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Bureau of Infrastructure, Transport and Regional Economics

AUSTRALASIAN RAILWAY ASSOCIATION INC

STATISTICAL REPORT

Rail

Australian rail freight performance indicators 2007–08

Bureau of Infrastructure, Transport and Regional Economics
and
Australasian Railway Association Inc.

Australian rail freight performance indicators 2007–08

Statistical Report

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Foreword

This statistical report is the third in this series and is a result of collaboration between the Australasian Railway Association (ARA) and the Bureau of Infrastructure, Transport and Regional Economics (BITRE).

The objective of this report is to provide an overview of railway infrastructure standards, interstate track usage and the freight task performed.

We acknowledge the assistance of ARA members with providing data about the Australian railway industry's performance. Members of ARA include all rail operators, private and government, track owners and managers and manufacturers of rolling-stock and components in Australasia. We also acknowledge the assistance of Emma Pettiford and Brett Hughes of the ARA with the project.

The BITRE report team comprised Peter Kain, Rob Bolin, Anatoli Lightfoot, Godfrey Lubulwa, David Gargett and Afzal Hossain.

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February 2010

Key results

- In 2007–08, the extensive infrastructure work on the North–South corridor was still in its early stages, with scheduled intermodal transit times remaining above Australian Transport Council (ATC) target times.
- The most intensive usage of the interstate network by intermodal trains is on the Melbourne–Adelaide line segment. The number of intermodal trains on the East–West corridor rose but fell on the North–South corridor.
- The ATC targets on double-stacking of containers have been achieved, with the completion of investment between Parkes and Crystal Brook that increased clearances.
- There has been considerable investment in upgrading track infrastructure, especially on the North–South corridor, reflected in the improved Track Quality Index measures.
- In 2007–08, the stopping time for intermodal trains was around 20 per cent of the total scheduled transit time. The stopping time was lower on the Sydney–Melbourne line segment, where there is a higher proportion of double-trackage. As the infrastructure investments are completed during 2009–10, train timetables will be revised to incorporate the higher track quality that will reduce the number and duration of operational stops made to enable trains to pass each other.
- Of the rail freight task that has been recorded, around 86 per cent of the net tonne kilometres are intrastate and this is dominated by bulk freight.
- The bulk freight movements are relatively modest in the interstate freight task but dominate the intrastate rail freight task (inevitably, due to the Pilbara iron ore exports and the eastern states' coal export).
- The principal bulk rail tonnages are from New South Wales to Queensland, Victoria and South Australia and from South Australia to New South Wales.
- The principal intermodal rail tonnages are on the East–West corridor, especially between Victoria and Western Australia. The other strong freight flow on that corridor is between Melbourne and Adelaide, with international goods to or from South Australia being shifted overland through the Port of Melbourne.
- The strength of rail's performance on the East–West corridor is reflected in rail's high share of intermodal traffic relative to road and coastal shipping, with 62 per cent of the road/rail/coastal shipping traffic.

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Introduction

This statistical report provides insights into the quality and usage of interstate trains and track. Where the Australian Transport Council (ATC) has set target measures of performance, those benchmarks are presented alongside actual performance. Since its formation in 1998, the Australian Rail Track Corporation has embarked on a large-scale investment in infrastructure enhancements; this programme has escalated in recent years, especially on the track between Brisbane and Melbourne. The consequence of that upgrading is that, over time, the indicators should report performance that increasingly aligns with the ATC's targets.

The data reported are in the three broad classifications of train, track and market indicators. The train and track indicators are presented for the North–South (Brisbane–Melbourne), East–West (Sydney/Melbourne–Perth) and Central (Tarcoola–Darwin) corridors. The market indicators show freight task data for the entire railway network and, for the intermodal freight task, comparisons with other modes.

The types of indicators presented are as follows:

- **Transit time**. Train transit time indicators report on scheduled average transit times and their actual delivered average transit times. These indicators give insight into train performance and competitiveness relative to other modes.
- **Train service frequency**. Indicators showing the number of weekly intermodal and steel trains operating between cities and across line segments are provided.
- **Train capacity**. Indicators are presented that show the maximum permitted train capacity (length and height) across the interstate network.
- **Track standards**. Track quality indicators are presented for the North–South and East–West corridors.
- **Train flow patterns**. Freight timetables have been analysed to identify the pattern of freight train movements across the corridors. There are indicators showing average train speeds, the number of stops and the duration of stops.
- **Infrastructure price indicator**. An infrastructure price indicator is presented for selected interstate line segments. Infrastructure enhancements can enable longer, heavier and faster trains. Where train operators are in a position to exploit those improvements, it can reduce the effective infrastructure price per tonne. This indicator therefore is a composite measure of infrastructure improvements and the resulting train operator uptake of the improved infrastructure capabilities.
- **Freight task performed**. A series of indicators are presented for the Australian railway network, showing the railway freight task performed and its share of the task relative to other modes.

The indicators are chosen on the basis of their ability to convey how the network is performing and patterns of usage, subject to data collection processes. Due to lack of requisite data, two indicators from the 2006–07 report are no longer reported—the total interstate freight task by line segment; and the intercapital city line segment share in the total interstate rail task. However, four new indicators have been introduced—principal freight flows between jurisdictions, by direction for intermodal and for bulk freight; and principal freight flows within jurisdictions, for intermodal and for bulk freight.

