

Rail Delivery Group



Country Profiles – Australia

The Williams Rail Review

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As part of a series of comparative studies of international rail systems, this document profiles railways in Australia. The document outlines how rail services are delivered in Australia and provides an analysis of strengths and weaknesses of the system. This analysis is also contextualised so the reader can make appropriate comparisons with Great Britain (GB).

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Executive summary

The Australian rail industry currently uses both vertical integration and vertical separation and passenger service operators are largely state-based. Regional governments own the majority of rail infrastructure across the country however most operators are privately owned.

Freight rail has enjoyed a period of rapid growth over the past decade and currently enjoys a modal share of above 50%, with the transportation of manufacturing and agricultural produce proving pivotal to this increase. This rise has coincided with increased competition within the sector and has led to improved utilisation of international markets through global supply chains.

Comparisons with the UK have been limited. This is largely down to the significant geographical differences between the two nations, particularly given the size and population density of Australia. However, with increased competition across the rail sector and a growing demand from commuters for improved rail links to Australia's largest cities there is certainly a great deal of symmetry between both nations.

Looking forward, Australia faces the challenge of ensuring investment in infrastructure projects satisfy the increased demand for rail across the country driven by rapid population growth, increased urbanisation and an expanding freight industry.

Conclusions

We would offer the following observations from the Australian model:

- Australia's size and natural resources lends itself to rail freight achieving a strong modal share which has benefitted the economy.
- Large distances involved in Australia's rail industry does present challenges for achieving good productivity and therefore the comparison with GB productivity may be limited.
- Where geography is not a constraining factor, productivity gains in Australia have been made through the partnership with the private sector and to some extent the introduction of competition. Independent research shows the positive effects of competition have been particularly marked in the freight sector.
- State management has resulted in disconnected standards and qualifications which have in turn pushed up unit costs. Australia is committed to more coordination and harmonisation which should go some way to resolving this issue. There is a lesson for our own reforms in ensuring that there is sufficient coordination of activities.

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Introduction to international comparators

There is no templated model for organising railways in an optimally efficient, customer-focussed and safe way. Indeed, all structures are made up of a series of policy choices and trade-offs. Furthermore, the comparative statistics alone only tell us one part of the story; there are lies, damned lies and statistics. Fantastic comparative punctuality tells you nothing of the cost of achieving it. In the same way, it is impossible to say that a particular industry structure is a direct causal factor in achieving efficiency.

As such, these profiles are intended to paint a picture of possibilities and the strengths and weaknesses of the plethora of systems operated internationally. However, they cannot be understood in isolation. The social, geographical, financial and political context are critical to understanding why some systems work well and their limitations when adopted overseas with different counter-variables.

Where possible, this context has been provided, but all comparators should be viewed with an appropriately critical eye. Furthermore, overlaid on this is the issue of an appropriate model for the appropriate market segment.

The rail industry in Great Britain (GB) is made up of many different markets. The intercity market operates between major cities and is typically related to the East Coast, West Coast, Midland and Great Western mainlines (ECML, WCML, MML, GWML respectively). The urban, suburban and regional markets are for commuters or middle-distance railways with a mixture of cost covering and non-cost covering services. A typical route for this category would be Southern, serving commuters into and out of London. Finally, there are relatively self-contained markets, like in Scotland where there is a single dominant operator providing the majority of services.

This mixture of markets exists in other countries. Some have tailored their structures and commercial models accordingly, whereas others have applied a single model to the whole system. Some of the examples presented in this document are not always suited to different market segments, geographies or demographic contexts. For example, the successful open access route run by Nuovo Trasporto Viaggiatori (NTV) in Italy might be unsuited to the London commuter market. Equally, the single operator model running on the highly saturated Dutch market would not be able to reap the benefits of competition on our long-distance commercial mainlines.

In this context, RDG is approaching the rail review by examining the markets contained within the industry as well as cross-cutting issues. Where possible these markets and horizontal workstreams and themes will be cross-referenced.

