane.

Improving transit times will increase the range of products that can be transported using rail. Rail needs to meet target service requirements to be competitive with road.

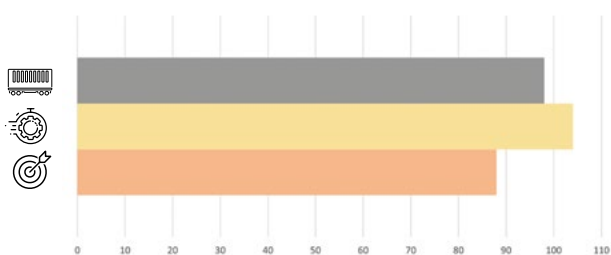
### Melbourne – Perth



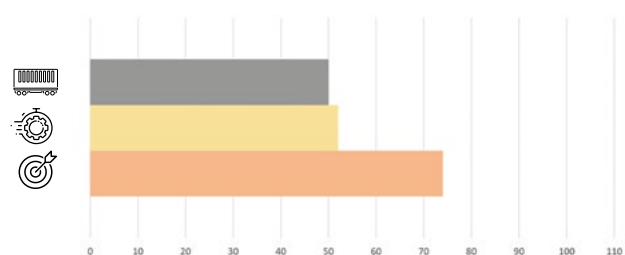
### Sydney – Perth



### Brisbane – Perth



### Adelaide – Perth



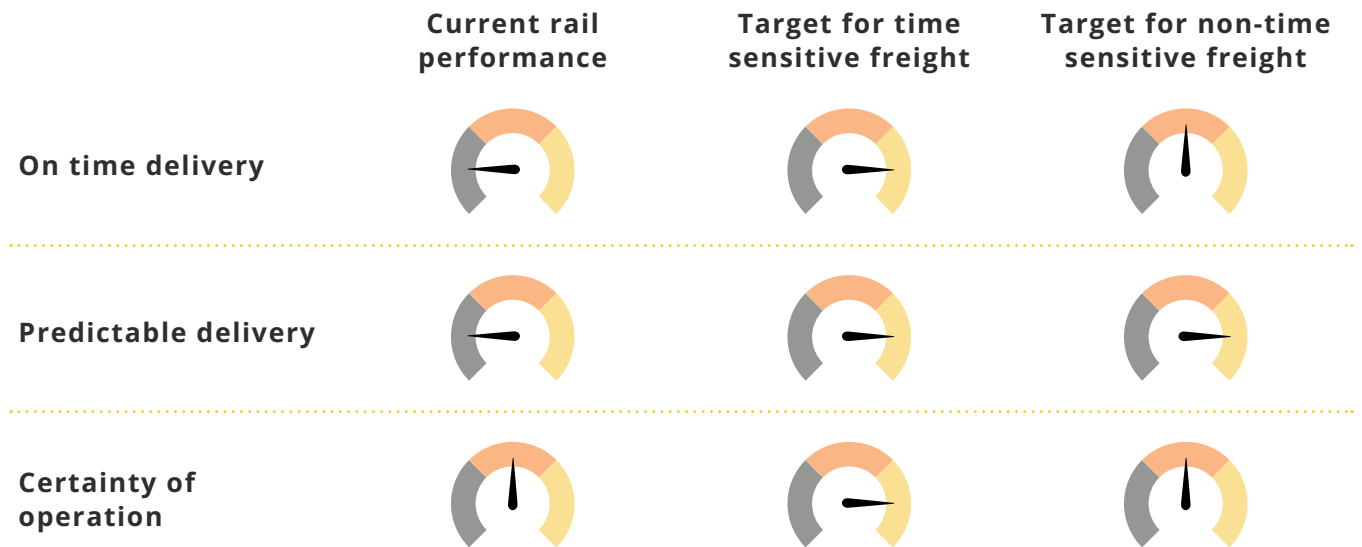
Current rail performance

Target service requirement for non-time sensitive freight

Target service requirements for time sensitive freight

## Reliability

Investment in new infrastructure will help achieve more reliable service targets to encourage more customers to choose rail. Currently, poor reliability for on time and predictable delivery limit mode shift.



## Frequency and availability

Rail services on key routes are currently available daily, which is sufficient to meet most freight requirements. However, there are limited opportunities to increase frequency using current infrastructure as demand grows.

### Price

Rail services are currently 30-40 per cent slower than road. Our research confirms door-to-door prices need to be 20-40 per cent lower if rail is to remain competitive.

