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Australian rail freight performance indicators 2005–06

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Foreword

This information paper, prepared as a report to the Australian Transport Council (ATC) on rail freight performance indicators for 2005–06, is a result of collaboration between the Australasian Railway Association (ARA) and the Bureau of Transport and Regional Economics (BTRE).

In 2002, the ATC approved a set of six targets and indicators to measure improvements over time in performance of the interstate rail track. Early reports against the indicators were derived entirely from track managers' (below rail) datasets. An ARA survey of train operators (above rail) reporting on key performance indicators showed that results from track managers' datasets were, for some indicators, inconsistent with results based on rail operators' data. There are distinct reporting methodologies between above and below rail.

Hence, in 2005, the ARA entered into an agreement with the Standing Committee on Transport (SCOT) Rail Group to work with BTRE to develop a new approach to reporting performance indicators in order to improve data quality and integrity. As part of this process, the different reporting mechanisms by above and below rail are also addressed.

The ARA is also assisting the Department of Transport and Regional Services (DOTARS) with the provision of freight movement data for the purposes of assessing corridor investment requirements under the Auslink program. This data should also help in analysing future rail performance indicator data.

Results for 2005–06 are reported against an expanded set of 11 railway indicators. These are in three groups—three train indicators, four track indicators and four market indicators. The three train indicators provide information about intermodal train timetables and services. The four track indicators provide information about below rail infrastructure. The first of the four market indicators is an access price indicator. Other indicators measure the size of the intermodal freight market and the railway sector's share in that market.

Members of ARA include all rail operators, private and government, track owners and managers and manufacturers of rolling-stock and components in Australasia. The assistance of ARA members with providing data about the Australian railway industry's performance is gratefully acknowledged. We also acknowledge the pivotal contribution of the late Kathryn Rayner of the ARA in developing the initial cooperative linkages on which this information paper is based.

The BTRE report team comprised Godfrey Lubulwa, Peter Kain, Adam Malarz, Rob Bolin, David Gargett and Leo Soames. The assistance of Lucy Williams and Afzal Hossain with proof-reading of earlier drafts is gratefully acknowledged.

Bryan Nye
Chief Executive Officer
Australasian Railway Association Inc.
May 2007

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Key results

Train indicators

- On the North–South corridor, scheduled transit times were, in 2005–06, longer than ATC targets. For example, average transit time between Sydney and Melbourne was 15 hours, against an ATC target of 10.5 hours. Calculations of average actual transit time on two of the line segments on this corridor showed that trains operated close to, or slightly longer than, the scheduled transit times.
- Average scheduled transit times on the East–West corridor remained longer than ATC targets. Actual transit times were generally longer than scheduled times.
- The highest level of intercity service trains on the national network occurred between Sydney and Cootamundra, and between Melbourne and Adelaide. On the North–South corridor, train origin-destinations typically traversed the full Brisbane–Melbourne corridor rather than operate as separate Brisbane–Sydney and Sydney–Melbourne trains, or as non-stop Brisbane–Melbourne trains.

Track indicators

- Looking at the average track quality on each line segment, the aggregate measure showed mostly unchanged quality over the last few years. Track renewal and enhancements that have commenced on the North–South corridor may lead to improved track quality.
- On completion, current signalling and track investments should bring about reductions in train dwell (stationary) time. In 2005–06 Brisbane–Sydney trains spent around one quarter of their scheduled transit time as dwell time. By contrast, despite relatively high intrastate traffic on parts of the line, average dwell time on the Sydney–Melbourne segment was much lower, averaging 11 per cent of total scheduled transit time.
- Trains on the 972 km between Brisbane and Sydney made almost as many stops as trains on the 2 970 km Adelaide–Perth journey. This operating environment meant that Brisbane–Sydney trains averaged 45 km/h compared to 72 km/h for trains on the Adelaide–Perth line.

Market indicators

- An index of real access revenue yield ($/gross tonne kilometre) decreased by up to 2.5 per cent between 2003–04 and 2005–06. Over the recent past, the cost per gross tonne kilometre of accessing the rail network declined to the benefit of train operators, and potentially to customers.
- Between 1972 and 2005 the market share of rail rose in the following markets:
    - New South Wales–Western Australia from 33 per cent to 53 per cent
    - Victoria–Western Australia from 38 per cent to 59 per cent
    - Victoria–Northern Territory from 25 per cent to 100 per cent
    - Queensland–Western Australia from 11 per cent to 36 per cent.

All these are medium to long distance freight markets which tend to favour rail.

- In the East–West corridor, in 2005–06, the Adelaide–Perth line segment carried the largest total freight task estimated at 14.5 billion tonne kilometres, followed by the Melbourne–Adelaide line segment with a task of 4.7 billion tonne kilometres. In the North–South corridor the Sydney–Melbourne line segment carried most freight estimated at 4.9 billion tonne kilometres.
- The Adelaide–Perth line segment had the highest intercity line segment share of 78.4 per cent, followed by the Brisbane–Sydney line segment with an estimated intercity line segment share of 74.9 per cent. The Sydney–Broken Hill–Crystal Brook line segment was estimated to have the lowest intercity line segment share of 56.8 per cent.

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Introduction

In August 2002, the ATC endorsed the reporting of six indicators of railway performance for eight line segments of the interstate network. The performance indicators covered were:

- Scheduled transit time
- Train length
- Double-stacking capability
- Train reliability (punctuality)
- Market share, and
- Price.

The first two reports to ATC, for 2003–04 and 2004–05, were against the first four of these indicators. Market share and price indicators were not included, pending resolution of data confidentiality and other issues. However, they form part of the present report. The report includes a thirty year time series of data on changes in market shares of rail, road and coastal shipping. In addition, the statistical annex includes a table of significant railway events, since the early 1990s, which provide complementary information about possible sources of change in rail market share over time.

The expanded set of indicators for the present report includes two additional track indicators, a track quality indicator, and a suite of indicators measuring train movements (dwell time, number of stops, train speed).

Two new market indicators are also reported on:

- intercity line segment shares in total line segment rail freight, and
- total rail freight task by line segment.

The indicator of train reliability has been withdrawn due to lack of consensus between above-rail and below-rail stakeholders about how it should be measured and interpreted. There are also differing views on the extent to which changes in this indicator imply changes in the quality of service to rail customers. The indicator of train reliability has been replaced with actual intermodal transit time.

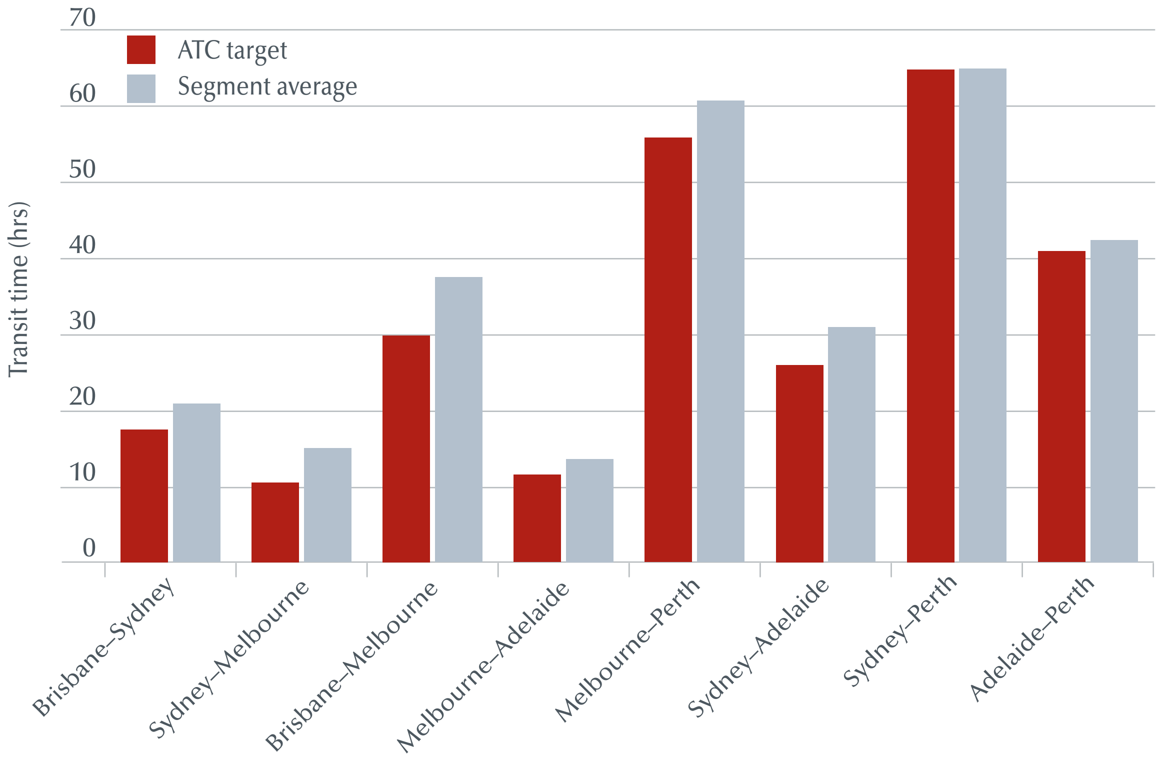
The full set of indicators will be kept under review in light of infrastructure developments, operational changes and stakeholder requirements. For instance, the current Australian Rail Track Corporation (ARTC) investment programme will lead to ATC train length and double-stacking targets being achieved in the near future, thereby making two of the indicators redundant.

Train indicators

Indicator 1: Scheduled intermodal transit time

The scheduled transit time indicator is the average timetabled transit time of intermodal trains scheduled to operate in the last week of June 2006. (Scheduled trains were omitted where the train operator reserved, but generally had not used, specific train paths during the three-month period around the end of June 2006.) Figure 1 presents the ATC target transit time on each specified ATC network line segment along with the average transit time using the timetables.

Figure 1: Average scheduled transit times relative to ATC transit time targets, by line segment, 2005–06



Note: The ATC target is the average transit time for all trains operating on a line segment, in both directions. The Figure compares this target with average scheduled transit times for all trains in both directions.

Source: BTRE estimates based on data provided by infrastructure managers for the last week of June 2006: Queensland Rail Network Access, RailCorp, Australian Rail Track Corporation and WestNet.

Table A.1 (column 3) in the statistical annex presents estimates of scheduled intermodal transit times by line segment for both the outward and return journeys.

The average scheduled transit time was influenced by a number of factors including:

- line speed
- the number of stops en-route

- the number of other trains on the line segment
- the mix of trains
- the route used, and
- operator-dependent factors, such as, the time spent loading and unloading in intermediate cities.

Many of these factors change over time. For instance, until November 2005, the weekly intermodal Sydney–Adelaide return train was routed via Broken Hill; the current twice-weekly service between these cities (but originating/terminating in Brisbane) is routed via Melbourne.

In 2005–06, scheduled transit times on the East–West corridor were generally longer than the ATC targets although the Sydney–Perth average (65.1 hours) was close to the 65 hours ATC target.

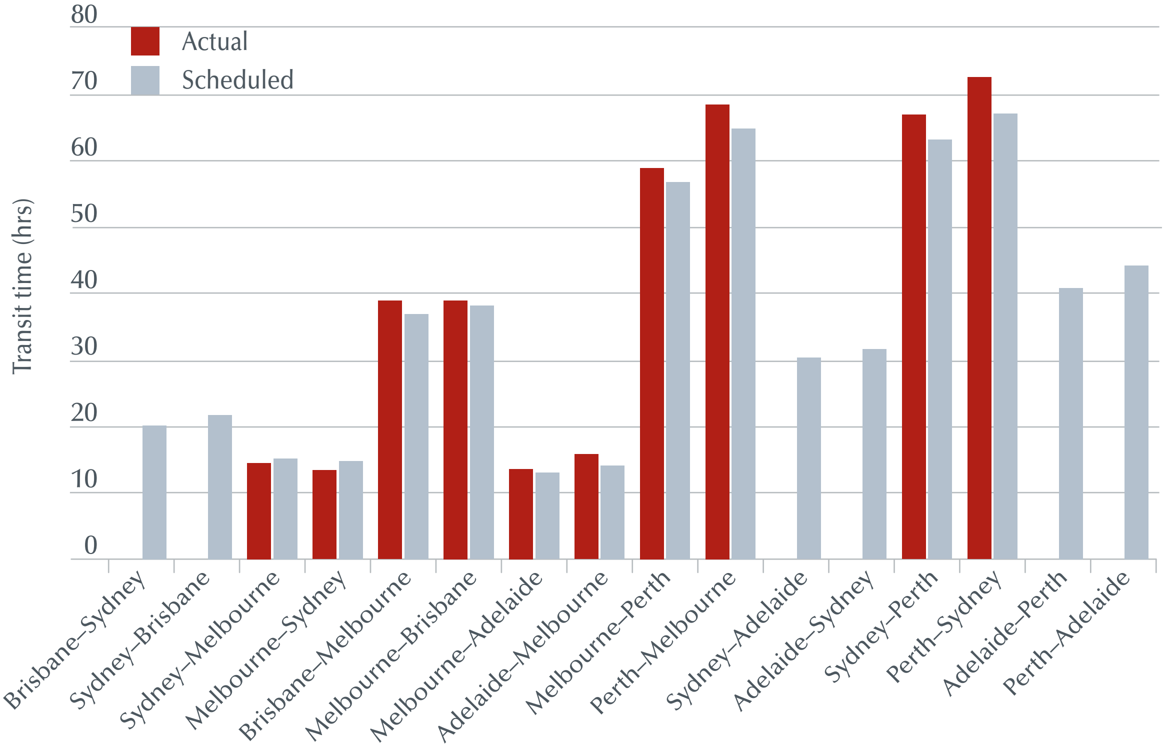
In 2005–06, on the North–South corridor average scheduled transit times remained longer than the ATC targets. For instance, the average scheduled transit time for trains operating between Brisbane and Melbourne was 36.9 hours, compared with the ATC target of 29.5 hours. Similarly, average scheduled transit time between Sydney and Melbourne was 15 hours, compared with an ATC target of 10.5 hours.

Indicator 2: Actual intermodal transit time

This indicator measures the annual average actual transit time of intermodal trains by line segment. As discussed in the explanatory notes at the end of this report (page 27), reliable data was not available to enable the estimation of this indicator for the following three of the eight line segments: Brisbane–Sydney, Sydney–Adelaide and Adelaide–Perth. Figure 2 and Table A.1 (column 5) report results for the other five line segments.

From Figure 2 and Table A.1 (column 5), on average, for the trains on the North–South corridor, the average actual transit times were close to the average scheduled transit times. Indeed, on Sydney–Melbourne services, average actual transit times were less than average scheduled times. By contrast, actual transit times for trains on the East–West corridor were considerably greater than the scheduled transit times.

Figure 2: Scheduled and actual transit times, by line segment, 2005–06



Note: It was not possible to estimate actual transit times for Brisbane–Sydney, Sydney–Adelaide and Adelaide–Perth due to data constraints. In the case of Brisbane–Sydney, while Brisbane–Melbourne trains pass through Sydney, data was not routinely collected on arrivals and departures of trains on this service at Sydney. For the other two line segments not estimated, there was not enough data to enable estimation.

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

Indicator 3a: Number of weekly intermodal direct city-to-city trains

Indicator 3a reports counts of weekly intermodal, direct city-to-city train services that originated and terminated in the given city pairs. These counts are summarised in Table A.1 (column 6) and Map 1.

For the North–South corridor, Map 1 shows that in 2005–06 there were 9 intermodal trains per week with origins/destinations in Brisbane and Sydney, and 10 intermodal trains per week with origins/destinations in Sydney and Melbourne. Map 1 also shows that on the same route, there was an additional 37 trains per week with origins/destinations in Brisbane and Melbourne. While these trains go through Sydney it is not clear whether they load/unload at Sydney.

For the East–West corridor there were no direct intercity intermodal trains originating from Adelaide. However, there were 44 direct city-to-city, intermodal train services that went through Adelaide, as shown in Map 1—16 Perth–Sydney and 28 Perth–Melbourne train services.

Brisbane–Melbourne was the line segment with the largest number of weekly direct city-to-city intermodal freight movements.

Map 1: Number of weekly intercity intermodal trains, by city-to-city pair, June 2006

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

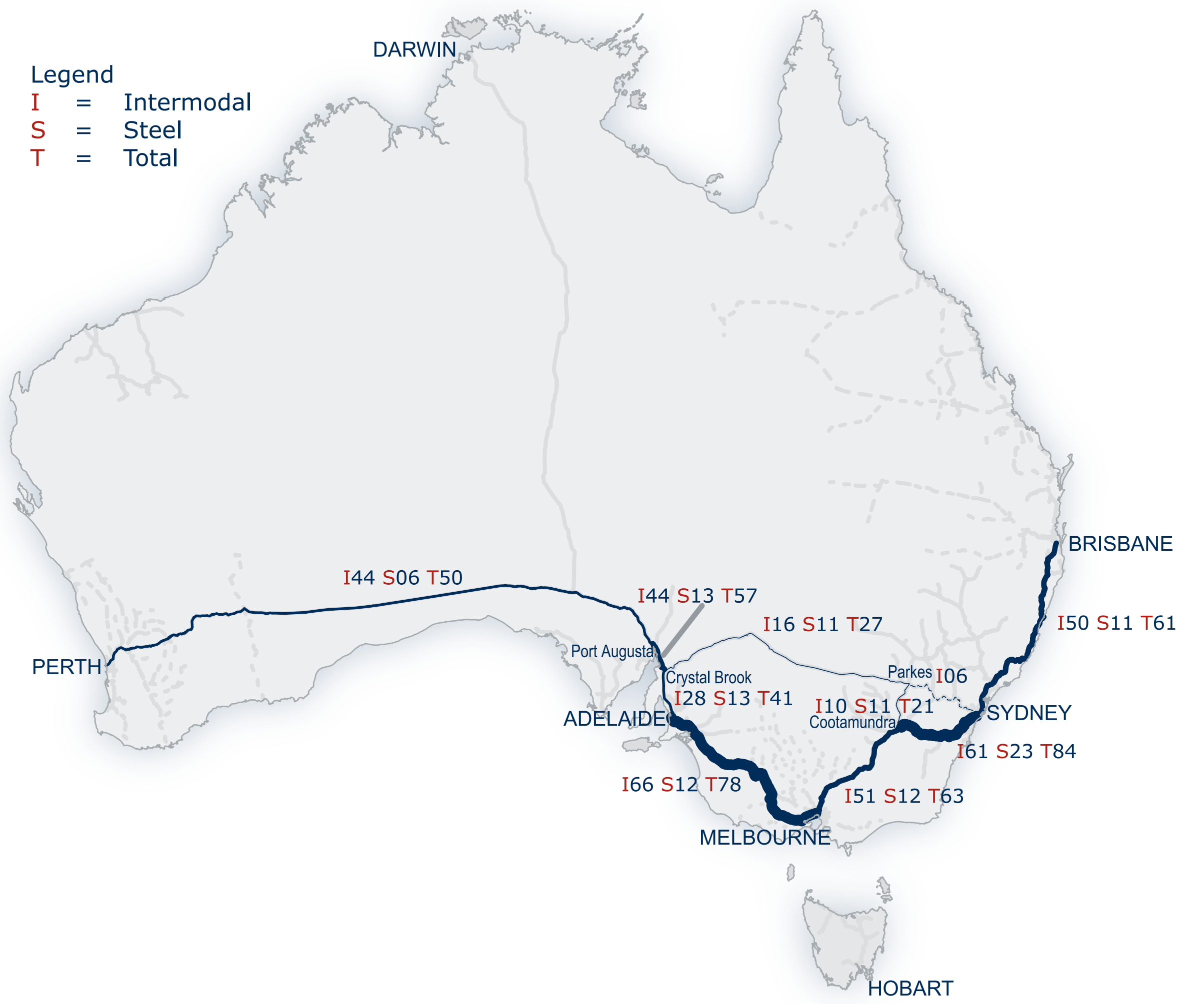
Indicator 3b: Total number of weekly intermodal trains on a line segment

Indicator 3a understates the density of intermodal trains operating on each line segment. Indicator 3b extends the count of intermodal trains to include, in addition to direct city-to-city pair trains, other intermodal trains which operate on a line segment. This indicator measures the intensity of intermodal trains on a line segment and the extent of track utilisation by intermodal trains on a line segment. This information is summarised in Table A.2 and Map 2 by the numbers starting with the letter 'I'. For example, Map 2 shows that on the Brisbane–Sydney line segment, in addition to the 9 direct city-to-city trains, there were 41 other intermodal trains, i.e. trains moving between Brisbane and Melbourne and Brisbane and Adelaide using the line segment.

Indicator 3c: Total number of weekly steel trains

The information on counts of steel trains operating on the rail network is summarised on Map 2 and Table A.2. The totals in Map 2 and Table A.2 illustrate that, in 2005–06, the most intensive intercity movements on the network were on the Sydney–Cootamundra line section.