RDG's Approach to the Williams Rail Review

RDG has developed six principles to measure success against for the Williams Rail Review. These will be used to assess the country comparisons. The principles are as follows:

1. **Put customers at the heart:** ensuring that all parts of the railway, including the supply chain, work together to deliver for customers now and for generations to come
2. **Increase accountability:** building on the solid safety record, deliver a structure for the railway that creates confidence in its leadership, improving coordination in the way services are delivered and decisions are taken, and making it clear where the buck stops when things go wrong
3. **Deliver value for money:** managing costs for passengers, freight customers and taxpayers, with a sustainable supply chain

4. **Unlock economic growth:** boosting innovation with private investment enabling the railway to expand; growing and rebalancing Britain's economy, and be environmentally sustainable
5. **Strengthen communities:** ensuring communities across the country benefit from a vibrant, growing railway
6. **Inspire our people:** ensuring that people working in rail have fulfilling careers and a greater stake in the railway's long-term success

Underpinning all of this is a focus on getting the basics of performance, capacity and fares right.



Figure 1, RDG's six principles

- Population: 24.598 million
- Network: 33,168km
- Passenger modal share: 4%
- Freight modal share: 50%

Geography

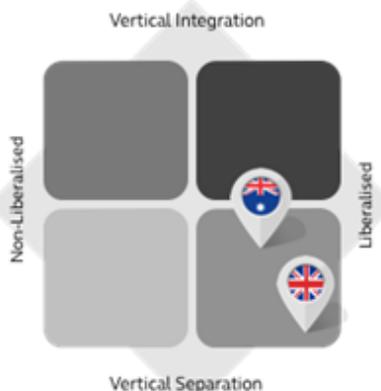
- Australia is 32 times larger than the United Kingdom

Demography

- Australia has a small population

Politics

- There is a federal system in Australia with regional management and standards



Demography

- Australia's population is urban concentrated on the major cities
- The population is increasingly moving to the suburbs of major cities.

factors that contribute to

Weaknesses

- Productivity
- Harmonisation



Australia



factors that enable

Strengths

- Freight
- Investment
- Satisfaction
- Competition



About Australian railways

Australian railways in some respects provide an interesting comparison as they are structurally similar to Great Britain (GB). However, the comparison is limited largely because Australia's geography and demography are so different.

Australia is the sixth largest country in the world and 32 times larger than the United Kingdom (UK). It is also not very densely populated with a population more than two and a half times smaller than the UK. The population is concentrated in its cities with 86% of the population inhabiting urban areas¹².

However, the population is growing and expected to double by 2070 to 45m³. A growing population and increased inner city employment have created a growing demand for inner-city rail across major cities, since 2003 Perth's rail patronage has increased by 50%⁴. The state of Victoria recently invested in the regional line into Melbourne, increasing frequency and line speed, seeing more people settle outside of the city, and commuting in⁵. This demographic change and increase in regional commuting do have some interesting parallels with GB making some comparisons more compelling.

About the Australian network

The industry structure consists of vertically separated and vertically integrated railways. In vertically separated railways, the railway infrastructure manager does not operate revenue earning trains. Instead it sells track access to train operators under an "open access" regime. Integrated railways manage the network's infrastructure and access and also operate trains on the track. Integrated railway owners may provide third-party access to (other) train operators.

Although the majority of infrastructure is Government owned, most railway operators are privately owned. Policy and national funding still originate from the Australian federal government. The Australian Rail Track Corporation (ARTC) manages most of Australia's interstate rail network.

There are a number of operators in Australia providing either passenger or freight services:

Company	Type	Ownership	Comments
Great Southern Rail	Passenger intercity	Private Equity	Two profitable services one subsidised by state government
NSW TrainLink	Passenger intercity and regional	Agency of New South Wales Government	Also operate coach services
Queensland Rail	Passenger suburban and long-distance	Queensland government	Used to include freight division although this was privatised
V/line	Passenger commuter and long distance	Government operated by KPMG	Previously a National Express run concession
Sydney Trains	Passenger commuter	New South Wales	

¹ World Bank, <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>

² Australian Railroad Association, <https://ara.net.au/sites/default/files/Australian%20Rail%20Industry%202014%20web.pdf>