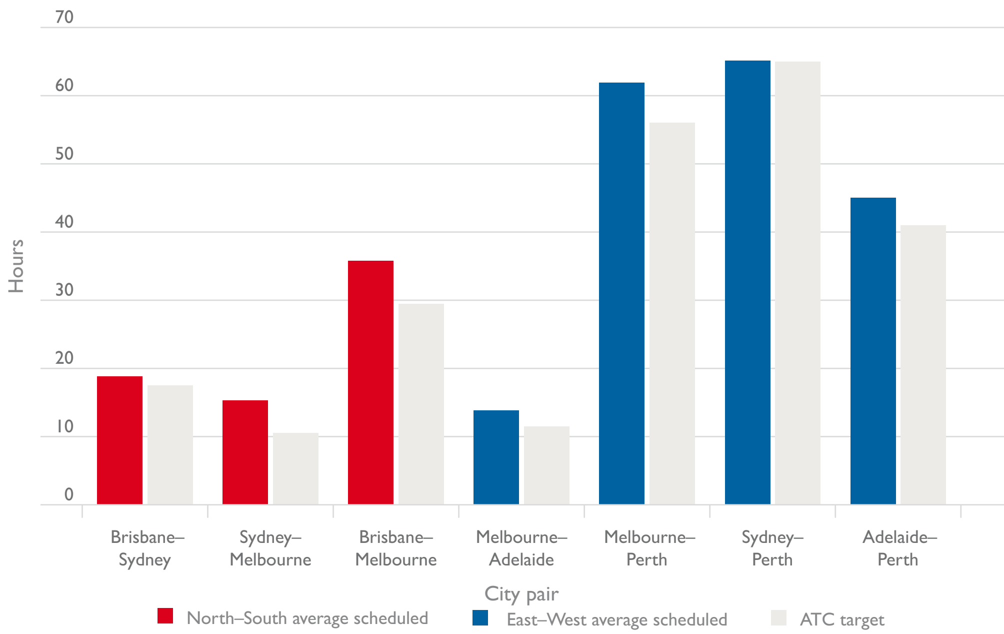
Time series data on the indicators covered in this report are available as Excel spreadsheets on the BITRE website.

TRAIN INDICATORS

Scheduled intermodal transit time

The scheduled intermodal transit time indicator is the average timetabled transit time of intermodal trains that operated in the last week of June 2008. Figure 1 presents the average scheduled transit time for trains on seven city pairs and the Australian Transport Council (ATC) target transit time for those pairs. These data are detailed in Table A1.

F1 Average scheduled transit times relative to ATC transit time targets, by service, June 2008



Note: The ATC target is calculated as 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. Scheduled trains were omitted where the train operator reserved, but generally had not used, specific train paths during the two-month period up to the end of June 2008.

Source: BITRE calculated average scheduled transit times from infrastructure managers' working timetables that were current for the last week of June 2008.

As presented in Figure 1, scheduled transit times continue to be longer than the ATC targets. The East–West corridor was closest to ATC's target transit time, with Sydney–Perth trains being 0.3 percent longer than the target. Adelaide–Perth services being 10.2 per cent longer than the target, and Melbourne–Adelaide being 19.7 per cent longer than the target. On the North–South corridor, transit time between Sydney and Melbourne averaged 45.8 per cent longer than the target transit time.

Box 1 Defining 'intermodal' and other trains

This report provides statistics for 'intermodal', 'steel' and 'bulk' freight movements. The definition used here for intermodal freight is 'market-based'. Defining the traffic in terms of the market served (such as relatively high priority goods for which road freight is a strong competing mode) is argued to be clearer than when defined in terms of the type of goods (notably, non-bulk) conveyed or the type of wagon used. In particular, where data for 'intermodal' trains is reported, such trains are defined as trains with axle loads up to and including 21 tonnes and a maximum speed of 115 kph. In terms of ARTC infrastructure charges, this categorisation consists of the 'Express Freight' trains (with maximum train speed of 115 kph and axle load up to 20 tonnes) and 'Superfreighter' trains (with maximum train speed of 110 kph and axle load up to 21 tonnes).

These specifications reflect the competitive freight market for the conveyed traffic. Thus, the nature of the wagons themselves may not reflect the traditional perception of 'intermodal' as meaning 'more than one mode'; and may not reflect a situation where the goods can be readily transferred across modes.

As defined here, the 'intermodal' traffic can consist of wagons conveying containers on flat (or well) wagons as well as by louvre wagons. Further, the goods may be bulk goods (such as grains or hay) as well as non-bulk (such as palletised tinned dog food). However, the type of train operated is unambiguous. The defining feature of an 'intermodal' train is the infrastructure charge rather than the way the goods are conveyed. 'Container' can be used to define the 'intermodal' activity but it does not convey the market within which rail is competing. For instance, containers can be used to classify goods movements but the goods may include steel, grain or minerals.

Steel movements occur on timetable-defined 'steel' trains, which ARTC defines as 'Regular Freight' trains. It is possible, however, for such trains to convey other, low-priority, goods.

Finally, bulk-freight activity is also reported. Measuring 'bulk' freight can be ambiguous because the goods traditionally classified as bulk may be conveyed on intermodal trains (in louvre wagons or containers) and, on the definition used here, will be classified as 'intermodal'. Bulk freight can also be conveyed by containerised trains; when compiling data presented in this report, train operators have classified containerised bulk goods trains (such as ores, grains, steel and mineral sands) as 'bulk'.