Map 2: Number of weekly intercity and steel trains, by section of track, June 2006



Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

Track indicators

Indicator 4: Train length

Table A.3 and Map 3 summarise information about the maximum "unrestricted" and "restricted" train lengths on each line segment. The "unrestricted" train length is the train length up to which train operators can operate any scheduled service without reference to the track manager. The "restricted" train length is the maximum train length permitted on the line segment.

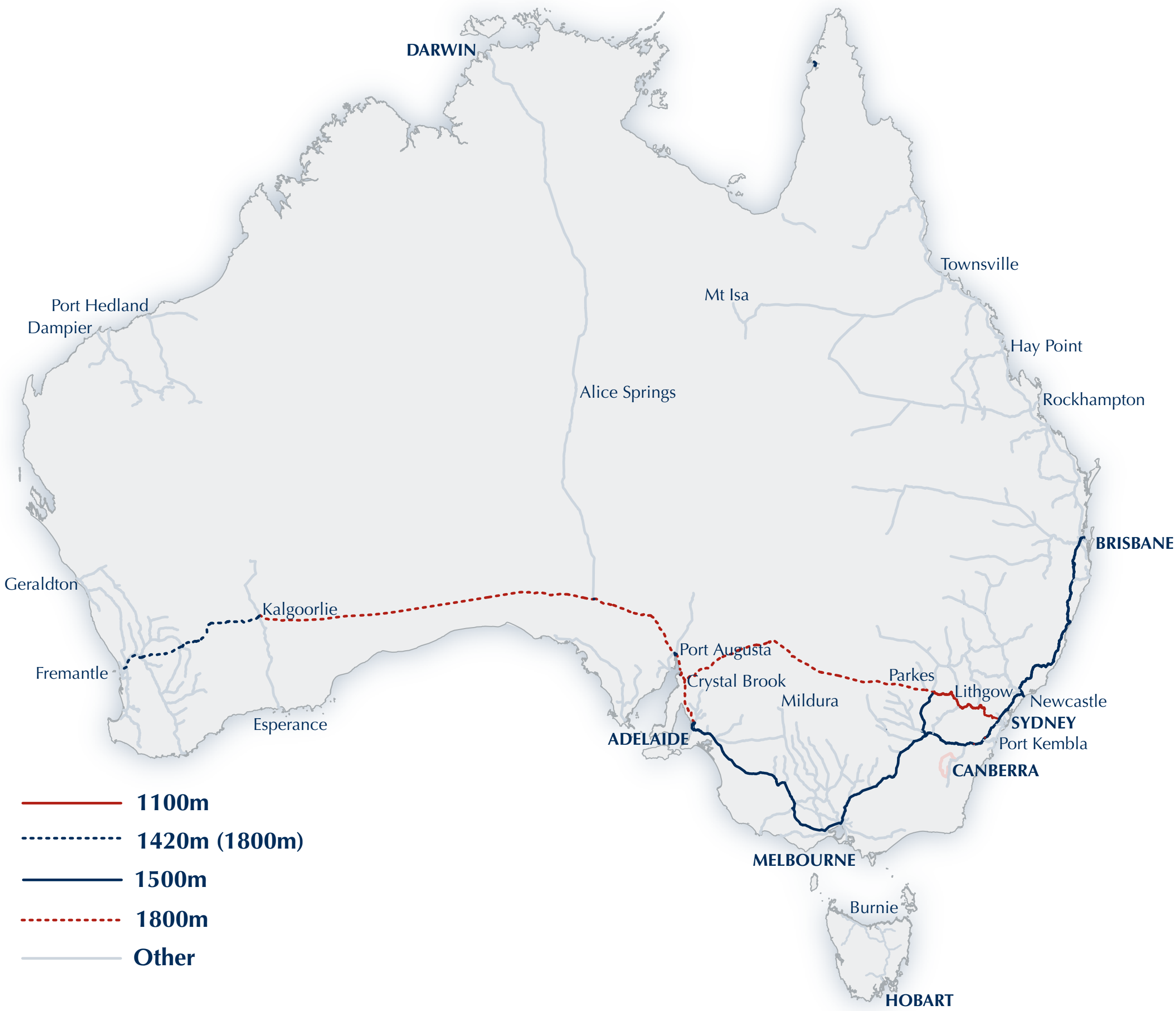
The maximum train length that is permitted depends on the number of trains and the frequency of the passing loops. For instance, there are passing loops on the single track between Kalgoorlie and Perth that can accommodate 1800 metre trains but eight of the loops can accommodate trains of only 1420 metres in length. Because of these short passing loops, the train operator must obtain approval from the infrastructure manager if the train is longer than 1420 metres—the restricted train length. The infrastructure manager needs to approve the operation of the long train if the train can be scheduled to cross other long trains at the longer passing loops.

In 2005–06, the Kalgoorlie–Perth section of the East–West corridor was the one part of that corridor that has an unrestricted train length (1420 metres) that did not meet the ATC target of 1800 metres.

Some Sydney–Parkes–Perth trains were routed via Cootamundra, where the 1500 metre unrestricted train length met the ATC target. Other Sydney–Parkes–Perth trains were routed via Lithgow. On this route, the maximum permitted train length was 1100 metres. Here the train lengths were restricted because of the limits on train braking power in traversing the Blue Mountains.

On the North–South corridor the ATC target is 1500 metres. Insofar as the line south of the Queensland border is concerned, ARTC (the infrastructure manager) considered that the line met the ATC target train length of 1500 metres. Queensland Rail Network Access and Queensland Transport also reported that passing loops between Acacia Ridge and the Queensland–New South Wales border were at least 1500 metres.

Map 3: Unrestricted (and restricted) train lengths, by line segment, 2005–06



Note: The figure in ( ) is restricted train length.

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network and Queensland Transport, RailCorp, Australian Rail Track Corporation and WestNet.

Indicator 5: Double-stacking capability

Table A.3 and Map 4 outline the double-stacking capability of each line segment. In the Australian context, the double-stacking capability refers to the ability to stack one hi-cube (9 feet 6 inches, or 2.896 metres high) container on top of another hi-cube container and to convey them within a low-floor (well) wagon. The top of the stack must then be no higher than 6.5 metres above the top of the rail.

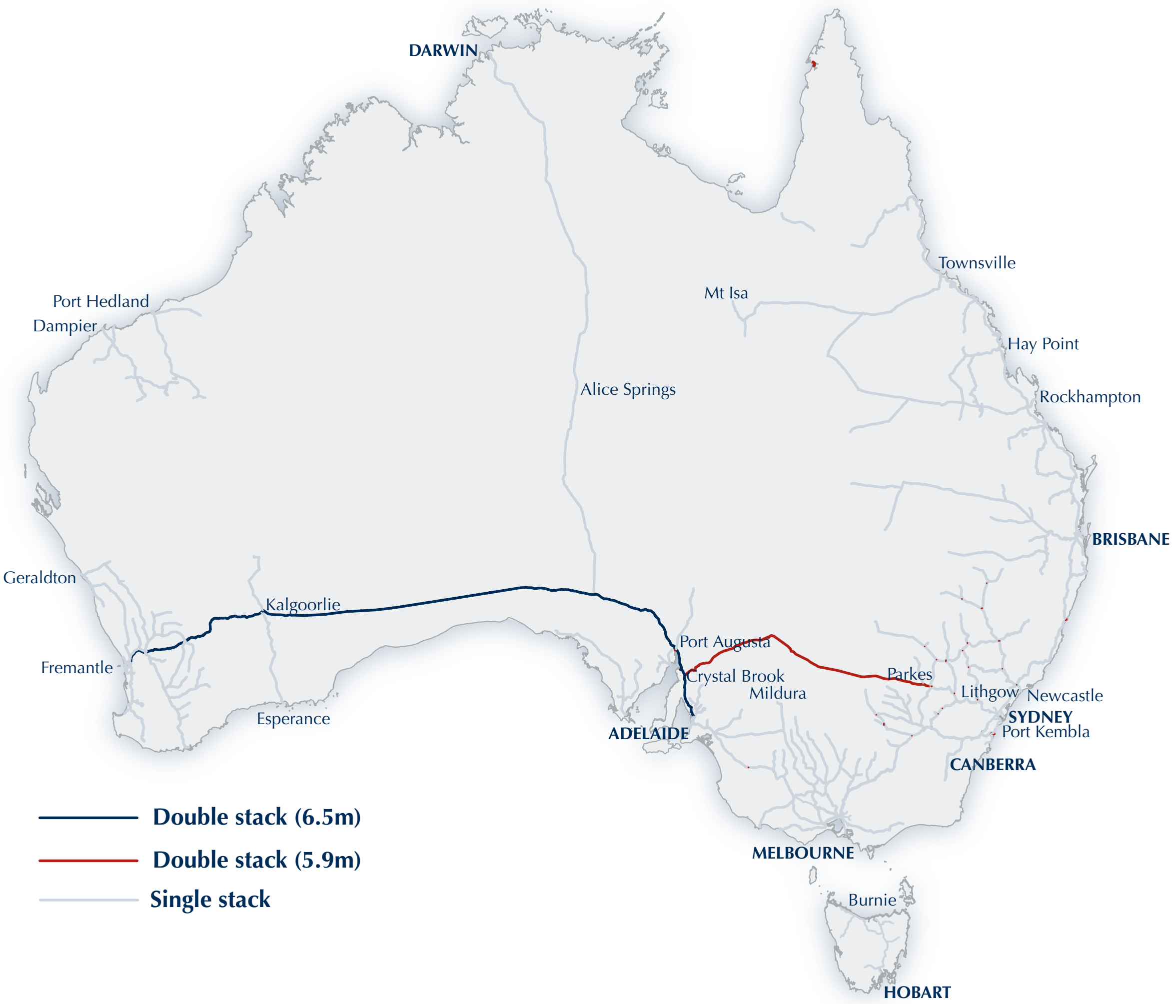
The ATC target seeks height clearance to enable double-stacking on the East–West corridor line segments between Parkes–Crystal Brook, and Adelaide–Crystal Brook–Perth. In 2005–06, double-stacking could be undertaken between Adelaide and Perth.

Lower clearance on the Parkes–Crystal Brook line prevented double-stacking of hi-cube containers although a restricted form of double-stacking could be operated by stacking a shallower (8 feet 6 inches high) container on top of a hi-cube container within the low-floor wagon. ARTC's current investment programme includes the works to raise the clearances between Parkes and Crystal Brook, to enable conventional double-stacking.

The ATC has not set targets for double-stacking on the North–South corridor. On this corridor, the loading clearances are restricted to single-stacking of hi-cube containers. Indeed, the clearance is so restricted that the increasingly-prevalent higher maxicube (10 feet 6 inches or 3.20 metres) containers cannot be transported using conventional flat wagons; they must be conveyed within the specialised low-floor well wagons.

ARTC's investment programme includes works to raise the clearances to 4.25 metres. As a result, maxicube containers are likely to be more efficiently transported on conventional flat wagons. Quite apart from any other main line obstacles, the "low" overhead electrical wires on Sydney passenger railways are a major obstacle to subsequent clearance beyond 4.25 metres.

Map 4: Double-stacking capability, by line segment, 2005–06



Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

Indicator 6: Track quality

The charts in Figure 3 and Figure 4 illustrate physical measures of average track condition, using a composite "track quality index" (TQI). The lower the index value, the better the track quality. The explanatory notes (page 28) provide greater insight into the measurement and reporting of this indicator. The charts should not be used to compare track conditions across different line segments. This is because track quality is measured and reported differently across the network, and reflects different infrastructure and operational environments.

The charts should be used to indicate trends in track condition for a given line segment. In normal, well-managed operating conditions, the track condition of the intercity rail network should not worsen appreciably between one year and the next. Thus, the longer the time series the better for monitoring track performance in typical operating conditions. However, the upgrading in measuring equipment in recent years causes breaks in the data, preventing a longer time series being reported.

The pace of decline in track quality is influenced by a range of factors, including the quality of renewal material and work, the level and type of track usage, climatic and local geographical factors and, of course, skilled and timely ongoing maintenance.

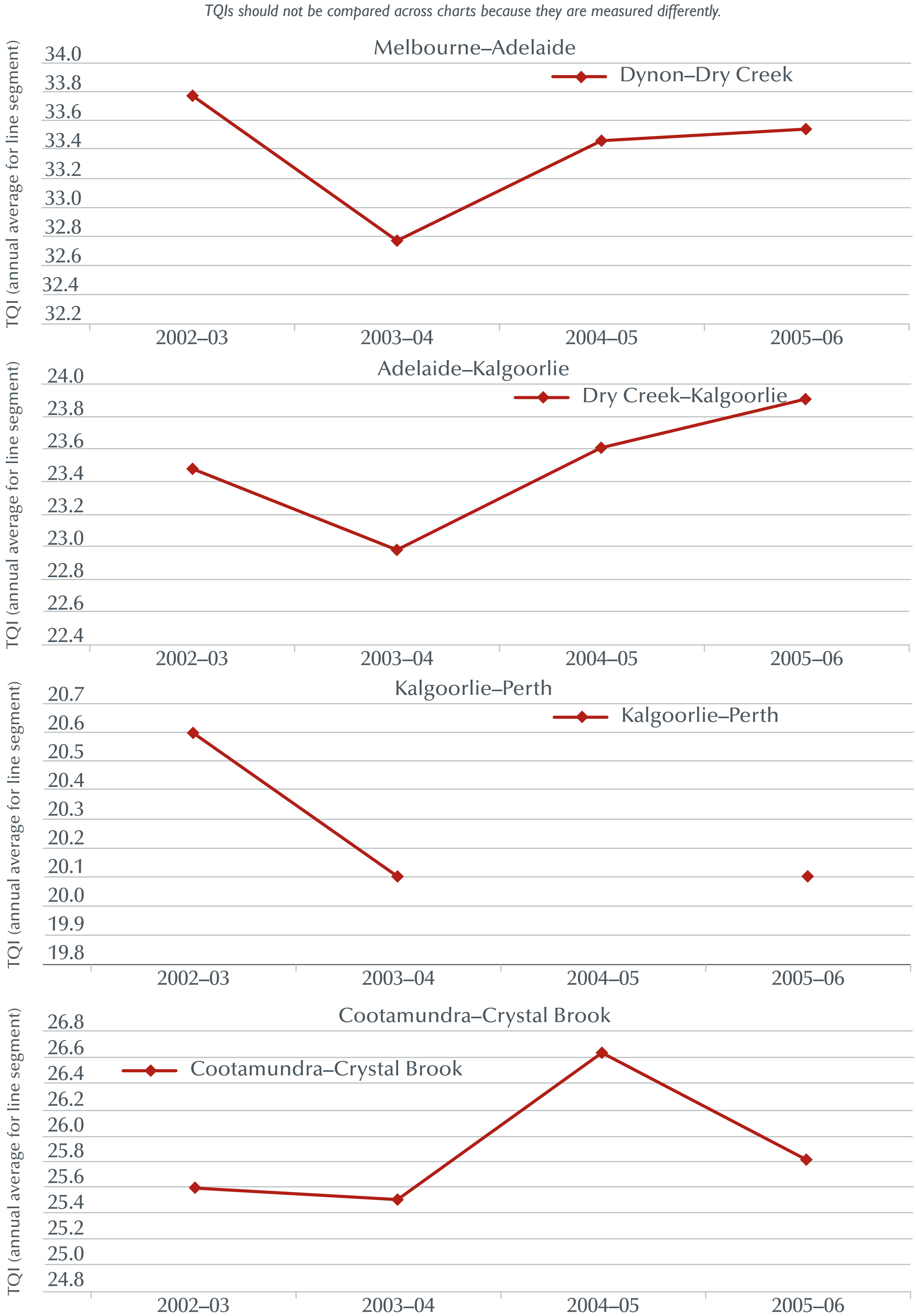
The track condition between the Queensland–New South Wales border and Acacia Ridge has improved since 2004. As a result of the current extensive sleeper renewal programme that is underway on the North–South corridor, in future years one should observe significant improvements in the reported track quality.

Figure 3: Track quality indices (TQI) on North–South corridor (the lower the index value, the better the condition of the track)

TQIs should not be compared across charts because they are measured differently.

Source: Based on data provided by infrastructure managers: Queensland Rail Access Network and Queensland Transport, Railcorp, Australian Rail Track Corporation.

Figure 4: Track quality indices on East–West corridor (the lower the index value, the better the condition of the track)



Note: No comparable data for 2004–05 for Kalgoorlie–Perth was available.

Source: BTRE estimates based on data provided by infrastructure managers: Australian Rail Track Corporation and WestNet.

Indicator 7: Train flow patterns

Table A.1 (column 7) shows three related indicators of train flow:

- train dwell time
- the number of train stops, and
- train speed.

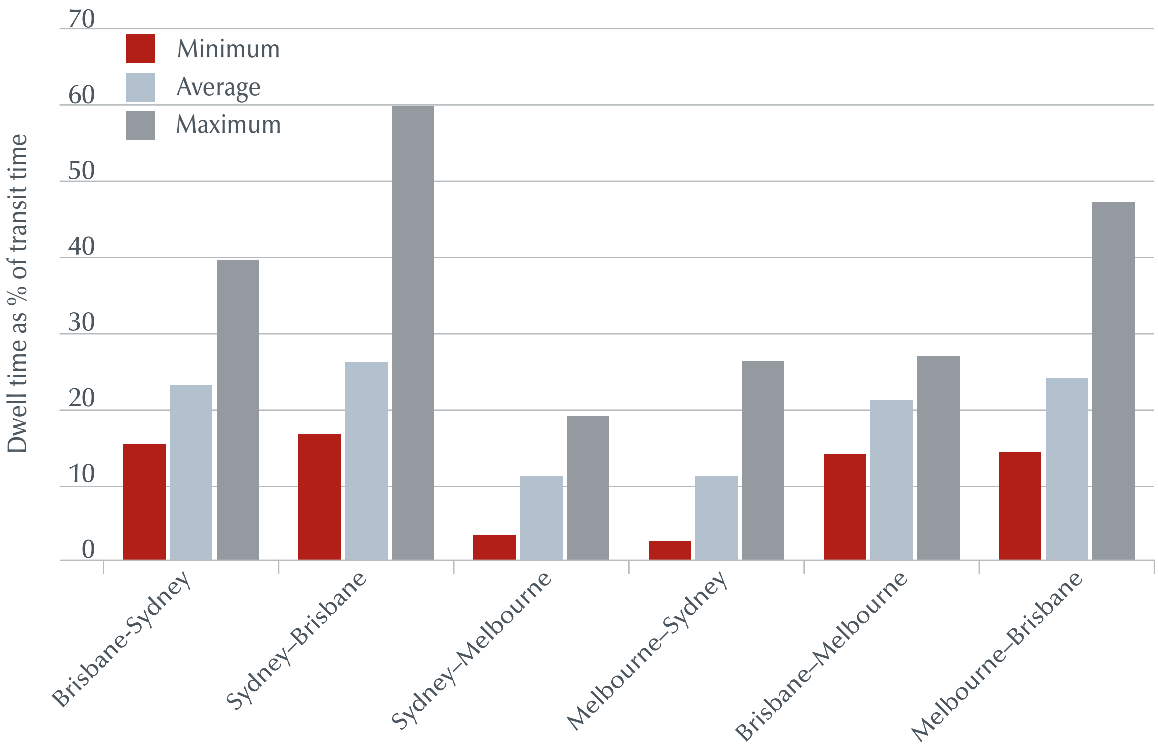
In essence, these indicators describe the pattern of train flows across the network, which is enhanced by infrastructure investment and renewal, such as new or improved signalling, additional long passing loops and passing lanes.

Indicator 7a: Dwell time

The dwell time indicator measures the percentage of scheduled train transit time that is spent "dwelling" (stationary) in railway yards and passing loops.

Figure 5 and Table A.1 (column 7) present estimates of dwell time on the North–South corridor based on an analysis of the timetables current at the end of June 2006. The Figure shows the minimum, average and maximum percentage dwell time (per cent of average scheduled transit time) on each line segment. For instance, on Brisbane to Sydney trains, the dwell time ranged from around 15 per cent of total scheduled transit time, to around 40 per cent; the average was about 23 per cent.

