National Rail Action Plan

Prepared for the Transport and Infrastructure Council

National Transport Commission

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Introduction

This plan is an agreed set of actions that will be undertaken by the Commonwealth, state and territory governments and key members of the rail industry.

The plan aims to implement changes to improve delivery of rail infrastructure and improve the safety and productivity of rail operations. An additional focus will be to create opportunities for manufacturers of rail equipment to supply rolling stock and components.

The actions have two main focuses:

1. to ensure we have the skills and labour required to build and operate the rail network; and
2. to improve the efficiency and safety of Australia's rail system by continuing to align or harmonise operating rules, infrastructure and operational standards and systems across the nation's rail network.

The plan will be a collaboration between governments and the rail industry as each has a part to play in delivering the actions.

Australia is currently experiencing a major wave of public investment in the delivery of rail infrastructure. A BIS Oxford and Australasian Railway Association (ARA) report (November 2018) has found that rail construction activity rose by 18 per cent to $4.5bn total capital expenditure in 2016-17 and expanded again in 2017-18 to $7bn. The medium-term outlook for the rail construction sector is the strongest of all engineering construction markets in Australia, with the annual increase expected to surpass the resources-driven peak of $8.3bn by 2021. Total activity is expected to grow around 8 per cent per annum over the five years to 2022-23.

Australia will be spending more on rail in the next decade than submarines. Rail manufacturing employs 5,000 workers directly, with a further 7,000 in the extended supply chain.

This rapid increase in public investment creates both opportunities and challenges. Rail can reduce congestion in metropolitan areas and improve freight productivity across the nation. One of the challenges is having a rail construction capability which is able to match the demand created by the proposed new projects. There is also an opportunity to leverage the investment to improve operational effectiveness and safety, as well as provide economic opportunities in the rail manufacturing sector.

As new infrastructure projects are completed and move to operations and as rail operators update their fleet, there will be a greater need for passenger car sets as well as locomotives and rolling stock. This provides an opportunity for local manufacturers to be able to build those passenger car sets and other rolling stock or to supply components.

1. Workforce

A number of studies have highlighted concerns over capacity constraints in both skilled and unskilled labour. BIS Oxford's analysis notes that the rail construction sector is likely to experience challenges in sourcing skilled workers over the coming decade. Indeed, the sector is already experiencing challenges with the number of train drivers, controllers, track workers, signalling engineers and technicians, maintenance workers, electrical technicians and tunnellers not keeping up with growing demand.

The rail industry has called for governments to work together to help meet these challenges. The ARA has called for a collaborative working group to develop a national rail workforce strategy to manage skills shortages and facilitate enhanced rail skills development and workforce capability across construction, operation and maintenance.

This Plan focuses on skill issues that are specific to the rail sector. Some actions will be undertaken collaboratively with industry and some actions will be led by industry.

Planning to acquire skills for rail construction projects will be helped by a transparent investment pipeline. Governments have identified that a consistent and reliable infrastructure investment pipeline is a key driver in achieving value for money in infrastructure provision.

There is significant information that outlines the investment by governments in transport infrastructure. The Australian Government's National Infrastructure Construction Schedule (NICS) links to state, territory and industry-led infrastructure websites, that provide investors and construction contractors with detailed information on infrastructure pipelines, tendering and contracting opportunities.

Infrastructure Australia publishes the Infrastructure Priority List. The Priority List is regularly reviewed and updated as proposals for nationally significant projects move through stages of development and delivery. The Priority List is also available as an interactive map on the Infrastructure Australia website. State infrastructure agencies maintain similar lists of projects for their jurisdiction.

2. Harmonisation and standardisation

Australia's railways have mostly developed as isolated networks where each has applied standards suitable for their circumstances. This is most notably reflected in the different rail gauges across Australia. However, there remain different standards for rolling stock and components, operating rules for rail infrastructure and for communications and control systems. The significant expansion in the rail network provides the opportunity to move to a network that operates seamlessly across Australia.