Intermodal train, with double-stacked containers

Source: Photograph courtesy of Freightlink

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

- line speed
- the number of stops en route
- whether the train transits through an intermediate city (such as Sydney, on the Brisbane–Melbourne line segment)
- the number of other trains on the line segment, especially when the route has single track
- the types of other trains on the track (such as express, steel and passenger trains)
- the route used
- operator-dependent factors, such as, the time spent loading and unloading in intermediate cities.

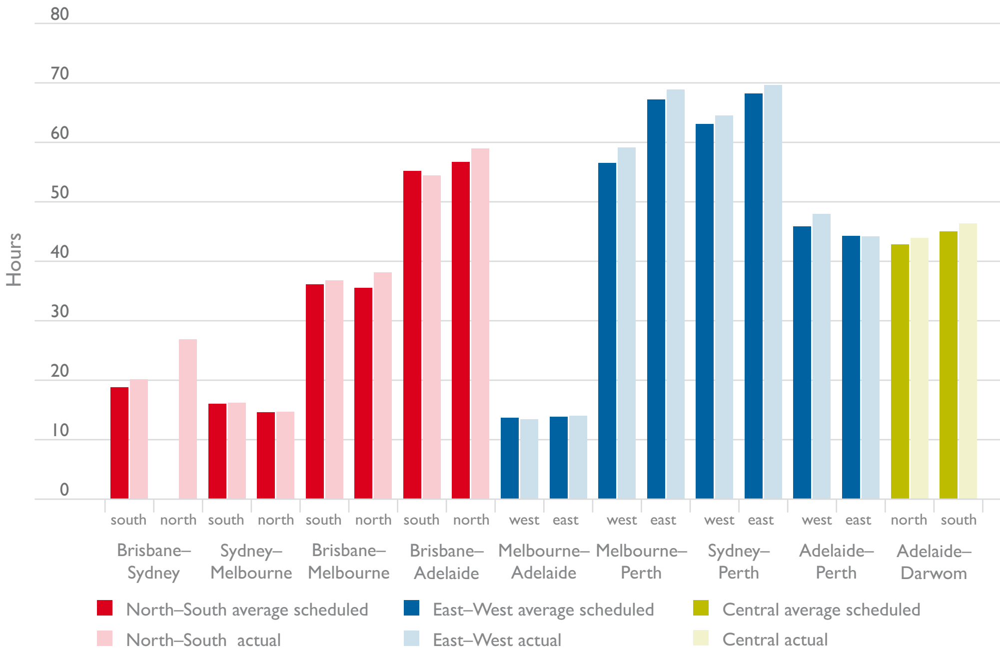
A number of these parameters will vary over the next few years as infrastructure enhancements are completed. Work is underway to enhance track and capacity on the interstate network and will enable significant reductions in transit time during 2009–10. As a consequence, the working timetables in place in June 2008 reflect few of the benefits that will flow from the infrastructure manager investment strategies.

Actual intermodal transit time

This indicator measures the annual average actual transit time of intermodal trains by line segment. The analysis uses infrastructure managers' data, for a 12-month period, of recorded train arrival and departure times at city terminals. Figure 2 and Table A1 present the results of the analysis for city-pair services on the North–South, East–West and Central corridors.

For most city-pair services, train transit time was close to, or performed better than, schedules.

F2 Average scheduled and actual transit times, by service, 2007–08



Note: Trains denoted as 'south' are southbound trains (such as Brisbane to Sydney) and 'north' refers to northbound trains; similarly, trains denoted as 'west' are westbound and 'east' train are eastbound.

Average actual transit times have been calculated by matching actual departure times from origin terminals and actual arrival times at destination terminals for each train that operated over the period 2007–08. Average scheduled transit times have been calculated from infrastructure managers' working timetables current in the last week of June 2008. Train services that may have operated during 2007–08 may not be scheduled to operate in June 2008. For example, with reference to the figure, there were Sydney to Brisbane services during 2007–08 but there were no scheduled services in the June 2008 working timetable.

Source: BITRE calculations from infrastructure managers' working timetables and their records of actual train arrival and departure.

Train service frequency

In this section, a number of indicators of train service frequency are presented.