Figure 5: Train dwell times on North–South corridor, as a percentage of transit times, June 2006



Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

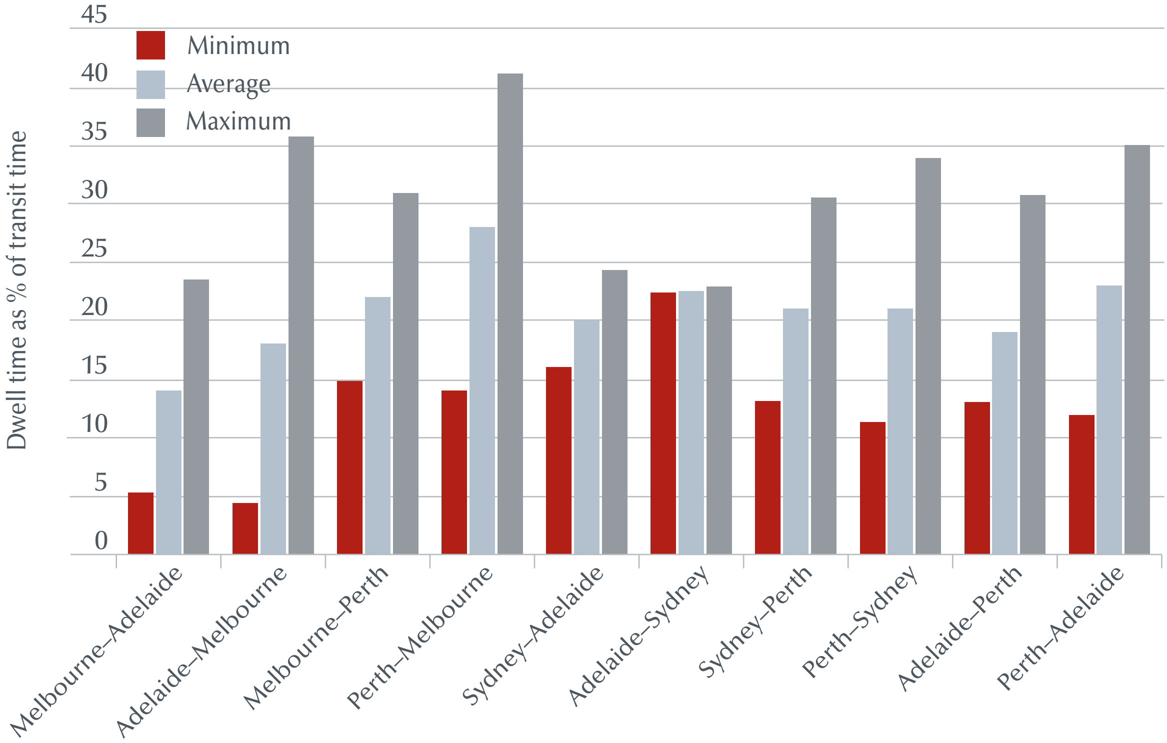
Factors that contributed to dwell time on the North–South corridor include the single track rail infrastructure and reliance on electric staff signalling. For example electric staff signalling from Greenbank to Queensland/New South Wales border required the train crew to physically disembark the train to operate the signalling system. This system will be replaced by a centralised traffic control system by October 2007.

The average proportion of dwell time on the Sydney–Melbourne line segment was around one-half that of the Brisbane–Sydney segment. The Sydney–Melbourne line segment had a relatively large capacity, with just over 50 per cent of the line having double track; this may be an important reason for the line having a relatively low dwell time.

Figure 6 presents the results of the analysis of dwell time on the East–West corridor in 2005–06, and shows the following:

- The line segment with the lowest average proportion of dwell time per train was Melbourne–Adelaide.
- The proportions of dwell time per train were higher on eastbound trains than on westbound trains.
- The trains with the highest level of dwell time involved layovers in Adelaide and Spencer Junction (Port Augusta) for train operational reasons and for commercial reasons, for example attaching/detaching wagons.

Figure 6: Train dwell times on East–West corridor, as a percentage of transit times, June 2006



Source: BTRE estimates based on data provided by infrastructure managers: Queensland Rail Access Network, RailCorp, Australian Rail Track Corporation and WestNet.

Where trains operate through cities—notably, Sydney, for Brisbane–Melbourne trains; and Adelaide, for Melbourne–Perth trains—one might expect relatively higher dwell times, on average, to the extent that wagons have to be attached and detached. However, the analysis suggests that the dwell time range and levels for these trains were little different from trains that did not operate through intermediate capital cities.

Dwell time may never be completely eliminated for various train operating reasons, such as crew breaks, change of crew and locomotive refuelling. Further details on this indicator are provided in the explanatory notes at the end of this report (page 30).

Indicator 7b: Number of stops

The infrastructure investments that are underway will reduce the number of stops that trains need to make. Trains can lose much time (and lose energy efficiencies) in losing momentum and in the subsequent gradual acceleration back to the line speed.

Table A.1 (column 7) presents the average number of intermodal train stops for each line segment. It is notable that, in 2005–06, the average number of stops on the relatively short Brisbane–Sydney segment (972 km) was almost the same as that for the long Adelaide–Perth segment (2970 km). Signalling investments that are underway and planned as well as line capacity enhancements are likely to lead to a reduction in the number of times that trains stop.

Indicator 7c: Average speed

Table A.1 (column 7) shows the average train speed for trains on the eight line segments. Consistent with the other train flow measures, the average speeds of trains on the Brisbane–Sydney line were the slowest, with northbound trains averaging 45 km/h. These lower train speeds could be in part explained by the grade and terrain of the line segment. In particular, the segment from Beaudesert to the Queensland/New South Wales border has mountainous terrain with steep grades and sharp corners, which result in speed restrictions and hence lower average speeds.

The speeds of intermodal trains on the Adelaide–Perth line segment were the fastest, with westbound trains averaging 72 km/h. Investments and renewal on the North–South corridor are likely to lead to an increase in train speed.

Average train speed is an overall measure of physical railway performance—both train and infrastructure. As with other indicators, average speed is partly determined by train operator factors such as locomotive power and whether the operator picks up and drops off freight en-route.

Market indicators

Indicator 8: Access revenue yield indicator

Access revenue is the income to an infrastructure manager derived from the infrastructure manager's charges to train operators that access the rail network. The access price has two components—a flag fall charge, and a component that varies with a train operator's gross tonne kilometres. Access revenue yield can be a valuable measure of the performance of rail infrastructure. Movements in this composite indicator may arise through changes in:

- real (inflation-adjusted) access charges
- the train operators' use of existing capacity
- enhancements in rail infrastructure, and
- train operators' uptake of those enhancements.

For example, given a constant two-part access price, if the operator runs heavier trains then access revenue yield goes down, and if the operator runs lighter trains then access revenue yield goes up. As such, access revenue yield is a measure of price change, as well as change in the utilisation of available capacity by the operator.

This report presents results on an index of the access revenue yield, based on ARTC data and analysis.

This indicator measures the changes (relative to the base year) in the access revenue yield per gross tonne kilometre (GTK). Table 1 shows that compared to 2003–04, the access revenue yield per gross tonne kilometre in 2005–06 was about 2.3 per cent lower for the following line segments:

- Tottenham–Albury
- Adelaide–Melbourne
- Adelaide–Kalgoorlie, and
- Crystal Brook–Broken Hill.

In addition, compared with 2004–05, the access revenue yield per gross tonne kilometre in 2005–06 was about 2.4 per cent lower for the following line segments:

- Newcastle–Borderloop
- MacArthur–Albury
- Broken Hill–Parkes
- Parkes–Stockinbingal, and
- Stockinbingal–Cootamundra.

From 2003–04, access charges for ARTC track have increased by less than inflation.

The access revenue yield in dollars per GTK differs by line segment in the base year, 2004–05. The differences between line segments depend on a number of factors, including the types and mix of trains operated and the level of access pricing.

Table 1: Index of real access revenue yield ($/GTK), 2003–04 to 2005–06 (2004–05=100)

	2003–04	*2004–05*	*2005–06*
Newcastle–Borderloop		100.00	97.48
MacArthur–Albury		100.00	97.45
Tottenham–Albury	101.25	100.00	98.84
Adelaide–Melbourne	101.23	100.00	98.84
Adelaide–Kalgoorlie	101.25	100.00	98.85
Crystal Brook–Broken Hill	101.24	100.00	98.83
Broken Hill–Parkes		100.00	97.47
Parkes–Stockinbingal		100.00	97.46

Note 1: Blanks mean no data is available for that period.

Note 2: 2004–05 is when ARTC started managing the following line segments: Newcastle–Borderloop, Macarthur–Albury, Broken Hill–Parkes, Parkes–Stockinbingal, and Stockinbingal–Cootamundra.

Source: Australian Rail Track Corporation.

Access revenue yield does not automatically change in response to enhancements in rail infrastructure unless train operators utilise those enhancements. If train operators do not utilise enhancements in rail infrastructure, then the index of access revenue yield in Table 1 would understate the possible impacts of rail investment on rail infrastructure pricing. An index of maximum possible revenue yield could then be used to measure the (unrealised) changes (relative to a base year) in the maximum possible access revenue yield per gross tonne kilometre that would have occurred if, during the period under review, train operators had increased trailing loads to the maximum permitted, given axle loading and train length constraints.

Indicator 9: Intermodal State-to-State market share

To estimate the mode share of rail in the intermodal freight market segment requires, in addition to data on intermodal rail freight, data on road and coastal shipping—the other two modes which compete with rail in this market. Shifts in mode share often occur slowly and significant shifts may require data over long time periods to be identifiable in freight statistics.

While data for rail was available on intercity intermodal rail freight, equivalent data for road and coastal shipping intercity freight is not available at this stage. Thus results are presented for interstate rather than intercity market shares. Time series data from 1972 to 2005 on State-to-State freight transported by road and coastal shipping was derived using a methodology developed by BTRE and published in BTRE (2006).

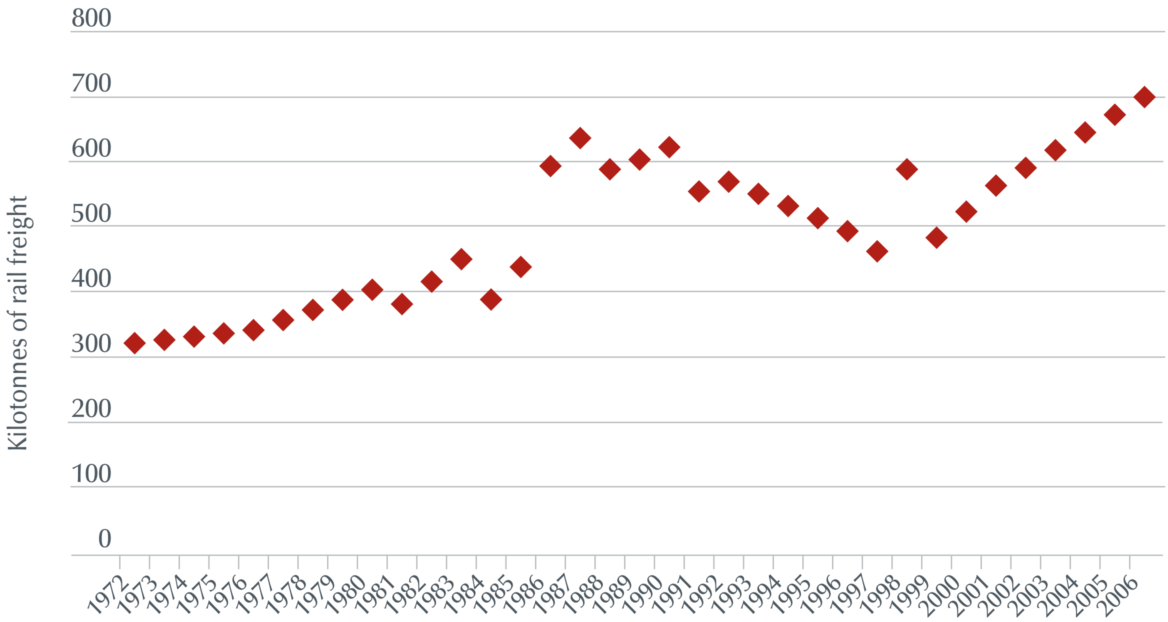
For a line segment, the total interstate freight market is given by the sum of the tonnage of intermodal freight transported by each of road, rail, and coastal shipping on the segment. The market share of a mode of transport (say rail) in this market is given by the tonnage of freight transported by the mode divided by the total interstate freight market for the State-to-State freight market segment. This part of the report presents results on the market share for each of road, rail, and coastal shipping.

Figure 7 uses the Queensland to New South Wales freight market as an example to show the various rail data sources used to estimate volumes of freight transported by rail in this and other State-to-State freight markets. The explanatory notes (page 31) provide more detail on these data sources.

Tables A.4 to A.10 in the statistical annex provide detailed time series data that underlie the estimates of modal share. Each of the Tables A.4 to A.10 divides the freight from a given state into six or seven market segments depending on the destination of freight. For example, Table A.4 divides up the freight originating from NSW into the following market segments: NSW to VIC, NSW to QLD, NSW to SA, NSW to WA, NSW to ACT, NSW to NT and NSW to TAS. For each market segment the tables provide the following data for each year, from 1972 to 2005:

- the total freight in kilotonnes by year
- road market share, as a proportion, in each year
- rail market share, as a proportion, in each year, and
- coastal shipping market share, as a proportion, in each year.

Figure 7: Rail data sources used in estimating volume of freight transported by rail: Queensland to New South Wales, 1972–2005, kilotonnes



Note 1: BTE (1976), BTE (1979) and BTE (1983) reported rail data for 1971–72, 1975–76 and 1979–80 respectively.
Note 2: ABS (1982–1993) reported interstate freight movements for the years 1981 to 1992; ABS (1994–1997) reported rail data for the period June 1994 to March 1997; ABS (2002) reported rail data for 2001.
Note 3: FDF, a private company, collected data on rail for 1987, 1989, 1993, 1996, 1999 and 2004.
Note 4: Data from rail industry in 2006 is a combination of data provided by infrastructure managers and train operators.
Note 5: For more details about these data sources, see the reference list at the end of the paper.
Source: Compiled by BTRE.

For each year the market shares across the three modes add to 1.

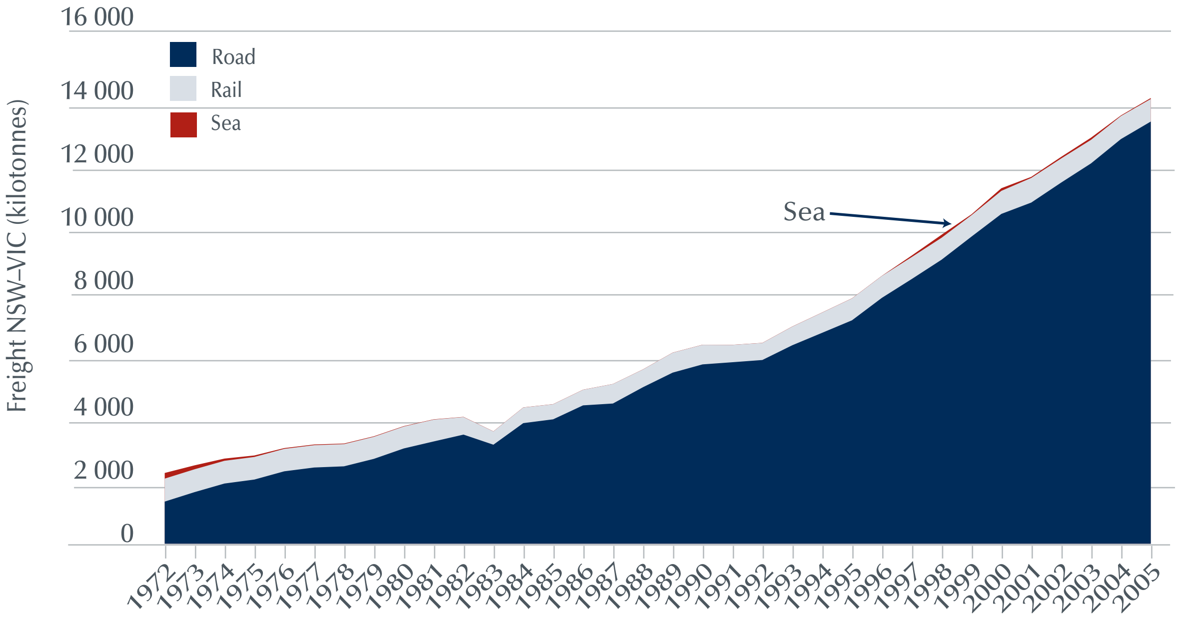
Figures 8 to 13 illustrate the changes in mode share by reference to three important interstate freight markets: New South Wales to Victoria, Victoria to South Australia and Victoria to Western Australia.

Figure 8 illustrates the growth that has occurred in interstate intermodal freight flows, New South Wales to Victoria, since 1972. Figure 9, however, shows that rail has generally lost mode share to road in these types of short to medium distance market segments.

These state-to-state rail mode shares differ from the intercapital estimates provided in BTRE (2006, chapter 6) and in earlier BTRE publications. Estimates of state–to–state road freight are in some cases significantly higher than the corresponding estimates of intercapital road freight, with the result that state–to–state rail freight mode share estimates are accordingly lower. Road has many more short distance interstate trips than rail does.

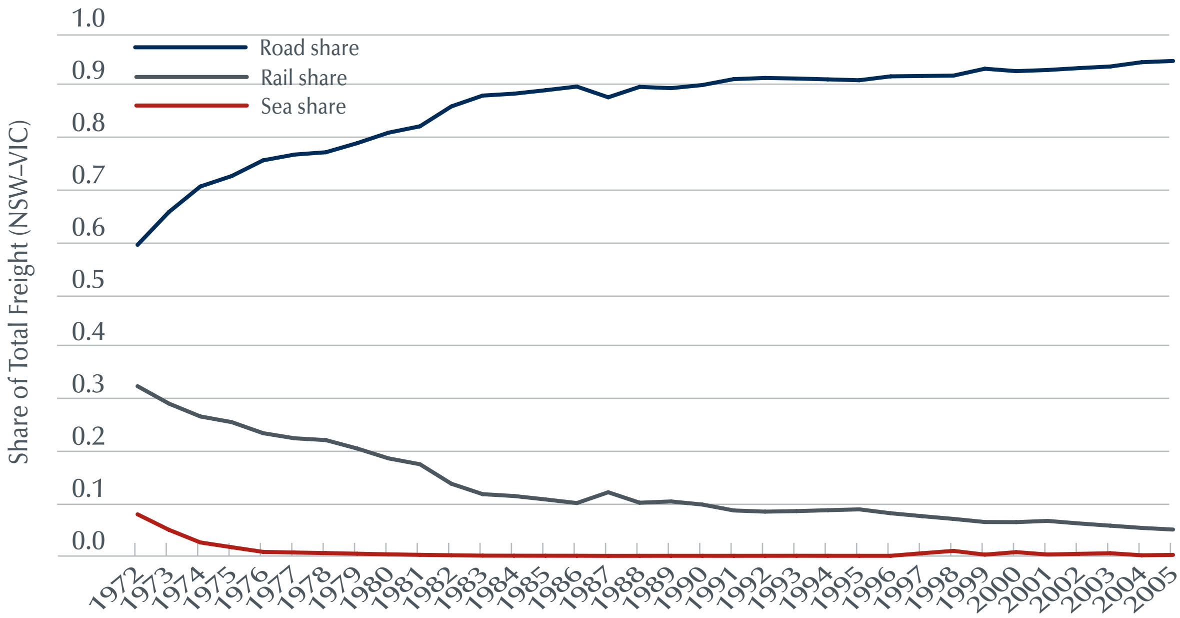
Figure 10 illustrates the growth that has occurred in interstate intermodal freight flows, Victoria to South Australia, since 1972. This is another example of a short to medium distance interstate freight market. Figure 11 shows that in this market segment rail has lost market share to road.

Figure 8: Interstate freight, New South Wales to Victoria, transported by rail, road and sea, 1972–2005, kilotonnes



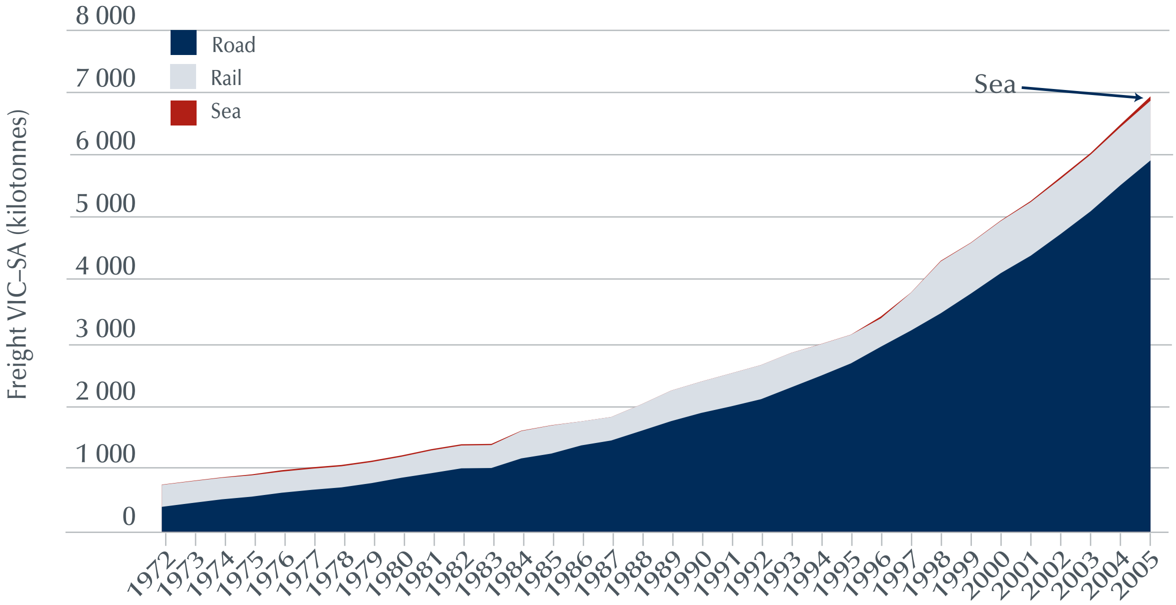
Source: BTRE estimates.