³ Value of Rail Australia, Deloitte, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

⁴ Australian Railroad Association, <https://ara.net.au/sites/default/files/Australian%20Rail%20Industry%202014%20web.pdf>

⁵ Australian Railroad Association, <https://ara.net.au/sites/default/files/Australian%20Rail%20Industry%202014%20web.pdf>

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Company	Type	Ownership	Comments
Metro Trains Melbourne	Passenger commuter	Private - MTR	
Transperth	Passenger commuter	The Public Transport Authority	
Adelaide Metro	Passenger commuter	South Australian Government	
Byron Bay Train	Passenger commuter	Private	
Aurizon	Freight, coal, bulk, containerised	Private	Previously nationalised, sold off
Pacific National	Freight, bulk, coal, steel and intermodal	Private	Previously nationalised, sold off
Genesee & Wyoming	Freight	Private	Own Freightliner in the UK
Qube	Freight	Private	
SCT Logistics	Freight, containerised and specialist including refrigerated	Private	
Southern Shorthaul Railroad	Freight	Private	Also offer workshop facilities
TransVolution	Freight, integrated logistics	Private	
TasRail	Freight	State-owned (Tasmanian Government)	Vertically integrated operator

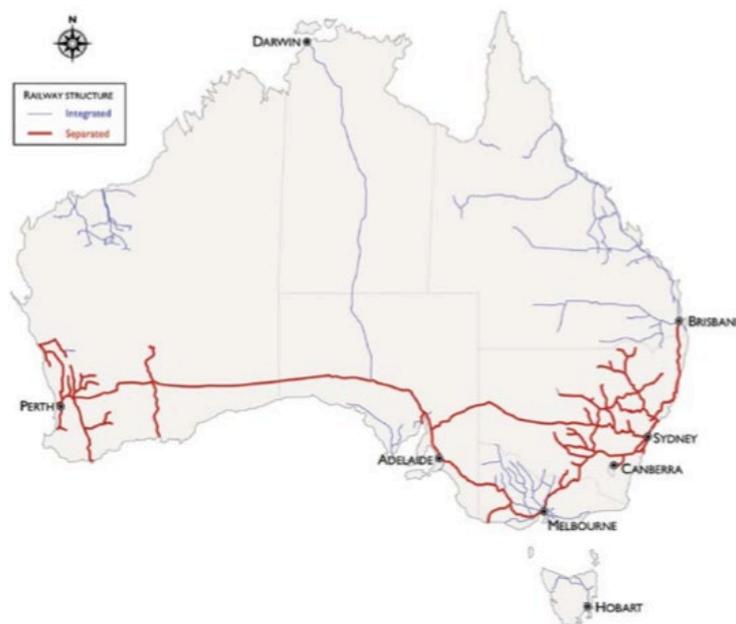


Figure 2, Australian rail industry map

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Comparator unless noted otherwise	Australia	UK* ⁶
Population (million) 2017	24.598 ⁷	65.809
GDP (Nominal) bn € 2016	1208 ⁸	2395.8
Network Employees (UK includes direct supply chain)	142,228 ⁹	240,000
Network KM (electrified %) 2016	33,168km (10%) ¹⁰	16,253km (33.7)
Passenger km per year 2016 (modal share)	16.15bn (2015/16) ¹¹ (4% ¹²)	68bn (8.7%)
Number of stations	Unable to disaggregate metro stations	2317 ¹³
Regional and local punctuality % on time	Urban Heavy Rail 94.8% (3-5 minutes) ¹⁴	89.7% (5 minutes) ¹⁵
Long distance punctuality % on time	Non-urban heavy rail 79.4% (6-15 minutes) ¹⁶	91% (10 minutes) ¹⁷
High and Good Satisfaction %	Australia's metropolitan railways score well. ¹⁸	75% ¹⁹
Freight tonne km per year 2016 (modal share)	400bn (50%) ²⁰	17.1bn (4.7%)
All train km (% passenger/freight)	-	565.6 (94/6) ²¹
Infrastructure investment €bn (enhancements)	-	9018 (41%) ²²
Maintenance and enhancement spend thousand € per km	-	327
% Farebox revenue	Sydney, 2011 data, 22.1% ²³	92% ²⁴
Passengers killed in railway accidents 2013, 2014, 2015, 2016	Unclear reporting although excluding suicides and level crossing fatalities it appears there has been 1 in 2015/16	0, 0, 0, 0