Intermodal train services by city pair

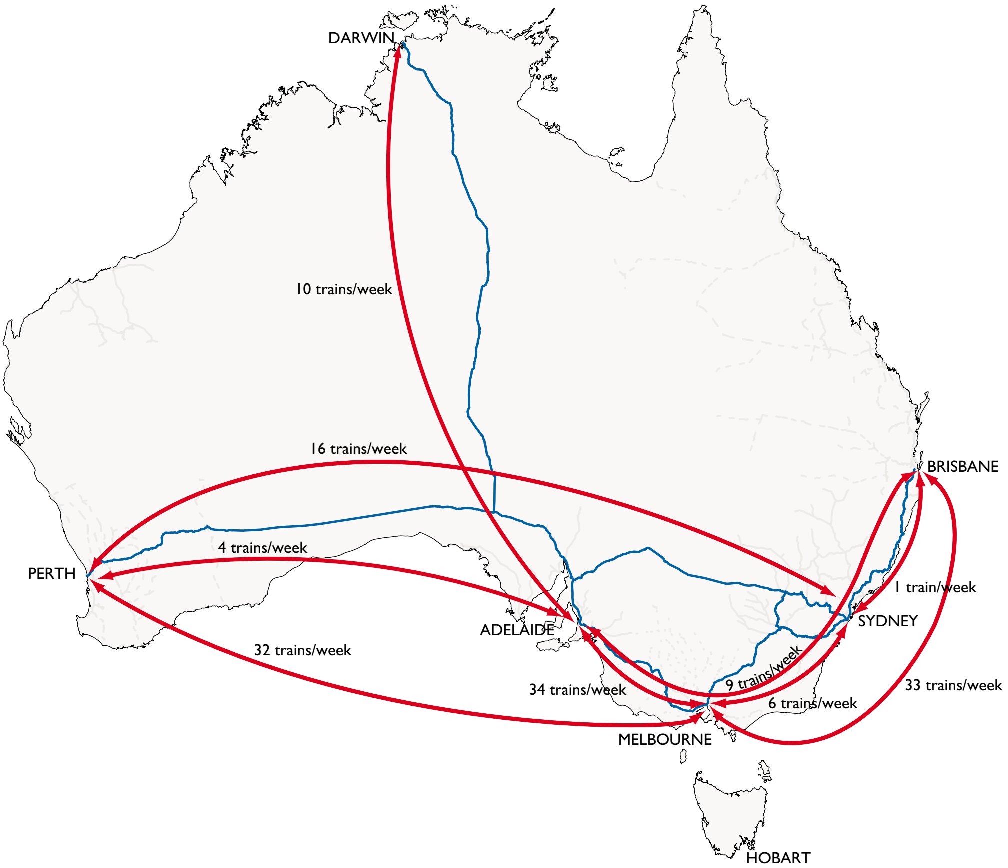
This indicator reports counts of scheduled weekly intermodal trains that originated and terminated in the given city pairs. These counts are summarised in Figure 3. Origin and destination have been defined by the formal working timetable definition even though much of the goods may be conveyed onwards to a more distant city. For instance, QR offers a Melbourne–Perth service; this service comprises conveying goods by QR's Melbourne–Adelaide service and by its separately identified Adelaide–Perth service. In a contrary example, goods conveyed between Brisbane and Sydney (or between Sydney and Melbourne) are almost invariably conveyed on Brisbane–Melbourne trains.

In recent years, the trend has been for intermodal train service provision on the North–South corridor to travel the entire length of a corridor rather than between adjacent cities. For instance, Brisbane–Adelaide and Brisbane–Melbourne trains have largely supplanted Sydney–Melbourne trains for operations between those latter two cities.

As presented in Figure 3, in June 2008 there was only 1 intermodal train scheduled per week with an origin/destination in Brisbane and Sydney; in June 2006 there were 9 trains. Similarly, in June 2008 there were only 6 intermodal trains per week with origins/destinations in Sydney and Melbourne compared with 10 trains in June 2006. By contrast, there were 33 trains per week with origins/destinations in Brisbane and Melbourne in June 2008 and 37 trains in June 2006.

The most intensive intermodal service was provided between East–West corridor cities. In particular, there were 34 trains per week originating/terminating in Melbourne–Adelaide, the same frequency as June 2006. There were an increased number of trains travelling between the East Coast and Perth, with 16 trains per week Sydney–Perth (unchanged from June 2006); 32 per week Melbourne–Perth (28 in June 2006); 7 per week Adelaide–Perth (none in June 2006); and 4 per week Parkes–Perth (none in June 2006).

F3 Number of weekly intercity intermodal services, by city-to-city pair, June 2008



Note: The number of intermodal services is taken from infrastructure managers' working timetables current in the last week of June 2008. Trains are excluded when they are listed in those timetables, but normally did not operate in June 2008.

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

Weekly trains by line segment

Interstate scheduled train movements on the national railway network are dominated by intercity intermodal and steel trains. Depending on the pattern of grain production, there are also interstate bulk grain movements between states. Much of the remaining freight task on the interstate network is intrastate bulk movements.

The number of weekly interstate intermodal and steel trains on each line segment is therefore one measure of the intensity of long-distance usage of the interstate network. The weekly numbers of intermodal and steel trains are presented in Figure 4 and Table A3. As the data illustrate, the most intensive usage of the network by interstate trains is between Melbourne and Adelaide, followed closely by the Crystal Brook–Port Augusta (Spencer Junction) segment. These line segments are almost entirely single track. The relatively busy line segment between

Sydney and Cootamundra is double-track but it also carries interstate passenger trains and a relatively high amount of intrastate passenger and bulk traffic.

There are contrasting trends in the number of interstate trains on the North–South and East–West corridors. The number of intermodal trains between Brisbane and Sydney has fallen between June 2006 and June 2008, from 50 trains per week to 43 trains per week. South of Sydney, the number of weekly intermodal trains fell during the same period, from 61 trains to 59 trains. By contrast, on the East–West corridor, the number of intermodal trains has risen. Across the Nullarbor, there were 44 intermodal trains per week in June 2006 compared with 59 in June 2008. This growth reflects, in particular, SCT's introduction of 4 Parkes–Perth trains per week and QR's 8 Adelaide–Perth trains per week.

F4 Number of weekly intermodal and steel trains, by line segment, June 2008

Source: BITRE estimates based on data provided by infrastructure managers: ARTC, FreightLink, QR Network Access, RailCorp and WestNet.