Figure 9: Interstate freight, New South Wales to Victoria, shares of rail, road and sea, 1972–2005



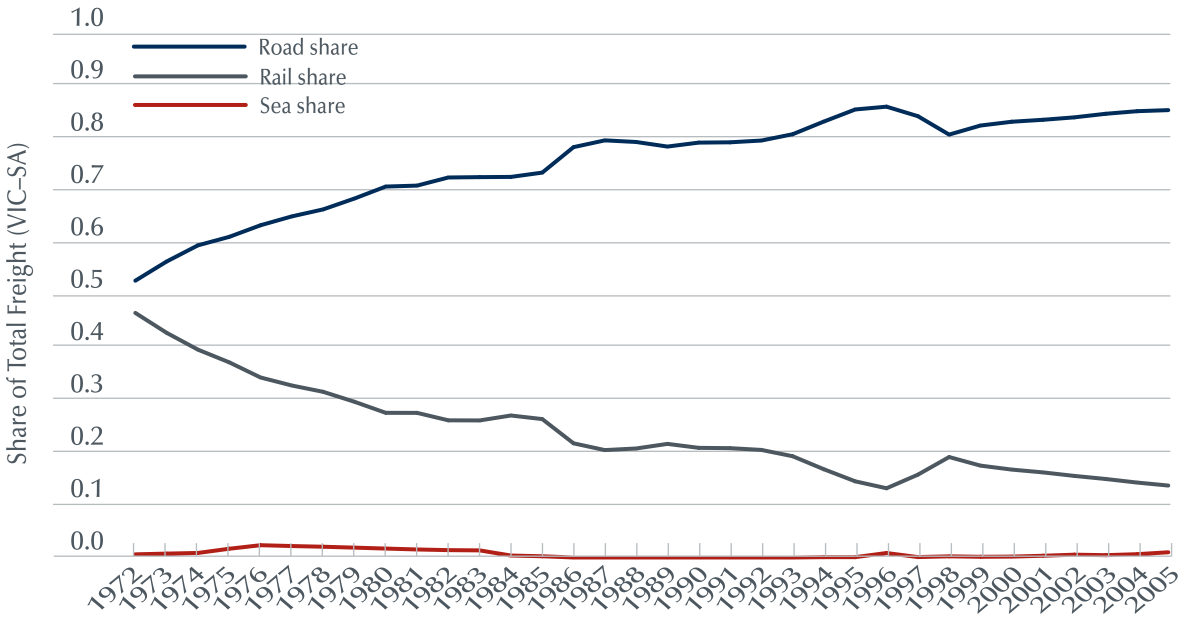
Note: Shares are presented as proportions which when multiplied by 100 expresses the shares as percentages.
Source: BTRE estimates.

Figure 10: Interstate freight, Victoria to South Australia, transported by rail, road and sea, 1972–2005, kilotonnes



Source: BTRE estimates.

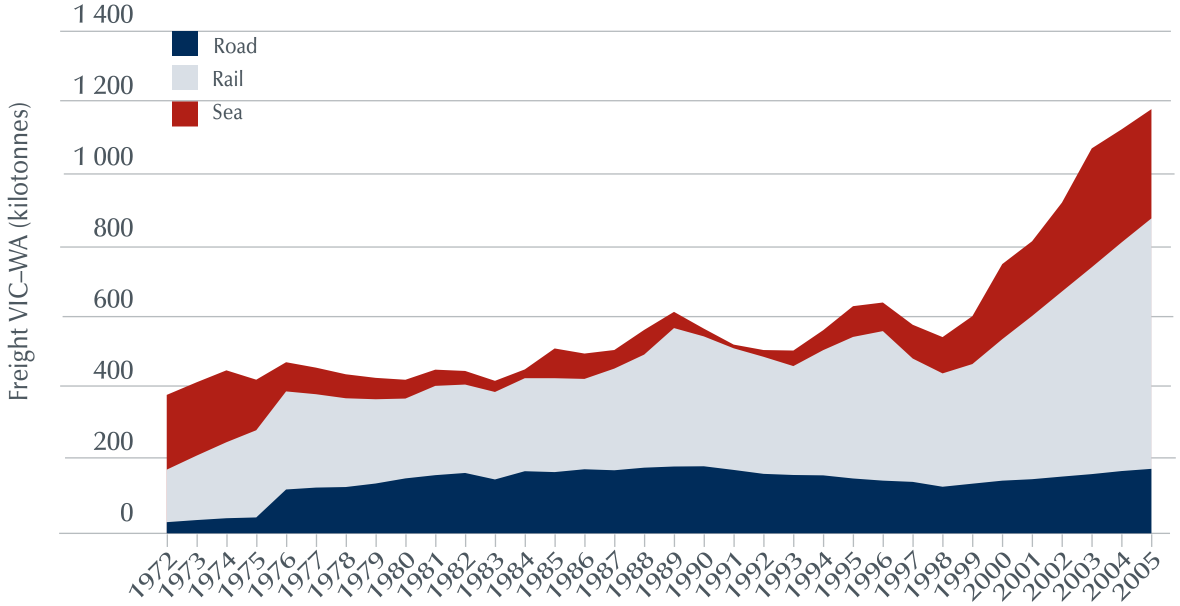
Figure 11: Interstate freight, Victoria to South Australia, shares of rail, road and sea, 1972–2005



Note: Shares are presented as proportions which when multiplied by 100 expresses the shares as percentages.
Source: BTRE estimates.

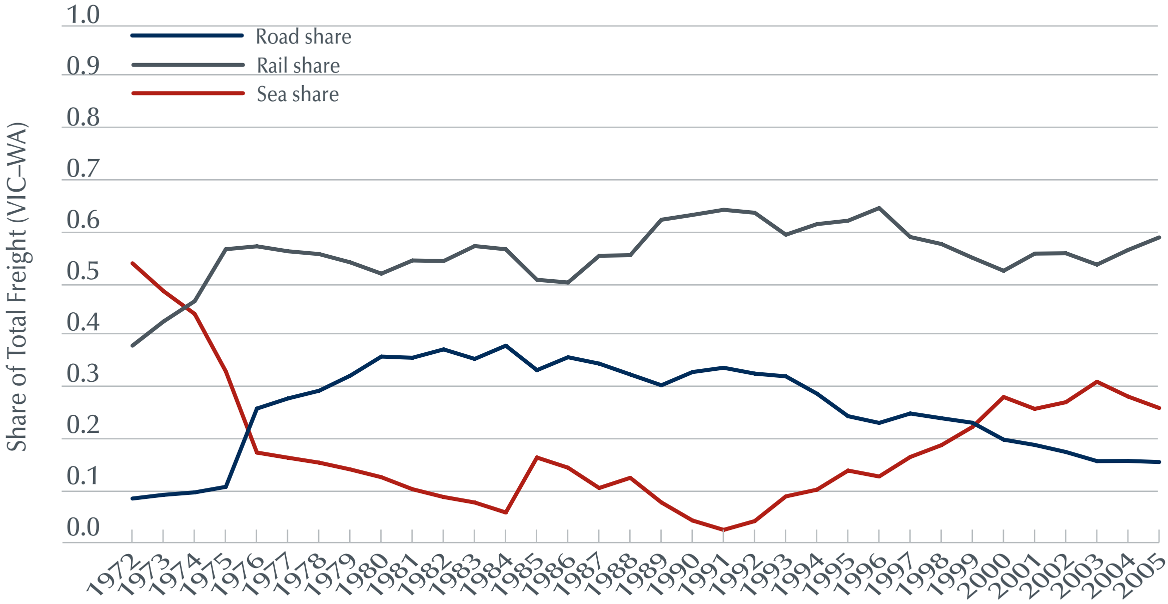
Figure 12 shows the growth that has occurred in interstate freight flows, Victoria to Western Australia, since 1972. Figure 13 illustrates the changes in modal share over medium to long distance freight markets—rail and coastal shipping have generally gained mode share at the expense of road.

Figure 12: Interstate freight, Victoria to Western Australia, transported by rail, road and sea, 1972–2005, kilotonnes



Source: BTRE estimates.

Figure 13: Interstate freight, Victoria to Western Australia, shares of rail, road and sea, 1972–2005



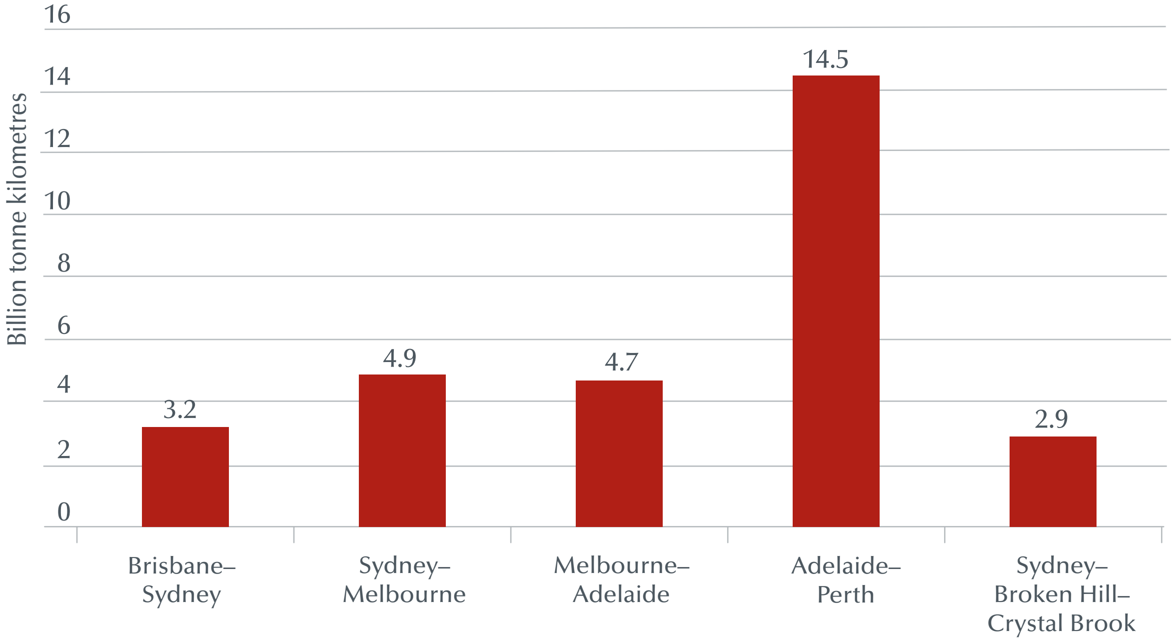
Note: Shares are presented as proportions which when multiplied by 100 expresses the shares as percentages.
Source: BTRE estimates.

Indicator 10: Total rail task, by line segment

Figure 14 shows the estimates of the total rail freight task by line segment for 2005–06. The explanatory notes (page 31) provide details on how these estimates were derived.

In 2005–06, in the East–West corridor, the Adelaide–Perth line segment had the largest total rail freight task estimated at 14.5 billion tonne kilometres. In the North–South corridor, the Sydney–Melbourne line segment had the largest total rail freight task estimated at 4.9 billion tonne kilometres.

Figure 14: Total rail freight task, by line segment, 2005–06, billion tonne kilometres

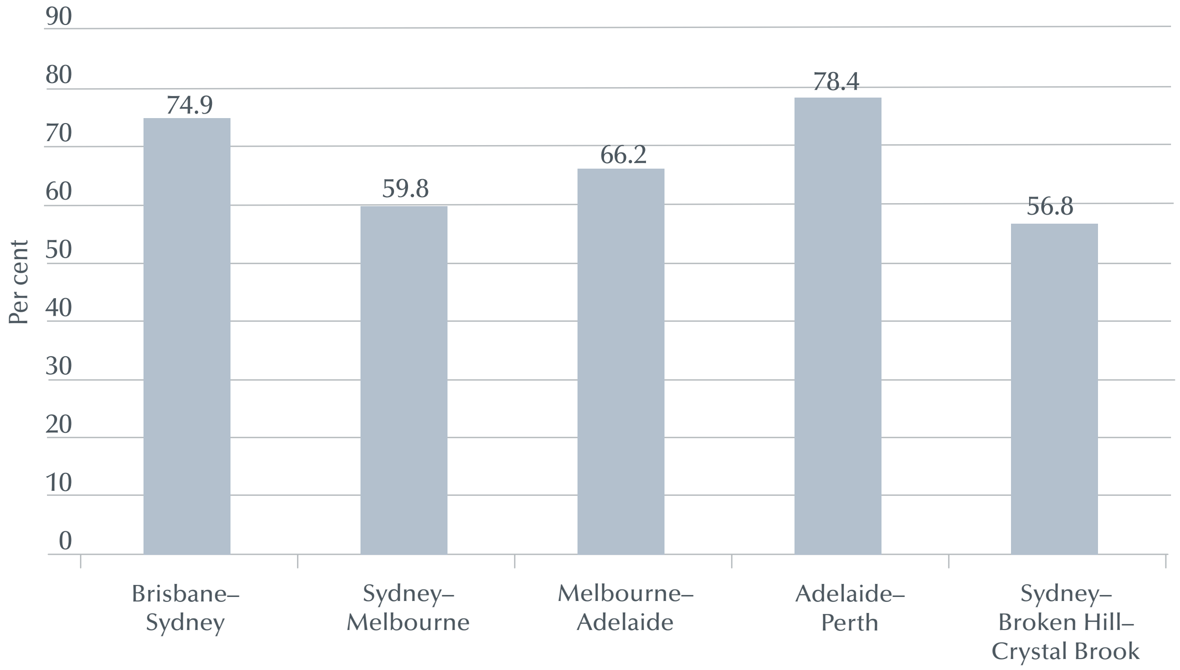


Source: BTRE estimates informed by data provided by: Queensland Rail, RailCorp, Australian Rail Track Corporation, WestNet, Pacific National and SCT Logistics.

Indicator 11: Intercity line segment share in total rail task

Figure 15 shows the intercity line segment shares in five line segments in 2005–06. In the North–South corridor, the Brisbane–Sydney line segment had the highest intercity line segment share—74.9 per cent of total rail freight on the line segment was intercity freight. In the East–West corridor, the Adelaide–Perth line segment had the highest intercity line segment share—78.4 per cent of total rail freight on the line segment.

Figure 15: Intercity line segment share in total rail task, 2005–06



Source: BTRE estimates informed by data provided by: Queensland Rail, RailCorp, Australian Rail Track Corporation, WestNet, Pacific National and SCT Logistics.

Explanatory notes

This section provides background on methodology and data issues for specific indicators.

Indicator 1: Scheduled transit time

Scheduled transit time measures transit time for all trains on the line segment, irrespective of ultimate origin or destination.

Indicator 2: Actual transit time

The actual transit time indicator measures average, transit time of intermodal trains operating point-to-point between two cities. It is the elapsed time from the actual departure to the actual arrival (that is, adjusting for GMT-standard time and Summer Time) between the two cities that a train operates between. For example, the actual transit time for the Melbourne–Adelaide line segment relates to Melbourne–Adelaide train services only. That is, it excludes trains traversing the line segment but travelling beyond Melbourne or Adelaide, such as Melbourne–Perth trains.

Data were provided by ARTC, WestNet, RailCorp and Queensland Rail. Origin-destination times were adjusted for time zones and were "normalised" to a given city origin or destination location. For example, times for trains terminating at Altona (west of Melbourne) were adjusted to a Dynon arrival time using scheduled running times between Altona and Dynon.

The indicator was intended to report the transit time performance of all the intermodal trains over the period 2005–06. In practice, the results reported have had to be based on a subset of the total number of the relevant intermodal trains due to a number of reasons.

Infrastructure managers do not record train arrivals and departures for all trains. This is particularly the case for some trains originating and terminating in Sydney. One infrastructure manager had only eight months of data.

ARTC data for Sydney–Adelaide trains were not available for 2005–06.

In some cases, the data that the infrastructure managers recorded was not always the data needed to estimate the actual transit time. For example, times for Queensland Rail's Brisbane–Melbourne trains were reported as arrival/departure at Fisherman Islands rather than at the Acacia Ridge terminal.

For Brisbane–Melbourne the actual transit time was estimated as follows. The ARTC data on actual and scheduled arrival times were used to calculate an average delay and average early arrivals for all train services on the line segment. The average scheduled transit times calculated from the ARTC June 2006 timetables for these services were then "increased" by the average delays providing the estimated transit times for these line segments. The estimates appear to approximate better the real transit times but are less accurate than those calculated from "real" departure and arrival times.

Indicator 6: Track quality

For safety, maintenance, planning and regulatory reasons, infrastructure managers regularly measure the condition of their track. In essence, managers measure the extent to which the railway track deviates from the "designated" (or "true") alignment.

Infrastructure managers can report a global indicator of track condition on a given line segment. ARTC (2006) publish a "track quality index" (TQI) as part of their Access Undertaking agreement with the Australian Competition and Consumer Commission. The TQI is a statistical measure calculated from a number of different track geometry parameters. The TQI for a given line segment is taken as the average of the individual TQI sample readings. The parameters that are measured include:

(1) Rail placement measurement

"Gauge" is the distance between the inside edges of the rails. It is generally measured 16mm below the top surface of the rail. On standard gauge track this is a nominal 1435mm.

(2) Vertical alignment measurement

"Crosslevel", "Superelevation" or "Cant" are terms used to define the difference in the height of one rail when compared to the other at any point along the track. On curves, the track is usually "banked" whereas in straight track the rails are at the same height or level.

Twist (or "warp") is the difference of track cants or cross level measured at two points on a given section of track. For instance, at point A, the track may slant to the left and, x metres further on; the track may slant to the right. A severe difference in cant between the two points could cause one of the axles to lose contact with the rail and so risk derailment. A "short twist" is where the base distance, x, is short; a "long twist" is where x is long. The twist base measurement x generally relates to distances between axles or between wagon bogies.

Vertical profile irregularities (or "top" or "surface") measures the irregularities in the vertical alignment of each rail. The test is made independently for each rail.

(3) Horizontal alignment measurement

Horizontal alignment irregularities (or "versine" or "line") identify sideways irregularities in the alignment of each rail.

Infrastructure managers' interest in track geometry measures arises because misalignments affect how a wagon rides on the track. The consequence for the train of a wagon riding poorly—such as swaying badly or erratically—is that the wagon can derail, the wagon contents can shift and so be damaged, and the wagon's wheels can face extra wear. The consequence for the track of poor wagon riding is that additional pressure can be placed on the track and this can quickly accelerate the track deterioration. To moderate these damaging effects, in the first instance, the manager may reduce the train speed, thereby lengthening transit times. Corrective action may require maintenance or renewal activities.

There is a financial trade-off for infrastructure managers in how much alignment deviations the infrastructure manager accepts. Too much precision generates high ongoing maintenance costs and shortens asset life; too little precision degrades train services (lengthened transit time and damaged goods) and shortens asset life. In any case, as the asset ages and is used, it becomes increasingly difficult to maintain a high standard alignment, and this increases the case for asset renewal instead of further maintenance.

On a regular basis on the intercity network, infrastructure managers operate a train with a "track geometry measuring car". The carriage is equipped with instruments that measure and record a range of different geometric parameters. There is a variety of track geometry measuring cars in Australia and hence a number of different means of measuring and analysing the parameters that make up the TQI. Further, track quality is reported as a composite measure of the different geometric parameters; this composite measure can differ between systems depending on the parameters used.

The following are the track quality measurements and indicators for the national network:

(1) Queensland standard gauge

- Gauge
- Twist (short), measured over 3 metres
- Vertical rail irregularities (“top”) deviation over a 6.5 metre chord, and
- Horizontal rail irregularities (“versine”) deviation over 10 metres.

(2) NSW standard gauge

- Gauge
- Twist (short), measured over 2.5 metres
- Vertical irregularities (“top”), deviation over a 10 metre chord, and
- Horizontal rail irregularities (“versine”) averaged over 10 metres.