* European Union (EU) Commission stats include Northern Ireland (NI) but excludes the Channel Tunnel

⁶ EU Transport Statistical Pocketbook, <https://ec.europa.eu/transport/sites/transport/files/pocketbook2018.pdf>

⁷ World Bank, <https://data.worldbank.org/country/australia>

⁸ World Bank, <https://data.worldbank.org/country/australia>

⁹ Value of Rail Australia, Deloitte, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

¹⁰ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

¹¹ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

¹² Australian infrastructure statistics, https://bitre.gov.au/publications/2016/files/is_075.pdf

¹³ RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

¹⁴ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

¹⁵ RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

¹⁶ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

¹⁷ RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

¹⁸ Canstar Blue Research 2016, <https://www.canstarblue.com.au/city-trains/>

¹⁹ RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

²⁰ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

²¹ Train km in themselves do not always denote success. British freight operators have reduced train km by increasing length and payload, making more efficient use of scarce capacity. https://www.raildeliverygroup.com/files/Publications/2018-06_rail_freight_working_for_britain.pdf

²² RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

²³ Australian Government, https://bitre.gov.au/publications/2014/files/is_059.pdf

²⁴ RMMS 2016, https://ec.europa.eu/transport/modes/rail/market/market_monitoring_en

On the interstate network, ARTC operates under 'access undertakings', which are subject to approval by the national Australian competition authority (ACCC). The undertakings include provisions relating to non-discriminatory access, price-setting under the 'negotiate-arbitrate' model generally used in Australia, pricing principles adopted for deriving indicative charges, and the proposed charging structures.

Under the 'negotiate-arbitrate' model, the access provider and access seeker aim to reach a commercially negotiated agreement on price and the non-price terms of access. If they cannot agree, a provision exists for arbitrated outcomes.

The pricing principles establish the floor and ceiling limits for negotiating and arbitrating access charges and revenue, which aims to prevent access providers from generating monopoly profits, and to ensure that users pay the cost of using the network. Generally, the ceiling price is defined as the full economic cost of service provision; the floor price equals the marginal or incremental cost, although ceiling and floor definitions vary among access providers²⁵.

Future challenges

Australian railways have identified a number of challenges for the future quoted from an independent report²⁶:

- *“There is forecast growth of 19% in the passenger task and 26% in the freight task over the period to 2026 (NTC 2016). Any modal shift towards rail will mean that growth rates in rail transport will be even higher.*
- *Technological change and policy which creates advantages for road transport are creating challenges for transport in Australia. New policy approaches will be needed to ensure we can meet the growing transport challenge.*
- *The upcoming stream of large infrastructure projects in road and rail will create constraints on skilled labour. We currently don't have a clear picture of the scale or specifics of skills that will be required to deliver these projects.*
- *The continued success of Australia's transport system and its ability to contribute to the economy and society is not guaranteed and will require collaboration between industry and government to enable our transport networks to operate efficiently and allow the public to get the most out of the investments that are being made.*
 - *Government should continue to pursue improvements to planning decisions, procurement and regulation, including through road pricing reform.*
 - *Industry should pursue harmonisation of product designs and standards between jurisdictions and harness disruptive technologies with the potential to improve rail efficiency.*
 - *Government and industry should work together to improve customer experience, rail productivity and planning for the volumes and types of skilled workers required to deliver the ongoing stream of transport projects that will be required in the next 10-20 years.”*

²⁵ World Bank ARTC profile, <https://olc.worldbank.org/system/files/Railway%20Case%20Studies.pdf>

²⁶ Value of Rail Australia, Deloitte, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

Strengths

Freight

The geography of Australia and its strong mining manufacturing and agriculture industries lend itself to freight shippers using rail. Indeed, rail has a significant modal share of over 50%²⁷. The Freight on Rail Group (FORG) identified that rail freight added AUS\$13.2bn to the Australian economy in 2013²⁸.