The Bureau of Transport and Regional Economics (BITRE) *Optimising harmonisation in the Australian railway industry* (2006) identifies that in addition to different gauges, other technical, operational, regulatory and administrative inconsistencies have also impeded the flow of rail traffic. BITRE notes that harmonisation may deliver benefits such as lower input costs, improvements in operational efficiency, higher inherent safety and lower training costs. It can also widen rail's freight market. Conversely, it notes there are commercial pressures and historical legacies that mitigate against greater standardisation. The report also notes the potential folly of government setting standards for rail when rail transport operators have superior knowledge. Therefore, any move to greater harmonisation and standardisation will be done in close cooperation with the rail industry.

Under Australia's co-regulatory model, the Rail Industry Safety and Standards Board (RISSB) develops and manages standards, rules, guidance materials and other documents to assist the rail industry to manage rail safety, improve efficiency and achieve safety outcomes through standardisation, interoperability and harmonisation. This includes the Australian Network Rules & Procedures (ANRP) which is the master set of rules and procedures that define how Rail Transport Operators operate safely on the Australian rail network.

Improved safety, efficiency and manufacturing opportunities

The growth of the rail sector provides an opportunity for local manufacturers to be able to build the passenger car sets and other rolling stock or to supply components. The Senate's Rural and Regional Affairs and Transport References Committee 2017 Inquiry into Australia's rail industry noted that rather than Australia being represented by one central, national market, Australia has historically been made up of a number of smaller, fragmented rail markets. This continues to act as a deterrent to investment in larger scale manufacture and innovation. Scale also acts as a barrier to expansion. The problems are compounded by the inefficiencies associated with manufacturing railway products to different standards and specifications.

Infrastructure standards

In most cases the rail industry is vertically separated, with above rail operations typically separated from below-rail. This separation is reflected in the law. Rail operations in Australia are regulated under the Rail Safety National Law that is adopted or applied in each Australian state or territory. The National Law defines the responsibilities of Rail Infrastructure Managers (RIMs): this is the person or organisation that has effective control and manages the rail infrastructure. This isn't always the infrastructure owner. RIMs are responsible for below rail operations.

The National Law also defines the responsibilities of rolling stock operators. Rolling stock operators have effective control and management of the operation or movement of rolling stock on rail infrastructure for a railway.

The regulatory framework is co-regulatory in that the Australian governments do not directly prescribe the standards or rules by which railways need to operate. Rather, they set a performance requirement on railways to operate safely and provide operational flexibility to establish and implement standards, rules and methods of operation necessary to meet the safety performance requirement of their operations.

The co-regulatory safety model and the commercial access frameworks have evolved in Australia over the last 20 years, as the nation has moved away from vertically integrated, state-based monopoly arrangements.

The new approach is consistent with world's best practice from both a safety and commercial perspective.

- It ensures that safety and operational risks are clearly and contractually allocated between network managers and above-rail operators.
- It creates a competitive, private-sector market for above-rail operations, resulting in significant shifts in rail's share of the freight task in various market segments (85% between Perth and Melbourne).

However, it also results in less ability of governments to coordinate standards for rail operations and for infrastructure. This results in there being less ability for there to be nationally consistent standards for rail infrastructure and for operations, including for interoperability of communications and control systems.

There are eight Rail Infrastructure Managers in Australia and more than 50 above-rail operators, including freight and passenger operations. When new infrastructure is built, each RIM individually determines the technical standards it requires to enable it to meet its safety obligations under the national law.

This multiplicity of different standards, and different infrastructure outcomes, across Australia (both on networks within and outside each State/Territory) is causing inefficiencies for government and industry, including higher procurement, delivery and maintenance costs. The problem has become critical during the current period of unprecedented investment by governments in new rail projects.

Network operating rules

Most rail freight trips in Australia do not occur on a single network but typically span several networks. For example, in Victoria a relatively short freight trip from Gippsland to the Port of Melbourne requires a train to travel on both regional and metropolitan networks, each controlled by two different Rail Infrastructure Managers – V/Line and MTM.

Safe-working rules tend to reflect in part historic state-based rules in each jurisdiction, as well as the 'overlay' of individual networks controlled by different Rail Infrastructure Managers.