(3) Standard gauge (east of Kalgoorlie)—Victorian/South Australian

- Crosslevel
- Twist (long), measured over 14 metres
- Vertical rail irregularities (“top”), measured using a 20 metre wavelength inertial output, and
- Horizontal rail irregularities (“versine”) measured at the midpoint of a 10 metre chord.

(4) Western Australian standard gauge (west of Kalgoorlie)

- Crosslevel
- Twist (long), measured over 14 metres or twist (short) over 2 metres
- Vertical rail irregularities (“rail surface”), deviation over a 20 metre chord, and
- Horizontal rail irregularities (“versine”).

TQI results for different line sections can only be compared when, in their compilation, identical parameters are used.

Indicator 7: Train flow patterns

The objective of this indicator is to identify patterns in train movements, showing how trains operate over the network. These patterns are a consequence of both infrastructure capability and train operator requirements. In the latter case, for instance, the time performance of some trains is strongly influenced by the operator’s service of uplifting and dropping off freight at intermediate points between the origin and destination.

The benefits of current infrastructure investment and renewal are likely to be that train flow is enhanced. The train flow patterns are likely to change to reflect that infrastructure work. The three train flow patterns outlined here have been derived from analysis of data contained in infrastructure managers' Working Timetables.

Indicator 7a: Dwell time

The dwell time indicator measures the proportion (percentage) of train transit time that is spent "dwelling" (stationary) in railway yards and passing loops. Given the length of the line segments, the dwell times may never be completely eliminated. The time and length of the segments give rise to a range of train operating reasons for the train to make stops. These reasons include crew breaks, change of crew, locomotive refuelling and attaching and detaching wagons in intermediate cities.

The dwell time was calculated by reviewing infrastructure managers' Working Timetables, recording the time that each train was stationary on a given line segment, and then combining this data with previously-calculated data on scheduled transit time (Indicator 1).

Figure 5 and Table A.1 (column 7) present the results of the analysis of dwell time on the North–South corridor. The indicator uses analysis of the timetable current at the end of June 2006. As the gains from investments spread across the network, there is likely to be reductions in dwell times.

Indicator 7b: Number of stops

The infrastructure investments that are underway are likely to reduce the number of stops that trains need to make. Trains can lose much time (and lose energy efficiencies) in losing momentum and subsequent start and gradual acceleration back to the line speed.

There are three primary reasons for freight trains stopping at intermediate points between origin and destination. The trains may pick up or drop off wagons, there are operational reasons (a need to change crews or refuel the locomotives) and there are train control reasons (obtaining clearance to move into the next section of track). The investments that are in the pipeline focus on these signalling issues and are likely to reduce the number of times that trains need to stop, either because there are additional opportunities for passing other trains without stopping (such as with the passing lanes) or because of the installation of modern signalling that does not require the train driver to stop the train in order to obtain an authority to proceed onto the next section of track.

While traffic and capacity utilisation issues partly explain this, it is also notable that the signalling system on the northern end of the Brisbane–Sydney segment requires trains to stop five times—for five minutes—to pick up a 'physical authority' to proceed to the next section of track. Inevitably, long, heavy freight trains lose a considerable amount of time due to the loss of speed. This time loss greatly exceeds the five minutes of dwell time that is allocated in the timetable for obtaining the authority to proceed.

Indicator 7c: Average speed

An overall measure of railway performance—both train and infrastructure—is the average train speed. As with other indicators, average speed is partly determined by train operator factors such as locomotive power and whether the operator picks up and drops off freight en-route.

In general, a measure of average speed is a function of the infrastructure performance and capacity. The prevailing main line speeds are a function of the standard and age of the track and the geometry of the track; the level and usage of capacity influence the dwell time and, thus, the average speed.

The planned renewals and enhancements to infrastructure and capacity will enable the average train speeds to be raised. The previously discussed capacity enhancements (such as the passing lanes south of Junee and the Southern Sydney Freight Line) may also reduce dwell time. The new signalling system may reduce the number of stops at passing loops. Track upgrading—notably, the installation of concrete sleepers—may permit higher main line running speeds.

Table A.1 (column 7) shows the average train speed (as calculated from the June 2006 timetable) for trains on the eight line segments. Consistent with the other train flow measures, the average speeds of trains on the Brisbane–Sydney line are the slowest, with northbound trains averaging 45 km/h; the speed of intermodal trains on the Adelaide–Perth line segment are the fastest, with westbound trains averaging 72 km/h.

Indicator 9: Intermodal State-to-State market share

The railway data in this report is based on the following sources:

- Data provided by infrastructure managers and rail operators to BTRE in 2006
- Rail data collected by an Australian private company called FDF for the years 1987, 1989, 1993, 1996, 1999 and 2004
- Data from Australian Bureau of Statistics for 2001 (ABS Catalogue No. 9220.0)
- Data series from Australian Bureau of Statistics for the period June 1994 to March 1997 (ABS Catalogue No. 9217.0)
- Data series from the Australian Bureau of Statistics for the years 1981 to 1992–Interstate freight movement series (ABS Catalogue No 9212.0)
- Unpublished data on intersystem rail freight movements in 1984–85 from train operators, and
- Data from BTE (1976, 1979, 1983).

These state-to-state rail mode shares differ from the inter–capital estimates provided in BTRE (2006, chapter 6) and in earlier BTRE publications. Estimates of state–to–state road freight are in some cases significantly higher than the corresponding estimates of intercapital road freight, with the result that state–to–state rail freight mode share estimates are accordingly lower. The data sources for road and coastal shipping freight time series used to estimate this indictor are documented in BTRE (2006).

Indicator 10: Total rail task, by line segment

For each line segment the task indicator gives the total rail freight task measured in net tonne kilometres of intermodal freight and non-intermodal freight hauled on the line segment.

Data from infrastructure managers and train operators was provided in different formats. The format most suitable for the estimation of this indicator is origin/destination data by line segment. In a few cases data on total task (tonne kilometres) was provided without the necessary break up by line segment. Estimation also provides consistency with earlier time series estimates.

BTRE's estimates of rail task by line segment started with data summarised in Table A.11, which is based on data from below rail infrastructure managers and data from above-rail train operators on freight hauled.

The data from the state level origin/destination matrix is then assigned to the Australian rail network. The text below gives a summary of the rules used in assigning freight to five line segments.

Brisbane–Sydney

The rail freight task on this line segment is equal to:

- (NSW–QLD)*882 km + (QLD–NSW)*620 km + [(VIC–QLD) + (QLD–VIC)+ (SA–QLD) + (QLD–SA)+(QLD–WA)+ (WA–QLD)]*972 km, where
    - The terms in parenthesis represent million tonne kilometres derived from the origin/destination matrix in Table A.11. For each term the first listed State is the origin State and the second listed is the destination State, and
    - 882 km, 620 km, and 972 km are estimated average distances that freight is hauled by rail in the corresponding corridors.

Sydney–Melbourne

The rail freight task on this line segment is equal to:

- [(NSW–VIC)]*592 km + [(VIC–NSW)]*665 km + [(NSW–SA) + (SA–NSW) + (QLD–VIC) + (SA–QLD) + (SA–NSW) + (SA–QLD)]*959 km+[0.75*{(NSW–WA) + (NSW–QLD) + (WA–NSW) + (WA–QLD)}]*430 km, where
    - 592 km and 665 km are estimated average distances from Australian Bureau of Statistics Freight Movement Survey
    - 959 km is the average distance hauled for freight between the corresponding States, and
    - 430 km is the distance between Sydney and Cootamundra; 75 per cent of the freight from the States listed in this part of the equation is hauled through Cootamundra.

Melbourne–Adelaide

The rail freight task on this line segment is equal to:

- [(NSW–SA) + (VIC–SA) + (VIC–WA) + (VIC–NT) + (QLD–SA) + (SA–NSW) + (SA–VIC) + (SA–QLD) + (WA–VIC) + (NT–NSW) + (NT–VIC)]*790 km.

Adelaide–Perth

The rail freight task on this line segment is equal to:

- [(NSW–WA) + (VIC–WA) + (QLD–WA) + (SA–WA) + (WA–NSW) + (WA–NSW) + (WA–QLD) + (WA–SA)]*2970 km + [(NSW–NT) + (VIC–NT) + (SA–NT) + (NT–NSW) + (NT–VIC) + (NT–SA)]*313 km, where
- 313 km is the distance from Crystal Brook to Tarcoola.

Sydney–Broken Hill–Crystal Brook

The rail freight task on this line segment is equal to:

- [(NSW–WA) + (QLD–WA) + (WA–NSW) + (WA–QLD)]*(1520 km*0.25 + 1271 km*0.75), where
    - 1520 km is the distance from Sydney to Crystal Brook via Lithgow, 1271 km is the distance from Crystal Brook to Cootamundra.

Indicator 11: Intercity line segment share in total rail task

The intercity line segment share is given by net tonne kilometres (NTK) of city-pair origin-destination intermodal and non-intermodal freight rail freight divided by the total rail freight task for the line segment.

Indicator 10 estimated, for each of five line segments, the total rail freight task in 2005–06.

In estimating the intercity line segment task, first origin/destination estimates of intercity rail freight are derived from BTRE modelling of freight movements. These are shown in Table A.12 for 2005–06 in the statistical annex at the end of the report.

Second, the data from the city-city origin/destination matrix is assigned to the Australian rail network using methods similar to those used when estimating indicator 10.

Third, BTRE's estimates are refined after checking them against data from below rail infrastructure managers and from above-rail train operators.

Statistical annex

Table A.1: Intercapital intermodal train indicators, by line segment, 2005–06

(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*		
Line segment	*Direction*	*Indicator 1 Scheduled transit time (†)*	*Indicator 1 ATC target*	*Indicator 2 Actual transit time (†)*	*Indicator 3a Number of weekly intercity trains (*)*	*Indicator 7 Train flow patterns*		
North–South						*Average dwell time (% of scheduled transit time)*	*Average number of stops*	*Average speed (km/h)*
1. Brisbane–Sydney	Brisbane to Sydney	20 hrs 7 min	17.5 hrs	NA	4	23	14	48
	Sydney to Brisbane	21 hrs 42 min		NA	5	26	14	45
2. Sydney–Melbourne	Sydney to Melbourne	15 hrs 9 min	10.5 hrs	14 hrs 30 min	4	11	4	63
	Melbourne to Sydney	14 hrs 47 min		13 hrs 24 min	6	11	5	65
3. Brisbane–Melbourne	Brisbane to Melbourne	36 hrs 57 min	29.5 hrs	38 hrs 56 min	19	21	20	52
	Melbourne to Brisbane	38 hrs 11 min		38 hrs 57 min	18	24	20	51
East–West								
4. Melbourne–Adelaide	Melbourne to Adelaide	13 hrs 1 min	11.5 hrs	13 hrs 36 min	17	14	5	64
	Adelaide to Melbourne	14 hrs 6 min		15 hrs 48 min	17	18	6	60
5. Melbourne–Perth	Melbourne to Perth	56 hrs 50 min	56 hrs	58 hrs 56 min	14	22	23	67
	Perth to Melbourne	64 hrs 52 min		68 hrs 30 min	14	29	24	59
6. Sydney–Adelaide	Sydney to Adelaide	30 hrs 20 min	26 hrs	NA	-	20	13	59
	Adelaide to Sydney	31 hrs 37 min		NA	-	23	14	56
7. Sydney–Perth	Sydney to Perth	63 hrs 11 min	65 hrs	66 hrs 58 min	8	21	24	63
	Perth to Sydney	67 hrs 6 min		72 hrs 36 min	8	21	25	61
8. Adelaide–Perth	Adelaide to Perth	40 hrs 50 min	41 hrs	NA	-	19	17	73
	Perth to Adelaide	44 hrs 14 min		NA	-	23	17	67

† The average transit time reported here is for all intermodal services—both express and stopping services.

* The numbers in this column show the number of trains originating and terminating in the given city pairs, e.g., there were 4 trains per week originating in Brisbane and terminating in Sydney. These numbers contrast with those presented in Table A.2. Also note that in June 2006 there were also 2 trains each way per week between Brisbane and Adelaide.

Note 1: The data in this Table relates to intermodal trains, with axle loads up to and including 21 tonnes and a maximum speed of 115 kph.

Note 2: Transit times are the elapsed times between origin and destination terminals as extracted from infrastructure managers' scheduled Working Timetables. The explanatory notes describe how these times were adjusted prior to estimating the transit times. The average transit time has been calculated from the transit times for all intermodal trains scheduled to operate in the last week of June 2006.

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Railways, RailCorp, Australian Rail Track Corporation and WestNet.

Table A.2: The number of weekly intercity freight trains, by line segment, June 2006

	Number of weekly freight trains		
Line segment	*Indicator 3b* *Total intermodal (*)*	*Indicator 3c* *Steel trains*	*Total*
North–South corridor			
1. Brisbane–Sydney	50	11	61
2. Sydney–Melbourne			
- Sydney–Cootamundra	61	23	84
- Cootamundra–Melbourne	51	12	63
East–West corridor			
3. Sydney–Crystal Brook via Broken Hill			
- Sydney–Parkes via Lithgow	6	-	6
- Cootamundra–Parkes	10	11	21
- Parkes–Crystal Brook	16	11	27
4. Melbourne–Crystal Brook			
- Melbourne–Adelaide	66	12	78
- Adelaide–Crystal Brook	28	13	41
5. Crystal Brook–Perth			
- Crystal Brook–Spencer Junction	44	13	57
- Spencer Junction–Perth	44	6	50

Note: * This is the total of direct city to city and trains passing through a city.

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Railways, RailCorp, Australian Rail Track Corporation.

Table A.3: Infrastructure provision: train length and double-stacking capability, 2005–06

		Indicator 4			Indicator 5		
		Train length			Double-stack (conventional containers)		
corridor	*Segment*	*ATC target*	*Unrestricted §*	*Restricted §*	*ATC target*	*Unrestricted*	*Restricted*
North–South corridor–Brisbane–Sydney	Brisbane–Sydney	1 500	1 200	1 500	No	No	No
Sydney–Melbourne	Sydney–Melbourne	1 500	1 500		No	No	No
East–West corridor	Melbourne–Adelaide	1 500	1 500		No	No	No
	Sydney–Parkes	1 500			No	No	No
	– via Cootamundra		1 500				
	– via Lithgow		1 100				
	Parkes–Crystal Brook	1 800	1 800		Yes	No	Yes
	Crystal Brook–Adelaide	1 800	1 800		Yes	Yes (6.5 m)	Yes (5.9m)
Adelaide–Perth	Crystal Brook–Kalgoorlie	1 800	1 800	1 800	Yes	Yes (6.5m)	
	Kalgoorlie–Perth	1 800	1 420	1 800	Yes	Yes (6.5m)	

§ The "unrestricted" train length is the train length up to which train operators can operate any scheduled service without reference to the track manager. The "restricted" train length is the maximum train length permitted on the line segment. The unrestricted train length is a function of the frequency of the length of the longest passing loops on single-tracked line sections.

Source: BTRE estimates based on data provided by infrastructure managers: Queensland Railways, Queensland Transport, RailCorp, Australian Rail Track Corporation.

Table A.4: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from New South Wales, 1972–2005

	NSW–VIC				*NSW–QLD*				*NSW–SA*				*NSW–WA*			
		Shares				*Shares*				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	2237	0.60	0.32	0.08	1083	0.57	0.33	0.09	260	0.87	0.12	0.01	216	0.05	0.33	0.62
1973	2478	0.66	0.29	0.05	1274	0.61	0.31	0.08	310	0.88	0.11	0.00	230	0.05	0.41	0.54
1974	2692	0.71	0.27	0.03	1456	0.64	0.29	0.07	354	0.90	0.01	0.01	244	0.06	0.47	0.47
1975	2790	0.73	0.26	0.02	1533	0.66	0.30	0.05	375	0.90	0.09	0.01	248	0.06	0.55	0.39
1976	3023	0.76	0.24	0.01	1690	0.68	0.29	0.03	417	0.91	0.09	0.01	277	0.15	0.57	0.28
1977	3137	0.77	0.23	0.01	1773	0.69	0.28	0.02	442	0.90	0.09	0.01	284	0.15	0.59	0.26
1978	3167	0.77	0.22	0.01	1808	0.69	0.29	0.02	453	0.89	0.10	0.01	291	0.15	0.60	0.25
1979	3396	0.79	0.21	0.00	1960	0.71	0.28	0.02	496	0.89	0.11	0.01	300	0.16	0.61	0.24
1980	3718	0.81	0.19	0.00	2170	0.73	0.26	0.01	553	0.89	0.11	0.01	310	0.17	0.61	0.22
1981	3932	0.82	0.18	0.00	2337	0.74	0.26	0.01	584	0.90	0.01	0.01	308	0.18	0.60	0.22
1982	4010	0.86	0.14	0.00	2413	0.77	0.23	0.01	613	0.91	0.08	0.01	296	0.20	0.57	0.22
1983	3554	0.88	0.12	0.00	2164	0.77	0.23	0.01	568	0.90	0.08	0.02	274	0.21	0.56	0.23
1984	4310	0.88	0.11	0.00	2637	0.79	0.20	0.01	674	0.91	0.09	0.00	352	0.19	0.51	0.30
1985	4413	0.89	0.11	0.00	2712	0.79	0.20	0.01	694	0.91	0.09	0.00	374	0.19	0.47	0.34
1986	4870	0.90	0.10	0.00	3053	0.80	0.20	0.01	746	0.94	0.06	0.00	419	0.19	0.50	0.31
1987	5051	0.88	0.12	0.00	3095	0.80	0.20	0.00	798	0.89	0.11	0.00	370	0.22	0.59	0.20
1988	5510	0.90	0.10	0.00	3488	0.80	0.20	0.00	890	0.88	0.12	0.00	425	0.21	0.79	0.00
1989	6043	0.90	0.10	0.00	3910	0.79	0.20	0.00	977	0.88	0.12	0.00	486	0.20	0.76	0.04
1990	6292	0.90	0.01	0.00	4046	0.81	0.19	0.00	1042	0.86	0.14	0.00	423	0.25	0.75	0.00
1991	6289	0.91	0.09	0.00	3984	0.83	0.16	0.00	1039	0.87	0.12	0.00	413	0.26	0.73	0.01
1992	6350	0.91	0.08	0.00	3983	0.85	0.15	0.00	1017	0.90	0.01	0.00	451	0.24	0.72	0.03
1993	6867	0.91	0.09	0.00	4306	0.85	0.14	0.00	1138	0.87	0.13	0.01	476	0.25	0.73	0.02
1994	7312	0.91	0.09	0.00	4588	0.86	0.14	0.00	1185	0.88	0.11	0.00	517	0.24	0.71	0.05
1995	7760	0.91	0.09	0.00	4868	0.87	0.13	0.00	1280	0.86	0.13	0.00	581	0.23	0.67	0.10
1996	8470	0.92	0.08	0.00	5355	0.88	0.12	0.00	1410	0.86	0.14	0.00	591	0.25	0.67	0.08
1997	9112	0.92	0.08	0.01	5690	0.90	0.01	0.00	1512	0.86	0.14	0.00	619	0.26	0.66	0.08
1998	9771	0.92	0.07	0.00	6172	0.90	0.09	0.01	1594	0.87	0.13	0.00	660	0.26	0.64	0.10
1999	10415	0.93	0.07	0.00	6671	0.91	0.08	0.01	1710	0.88	0.12	0.00	557	0.33	0.67	0.00
2000	11241	0.93	0.06	0.01	7210	0.91	0.08	0.01	1817	0.88	0.12	0.00	683	0.28	0.56	0.15
2001	11600	0.93	0.07	0.00	7458	0.92	0.07	0.01	1902	0.87	0.11	0.02	752	0.27	0.53	0.21
2002	12231	0.93	0.06	0.00	7879	0.93	0.07	0.00	1973	0.89	0.11	0.00	772	0.27	0.53	0.20
2003	12839	0.94	0.06	0.01	8395	0.92	0.07	0.01	2072	0.89	0.11	0.01	815	0.27	0.51	0.22
2004	13541	0.94	0.05	0.00	9048	0.92	0.06	0.02	2183	0.89	0.11	0.00	817	0.28	0.53	0.19
2005	14093	0.95	0.05	0.00	9418	0.93	0.06	0.01	2270	0.89	0.10	0.00	838	0.28	0.53	0.19
Annual growth rate (%)																
2000–2005	4.6%				5.5%				4.5%				4.2%			
1995–2005	6.1%				6.8%				5.9%				3.7%			
1972–2005	5.9%				7.0%				7.0%				4.3%			