Freight has performed well increasing by 57% since 2007 and continuing to grow²⁹. Indeed, the target is to grow another 26% by 2026³⁰.

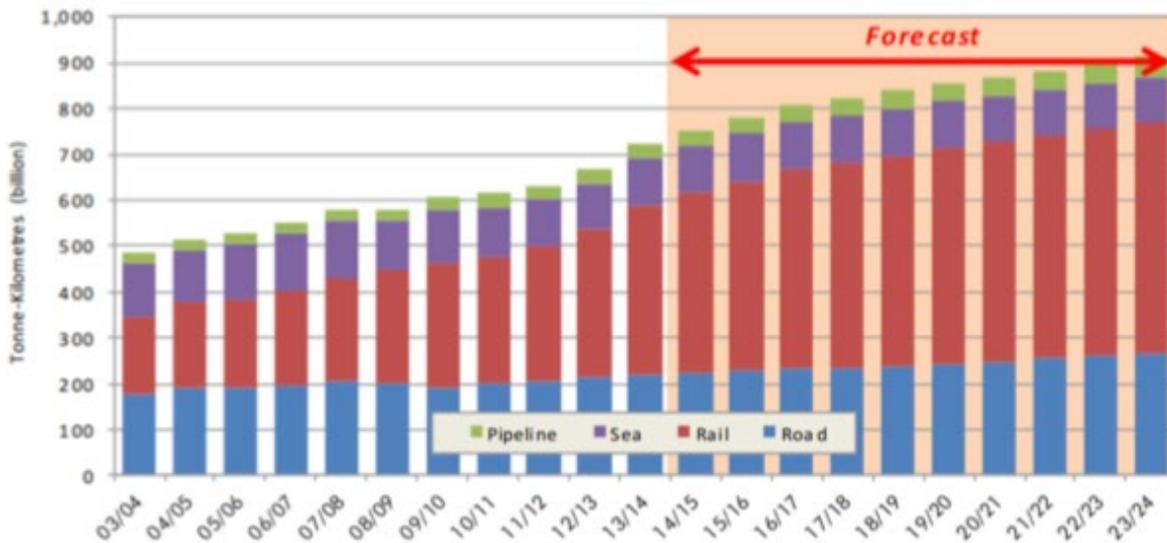


Figure 3, Expected growth in freight³¹

Competition

Reforms in the 1990s transformed the structure and operations of Australia’s railways introducing more competition and private sector involvement. Academic studies have found this led to immediate improvements in productivity in the residual government companies³².

There is some work for Australia to do on comparative performance, but this is challenging in the geographical context in which they operate. The World Bank also picks out Australian rail freight as particularly effective due to the effects of competition³³.

²⁷ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

²⁸ Australian Senate Rural and Regional Affairs and Transport References Committee, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKewje592fovTeAhUD-6QKHRfmCdMQFjACegQIBxAC&url=https%3A%2F%2Fwww.aph.gov.au%2FParliamentary_Business%2FCommittees%2FSenate%2FRural_and_Regional_Affairs_and_Transport%2FRailIndustry45%2F~%2Fmedia%2FCommittees%2Frat_cte%2FRailIndustry45%2Freport.pdf&usq=AOVvaw3ZoUYnK1y57PJvH1sC0cl2

²⁹ Australian Railroad Association, https://bitre.gov.au/publications/2017/files/train_005.pdf

³⁰ Value of Rail Australia, Deloitte, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

³¹ Value of Rail Australia, Deloitte, <https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>

³² Rail Reform Strategies: The Australian Experience, NBER, <https://www.nber.org/chapters/c10194.pdf>

³³ World Bank Toolkit, <http://documents.worldbank.org/curated/en/529921469672181559/pdf/69256-REVISED-ENGLISH-PUBLIC-RR-Toolkit-EN-New-report-date-2017-12-27.pdf>

Investment

There is a commitment from the Australian government to invest in rail as it is recognised that it positively contributes to the economy, society and the environment.