As a result, there are at least 11 different signalling and train control systems in use across Australia, with each state having its own distinct safe-working rules – meaning there are around 17 distinct safe-working systems across Australia. This extensive array of systems imposes additional costs in management, maintenance and competency training for both network managers and operators.

About the plan

This plan sets a number of actions which will support the rail industry's efforts to undertake workforce planning, address skill shortages and build and operate an expanded rail network, covering the following areas:

- **Identifying critical skill needs and options to meet these needs** – to identify the critical skills needed by industry and options to address these needs across the rail construction, operation and manufacturing sectors.
- **Improving network and infrastructure harmonisation and interoperability** – by capitalising on the opportunity created by infrastructure spending and advances in technology to improve the consistency of rules for using and building transport infrastructure and the ability to communicate across the rail network. This work will focus on the development of common rules for railway operations, common standards for rail infrastructure and for rolling stock, and to improve the interoperability of train control and communications systems.

Each section will set out:

- the outcome the Transport and Infrastructure Council expects;
- the reasons for, and benefits of, this outcome;
- work underway that is contributing to the expected outcome;
- who will lead the work; and
- how the work will be funded.

National Rail Action Plan

Government and industry working groups				
PHASE				
Skills & labour		Common standards	Interoperability	
Construction	Operation and manufacturing	Components for rolling stock and infrastructure	Common operating rules	Communication and control systems
Plan to grow critical rail sector skills	Plan for rail specific operating and manufacturing skills	Common standards for rolling stock components and infrastructure	Common standard operating rules for safe work	Interoperability of control and communications systems
CRITICAL COMPONENTS				
Rail skills such as tunnelling and specific electrical	Rail skills such as signalling engineer and train drivers	Development of common standards rolling stock components and major infrastructure elements	Development of standard operating rules that would apply across the rail network and the ability of train control and communications	

1. Meeting rail's critical skills and labour needs

The large increase in rail investment by governments creates challenges and opportunities in terms of skill and labour requirements including in construction, operations and manufacturing. Critical skills across each of these areas often require specialised training pathways. These pathways rely on public and private resources and institutions, including the training and education sectors.

Construction

Construction is Australia's third largest industry. It is highly competitive. Rail is just one component of the construction sector. Many of the skills required in the rail construction sector are portable across various sectors, including the civil construction sector. As acknowledged by the ARA and BIS Oxford, the rail construction sub-industry will need to draw extensively from other parts of the construction industry (and elsewhere) to ensure the timely delivery of projects.

The Transport and Infrastructure Council notes there is an existing joint forum of leaders from the construction industry – the Construction Industry Leadership Forum (CILF). This group is comprised of members from the Australian Constructors Association (ACA) and the Victorian and New South Wales public sectors. The CILF works to address capability and capacity constraints in the construction sector. In light of the significant work already underway through the CILF, and to avoid duplication, this action plan focuses on critical rail specific skills, e.g. high voltage electrical work, train signalling, rail tunnelling.

In addition, the Council recognises that governments and industry are already partnering to develop critical rail skills. For example, the Victorian Tunnelling Centre is being built at Holmesglen Institute's Chadstone campus to train people in underground construction and tunnelling, the Level Crossing Removal Authority has developed nine new training programs and a new Inland Rail Skills Academy has recently been launched by Australian Rail Track Corporation (ARTC).

Operational and manufacturing

The rail industry has a number of skilled jobs where relevant training is best provided by those already in the industry such as train and tram drivers, train controllers, railway signal operators. Similarly, there are several variously skilled jobs where the training for the role needs to be, or is best provided by, the rail operators. This includes jobs such as rail maintenance worker and key rail specific administration and management roles.

There is also a need for the rail industry to continue to develop people to have more specialised skill, e.g. engineers. The actions proposed in this plan are aimed at the development and training (and/or retaining) such key staff.

In terms of an audit, the Victorian Government has commissioned a study with the Rail Manufacturing Cooperative Research Centre to investigate and report on skills shortages in the train, tram and bus industry. The research will suggest strategies to improve workforce attraction and staff retention to ensure there is a sustainable industry that continues to meet Victoria's transport and manufacturing needs.