	NSW–ACT				*NSW–NT*				*NSW–TAS*			
		Shares				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	472	0.57	0.43	0.00	38	0.25	0.05	0.70	155	0.00	0.00	1.00
1973	482	0.67	0.33	0.00	37	0.30	0.05	0.65	161	0.00	0.00	1.00
1974	488	0.75	0.25	0.00	37	0.35	0.05	0.60	167	0.00	0.00	1.00
1975	476	0.82	0.18	0.00	35	0.38	0.06	0.57	177	0.00	0.00	1.00
1976	492	0.89	0.11	0.00	35	0.43	0.06	0.52	187	0.00	0.00	1.00
1977	504	0.90	0.01	0.00	33	0.46	0.06	0.48	171	0.00	0.00	1.00
1978	506	0.92	0.08	0.00	32	0.49	0.06	0.44	156	0.00	0.00	1.00
1979	538	0.93	0.07	0.00	31	0.55	0.06	0.39	140	0.00	0.00	1.00
1980	590	0.95	0.05	0.00	31	0.61	0.07	0.33	125	0.00	0.00	1.00
1981	619	0.96	0.04	0.00	30	0.67	0.07	0.27	110	0.00	0.00	1.00
1982	651	0.97	0.03	0.00	29	0.72	0.07	0.21	94	0.00	0.00	1.00
1983	591	0.98	0.02	0.00	25	0.76	0.08	0.16	79	0.00	0.00	1.00
1984	701	0.99	0.01	0.00	26	0.88	0.08	0.04	111	0.00	0.00	1.00
1985	719	0.99	0.01	0.00	26	0.92	0.08	0.00	107	0.00	0.00	1.00
1986	784	1.00	0.00	0.00	28	0.93	0.07	0.00	128	0.00	0.00	1.00
1987	796	1.00	0.00	0.00	28	0.93	0.07	0.00	119	0.00	0.00	1.00
1988	881	1.00	0.00	0.00	30	0.93	0.07	0.00	110	0.00	0.00	1.00
1989	954	1.00	0.00	0.00	33	0.94	0.06	0.00	97	0.00	0.00	1.00
1990	997	1.00	0.00	0.00	34	0.94	0.06	0.00	90	0.00	0.00	1.00
1991	1008	1.00	0.00	0.00	34	0.94	0.06	0.00	93	0.00	0.00	1.00
1992	1020	1.00	0.00	0.00	35	0.94	0.06	0.00	135	0.00	0.00	1.00
1993	1093	1.00	0.00	0.00	37	0.95	0.05	0.00	90	0.00	0.00	1.00
1994	1155	1.00	0.00	0.00	43	0.86	0.05	0.09	98	0.00	0.00	1.00
1995	1217	1.00	0.00	0.00	40	0.95	0.05	0.00	70	0.00	0.00	1.00
1996	1329	1.00	0.00	0.00	50	0.84	0.04	0.12	49	0.00	0.00	1.00
1997	1422	1.00	0.00	0.00	55	0.80	0.04	0.16	34	0.00	0.00	1.00
1998	1518	1.00	0.00	0.00	55	0.86	0.04	0.10	14	0.00	0.00	1.00
1999	1630	1.00	0.00	0.00	56	0.91	0.04	0.06	12	0.00	0.00	1.00
2000	1738	1.00	0.00	0.00	64	0.84	0.03	0.13	40	0.00	0.00	1.00
2001	1792	1.00	0.00	0.00	62	0.90	0.03	0.07	57	0.00	0.00	1.00
2002	1889	1.00	0.00	0.00	61	0.95	0.03	0.02	32	0.00	0.00	1.00
2003	1982	1.00	0.00	0.00	69	0.88	0.03	0.09	35	0.00	0.00	1.00
2004	2094	1.00	0.00	0.00	68	0.94	0.03	0.03	33	0.00	0.00	1.00
2005	2179	1.00	0.00	0.00	73	0.90	0.03	0.07	40	0.00	0.00	1.00
Annual growth rate (%)												
2000–2005	4.6%				2.8%				0.3%			
1995–2005	6.0%				6.1%				-5.4%			
1972– 2005	4.9%				2.1%				-4.1%			

Source: BTRE estimates.

Table A.5: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from Victoria, 1972–2005

	VIC–NSW				*VIC–QLD*				*VIC–SA*				*VIC–WA*			
		Shares				*Shares*				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	2435	0.71	0.27	0.02	540	0.38	0.24	0.38	752	0.53	0.47	0.01	389	0.08	0.38	0.54
1973	2716	0.73	0.24	0.03	626	0.50	0.23	0.27	811	0.56	0.43	0.01	424	0.09	0.43	0.49
1974	2973	0.74	0.21	0.04	711	0.59	0.22	0.20	868	0.60	0.40	0.01	458	0.09	0.47	0.44
1975	3099	0.76	0.20	0.04	713	0.62	0.23	0.15	915	0.61	0.37	0.02	432	0.10	0.57	0.33
1976	3311	0.77	0.19	0.04	793	0.68	0.22	0.10	982	0.63	0.34	0.02	481	0.26	0.57	0.17
1977	3379	0.80	0.19	0.02	802	0.68	0.23	0.09	1028	0.65	0.33	0.02	466	0.28	0.56	0.16
1978	3467	0.80	0.18	0.02	761	0.66	0.26	0.08	1067	0.66	0.32	0.02	447	0.29	0.56	0.15
1979	3682	0.81	0.17	0.01	829	0.69	0.26	0.06	1134	0.68	0.30	0.02	437	0.32	0.54	0.14
1980	3943	0.83	0.16	0.01	948	0.72	0.24	0.04	1218	0.71	0.28	0.02	431	0.36	0.52	0.12
1981	4146	0.84	0.15	0.01	981	0.75	0.22	0.03	1318	0.71	0.28	0.02	460	0.36	0.55	0.01
1982	4346	0.85	0.14	0.01	979	0.79	0.19	0.02	1396	0.72	0.26	0.01	456	0.37	0.54	0.08
1983	4228	0.84	0.14	0.01	693	0.76	0.23	0.01	1402	0.73	0.26	0.01	428	0.35	0.57	0.07
1984	4685	0.87	0.13	0.00	978	0.81	0.18	0.01	1613	0.73	0.27	0.00	461	0.38	0.57	0.05
1985	4904	0.86	0.14	0.00	942	0.81	0.19	0.01	1700	0.73	0.26	0.00	519	0.33	0.51	0.16
1986	5197	0.88	0.12	0.00	1099	0.81	0.18	0.00	1761	0.78	0.22	0.00	505	0.36	0.50	0.14
1987	5360	0.88	0.12	0.00	997	0.82	0.18	0.00	1832	0.80	0.20	0.00	515	0.34	0.55	0.10
1988	5865	0.87	0.13	0.00	1184	0.82	0.18	0.00	2033	0.79	0.21	0.00	571	0.32	0.56	0.12
1989	6354	0.87	0.13	0.00	1363	0.80	0.20	0.00	2254	0.78	0.22	0.00	622	0.30	0.62	0.07
1990	6555	0.88	0.12	0.00	1364	0.80	0.20	0.00	2398	0.79	0.21	0.00	575	0.33	0.63	0.04
1991	6697	0.89	0.11	0.00	1304	0.77	0.23	0.00	2529	0.79	0.21	0.00	530	0.34	0.64	0.02
1992	6668	0.92	0.08	0.00	1347	0.68	0.32	0.00	2662	0.79	0.21	0.00	515	0.32	0.64	0.04
1993	7116	0.92	0.08	0.00	1455	0.69	0.31	0.00	2855	0.81	0.19	0.00	514	0.32	0.60	0.09
1994	7543	0.92	0.08	0.01	1526	0.68	0.31	0.01	2998	0.83	0.17	0.00	571	0.29	0.62	0.01
1995	7966	0.92	0.08	0.00	1582	0.68	0.32	0.00	3147	0.85	0.15	0.00	638	0.24	0.62	0.14
1996	8455	0.93	0.06	0.00	1711	0.72	0.27	0.00	3438	0.86	0.13	0.01	648	0.23	0.65	0.12
1997	8942	0.94	0.06	0.00	1864	0.71	0.28	0.01	3817	0.84	0.16	0.00	586	0.25	0.59	0.16
1998	9517	0.94	0.06	0.00	1988	0.71	0.26	0.03	4327	0.81	0.19	0.00	551	0.24	0.58	0.18
1999	10039	0.95	0.05	0.00	2261	0.68	0.31	0.01	4617	0.82	0.18	0.00	610	0.23	0.55	0.22
2000	10665	0.95	0.05	0.00	2434	0.68	0.29	0.03	4970	0.83	0.17	0.00	756	0.20	0.53	0.28
2001	11093	0.95	0.05	0.00	2350	0.68	0.30	0.02	5282	0.83	0.16	0.00	821	0.19	0.56	0.26
2002	11654	0.96	0.04	0.00	2445	0.67	0.29	0.03	5666	0.84	0.16	0.01	929	0.17	0.56	0.27
2003	12250	0.96	0.04	0.00	2524	0.66	0.29	0.05	6049	0.85	0.15	0.00	1081	0.15	0.54	0.31
2004	12937	0.96	0.04	0.00	2711	0.65	0.27	0.08	6506	0.85	0.14	0.01	1135	0.15	0.57	0.28
2005	13529	0.96	0.04	0.00	2678	0.65	0.28	0.08	6953	0.85	0.14	0.00	1192	0.15	0.59	0.26
Annual growth rate %																
2000–2005	4.9%				1.9%				6.9%				9.5%			
1995–2005	5.4%				5.4%				8.2%				6.4%			
1972–2005	5.5%				5.1%				7.2%				3.6%			

	VIC–ACT				*VIC–NT*				*VIC–TAS*			
		Shares				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	133	0.95	0.05	0.00	16	0.00	0.25	0.75	1068	0.00	0.00	1.00
1973	132	0.94	0.06	0.00	16	0.00	0.28	0.72	912	0.00	0.00	1.00
1974	132	0.94	0.06	0.00	15	0.00	0.32	0.68	755	0.00	0.00	1.00
1975	129	0.93	0.07	0.00	16	0.00	0.32	0.68	823	0.00	0.00	1.00
1976	128	0.92	0.08	0.00	17	0.00	0.33	0.67	891	0.00	0.00	1.00
1977	127	0.92	0.08	0.00	18	0.00	0.33	0.67	821	0.00	0.00	1.00
1978	127	0.91	0.09	0.00	19	0.00	0.33	0.67	752	0.00	0.00	1.00
1979	126	0.90	0.01	0.00	20	0.00	0.33	0.67	683	0.00	0.00	1.00
1980	125	0.89	0.11	0.00	21	0.00	0.33	0.67	614	0.00	0.00	1.00
1981	124	0.89	0.11	0.00	22	0.00	0.33	0.67	545	0.00	0.00	1.00
1982	121	0.88	0.12	0.00	23	0.00	0.33	0.67	476	0.00	0.00	1.00
1983	120	0.88	0.12	0.00	24	0.00	0.32	0.68	414	0.00	0.00	1.00
1984	122	0.85	0.15	0.00	11	0.00	0.82	0.18	486	0.00	0.00	1.00
1985	121	0.84	0.16	0.00	10	0.00	1.00	0.00	511	0.00	0.00	1.00
1986	117	0.86	0.14	0.00	8	0.00	1.00	0.00	559	0.00	0.00	1.00
1987	113	0.88	0.12	0.00	10	0.00	1.00	0.00	662	0.00	0.00	1.00
1988	109	0.89	0.11	0.00	11	0.00	1.00	0.00	680	0.00	0.00	1.00
1989	105	0.90	0.10	0.00	12	0.00	1.00	0.00	830	0.00	0.00	1.00
1990	102	0.90	0.01	0.00	12	0.00	1.00	0.00	861	0.00	0.00	1.00
1991	100	0.91	0.09	0.00	13	0.00	1.00	0.00	757	0.00	0.00	1.00
1992	97	0.92	0.08	0.00	13	0.00	1.00	0.00	812	0.00	0.00	1.00
1993	87	1.00	0.00	0.00	14	0.00	1.00	0.00	847	0.00	0.00	1.00
1994	86	1.00	0.00	0.00	16	0.00	1.00	0.00	884	0.00	0.00	1.00
1995	84	1.00	0.00	0.00	17	0.00	1.00	0.00	973	0.00	0.00	1.00
1996	81	1.00	0.00	0.00	22	0.00	0.84	0.16	1061	0.00	0.00	1.00
1997	79	1.00	0.00	0.00	17	0.00	1.00	0.00	1110	0.00	0.00	1.00
1998	78	1.00	0.00	0.00	16	0.00	1.00	0.00	1082	0.00	0.00	1.00
1999	76	1.00	0.00	0.00	20	0.00	1.00	0.00	1092	0.00	0.00	1.00
2000	75	1.00	0.00	0.00	17	0.00	1.00	0.00	1258	0.00	0.00	1.00
2001	73	1.00	0.00	0.00	14	0.00	1.00	0.00	1079	0.00	0.00	1.00
2002	71	1.00	0.00	0.00	14	0.00	1.00	0.00	1288	0.00	0.00	1.00
2003	70	1.00	0.00	0.00	14	0.00	1.00	0.00	1457	0.00	0.00	1.00
2004	66	1.00	0.00	0.00	14	0.00	1.00	0.00	1680	0.00	0.00	1.00
2005	65	1.00	0.00	0.00	14	0.00	1.00	0.00	1818	0.00	0.00	1.00
Annual growth rate %												
2000–2005	-2.8%				-3.8%				7.6%			
1995–2005	-2.6%				-1.8%				6.5%			
1972–2005	-2.2%				-0.5%				1.7%			

Source: BTRE estimates.

Table A.6: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from Queensland, 1972–2005

	QLD–NSW				QLD–VIC				QLD–SA				QLD–WA			
		Shares				Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	918	0.63	0.32	0.06	153	0.43	0.28	0.29	121	0.65	0.29	0.06	55	0.09	0.11	0.80
1973	1070	0.68	0.28	0.05	177	0.51	0.23	0.25	133	0.70	0.24	0.05	52	0.12	0.11	0.77
1974	1211	0.71	0.25	0.04	200	0.58	0.20	0.22	143	0.74	0.21	0.05	50	0.14	0.11	0.75
1975	1270	0.73	0.24	0.03	207	0.61	0.19	0.21	144	0.77	0.20	0.03	39	0.19	0.13	0.67
1976	1401	0.76	0.22	0.02	229	0.66	0.16	0.17	152	0.82	0.18	0.00	41	0.50	0.12	0.38
1977	1485	0.76	0.22	0.02	220	0.75	0.18	0.08	167	0.84	0.16	0.00	29	0.73	0.21	0.06
1978	1526	0.75	0.22	0.03	224	0.74	0.18	0.08	178	0.85	0.15	0.00	30	0.71	0.23	0.06
1979	1673	0.76	0.21	0.03	250	0.76	0.17	0.07	199	0.87	0.13	0.00	33	0.71	0.24	0.05
1980	1873	0.78	0.19	0.03	289	0.79	0.15	0.06	224	0.90	0.10	0.00	36	0.71	0.25	0.05
1981	1982	0.79	0.17	0.03	309	0.82	0.13	0.05	219	0.90	0.01	0.00	35	0.78	0.17	0.05
1982	2141	0.79	0.18	0.03	338	0.82	0.13	0.05	222	0.94	0.06	0.00	35	0.81	0.14	0.05
1983	2004	0.76	0.20	0.04	299	0.79	0.15	0.06	200	0.97	0.02	0.01	33	0.83	0.12	0.05
1984	2307	0.82	0.15	0.03	428	0.75	0.16	0.08	237	0.93	0.07	0.00	37	0.87	0.11	0.02
1985	2373	0.83	0.17	0.01	421	0.79	0.19	0.02	240	0.85	0.08	0.07	37	0.92	0.08	0.00
1986	2757	0.81	0.19	0.00	476	0.83	0.17	0.00	250	0.92	0.08	0.00	40	0.95	0.05	0.00
1987	2832	0.80	0.20	0.00	483	0.82	0.18	0.00	251	0.88	0.12	0.00	41	0.95	0.05	0.00
1988	3084	0.83	0.17	0.00	556	0.85	0.15	0.00	283	0.84	0.15	0.01	53	0.81	0.19	0.00
1989	3369	0.84	0.16	0.00	654	0.83	0.17	0.00	317	0.77	0.23	0.00	57	0.83	0.14	0.03
1990	3549	0.84	0.16	0.00	710	0.81	0.19	0.00	344	0.67	0.28	0.04	55	0.91	0.09	0.00
1991	3524	0.86	0.14	0.00	726	0.80	0.20	0.00	328	0.69	0.31	0.00	65	0.78	0.22	0.00
1992	3581	0.86	0.14	0.00	775	0.76	0.24	0.00	331	0.74	0.26	0.00	78	0.67	0.32	0.01
1993	3846	0.87	0.13	0.00	913	0.72	0.22	0.06	358	0.72	0.23	0.05	94	0.60	0.39	0.01
1994	4068	0.88	0.12	0.00	938	0.77	0.23	0.01	381	0.77	0.22	0.01	120	0.50	0.40	0.09
1995	4300	0.89	0.11	0.00	1007	0.78	0.22	0.00	403	0.80	0.20	0.00	133	0.48	0.45	0.07
1996	4713	0.90	0.09	0.00	1107	0.82	0.18	0.01	411	0.84	0.16	0.00	161	0.44	0.55	0.01
1997	5057	0.92	0.08	0.00	1256	0.80	0.19	0.00	429	0.82	0.18	0.00	173	0.44	0.54	0.02
1998	5591	0.90	0.09	0.01	1425	0.79	0.21	0.01	446	0.83	0.17	0.00	200	0.45	0.44	0.11
1999	5933	0.93	0.07	0.00	1539	0.82	0.17	0.01	476	0.89	0.11	0.00	216	0.44	0.41	0.14
2000	6505	0.91	0.08	0.01	1726	0.81	0.17	0.01	492	0.87	0.13	0.01	234	0.43	0.39	0.18
2001	6907	0.90	0.07	0.03	1857	0.79	0.19	0.02	497	0.84	0.15	0.00	263	0.40	0.35	0.25
2002	7078	0.93	0.07	0.00	1994	0.80	0.20	0.00	509	0.85	0.15	0.00	240	0.46	0.39	0.15
2003	7460	0.93	0.07	0.00	2164	0.79	0.20	0.01	516	0.85	0.15	0.00	281	0.41	0.34	0.25
2004	8196	0.92	0.06	0.02	2368	0.79	0.20	0.00	528	0.86	0.14	0.00	332	0.36	0.29	0.34
2005	8447	0.93	0.06	0.01	2524	0.79	0.21	0.00	532	0.86	0.14	0.00	275	0.45	0.36	0.19
Annual growth rate (%)																
2000-2005	5.4%				7.9%				5.6%				3.3%			
1995-2005	7.0%				9.6%				6.3%				7.5%			
1972-2005	57.2%				9.1%				7.2%				5.1%			

	QLD–ACT				QLD–NT				QLD–TAS			
		Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	1.00	0.50	0.50	0.00	36	0.66	0.00	0.34	15	0.00	0.00	1.00
1973	1.00	0.50	0.50	0.00	47	0.59	0.00	0.41	8	0.00	0.00	1.00
1974	1.00	0.50	0.50	0.00	57	0.55	0.00	0.45	1	0.00	0.00	1.00
1975	1.00	0.50	0.50	0.00	55	0.60	0.00	0.40	2	0.00	0.00	1.00
1976	1.00	0.50	0.50	0.00	56	0.67	0.00	0.33	3	0.00	0.00	1.00
1977	1.00	0.50	0.50	0.00	57	0.68	0.00	0.32	3	0.00	0.00	1.00
1978	1.00	0.50	0.50	0.00	58	0.68	0.00	0.32	4	0.00	0.00	1.00
1979	1.00	0.50	0.50	0.00	61	0.69	0.00	0.31	5	0.00	0.00	1.00
1980	1.00	0.50	0.50	0.00	65	0.72	0.00	0.28	6	0.00	0.00	1.00
1981	1.00	0.50	0.50	0.00	68	0.73	0.00	0.27	7	0.00	0.00	1.00
1982	1.00	0.50	0.50	0.00	71	0.74	0.00	0.26	8	0.00	0.00	1.00
1983	1.00	0.50	0.50	0.00	67	0.72	0.00	0.28	9	0.00	0.00	1.00
1984	1.00	0.50	0.50	0.00	87	0.66	0.00	0.34	11	0.00	0.00	1.00
1985	1.00	0.50	0.50	0.00	65	0.89	0.00	0.11	1	0.00	0.00	1.00
1986	1.00	0.50	0.50	0.00	71	0.90	0.00	0.01	7	0.00	0.00	1.00
1987	1.00	0.50	0.50	0.00	71	0.92	0.00	0.08	12	0.00	0.00	1.00
1988	1.00	0.50	0.50	0.00	74	0.96	0.00	0.04	1	0.00	0.00	1.00
1989	1.00	0.50	0.50	0.00	77	1.00	0.00	0.00	4	0.00	0.00	1.00
1990	1.00	0.50	0.50	0.00	81	0.99	0.00	0.01	1	0.00	0.00	1.00
1991	1.00	0.50	0.50	0.00	80	1.00	0.00	0.00	1	0.00	0.00	1.00
1992	1.00	0.50	0.50	0.00	81	1.00	0.00	0.00	1	0.00	0.00	1.00
1993	1.00	0.50	0.50	0.00	88	0.99	0.00	0.01	3	0.00	0.00	1.00
1994	1.00	0.50	0.50	0.00	92	1.00	0.00	0.00	2	0.00	0.00	1.00
1995	1.00	0.50	0.50	0.00	98	0.98	0.00	0.02	5	0.00	0.00	1.00
1996	1.00	0.50	0.50	0.00	116	0.90	0.00	0.10	1	0.00	0.00	1.00
1997	1.00	0.50	0.50	0.00	137	0.81	0.00	0.19	1	0.00	0.00	1.00
1998	1.00	0.50	0.50	0.00	149	0.79	0.00	0.21	0	0.00	0.00	1.00
1999	1.00	0.50	0.50	0.00	137	0.92	0.00	0.08	1	0.00	0.00	1.00
2000	1.00	0.50	0.50	0.00	164	0.82	0.00	0.18	1	0.00	0.00	1.00
2001	1.00	0.50	0.50	0.00	166	0.83	0.00	0.17	6	0.00	0.00	1.00
2002	1.00	0.50	0.50	0.00	176	0.82	0.00	0.18	5	0.00	0.00	1.00
2003	1.00	0.50	0.50	0.00	183	0.82	0.00	0.18	6	0.00	0.00	1.00
2004	1.00	0.50	0.50	0.00	190	0.84	0.00	0.16	1	0.00	0.00	1.00
2005	1.00	0.50	0.50	0.00	193	0.85	0.00	0.15	6	0.00	0.00	1.00
Annual growth rate (%)												
2000–2005	0.0%				3.4%				57.9%			
1995–2005	0.0%				7.0%				1.1%			
1972–2005	0.0%				5.4%				-3.1%			

Source: BTRE estimates.