The Government of Australia has committed to AUS \$75bn (£42bn) of investment in transport in the next ten years³⁴. This includes major projects such as Melbourne to Brisbane Inland Rail, a 1,700km route connecting Melbourne and Brisbane through regional Australia in under 24 hours and a Melbourne airport rail link.

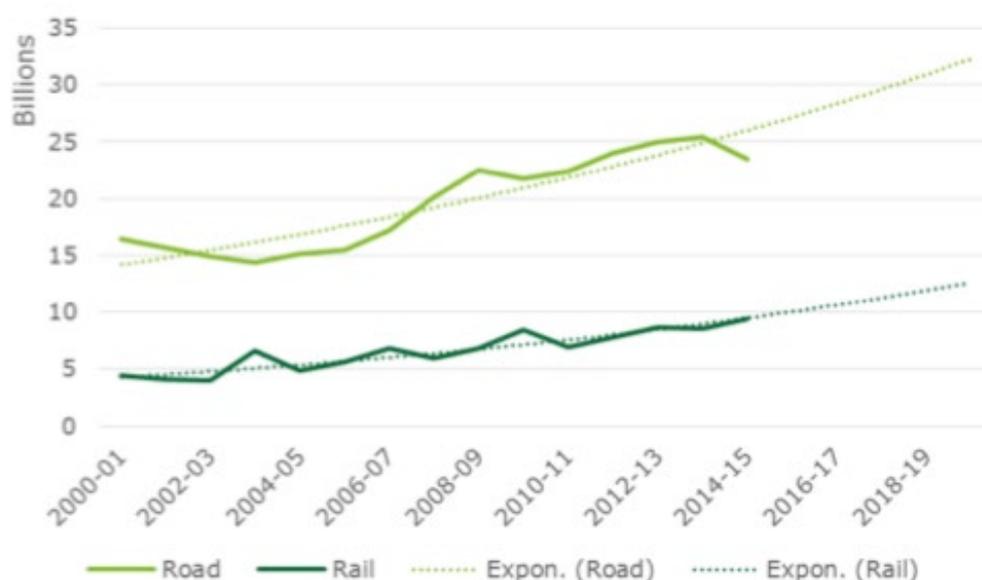


Figure 4, Government expenditure on road and rail 2014/15 constant prices

Weaknesses

Productivity

Many interested parties highlight low productivity as an issue for Australian railways which in turn resulted in increased access fees for users³⁵. Some of this challenge is beyond the control of the rail companies as it is caused by Australia's geography and demography. The large distances make productivity challenging as does the need to bring in human resource from overseas to undertake projects.

Harmonisation

Rail in Australia is largely managed by States which can result in different standards being used across Australia. In a recent Australian Government Inquiry into the rail industry, experts pointed to the difference in regulatory structures for safety, training and recognition of qualifications increasing the cost burden³⁶. The industry has adopted a progressive, voluntary approach to integration and things are improving. The same

³⁴ Australian Government, https://investment.infrastructure.gov.au/key_projects/road_and_rail_delivery/index.aspx

³⁵ Australian Senate Rural and Regional Affairs and Transport References Committee, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKEwje592fovTeAhUD-6QKHRfmCdMQFjACegQIBxAC&url=https%3A%2F%2Fwww.aph.gov.au%2FParliamentary_Business%2FCommittees%2FSenate%2FRural_and_Regional_Affairs_and_Transport%2FRailindustry45%2F~%2Fmedia%2FCommittees%2Frat_cte%2FRailindustry45%2Freport.pdf&usq=AOvVaw3ZoUYnK1y57PjvH1sC0cl2

³⁶ Australian Senate Rural and Regional Affairs and Transport References Committee, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=2ahUKEwje592fovTeAhUD-6QKHRfmCdMQFjACegQIBxAC&url=https%3A%2F%2Fwww.aph.gov.au%2FParliamentary_Business%2FCommittees%2FSenate%2FRural_and_Regional_Affairs_and_Transport%2FRailindustry45%2F~%2Fmedia%2FCommittees%2Frat_cte%2FRailindustry45%2Freport.pdf&usq=AOvVaw3ZoUYnK1y57PjvH1sC0cl2

report highlighted a need to conform with US or European standards for rail manufacturing to be very important in reducing costs.