Skills Council

The Council of Australian Governments (COAG) has recently established a new COAG Skills Council to drive skills reform. Reporting to the new Skills Council, the Australian Industry and Skills Committee provides industry with a formal role in advising on policy directions and decision making in the national training system. There are a large number of individual industry reference committees that advise on the development of national training packages, including for the rail industry and civil infrastructure. Any actions in the plan that go to training qualifications or broader skill system issues will need to be raised with the relevant officials and ministers responsible for skills issues.

Why	Existing work	Actions	Lead	By when	Funding
Outcome 1.a Government and industry understand the critical rail sector skill needs					
Current analysis has indicated there will be skills shortages across a number of occupations in the rail industry. Some of these shortages (especially the lower skilled roles) will be easier to resolve by industry. Many of the skills in demand have a skill specialisation that is in addition to the occupation's qualifications. It is expected there will be a smaller number of highly skilled occupations which are critical to the delivery and operation of rail infrastructure (e.g. rail signalling engineers) and may need focused efforts to identify those skills gaps.	BIS Oxford Skills Capability Study (ARA)	A report to Council on the critical rail sector skills required across the nation.	Labour and Skills Working Group	May 2020	Within existing budgets
Outcome 1.b Government and industry understand how these critical skills are established					
A skills pathway specific to each in-demand skill will be essential to ensuring that identified critical skill gaps are addressed.	BIS Oxford Skills Capability Study (ARA)	Audit of existing training, programs and facilities as well as government policies and levers and other factors that will determine whether critical rail skills needs are met. Consultation will be required with officials responsible for skills matters. Consideration will need to be given to the appropriate role for industry and governments in respect of skill development.	Labour and Skills Working Group	November 2020	Within existing budgets

Why	Existing work	Actions	Lead	By when	Funding
Outcome 1.c Governments and industry work together to improve portability of skills across jurisdictions					
Portability will allow employees to more easily move to areas of higher need without the need for additional costly training.	Rail Industry Reference Committee (training packages)	A report that identifies barriers to portability of critical skills (which could include: training packages; specific asset owner requirements; licence conditions; legislation; work health and safety requirements; and/or industrial relations requirements). Recommendations to improve portability. Consultation will be required with officials responsible for skills matters and with rail industry operators. Expert input will likely be needed from the Rail Industry Reference Committee (which develops and manages training packages) on the barriers and possible solutions to improving portability.	NTC in conjunction with Rail Industry Operators, jurisdictions and the Commonwealth departments responsible for infrastructure and skills	May 2020 November 2020	Funding to be resolved
Outcome 1.d Government and industry understand and have strategies to address specific skills shortage challenges in the rail manufacturing industry					
It is critical to have strategies to address skills shortages in the rail manufacturing industries in order to manufacture in Australia.	Asset and Networks Division (A&N) in the Victorian Department of Transport has consulted with Metro Trains Melbourne, Yarra Trams, Public Transport Victoria and several bus operators. These operators have reported a significant emerging skills shortage.	A Victorian Government study in conjunction with the Rail Manufacturing Cooperative Research Centre will investigate and report on skills shortages in the train, tram and bus industry. The research will suggest strategies to improve workforce attraction and staff retention, to ensure there is a sustainable industry that continues to meet Victoria's transport needs.	Victoria	October 2020	Within existing budgets

Why	Existing work	Actions	Lead	By when	Funding
Outcome 1.e Rail skill needs are taken into account as part of the COAG Skills Council's reform priorities and the reform roadmap it is developing.					
The COAG meeting of August 2019 resolved to establish a new COAG Skills Council to deliver a VET system which helps all Australians get the skills they need for employment. It is important ministers responsible for skills and Education take account of the rail sector's needs as part of future reform priorities.	Skills ministers will work through the new COAG Skills Council, in consultation with education ministers, to advise leaders on future reform priorities by the end of 2019 and provide a reform roadmap to COAG in early 2020.	Chair of the Transport and Infrastructure Council (TIC) to write to the Chair of the Skills Council raising the importance of rail skills development.	TIC Chair	December 2019	N/A
Outcome 1.f Rail industry attracts and retains quality, diverse staff					
The rail industry needs to be seen as an attractive and viable long-term prospect for future employees, so it can attract a workforce with critical skills.		Industry works together to develop, fund and deliver 'branding campaign'.	Industry	Ongoing	Industry funding
Outcome 1.g Rail industry continues to invest in skills and workforce					
Industry investment is critical as it is generally best placed to understand the discreet skills needs of its workforce.	Training centres and programs including • Australian Rail Track Corporation (ARTC) Inland Rail Skills Academy. • The Rail Academy Newport (Victoria). • Centre of Excellence in Rail Training.	Industry continues to take a coordinated approach to investment in its skills and workforce.	Industry	Ongoing	Industry funding