### The solution

Government and industry should continue to invest in infrastructure that enables the operation of efficient rail services. Several of the highest priority infrastructure requirements, such as intermodal terminal developments and digital train control on the interstate network, are being progressed.

However, it is essential to look beyond the existing pipeline of projects to the next priority infrastructure requirements.

The projects that will be required beyond these investments are less well defined, and must include resilience and reliability initiatives, as well as a commitment to automated train scheduling.



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A woman and a man in safety gear are inspecting a railway track. The woman, on the left, has long dark hair and is wearing clear safety glasses, a red jacket, and an orange high-visibility vest. The man, on the right, is wearing clear safety glasses, a black jacket, an orange high-visibility vest, and black work gloves. He is kneeling and pointing at the track. The background shows a railway track with gravel and a white pipe. A large yellow triangle is overlaid on the left side of the image.

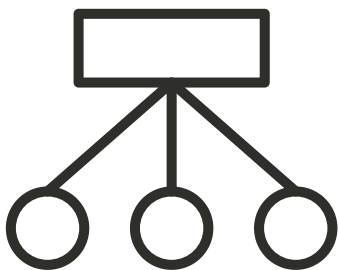
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## Safety and operations

# A complex regulatory environment

The number of independently managed rail networks in Australia has significantly increased, with differences between networks and jurisdictions making it harder to operate rail freight services efficiently.

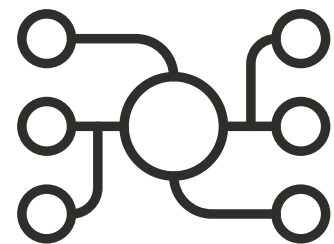
This complex regulatory and operational environment effectively means that the rules that apply to a freight service change as it crosses the country. That puts a drain on efficiency and leads to increased costs, reduced service standards and stifled innovation.



**Seven different regulatory frameworks**



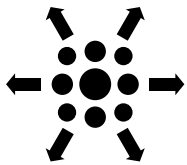
**Six different regulators**



**Different requirements for individual networks**

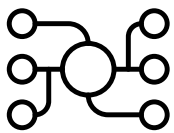


# The most significant causes of inefficiency on the rail network



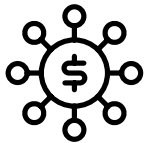
## Fragmentation

Increasing network fragmentation has led to different standards, operating rules and processes between jurisdictions and networks. This can impact operations, safety, network pathing and access management for rail freight services.



## Complex regulations

Different regulatory environments from one jurisdiction to another make it harder to operate. This is particularly the case when it comes to environmental and access management regulations.



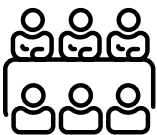
## Constraints on technology investment

The complexity of the rail freight market makes it harder for industry to invest in leading edge technology to promote efficiency, productivity and decarbonisation.



## Industrial relations

There is limited flexibility in how industrial relations issues are managed in the rail freight sector.



## Government policy settings

Current policies relating to fatigue management and the prioritisation of passenger services can limit the rail industry's efficiency.

In our cities, freight and passenger services often operate on the same rail network. Passenger services are provided priority, while rigid curfews are often applied to freight services. This severely restricts rail freight operations, causing increased delays, rising costs and reduced asset utilisation.

Parts of metropolitan networks are often closed for maintenance on the weekend to minimise disruption to passenger services.

This has a wider impact for freight operators, who may be unable to operate services, even if only a small section of the network is closed.

# Opportunities to improve rail freight efficiency

**Governments and industry will need to work together to improve efficiency and support a stronger, more resilient freight network.**

Constraint	Impact on mode share drivers	Benefit of reducing constraints	Level of difficulty to change
Inconsistent operational requirements	(\$) (↓)	●	●
Silo-based safety management systems	(\$) (↓)	●	●
Inconsistent physical standards and equipment	(\$)	●	●
Coordination of pathing, train management and possession arrangements	(\$) (↓) (🕒) (🎯)	●	●
Access management processes	(\$)	●	●
Concentration in above rail market	(\$) (↓) (🕒) (🎯)	●	●
Environment	(\$) (↓) (🎯)	●	●
Workplace flexibility	(\$) (↓)	●	●
Insufficient skilled workers	(\$) (↓) (🎯)	●	●
Driver training	(\$) (↓)	●	●
Fatigue management	(\$) (↓)	●	●
Passenger priority and peak period curfews	(\$) (↓) (🕒) (🎯)	●	●
Lack of access to real time information on likely arrival times	(\$) (↓)	●	●

(\$) Price – impact on average cost    (↓) Reliability, including on-time and predictable arrival    (🕒) Transit time    (🎯) Frequency and availability  
 ● High    ● Medium    ● Low

## The solution

The rail industry cannot address this complexity alone. A nationally consistent regulatory and governance framework is required to harmonise operational standards and processes, and

improve safety, productivity, environmental and access regulation.