TRACK INDICATORS

The track indicators presented in this section provide a profile of infrastructure quality and the complementary train flow patterns.

Train length

An important parameter that can constrain track capacity is the permitted train length; this can impact on train costs because, in general, it is more efficient (and cost competitive) to operate long trains than short trains. The alignment of the track (notably, steepness of the gradient) is one parameter that can constrain the train length. An important parameter for Australia's mostly-single track is the length of the passing loops. Since the mid-1990s, in particular, the infrastructure managers have invested in longer passing loops across the interstate network. There has been considerable capacity expansion, for instance with the Melbourne–Adelaide maximum allowable train lengths rising from 900 metres in 1997, to 1500 metres during 1999–2000. Ongoing investment is being undertaken to reach the ATC targets of 1500 metre train lengths on the North–South corridor and Melbourne–Adelaide; and 1800 metre train lengths on the East–West corridor west of Adelaide.

Table A4 and Figure 5 provide a summary of permitted train lengths on the interstate network as at June 2008 and are described in terms of 'unrestricted' and 'restricted' lengths. 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 length is shorter than the prevailing standard loop length on the line segment. The 'restricted' train length is the maximum train length permitted on the line segment. (Under restricted access terms, trains that exceed the prevailing passing loop length can be operated by ensuring that the trains that have to be passed can be accommodated within the prevailing loop length.)

In 2007–08, the Kalgoorlie–Perth section of the East–West corridor was the one part of the East–West corridor that had an unrestricted train length of 1420 metres, which did not meet the ATC 1800 metre target.

On the North–South corridor the ATC target is 1500 metres. Between Brisbane (Acacia Ridge) and the NSW border, the unrestricted train length in 2007–08 was 1200 and the restricted train length was 1500 metres. South of the Queensland border, the line met the ATC target train length of 1500 metres.

F5 Unrestricted (and restricted) train lengths, by line segment, June 2008

Source: Australian Rail Track Corporation, FreightLink, QR Network Access, RailCorp and WestNet.

Double-stacking capability

An important railway capacity parameter is the loading outline; these are the vertical and horizontal clearance dimensions around the track. Unit costs of moving freight may be reduced if greater payload can be carried on a wagon; this payload is subject to axle-load limits and the loading outline. If the loading outline is sufficiently large and the payload is not excessive, it is possible to double-stack one container on top of another container. This may lead to considerable reductions in unit freight costs.

Table A4 and Figure 6 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 be no higher than 6.5 metres above the top of the rail.

The ATC target on clearances on the East–West corridor line segments has now been met, following ARTC's work on increasing clearances between Parkes and Crystal Brook. This clearance now enables double-stacking between Parkes/Adelaide and Perth.

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 program 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.

The ATC has not set targets for the Central corridor. However, the line accepts double-stacked containers and road freight vehicles (for the transport of oil) piggybacked on rail flat wagons.

F6 Double-stacking capability, by line segment, June 2008

Source: ARTC, FreightLink, QR Network Access, RailCorp and WestNet.

Track quality

The maintenance and standards of railway infrastructure are important to the operating performance of trains. The permitted track speed and the smoothness of the ride of the wagons are strongly influenced by the quality of infrastructure, the maintenance regime and the underlying economic life of the infrastructure. Track quality is therefore an important parameter that shapes how the railway infrastructure can be used.

The operational and climatic environments act to degrade the track infrastructure; maintenance and, ultimately, renewal activities are used to offset the impact of these sources of deterioration. 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.

Investment has been undertaken to upgrade the track infrastructure. Since its formation, the ARTC has invested heavily in raising the standards on the East–West corridor; this work continues. More recently, there has been extensive track renewal across virtually all the North–South corridor. In particular, near-life-expired timber sleepers have been replaced with concrete sleepers on the North–South corridor and the Cootamundra–Parkes line. These enhancements will lead to a major improvement in track quality and, thus, train performance.

Figure 7 to Figure 10 illustrate engineers' physical measures of average track condition by line segment. These indicators use a composite 'track quality index' (TQI). The nature of the composition of the index varies between infrastructure managers, reflecting both philosophical differences and different operational environments across the network. From 2007–08, ARTC has standardised the TQI methodology for the infrastructure it now manages—this report provides revised estimates for previous years. The explanatory notes set out a detailed description of each TQI.

While the TQI definitions differ across managers, the general principle in reading the TQI is identical: the lower the index value, the better is the track quality. However, because of the different definitions, the reader should not use index numbers to compare track conditions across line segments managed by different infrastructure managers. Nonetheless, it is valid to observe the relative strength of changes in TQI. For this reason, vertical axes on the charts have been made consistent, with the same minimum and maximum values on each chart.