2. Common rules for infrastructure standards

In rail, there is a strong link between the regulatory settings, operational requirements and rail infrastructure.

The Rail Safety National Law defines infrastructure to be the facilities necessary to enable a railway to operate and includes railway tracks and associated railway track structures.

Governments and industry have highlighted a need for greater use of standardised documentation and design detail to minimise disparity in requirements for infrastructure, for example, through more standardised specifications, engineering solutions and methodologies rather than developing bespoke solutions on a project basis. Further work is required to determine the extent of the problem, and possible solutions.

Why	Existing work	Actions	Lead	By when	Funding
Outcome 2.a Industry establishes a higher level of standardisation / harmonisation of infrastructure standards					
Various governments have raised issues regarding the variations in infrastructure standards used by different operators. This is leading to concerns regarding productivity, interoperability and safety.		Conduct an audit of existing infrastructure standards and identify opportunities for standardisation. RISSB to undertake a survey of rail operators to understand where the differences are between the jurisdictions and rank these by: • How significant each difference is (i.e. how much effort it would take to change it) • What the value of changing it would be.	RISSB	Nov 2020	Funding to be resolved

3. Common standards for components for rolling stock

Australia has a manufacturing base that could support the rail industry. It could be self-sufficient in the development and supply of rolling stock and a wide variety of components. The large investment in rail projects and investment in rail operations will mean additional rolling stock will be needed to operate on the new or improved lines. This will be in addition to any routine replacement of rolling stock and components.

To support this, Australia needs clarity around the number and type of trains to be purchased in coming years. A delivery timetable would assist the development of a rail manufacturing industry. This will in part be addressed by the work on the rail pipeline. In addition, common standards for rolling stock are critical. Traditionally, Australian rail has had diverse standards and requirements for each state and territory. This has resulted in a fragmented rail manufacturing industry and small disparate markets. Using key standard components will provide significant opportunities for cost savings and investments in jobs in the rail manufacturing sector, e.g. resulting in longer production runs and lower unit costs. This will allow local manufacturers to be able to better compete to supply components within Australia and abroad.

A local manufacturing Industry faces challenges from cheap imports. The IBISWorld *Railway Equipment Manufacturing and Repair - Australia Market Research Report* (May 2019) notes that there are three important success factors for the railway equipment manufacturing and repair industry. These are:

- undertaking technical research and development;
- economies of scale; and
- well-developed internal processes.

Technical research and development is being undertaken by the industry and the Rail Manufacturing Cooperative Research Centre and is not covered in this plan. This plan proposes to address improving common standards for essential rail components as outlined below.

Why	Existing work	Actions	Lead	By when	Funding
Outcome 3.a Industry establishes higher level of standardisation / harmonisation of rollingstock components					
Standardised components will allow local companies to more easily supply products for passenger car set construction and for repair. A forward plan for standardising key components will provide greater certainty for the rail component manufacturing industry.	RISSB is working with governments on standards for components for rail rollingstock.	**1.** Release standards for glazing and bogies. **2.** Develop a further six standards: • egress (including emergency egress) • crashworthiness • energy storage • Heating, Ventilation and Airconditioning (HVAC) • emissions (diesel powered passenger trains). **3.** Develop a 3 year plan for developing standards for other key components.	RISSB	Completed November 2020 November 2020	Already funded (Funding to be determined between jurisdictions and RISSB) RISSB

4. Common rules for safe work

Australian railways should operate as a system. There are eight primary below-rail companies (excluding geographically separate Pilbara and Tasrail networks) and more than 50 above-rail operators, including freight and passenger operations. There are 29,000km of interconnected network spanning from the Perth to Brisbane and from Melbourne, via Adelaide to Darwin. Many rail trips across this system are not on a single network but typically span several networks, with each network operating as an independent business. There are still three different rail gauges in use in Australia.