In 2012 the Australian Rail Industry Safety and Standards Board (RISSB) undertook a review, the Taig Review, to understand the benefits of harmonisation. The Review highlighted: “...*there is a serious and very exciting prospect that rail networks might double or treble in size over that period [2012 to 2032]. There is a real opportunity, if harmonisation can be progressed quickly, to make the railways of the future considerably better value than those which exist at present.*”³⁷

Conclusions

Australia’s geography and natural resources lends itself to rail freight achieving a strong modal share which has benefitted the economy. However, the large distances involved in Australia’s rail industry does present challenges for achieving good productivity.

State management has resulted in disconnected standards and qualifications which have in turn pushed up unit costs. Australia is committed to more coordination and harmonisation which should go some way to resolving this issue.

Success against the RDG principles

Principle	Commentary
<p>Put customers at the heart ensuring that all parts of the railway, including the supply chain, work together to deliver for customers now and for generations to come</p>	<p>Passenger satisfaction with metropolitan services is good. There is not a wealth of information available in this area, but dissatisfaction is not particularly evident. Some urban services have satisfaction as high as 94%³⁸. The commitment to long term investment and improvement will support serving customers well in the long run.</p>
<p>Increase accountability building on the solid safety record, deliver a structure for the railway that creates confidence in its leadership, improving coordination in the way services are delivered and decisions are taken, and making it clear where the buck stops when things go wrong</p>	<p>There is limited public evidence for this metric.</p>
<p>Deliver value for money managing costs for passengers, freight customers and taxpayers, with a sustainable supply chain</p>	<p>Productivity and therefore unit costs are a challenge for Australian railways, driven largely by their geography and demography. There are moves to improve in this area.</p>
<p>Unlock economic growth boosting innovation with private investment enabling the railway to expand; growing and rebalancing Britain’s economy, and be environmentally sustainable</p>	<p>Australian railways have had a significant and proven positive effect on the economy. Rail freight has been particularly successful largely due to geography and the importance of mining industries.</p>

³⁷ RISSB, <https://www.rissb.com.au/news/123/>

³⁸ Rail express, <https://www.railexpress.com.au/train-patronage-and-passenger-satisfaction-up-in-perth/>

Principle	Commentary
<p>Strengthen communities ensuring communities across the country benefit from a vibrant, growing railway</p>	<p>Metropolitan railways have been successful in Australia meeting growing demand and connecting suburbs to city centres. Furthermore, the railway is growing and improving connecting local communities.</p>
<p>Inspire our people ensuring that people working in rail have fulfilling careers and a greater stake in the railway's long-term success</p>	<p>There is limited public evidence for this metric.</p>
<p>Performance</p>	<p>Urban heavy rail performs well with high punctuality. Longer distance services perform less well, although in the context of the distances travelled this is not considered to be poor.</p>
<p>Capacity</p>	<p>There is limited public evidence for this metric.</p>
<p>Fares</p>	<p>There is limited public evidence for this metric.</p>

Glossary

Abbreviation	Definition
ACCC	Australian competition authority
ARTC	Australian Rail Track Corporation
BN	Billion
CEO	Chief Executive Officer
ECML	East Coast Mainline
EU	European Union
FORG	Freight on Rail Group
GB	Great Britain
GWML	Great Western Mainline
KM	Kilometres
KPH	Kilometres per hour
MML	Midland Mainline
MPH	Miles per hour
NI	Northern Ireland
NSW	New South Wales
NTV	Nuovo Trasporto Viaggiatori (Italian passenger operator)
PSC	Public Service Contract
PSO	Public Service Obligations
RDG	Rail Delivery Group
RISSB	Rail Industry Safety and Standards Board
UK	United Kingdom
WCML	West Coast Mainline