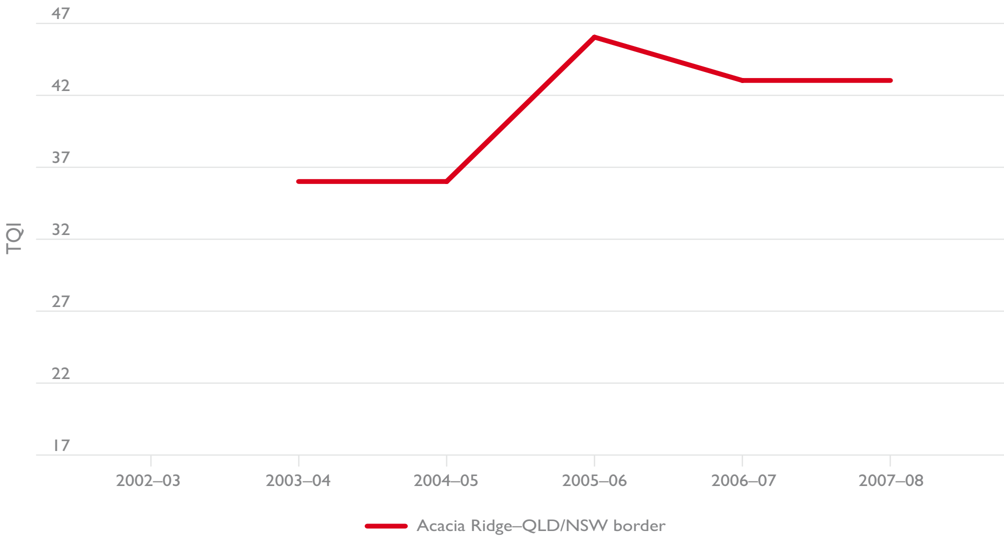
The charts are indicative of trends in track condition for a given line segment. In normal, well-managed operating conditions, the track condition should not deteriorate appreciably between one year and the next. Thus, the longer the time series the better for monitoring track performance in typical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

Over the six year period 2002–03 to 2007–08, the TQI values for most of the line segments have generally been trending down, that is, that track quality has been improving. Considerable investment in infrastructure, headlined by the introduction of concrete sleepers, will lead to this trend continuing.

Track upgrading on ARTC's interstate network

Source: Photograph courtesy of ARTC.

F7 Track Quality Index values on the North–South corridor—QR's track

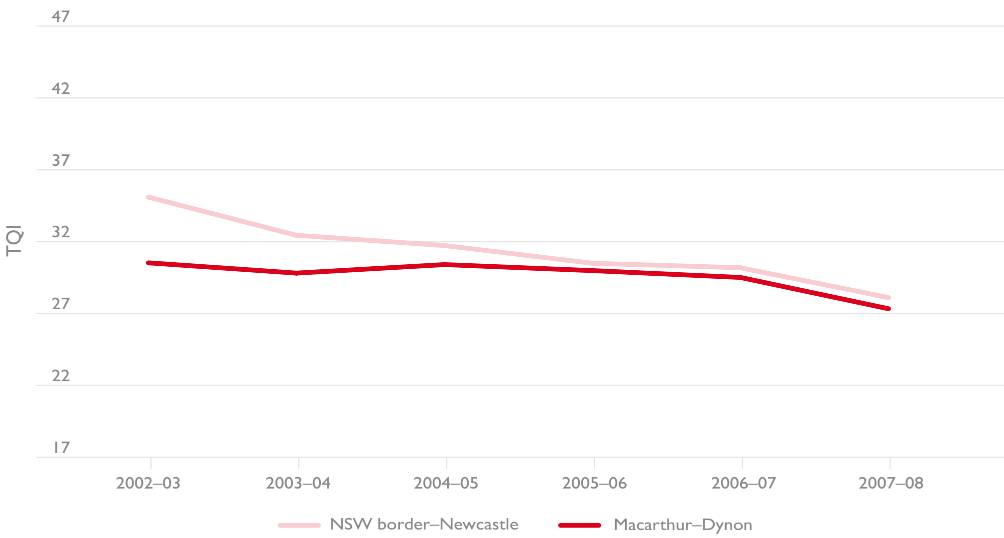


Notes:

1. The charts should not be used to compare track conditions across line segments managed by different infrastructure managers. This is because track quality is measured and reported differently across the network, and reflects different infrastructure and operational environments.
2. The lower the index value, the better the condition of the track.

Source: QR Network Access.

F8 Track quality index values on the North–South corridor—ARTC's track

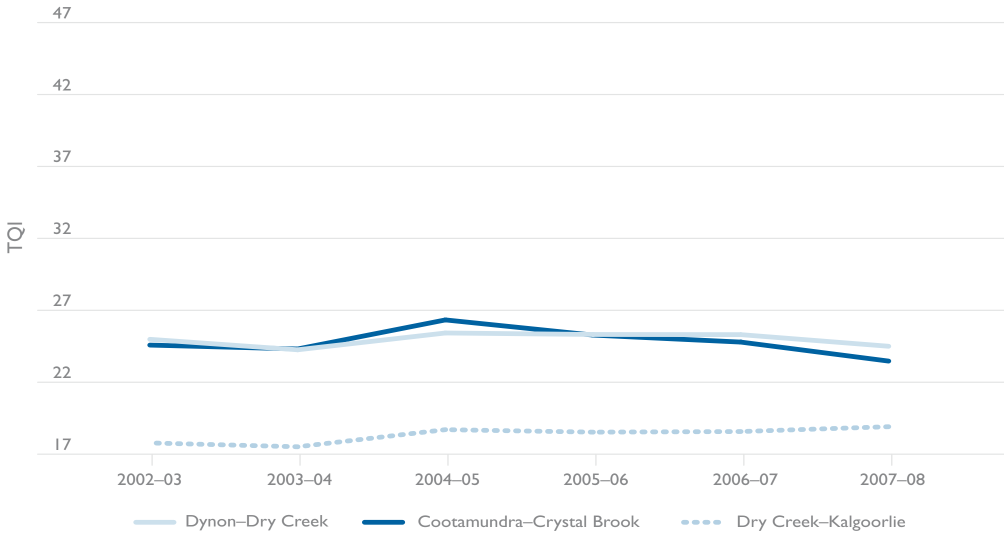


Notes:

1. The charts should not be used to compare track conditions across line segments managed by different infrastructure managers. This is because track quality is measured and reported differently across the network, and reflects different infrastructure and operational environments.
2. The lower the index value, the better the condition of the track.