Standardising common aspects of rail operations can improve safety and reduce operating costs across the system. Currently, separate networks had different rules for safe work around trains and for operating trains. These different rules require specific training on each network. In addition, requiring different rules for the same operation in different states can create a barrier to mobility of staff and increases the cost of training.

The Rail Industry Safety and Standards Board (RISSB), which is owned by industry, has developed the *Operational Concept for the Australian Rail Network*. The report proposes a method to work towards nationally consistent key rules for rail operation. This work can be used as a basis for developing key common rules for safe work and rail infrastructure use which will in turn improve efficiency and safety in rail operations.

Why	Existing work	Actions	Lead	By when	Funding
Outcome 4.a Improved harmonisation of rail operating rules and work standards					
Various governments have raised an issue regarding the variations in infrastructure standards used by different operators on the same network. This is leading to concerns regarding productivity and safety. A set of national rules (on operating rules and safe work standards) will enable an optimal approach to improving harmonisation.	Over the past three years, industry has been working with RISSB to develop a set of national rules. This initial project is well advanced and is scheduled for completion in early 2020.	RISSB finalise the National Rules Project. Rewrite the Australian Network Rules and Procedures (ANRP) RISSB to undertake a survey of rail operators to understand where the differences are between the jurisdictions and rank these by: • how significant each difference is; • how much effort/cost it would take to change it; • what the value of changing it would be.	RISSB and other industry	May 2020 Nov 2020 Nov 2020	Funding to be resolved

5. Interoperable communication and control systems

There are at least 11 different train control systems in use across Australia.

Systems in use can broadly be classified as:

1. **Signalling** – provides for efficient operations so is used on the busier lines but with the drawback of high levels of trackside equipment hence higher construction, operation and maintenance costs.
2. **Train Order Working** (TOW) – at least six different forms are in use, ranging from manual TOW, though to computer-assisted TOW (henceforth cTOW) which can use voice or data transmission of authorisations to proceed/not proceed and limit speeds.
3. **Token** – a legacy system, Staff and Ticket (S&T) remains in use only on the most marginal corridors in Victoria. This is a fully manual system.