Table A.7: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from South Australia, 1972–2005

	SA–NSW				SA–VIC				SA–QLD				SA–WA			
		Shares				Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	328	0.67	0.33	0.01	840	0.38	0.60	0.02	121	0.70	0.30	0.00	186	0.03	0.94	0.03
1973	374	0.71	0.29	0.01	929	0.45	0.53	0.02	133	0.75	0.25	0.00	225	0.03	0.95	0.02
1974	416	0.74	0.26	0.01	1014	0.51	0.47	0.02	143	0.80	0.20	0.00	262	0.03	0.96	0.02
1975	433	0.75	0.25	0.00	1038	0.54	0.45	0.01	144	0.82	0.17	0.01	298	0.02	0.96	0.01
1976	472	0.77	0.23	0.00	1119	0.60	0.40	0.00	152	0.86	0.13	0.00	346	0.06	0.93	0.01
1977	507	0.76	0.24	0.00	1176	0.61	0.39	0.00	167	0.81	0.19	0.00	341	0.06	0.94	0.00
1978	529	0.73	0.27	0.00	1199	0.61	0.39	0.00	178	0.76	0.24	0.00	339	0.06	0.94	0.00
1979	581	0.73	0.27	0.00	1303	0.63	0.37	0.00	199	0.73	0.27	0.00	338	0.07	0.93	0.00
1980	646	0.73	0.27	0.00	1452	0.67	0.33	0.00	224	0.71	0.29	0.00	338	0.08	0.92	0.00
1981	693	0.73	0.27	0.00	1563	0.68	0.32	0.00	219	0.77	0.23	0.00	314	0.09	0.91	0.00
1982	708	0.76	0.24	0.00	1601	0.73	0.27	0.00	222	0.79	0.21	0.00	284	0.10	0.90	0.00
1983	659	0.74	0.23	0.02	1406	0.73	0.27	0.00	200	0.79	0.21	0.00	260	0.14	0.86	0.00
1984	775	0.76	0.24	0.00	1773	0.75	0.25	0.00	237	0.79	0.21	0.00	309	0.16	0.84	0.00
1985	786	0.77	0.23	0.00	1797	0.78	0.22	0.00	240	0.79	0.21	0.00	303	0.20	0.80	0.00
1986	833	0.81	0.19	0.00	1975	0.82	0.18	0.01	250	0.82	0.18	0.00	294	0.27	0.73	0.00
1987	843	0.81	0.19	0.00	2035	0.81	0.19	0.00	251	0.82	0.18	0.00	401	0.22	0.78	0.00
1988	964	0.78	0.22	0.00	2356	0.81	0.19	0.00	283	0.79	0.21	0.00	444	0.25	0.74	0.01
1989	1064	0.77	0.21	0.02	2650	0.81	0.19	0.00	317	0.76	0.24	0.00	498	0.27	0.72	0.00
1990	1087	0.79	0.21	0.00	2710	0.85	0.15	0.00	344	0.72	0.28	0.00	578	0.27	0.73	0.00
1991	1047	0.83	0.17	0.00	2717	0.86	0.14	0.00	328	0.75	0.25	0.00	550	0.31	0.68	0.00
1992	1070	0.82	0.18	0.00	2781	0.85	0.15	0.00	331	0.74	0.26	0.00	567	0.34	0.65	0.01
1993	1173	0.81	0.19	0.00	3099	0.85	0.15	0.00	358	0.73	0.27	0.00	616	0.36	0.63	0.01
1994	1243	0.81	0.19	0.00	3384	0.85	0.15	0.00	381	0.71	0.29	0.00	637	0.40	0.60	0.00
1995	1313	0.81	0.19	0.00	3668	0.84	0.16	0.00	403	0.70	0.30	0.00	672	0.43	0.56	0.01
1996	1372	0.84	0.16	0.00	4109	0.86	0.14	0.00	411	0.74	0.26	0.00	754	0.44	0.55	0.01
1997	1424	0.87	0.13	0.00	4419	0.88	0.12	0.00	429	0.75	0.25	0.00	808	0.47	0.52	0.00
1998	1495	0.89	0.11	0.00	4881	0.88	0.12	0.00	446	0.75	0.24	0.00	865	0.50	0.49	0.01
1999	1583	0.90	0.01	0.00	5241	0.91	0.09	0.00	476	0.75	0.25	0.00	888	0.52	0.47	0.01
2000	1685	0.91	0.09	0.00	5760	0.91	0.09	0.00	492	0.76	0.24	0.00	997	0.49	0.50	0.01
2001	1735	0.91	0.09	0.00	6088	0.90	0.09	0.01	497	0.77	0.23	0.00	1113	0.45	0.52	0.03
2002	1834	0.91	0.08	0.01	6512	0.91	0.09	0.00	509	0.78	0.21	0.01	1200	0.44	0.55	0.01
2003	1905	0.92	0.08	0.00	6979	0.91	0.09	0.00	516	0.79	0.20	0.01	1314	0.42	0.56	0.02
2004	2010	0.92	0.08	0.00	7575	0.92	0.08	0.00	528	0.81	0.19	0.00	1415	0.41	0.58	0.01
2005	2084	0.93	0.07	0.00	8024	0.92	0.08	0.00	532	0.82	0.18	0.00	1520	0.39	0.59	0.01
Annual growth rate %																
2000-2005	4.3%				6.9%				1.6%				8.8%			
1995-2005	4.7%				8.1%				2.8%				8.5%			
1972-2005	5.9%				7.3%				4.7%				6.8%			

	SA–ACT				SA–NT				SA–TAS			
		Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	1.00	0.00	1.00	0.00	120	0.29	0.68	0.04	57	0.00	0.00	1.00
1973	1.25	0.00	1.00	0.00	115	0.36	0.63	0.02	48	0.00	0.00	1.00
1974	1.50	0.00	1.00	0.00	110	0.43	0.57	0.00	39	0.00	0.00	1.00
1975	1.75	0.00	1.00	0.00	103	0.48	0.52	0.00	52	0.00	0.00	1.00
1976	2.00	0.00	1.00	0.00	99	0.55	0.45	0.00	65	0.00	0.00	1.00
1977	2.00	0.00	1.00	0.00	110	0.52	0.48	0.00	58	0.00	0.00	1.00
1978	2.00	0.00	1.00	0.00	120	0.48	0.52	0.00	52	0.00	0.00	1.00
1979	2.00	0.00	1.00	0.00	133	0.47	0.53	0.00	46	0.00	0.00	1.00
1980	2.00	0.00	1.00	0.00	148	0.47	0.53	0.00	40	0.00	0.00	1.00
1981	1.95	0.00	1.00	0.00	151	0.49	0.51	0.00	34	0.00	0.00	1.00
1982	2.00	0.00	1.00	0.00	150	0.52	0.48	0.00	28	0.00	0.00	1.00
1983	1.61	0.00	1.00	0.00	140	0.51	0.49	0.00	22	0.00	0.00	1.00
1984	1.92	0.00	1.00	0.00	160	0.53	0.47	0.00	66	0.00	0.00	1.00
1985	1.83	0.00	1.00	0.00	159	0.54	0.46	0.00	55	0.00	0.00	1.00
1986	1.67	0.00	1.00	0.00	161	0.58	0.41	0.01	42	0.00	0.00	1.00
1987	1.33	0.00	1.00	0.00	177	0.54	0.46	0.00	36	0.00	0.00	1.00
1988	1.00	0.00	1.00	0.00	201	0.52	0.48	0.00	36	0.00	0.00	1.00
1989	1.00	0.00	1.00	0.00	215	0.53	0.47	0.00	1	0.00	0.00	1.00
1990	1.00	0.00	1.00	0.00	226	0.52	0.48	0.00	1	0.00	0.00	1.00
1991	1.00	0.00	1.00	0.00	232	0.51	0.49	0.00	1	0.00	0.00	1.00
1992	1.00	0.00	1.00	0.00	240	0.50	0.50	0.00	1	0.00	0.00	1.00
1993	1.00	0.50	0.50	0.00	265	0.48	0.52	0.00	1	0.00	0.00	1.00
1994	1.00	0.50	0.50	0.00	290	0.47	0.53	0.00	1	0.00	0.00	1.00
1995	1.00	0.50	0.50	0.00	314	0.45	0.55	0.00	1	0.00	0.00	1.00
1996	1.00	0.50	0.50	0.00	330	0.47	0.53	0.00	1	0.00	0.00	1.00
1997	1.00	0.50	0.50	0.00	353	0.46	0.50	0.04	11	0.00	0.00	1.00
1998	1.00	0.50	0.50	0.00	337	0.52	0.48	0.00	0	0.00	0.00	1.00
1999	1.00	0.50	0.50	0.00	342	0.54	0.46	0.00	0	0.00	0.00	1.00
2000	1.00	0.50	0.50	0.00	367	0.54	0.46	0.00	0	0.00	0.00	1.00
2001	1.00	0.50	0.50	0.00	387	0.52	0.48	0.00	1	0.00	0.00	1.00
2002	1.00	0.50	0.50	0.00	414	0.51	0.48	0.01	2	0.00	0.00	1.00
2003	1.00	0.50	0.50	0.00	435	0.51	0.49	0.00	0	0.00	0.00	1.00
2004	1.00	0.50	0.50	0.00	460	0.51	0.49	0.00	1	0.00	0.00	1.00
2005	1.00	0.50	0.50	0.00	483	0.50	0.50	0.00	0	0.00	0.00	1.00
Annual growth rate %												
2000–2005	0.0%				5.6%				-13.6%			
1995–2005	0.0%				4.4%				-14.7%			
1972–2005	0.0%				4.4%				-16.1%			

Source: BTRE estimates.

Table A.8: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from Western Australia, 1972–2005

	WA–NSW				*WA–VIC*				*WA–QLD*				*WA–SA*			
		Shares				*Shares*				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	138	0.01	0.08	0.82	185	0.05	0.04	0.90	16	0.21	0.06	0.73	113	0.06	0.78	0.16
1973	138	0.13	0.25	0.62	196	0.07	0.10	0.83	22	0.20	0.38	0.42	107	0.08	0.83	0.09
1974	139	0.16	0.43	0.42	208	0.08	0.16	0.77	29	0.19	0.57	0.25	102	0.11	0.88	0.00
1975	149	0.16	0.56	0.29	171	0.10	0.26	0.64	34	0.17	0.70	0.13	103	0.11	0.88	0.01
1976	161	0.17	0.66	0.17	137	0.15	0.41	0.43	40	0.17	0.78	0.05	106	0.13	0.87	0.00
1977	127	0.24	0.76	0.00	86	0.26	0.70	0.04	34	0.22	0.72	0.06	107	0.14	0.86	0.00
1978	118	0.26	0.74	0.00	90	0.26	0.71	0.03	27	0.29	0.65	0.06	109	0.14	0.86	0.00
1979	113	0.31	0.69	0.00	96	0.27	0.70	0.03	20	0.43	0.49	0.08	112	0.16	0.84	0.00
1980	109	0.37	0.63	0.00	104	0.30	0.68	0.03	15	0.70	0.20	0.01	115	0.18	0.82	0.00
1981	115	0.39	0.61	0.00	132	0.26	0.72	0.02	16	0.69	0.23	0.08	147	0.15	0.85	0.00
1982	144	0.34	0.66	0.00	157	0.24	0.74	0.02	20	0.63	0.31	0.06	144	0.17	0.83	0.00
1983	164	0.26	0.74	0.00	173	0.19	0.80	0.02	20	0.53	0.42	0.05	137	0.16	0.84	0.00
1984	156	0.36	0.55	0.09	177	0.24	0.68	0.08	27	0.52	0.48	0.00	165	0.17	0.82	0.01
1985	168	0.35	0.52	0.12	161	0.27	0.61	0.11	28	0.53	0.47	0.00	189	0.16	0.84	0.00
1986	181	0.37	0.60	0.02	155	0.32	0.64	0.04	37	0.47	0.53	0.00	226	0.17	0.83	0.00
1987	171	0.40	0.60	0.00	179	0.27	0.70	0.03	43	0.42	0.58	0.00	222	0.20	0.80	0.00
1988	177	0.44	0.56	0.00	180	0.31	0.68	0.01	53	0.40	0.60	0.00	230	0.25	0.75	0.00
1989	196	0.45	0.53	0.02	201	0.29	0.69	0.02	67	0.36	0.59	0.04	273	0.27	0.72	0.01
1990	201	0.46	0.54	0.00	197	0.31	0.69	0.01	47	0.56	0.44	0.00	273	0.31	0.69	0.00
1991	192	0.48	0.52	0.00	204	0.28	0.71	0.00	70	0.39	0.60	0.01	269	0.35	0.65	0.00
1992	209	0.45	0.55	0.01	234	0.24	0.76	0.00	118	0.24	0.43	0.33	278	0.37	0.57	0.06
1993	242	0.42	0.57	0.01	254	0.23	0.76	0.02	89	0.36	0.64	0.00	306	0.42	0.57	0.00
1994	272	0.40	0.60	0.00	268	0.22	0.77	0.00	100	0.35	0.65	0.00	335	0.44	0.56	0.00
1995	305	0.38	0.61	0.01	284	0.20	0.78	0.01	112	0.35	0.65	0.01	390	0.45	0.51	0.04
1996	252	0.51	0.48	0.00	254	0.25	0.75	0.00	136	0.33	0.66	0.01	414	0.51	0.48	0.01
1997	311	0.44	0.56	0.00	249	0.24	0.76	0.00	151	0.33	0.67	0.00	416	0.60	0.40	0.00
1998	371	0.39	0.61	0.00	299	0.21	0.77	0.02	181	0.34	0.49	0.17	465	0.64	0.35	0.01
1999	465	0.35	0.63	0.02	327	0.21	0.78	0.01	194	0.35	0.50	0.15	559	0.59	0.40	0.01
2000	506	0.35	0.56	0.08	416	0.18	0.80	0.01	187	0.40	0.54	0.05	725	0.50	0.46	0.04
2001	485	0.39	0.57	0.05	514	0.15	0.81	0.04	187	0.42	0.57	0.01	830	0.46	0.53	0.01
2002	587	0.35	0.54	0.11	629	0.14	0.79	0.08	213	0.40	0.58	0.02	986	0.42	0.56	0.02
2003	688	0.32	0.53	0.16	704	0.13	0.74	0.13	253	0.36	0.55	0.08	1031	0.43	0.56	0.01
2004	652	0.36	0.62	0.01	656	0.15	0.82	0.02	272	0.37	0.57	0.06	1103	0.44	0.54	0.02
2005	736	0.34	0.61	0.05	700	0.15	0.80	0.04	282	0.38	0.61	0.01	1150	0.45	0.54	0.00
Annual growth %																
2000–2005	7.8%				11.0%				8.6%				9.7%			
1995–2005	9.2%				9.4%				9.7%				11.4%			
1972–2005	5.4%				4.2%				9.4%				7.5%			

	WA–ACT				*WA–NT*				*WA–TAS*			
		Shares				*Shares*				*Shares*		
YEAR	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*	*Total Freight*	*road*	*rail*	*Coastal shipping*
1972	1	0.00	1.00	0.00	31	0.35	0.00	0.65	1	0.00	0.00	1.00
1973	2	0.00	1.00	0.00	34	0.43	0.00	0.57	1	0.00	0.00	1.00
1974	2	0.00	1.00	0.00	37	0.48	0.00	0.52	1	0.00	0.00	1.00
1975	3	0.00	1.00	0.00	39	0.50	0.00	0.50	1	0.00	0.00	1.00
1976	3	0.00	1.00	0.00	42	0.55	0.00	0.45	1	0.00	0.00	1.00
1977	3	0.00	1.00	0.00	43	0.57	0.00	0.43	1	0.00	0.00	1.00
1978	3	0.00	1.00	0.00	43	0.58	0.00	0.42	1	0.00	0.00	1.00
1979	2	0.00	1.00	0.00	46	0.61	0.00	0.39	1	0.00	0.00	1.00
1980	2	0.00	1.00	0.00	51	0.65	0.00	0.35	1	0.00	0.00	1.00
1981	2	0.00	1.00	0.00	54	0.67	0.00	0.33	1	0.00	0.00	1.00
1982	2	0.00	1.00	0.00	57	0.70	0.00	0.30	1	0.00	0.00	1.00
1983	2	0.00	1.00	0.00	52	0.67	0.00	0.33	9	0.00	0.00	1.00
1984	2	0.00	1.00	0.00	65	0.71	0.00	0.29	18	0.00	0.00	1.00
1985	2	0.00	1.00	0.00	65	0.74	0.00	0.26	22	0.00	0.00	1.00
1986	3	0.00	1.00	0.00	77	0.71	0.00	0.29	19	0.00	0.00	1.00
1987	2	0.00	1.00	0.00	78	0.72	0.00	0.28	23	0.00	0.00	1.00
1988	1	0.00	1.00	0.00	82	0.79	0.00	0.21	39	0.00	0.00	1.00
1989	1	0.00	1.00	0.00	92	0.79	0.00	0.21	36	0.00	0.00	1.00
1990	1	0.00	1.00	0.00	106	0.74	0.00	0.26	41	0.00	0.00	1.00
1991	1	0.00	1.00	0.00	88	0.90	0.00	0.10	21	0.00	0.00	1.00
1992	1	0.00	1.00	0.00	91	0.89	0.00	0.11	12	0.00	0.00	1.00
1993	1	0.50	0.50	0.00	101	0.89	0.00	0.11	1	0.00	0.00	1.00
1994	1	0.50	0.50	0.00	118	0.82	0.00	0.18	7	0.00	0.00	1.00
1995	1	0.50	0.50	0.00	123	0.85	0.00	0.15	13	0.00	0.00	1.00
1996	1	0.50	0.50	0.00	137	0.87	0.00	0.13	8	0.00	0.00	1.00
1997	1	0.50	0.50	0.00	132	1.00	0.00	0.00	1	0.00	0.00	1.00
1998	1	0.50	0.50	0.00	162	0.90	0.00	0.10	34	0.00	0.00	1.00
1999	1	0.50	0.50	0.00	181	0.89	0.00	0.11	18	0.00	0.00	1.00
2000	1	0.50	0.50	0.00	189	0.94	0.00	0.06	13	0.00	0.00	1.00
2001	1	0.50	0.50	0.00	198	0.94	0.00	0.06	7	0.00	0.00	1.00
2002	1	0.50	0.50	0.00	212	0.95	0.00	0.05	319	0.00	0.00	1.00
2003	1	0.50	0.50	0.00	229	0.94	0.00	0.06	9	0.00	0.00	1.00
2004	1	0.50	0.50	0.00	251	0.93	0.00	0.07	5	0.00	0.00	1.00
2005	1	0.50	0.50	0.00	257	0.96	0.00	0.04	8	0.00	0.00	1.00
Annual growth %												
2000–2005	0.0%				6.4%				-8.8%			
1995–2005	0.0%				7.7%				-4.6%			
1972–2005	0.0%				6.9%				6.8%			

Source: BTRE estimates.