Source: ARTC.

F9 Track quality index values on the East–West corridor—ARTC's track

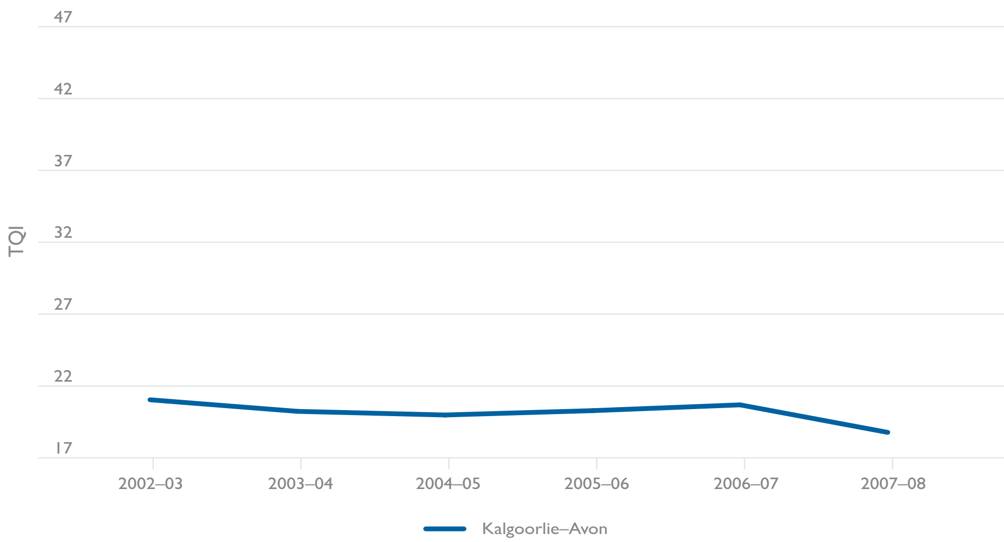


Notes:

1. The charts should not be used to compare track conditions across line segments managed by different infrastructure managers. This is because track quality is measured and reported differently across the network, and reflects different infrastructure and operational environments.
2. The lower the index value, the better the condition of the track.

Source: ARTC.

F10 Track quality index values on the East–West corridor—WestNet's track



Notes:

1. The charts should not be used to compare track conditions across line segments managed by different infrastructure managers. This is because track quality is measured and reported differently across the network, and reflects different infrastructure and operational environments.
2. The lower the index value, the better the condition of the track.

Source: WestNet.

Train flow patterns

Train flow indicators provide a profile of the unimpeded flow of trains across the network. The average train speed between two cities is a function of infrastructure parameters such as the prevailing line speed and interactions with other trains (including signalling); revenue-earning activities such as loading and unloading goods; and operational reasons such as changing crews and refuelling. The flows are being enhanced by infrastructure investment and renewal, such as new or improved signalling, additional long passing loops and passing lanes.

Table A2 summarises three related indicators of train flow for the primary line segments:

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

These indicators are now discussed.

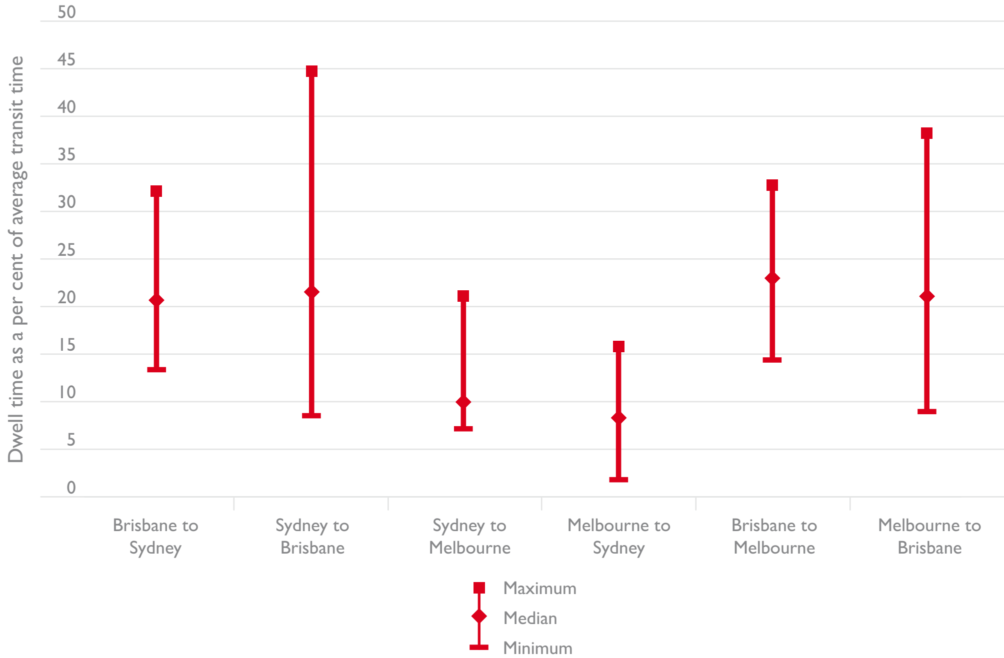
Dwell time

The dwell time indicator measures the scheduled train transit time that is spent 'dwelling' (stationary) in railway yards and passing loops. Reasons for this dwell include waiting for other trains to pass or overtake, attaching or detaching wagons, changing train crews or refuelling. For such reasons, dwell time will never be completely eliminated. Further details on this indicator are provided in the explanatory notes.