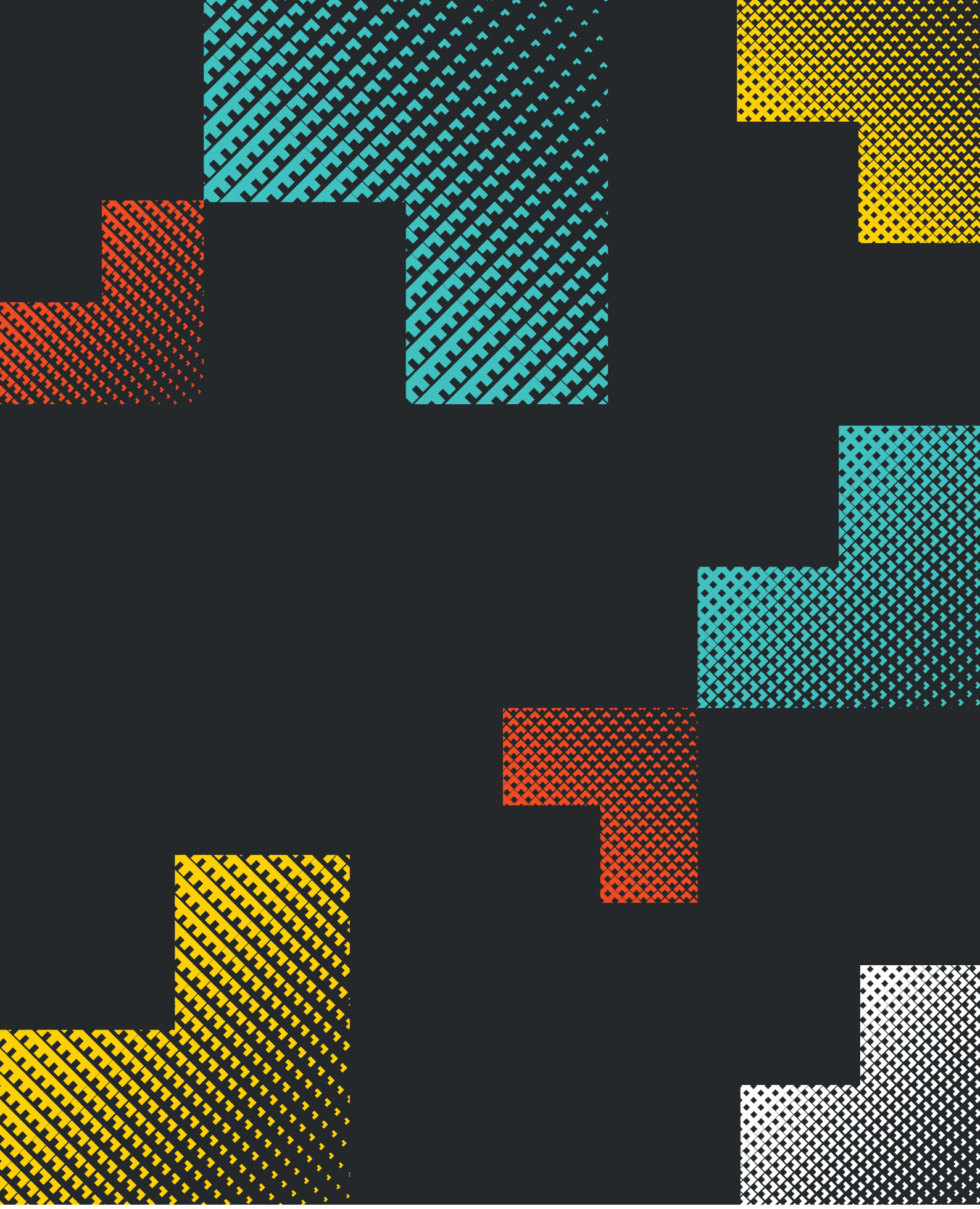
Rail network operators are increasingly adopting more sophisticated train control systems. There are three train control system improvements being progressed in Australia, each is designed to meet the challenges of the different types of railway operations, from less used interstate and regional trains, to dense intra-city rail lines. These new systems optimise train control and can automatically slow trains to maximise network efficiency and improve safety.

Barriers to system wide investment in modernised and interoperable command and control systems include:

- the distribution of costs and benefits including (perceptions at least of) safety and environmental externalities; and
- fragmented economic regulatory (access) arrangements including different regulators and regulatory treatment (including return on capital).

Why	Existing work	Actions	Lead	By when	Funding
Outcome 5.a An assessment of the costs and benefits for interoperable system implementation options.					
The roll out of inter-operable systems technology has significant benefits to greater utilization of existing assets and improvement in productivity. These benefits however do not accrue to individual asset owners, impacting their commercial business cases and highlighting a potential need for government support.	ARA, the Freight on Rail Group (FORG) and RISSB have all commissioned or undertaken work on train operating and communications systems. These audits however do not address commercial business cases and what government support is needed to deliver the full potential productivity improvements available.	Complete a report for government based on network business cases for the implementation of interoperable systems, highlighting the benefits available and the recommended role of government to deliver those benefits.	Industry working group consisting of network owners and operators.	November 2020	Funding to be resolved

Why	Existing work	Actions	Lead	By when	Funding
Outcome 5.b National interoperable communications-based control systems.					
Leveraging the completed audits of train control systems, industry in collaboration with RISSB is to develop the appropriate roll out strategy to deliver interoperable control systems across to ensure strategic alignment across industry on what is required to deliver an interoperable system.	ARTC and TfNSW are working on greater interoperability within the NSW network.	Develop a strategy to roll out an interoperable control system based on an investigation of technological options.	RISSB	July 2021	Funding to be resolved



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