Table A.9: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from Tasmania, 1972–2005

	TAS–NSW				TAS–VIC				TAS–QLD			
		Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	243	0.00	0.00	1.00	1177	0.00	0.00	1.00	4	0.00	0.00	1.00
1973	163	0.00	0.00	1.00	777	0.00	0.00	1.00	5	0.00	0.00	1.00
1974	83	0.00	0.00	1.00	378	0.00	0.00	1.00	7	0.00	0.00	1.00
1975	71	0.00	0.00	1.00	325	0.00	0.00	1.00	7	0.00	0.00	1.00
1976	60	0.00	0.00	1.00	272	0.00	0.00	1.00	7	0.00	0.00	1.00
1977	89	0.00	0.00	1.00	320	0.00	0.00	1.00	14	0.00	0.00	1.00
1978	119	0.00	0.00	1.00	368	0.00	0.00	1.00	21	0.00	0.00	1.00
1979	148	0.00	0.00	1.00	416	0.00	0.00	1.00	28	0.00	0.00	1.00
1980	178	0.00	0.00	1.00	463	0.00	0.00	1.00	36	0.00	0.00	1.00
1981	207	0.00	0.00	1.00	511	0.00	0.00	1.00	43	0.00	0.00	1.00
1982	237	0.00	0.00	1.00	559	0.00	0.00	1.00	50	0.00	0.00	1.00
1983	267	0.00	0.00	1.00	607	0.00	0.00	1.00	57	0.00	0.00	1.00
1984	315	0.00	0.00	1.00	713	0.00	0.00	1.00	56	0.00	0.00	1.00
1985	302	0.00	0.00	1.00	701	0.00	0.00	1.00	50	0.00	0.00	1.00
1986	258	0.00	0.00	1.00	696	0.00	0.00	1.00	48	0.00	0.00	1.00
1987	324	0.00	0.00	1.00	923	0.00	0.00	1.00	62	0.00	0.00	1.00
1988	181	0.00	0.00	1.00	905	0.00	0.00	1.00	27	0.00	0.00	1.00
1989	291	0.00	0.00	1.00	1039	0.00	0.00	1.00	4	0.00	0.00	1.00
1990	140	0.00	0.00	1.00	1127	0.00	0.00	1.00	11	0.00	0.00	1.00
1991	162	0.00	0.00	1.00	1247	0.00	0.00	1.00	1	0.00	0.00	1.00
1992	200	0.00	0.00	1.00	1095	0.00	0.00	1.00	1	0.00	0.00	1.00
1993	177	0.00	0.00	1.00	1079	0.00	0.00	1.00	2	0.00	0.00	1.00
1994	140	0.00	0.00	1.00	1291	0.00	0.00	1.00	1	0.00	0.00	1.00
1995	196	0.00	0.00	1.00	1239	0.00	0.00	1.00	1	0.00	0.00	1.00
1996	116	0.00	0.00	1.00	1307	0.00	0.00	1.00	0	0.00	0.00	1.00
1997	1	0.00	0.00	1.00	1440	0.00	0.00	1.00	1	0.00	0.00	1.00
1998	12	0.00	0.00	1.00	1425	0.00	0.00	1.00	0	0.00	0.00	1.00
1999	3	0.00	0.00	1.00	1442	0.00	0.00	1.00	4	0.00	0.00	1.00
2000	211	0.00	0.00	1.00	1489	0.00	0.00	1.00	0	0.00	0.00	1.00
2001	73	0.00	0.00	1.00	1525	0.00	0.00	1.00	1	0.00	0.00	1.00
2002	51	0.00	0.00	1.00	1862	0.00	0.00	1.00	17	0.00	0.00	1.00
2003	44	0.00	0.00	1.00	2218	0.00	0.00	1.00	3	0.00	0.00	1.00
2004	52	0.00	0.00	1.00	2563	0.00	0.00	1.00	26	0.00	0.00	1.00
2005	373	0.00	0.00	1.00	2635	0.00	0.00	1.00	14	0.00	0.00	1.00
Annual growth %												
2000–2005	12.0%				12.1%				149.0%			
1995–2005	6.6%				7.8%				30.2%			
1972–2005	1.4%				2.6%				4.0%			

	TAS–SA				TAS–WA				TAS–NT			
		Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	38	0.00	0.00	1.00	7	0.00	0.00	1.00	1	0.00	0.00	1.00
1973	24	0.00	0.00	1.00	7	0.00	0.00	1.00	1	0.00	0.00	1.00
1974	11	0.00	0.00	1.00	7	0.00	0.00	1.00	1	0.00	0.00	1.00
1975	14	0.00	0.00	1.00	5	0.00	0.00	1.00	1	0.00	0.00	1.00
1976	18	0.00	0.00	1.00	3	0.00	0.00	1.00	1	0.00	0.00	1.00
1977	23	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1978	29	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1979	35	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1980	40	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1981	46	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1982	52	0.00	0.00	1.00	1	0.00	0.00	1.00	1	0.00	0.00	1.00
1983	58	0.00	0.00	1.00	51	0.00	0.00	1.00	1	0.00	0.00	1.00
1984	54	0.00	0.00	1.00	53	0.00	0.00	1.00	3	0.00	0.00	1.00
1985	23	0.00	0.00	1.00	70	0.00	0.00	1.00	1	0.00	0.00	1.00
1986	1	0.00	0.00	1.00	59	0.00	0.00	1.00	1	0.00	0.00	1.00
1987	23	0.00	0.00	1.00	70	0.00	0.00	1.00	1	0.00	0.00	1.00
1988	27	0.00	0.00	1.00	59	0.00	0.00	1.00	1	0.00	0.00	1.00
1989	16	0.00	0.00	1.00	55	0.00	0.00	1.00	1	0.00	0.00	1.00
1990	1	0.00	0.00	1.00	47	0.00	0.00	1.00	1	0.00	0.00	1.00
1991	4	0.00	0.00	1.00	45	0.00	0.00	1.00	1	0.00	0.00	1.00
1992	16	0.00	0.00	1.00	18	0.00	0.00	1.00	1	0.00	0.00	1.00
1993	12	0.00	0.00	1.00	30	0.00	0.00	1.00	1	0.00	0.00	1.00
1994	2	0.00	0.00	1.00	25	0.00	0.00	1.00	1	0.00	0.00	1.00
1995	17	0.00	0.00	1.00	23	0.00	0.00	1.00	1	0.00	0.00	1.00
1996	1	0.00	0.00	1.00	50	0.00	0.00	1.00	1	0.00	0.00	1.00
1997	1	0.00	0.00	1.00	58	0.00	0.00	1.00	1	0.00	0.00	1.00
1998	1	0.00	0.00	1.00	81	0.00	0.00	1.00	2	0.00	0.00	1.00
1999	5	0.00	0.00	1.00	109	0.00	0.00	1.00	0	0.00	0.00	1.00
2000	2	0.00	0.00	1.00	62	0.00	0.00	1.00	2	0.00	0.00	1.00
2001	1	0.00	0.00	1.00	37	0.00	0.00	1.00	1	0.00	0.00	1.00
2002	16	0.00	0.00	1.00	208	0.00	0.00	1.00	1	0.00	0.00	1.00
2003	39	0.00	0.00	1.00	277	0.00	0.00	1.00	1	0.00	0.00	1.00
2004	6	0.00	0.00	1.00	401	0.00	0.00	1.00	1	0.00	0.00	1.00
2005	9	0.00	0.00	1.00	12	0.00	0.00	1.00	12	0.00	0.00	1.00
Annual growth %												
2000–2005	37.5%				-28.4%				42.1%			
1995–2005	-5.7%				-6.5%				28.6%			
1972–2005	-4.2%				1.6%				8.2%			

Source: BTRE estimates.

Table A.10: Intermodal State-to-State total freight, kilotonnes, and market shares of road, rail and coastal shipping in transporting freight originating from Northern Territory, 1972–2005

	NT–NSW				NT–VIC				NT–QLD				NT–SA			
		Shares				Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	6	0.49	0.00	0.51	14	0.44	0.00	0.56	34	1.00	0.00	0.00	90	0.55	0.45	0.00
1973	7	0.52	0.04	0.44	15	0.50	0.00	0.50	41	1.00	0.00	0.00	96	0.62	0.38	0.00
1974	7	0.53	0.07	0.40	16	0.55	0.00	0.45	47	1.00	0.00	0.00	100	0.67	0.33	0.00
1975	7	0.61	0.11	0.29	16	0.58	0.00	0.42	50	1.00	0.00	0.00	100	0.71	0.29	0.00
1976	7	0.70	0.15	0.15	16	0.63	0.00	0.37	55	1.00	0.00	0.00	104	0.76	0.24	0.00
1977	6	0.83	0.17	0.00	16	0.66	0.00	0.34	58	1.00	0.00	0.00	112	0.74	0.26	0.00
1978	6	0.84	0.16	0.00	16	0.69	0.00	0.31	59	1.00	0.00	0.00	117	0.72	0.28	0.00
1979	7	0.85	0.15	0.00	16	0.74	0.00	0.26	63	1.00	0.00	0.00	128	0.71	0.29	0.00
1980	7	0.86	0.14	0.00	17	0.78	0.00	0.22	70	1.00	0.00	0.00	141	0.71	0.29	0.00
1981	7	0.87	0.13	0.00	17	0.81	0.00	0.19	74	1.00	0.00	0.00	147	0.72	0.28	0.00
1982	8	0.87	0.13	0.00	17	0.85	0.00	0.15	79	1.00	0.00	0.00	150	0.75	0.25	0.00
1983	7	0.91	0.09	0.00	15	0.87	0.00	0.13	85	0.86	0.00	0.14	137	0.75	0.25	0.00
1984	8	0.91	0.09	0.00	17	0.94	0.00	0.06	112	0.77	0.00	0.23	163	0.75	0.25	0.00
1985	8	0.91	0.09	0.00	16	1.00	0.00	0.00	88	1.00	0.00	0.00	164	0.77	0.23	0.00
1986	9	0.93	0.07	0.00	18	1.00	0.00	0.00	100	0.97	0.00	0.03	173	0.80	0.20	0.00
1987	9	0.91	0.09	0.00	19	0.95	0.05	0.00	98	1.00	0.00	0.00	182	0.77	0.23	0.00
1988	10	0.90	0.01	0.00	22	0.91	0.09	0.00	108	1.00	0.00	0.00	202	0.76	0.24	0.00
1989	11	0.91	0.09	0.00	24	0.91	0.09	0.00	117	1.00	0.00	0.00	218	0.76	0.24	0.00
1990	11	0.91	0.09	0.00	24	0.92	0.08	0.00	121	1.00	0.00	0.00	228	0.76	0.24	0.00
1991	12	0.91	0.09	0.00	25	0.92	0.08	0.00	123	1.00	0.00	0.00	234	0.75	0.25	0.00
1992	12	0.91	0.09	0.00	25	0.92	0.08	0.00	124	1.00	0.00	0.00	239	0.74	0.26	0.00
1993	12	0.92	0.08	0.00	27	0.89	0.11	0.00	133	1.00	0.00	0.00	255	0.74	0.26	0.00
1994	14	0.86	0.07	0.07	29	0.89	0.11	0.00	141	0.99	0.00	0.01	270	0.74	0.26	0.00
1995	15	0.86	0.07	0.07	31	0.88	0.12	0.00	147	1.00	0.00	0.00	284	0.74	0.26	0.00
1996	16	0.87	0.06	0.07	34	0.86	0.12	0.02	160	1.00	0.00	0.00	307	0.74	0.26	0.00
1997	16	0.94	0.06	0.00	35	0.91	0.09	0.00	171	1.00	0.00	0.00	312	0.78	0.22	0.00
1998	17	0.93	0.06	0.01	33	1.00	0.00	0.00	181	1.00	0.00	0.00	352	0.73	0.27	0.00
1999	18	0.92	0.06	0.02	38	0.95	0.05	0.00	194	1.00	0.00	0.00	359	0.77	0.23	0.00
2000	19	0.95	0.05	0.00	41	0.94	0.06	0.00	207	1.00	0.00	0.00	386	0.76	0.24	0.00
2001	19	0.95	0.05	0.00	42	0.93	0.07	0.00	215	0.99	0.00	0.01	405	0.75	0.25	0.00
2002	20	0.95	0.05	0.00	44	0.93	0.07	0.00	226	0.99	0.00	0.01	429	0.74	0.26	0.00
2003	21	0.95	0.05	0.00	46	0.93	0.07	0.00	237	0.99	0.00	0.01	454	0.73	0.27	0.00
2004	22	0.95	0.05	0.00	48	0.94	0.06	0.00	258	0.95	0.00	0.05	481	0.18	0.82	0.00
2005	23	0.95	0.04	0.01	50	0.94	0.06	0.00	255	1.00	0.00	0.00	495	0.13	0.87	0.00
Annual growth rate %																
2000–2005	4.3%				4.3%				4.3%				5.1%			
1995–2005	4.7%				5.0%				5.7%				5.7%			
1972–2005	4.4%				4.0%				6.5%				5.5%			

	NT–WA				NT–ACT				NT–TAS			
		Shares				Shares				Shares		
YEAR	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping	Total Freight	road	rail	Coastal shipping
1972	27	0.19	0.00	0.81	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1973	29	0.24	0.05	0.70	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1974	30	0.28	0.01	0.63	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1975	35	0.27	0.13	0.61	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1976	41	0.27	0.15	0.58	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1977	40	0.29	0.15	0.56	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1978	38	0.32	0.14	0.54	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1979	38	0.35	0.14	0.51	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1980	39	0.41	0.13	0.46	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1981	38	0.45	0.12	0.43	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1982	39	0.49	0.11	0.40	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1983	34	0.49	0.11	0.41	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1984	28	0.75	0.18	0.07	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1985	29	0.78	0.15	0.07	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1986	33	0.79	0.12	0.09	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1987	32	0.82	0.12	0.06	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1988	37	0.84	0.11	0.05	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1989	41	0.83	0.01	0.07	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1990	42	0.88	0.07	0.05	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1991	43	0.86	0.07	0.07	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1992	47	0.81	0.06	0.13	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1993	49	0.86	0.06	0.08	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1994	53	0.85	0.06	0.09	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1995	55	0.89	0.05	0.05	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1996	61	0.91	0.05	0.04	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1997	61	1.00	0.00	0.00	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1998	112	0.60	0.00	0.40	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
1999	79	0.95	0.00	0.05	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2000	85	0.97	0.00	0.03	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2001	91	0.94	0.00	0.06	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2002	97	0.95	0.00	0.05	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2003	105	0.94	0.00	0.06	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2004	197	0.55	0.00	0.45	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
2005	117	0.98	0.00	0.02	1.00	0.50	0.50	0.00	1.00	0.00	0.00	1.00
Annual Growth rate (%)												
2000–2005	6.6%				0.0%				0.0%			
1995–2005	7.8%				0.0%				0.0%			
1972–2005	4.7%				0.0%				0.0%			

Note: The estimates for Northern Territory are preliminary.

Source: BTRE estimates.

Table A.11: Origin/destination for total interstate rail freight, million tonne kilometres, 2005–06

State/ Territory	*NSW*	*VIC*	*QLD*	*SA*	*WA*	*ACT*	*NT*
NSW	–	1 776	1 000	800	650	0	4
VIC	568	–	751	1 504	956	0	14
QLD	500	576	–	72	100	0	0
SA	256	1 250	150	–	800	0	423
WA	521	650	200	650	–	0	0
ACT	0	0	0	0	0	–	0
NT	1	3	0	261	0	0	–

Note: Row labels indicate origin States and column labels indicate the destination States for freight. The entries of '0' in the Table mean that volumes are small and less than one kilotonne.

Source: BTRE estimates informed by data provided by: Queensland Rail, RailCorp, Australian Rail Track Corporation, WestNet, Pacific National and SCT Logistics.

Table A.12: Origin/destination for total intercity rail freight, million tonne kilometres, 2005–06

Capital city	*Sydney*	*Melbourne*	*Brisbane*	*Adelaide*	*Perth*	*Canberra*	*Darwin*
Sydney	–	490	280	304	494	0	2
Melbourne	378	–	714	1 204	765	0	14
Brisbane	426	576	–	72	100	0	0
Adelaide	154	688	150	–	560	0	246
Perth	452	587	190	638	–	0	0
Canberra	0	0	0	0	0	–	0
Darwin	1	3	0	129	0	0	–

Note: Row labels indicate origin city and column labels indicate the destination city for freight. The entries of '0' in the Table mean that volumes are small and less than one kilotonne.

Source: BTRE estimates informed by data provided by: Queensland Rail, RailCorp, Australian Rail Track Corporation, WestNet, Pacific National and SCT Logistics.

Table A.13: Selected significant railway events, 1993–2006

Date	*Description of event*
July 1991	The Federal Government and the State Governments of Queensland, New South Wales, Victoria and Western Australia agreed that National Rail Corporation would take over from the states the operation of interstate rail services.
April 1993	National Rail began third-party access freight operations on interstate track.
1995	The Port of Brisbane was connected to the standard gauge network.
1995	Traffic on Trans Australia Railway disrupted for six weeks due to flooding.
June 1995	Completion of standardisation of Melbourne–Adelaide broad gauge with new standard gauge line through Geelong and conversion of North Geelong–Cressy–Ararat–Adelaide line to standard gauge.
July 1995	SCT Logistics, an Australian shipping company, commenced first private train service, Melbourne–Perth.
June 1996	TNT (later Toll), a multi-national freight forwarding company, began operating freight trains, Melbourne–Perth.
July 1996	State Rail Authority was split four ways. Rail Access Corporation started managing infrastructure, Rail Services Australia undertook track maintenance, FreightCorp operated freight trains, and residual State Rail Authority operated passenger trains.
July 1996	Inter-governmental Agreement was reached to legislate the terms for national safety and accreditation processes.
October 1996	The first of 120 of National Rail Corporation's new 4000 horse power locomotives entered service.
May 1997	Patrick Corporation commenced land bridging container train service between Port Adelaide and the Port of Melbourne.
October 1997	Great Southern Railway consortium purchased Pax Rail, the Australian National Railways' passenger business.
November 1997	Australian Transport Network consortium purchased Tasrail, the Australian National Railways' Tasmanian operations.
November 1997	Genesee & Wyoming purchased SA Rail, the Australian National Railways' SA intrastate network.
July 1998	ARTC commenced management of Australian National's infrastructure (assets of Australian National's Track Access Unit) and took up a lease of Victorian interstate rail network from the South Australia border through Melbourne to Albury.
February 1999	V/Line freight business was sold, and intrastate country track leased for 45 years, to RailAmerica, trading as Freight Australia.
Mid–1999	Victorian passenger rail and tram services were franchised to National Express, Connex and Yarra Trams.
December 1999	There was a passenger train collision at Glenbrook, New South Wales.
December 2000	Consortium of Wesfarmers and Genesee & Wyoming purchased Westrail.
January 2002	Consortium of Patrick and Toll purchased National Rail and FreightCorp, forming Pacific National.
December 2002	National Express stopped providing services specified in V/Line Passenger and Melbourne passenger contracts.
January 2003	There was a passenger train derailment at Waterfall, NSW.
January 2004	Darwin line opened and first freight train arrived in Darwin.
February 2004	Pacific National purchased Australian Transport Network-Tasrail.
May 2004	In the May budget, under Auslink 1, the Australian Government made a $540 million one off grant to the ARTC for track straightening and other works to improve the performance and capacity of the Sydney to Brisbane rail corridor.
June 2004	Release of the Auslink White Paper describing the Australian Government's move towards more cooperative transport planning and funding by federal, state and territory jurisdictions.
September 2004	Pacific National purchased Freight Australia.
September 2004	ARTC commenced 60 year lease of interstate rail network in New South Wales and a management contract of country rail network.
September 2005	Pacific National announced that it intended to withdraw most of its rail freight services in Tasmania, leaving only two bulk haul operations.
February 2006	In a complex sale, Queensland Rail purchased ARG's WA freight business; Babcock & Brown purchased ARG's WestNet infrastructure; and Genesee & Wyoming took full control of ARG's SA operations.
March 2006	Australian Competition and Consumer Commission (ACCC) approved Toll takeover of Patrick.

Source: Compiled by BTRE.

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ARA	Australasian Railway Association
ARG	Australian Railroad Group
ARTC	Australian Rail Track Corporation
ATC	Australian Transport Council
BTE	Bureau of Transport Economics
FDF	A name of private company that provides freight data services
GTK	Gross tonne kilometre
NTK	Net tonne kilometre
SCOT	Standing committee on transport
TNT	A name of a multinational freight forwarding company
TQI	Track quality index

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