The creation of a dedicated body with the power to mandate harmonised principles, standards and processes would support this goal.



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## Recommendations

### **1. Set a clear freight objective**

A national, long-term objective to drive policy impacting rail freight will help drive change and align policy development and regulation. This should focus on policy settings that promote the right transport mode for each freight task and achieve improved outcomes for industry, customers and the wider supply chain.

This may consider opportunities to optimise rail freight operations, strengthen the resilience of national supply chains and promote efficient investment in transport infrastructure.

### **2. Assess the full benefits freight projects have to offer**

The cost benefit analysis of rail and road projects should consider the full range of economic, social and environmental benefits they provide. This may be led by the Federal Department of Infrastructure, Transport, Regional Development, Communications and the Arts, the National Transport Commission (NTC), BITRE or Infrastructure Australia.

Policies to make it easier for rail operations to participate in the Emissions reduction Fund through projects that enable mode shift would also represent an important step towards decarbonising our fleet network.

### **3. Promote investment in efficient rail freight infrastructure**

The rail industry and governments should continue to focus on investing in infrastructure to support our long-term rail freight needs. While investment in intermodal terminal developments with integrated freight networks and digital train control systems are underway, more will be needed.

We must look beyond our immediate needs and build a strong investment pipeline to support our future freight needs for rail to support a strong and resilient network for years to come.

### **4. Ensure a national focus on safety and productivity**

A national regulatory and governance model is needed to harmonise operational standards, systems, processes and technologies. This may include the creation of a national rail industry regulator to drive productivity and safety improvements, either by redefining ONRSR's role or establishing a new regulatory body.

### **5. Harmonise complex regulations**

Nationally consistent environmental regulations and access regimes should be used consistently across the Australian network. The harmonisation of environmental regulations may be considered by the Commonwealth Government's soon to be established EPA, while an independent coordinating body should be identified to explore improvements to access regimes. Agreement should be sought with Rail Infrastructure Managers and jurisdictional regulators to incorporate shared principles or procedures into existing regulations. These principles and procedures could be mandated within existing regulatory instruments through the agreement of Commonwealth and state ministers.

### **6. Promote opportunities to expand the rail freight market**

Industry and government should continue to support action already underway to reduce barriers to entry in rail freight, including by providing access to new, publicly supported intermodal terminals and access to rail paths.

### **7. Drive policy to ensure the right mode is chosen for every freight task**

The Heavy Vehicle Road Charging Framework should be reviewed to better set road user prices based on a full cost recovery model. Further policy changes should be considered to require foreign

flagged vessels to provide evidence of their compliance with Australian shipping regulations.

As the rail freight sector continues to evolve its pricing structures to improve its competitiveness, these policy measures will enable greater use of rail for the freight tasks it is best suited to support and create a more efficient national freight network.

### **8. Improve freight access in metropolitan areas**

New policies could incentivise metropolitan Rail Infrastructure Managers to improve access to freight services, while continuing to recognise passenger priority. Greater flexibility in the application of passenger priority could drive significant improvements in freight access without compromising passenger networks.

### **9. Align freight services to customer needs**

The rail industry should continue to engage with freight customers to inform the development of network strategies, either through dedicated forums or via Board representation. This will help align freight services with customer needs, and evolve operating and contracting strategies to enable greater use of rail.

### **10. Transparent information disclosure**

State transport departments should publish more data collected by traffic census programs to provide a clearer understanding of road freight operations.

Rail Infrastructure Managers should regularly provide rail freight datasets to BITRE and ensure accurate, timely and consistent public reporting of train service reliability is available. A standardised approach to data collection is required to support greater information sharing.





The Future of Rail Freight is a joint initiative of the Australasian Railway Association, Freight on Rail Group and Department of Infrastructure, Transport, Regional Development, Communications and the Arts. The project seeks to enable greater use of rail as part of a strong and sustainable freight network that meets the nation's long term needs.

Research to inform the project was led by the Australasian Centre for Rail Innovation. It includes three foundational pieces of research developed by Synergies Economic Consulting on the key issues impacting rail freight in Australia:

- Understanding conditions influencing modal share
- Infrastructure and planning requirements
- Safety and operations