Figure 11 and Table A2 present calculations of dwell time for intermodal trains on the North–South corridor. The calculations come from an analysis of the working freight timetables current at the end of June 2008. Figure 11 shows the minimum, median and maximum dwell time relative to average scheduled transit time, for all intermodal trains on selected line segments. For instance, on Brisbane to Sydney trains, the dwell time ranged from 13.8 to 32.3 per cent of total scheduled transit time while the median was 20.9 per cent.

Some reductions in dwell times were progressively available during 2007–08 as a result of the upgrading of signalling equipment on track around Moss Vale and between Acacia Ridge and Casino. The investments introduced Centralised Train Control (CTC), which removed the need for trains to stop at passing loops if the track ahead was clear. Reductions in dwell time will be achievable on the North–South corridor as new passing loops and passing lanes (short sections of double-track) are commissioned and working timetables are revised to reflect the additional capacity.

F11 Intermodal train scheduled dwell times on North–South corridor, as a percentage of scheduled transit times, June 2008

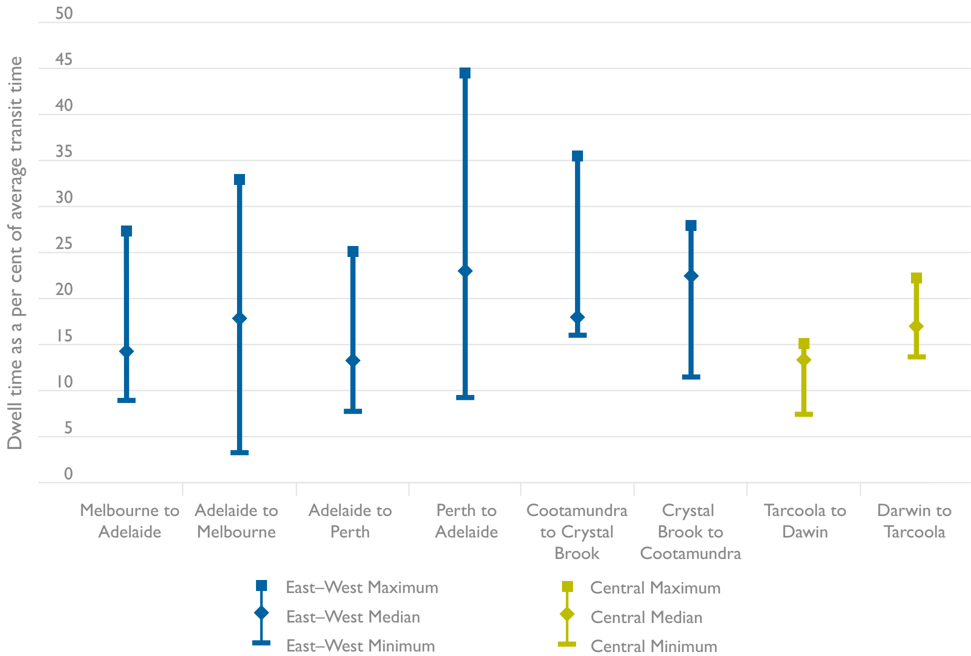


Source: BITRE calculations from working timetables provided by infrastructure managers: QR Network Access, ARTC and RailCorp.

Figure 12 and Table A2 present the results of the analysis of dwell time on the East–West and Central corridors in June 2008, and shows the following:

- Westbound trains averaged around 15 per cent of their time stationary.
- Eastbound trains averaged around 20 per cent of their time stationary.
- The proportions of dwell time per train were higher on eastbound trains than on westbound trains.
- Dwell time on the Central corridor was around 15 per cent.

F12 Intermodal train scheduled dwell times on East–West and Central corridors, as a percentage of scheduled transit times, June 2008



Source: BITRE calculations from working timetables provided by infrastructure managers: ARTC, FreightLink and WestNet.

Table A2 also presents the dwell time per stop. When trackage is heavily used, passing loops are closely spaced so as to reduce the amount of time that a train has to wait for a train coming in the opposite direction. For this reason, the average dwell time per stop on the North–South corridor is around 20 to 25 minutes. With increases in the proportion of passing loops, passing lanes and double track, the dwell time per stop should decline. Trackage on the Central corridor is relatively lightly used, however, so while the percentage dwell time is relatively low, the dwell time per stop is relatively high. That is, while the Darwin trains do not often have to pass other trains, when they do stop they incur a long dwell time.

Number of stops

The infrastructure investments that are underway will reduce the number of stops that trains need to make. The requirement for trains to stop leads to trains losing time and energy efficiencies. Signalling investments and line capacity enhancements will reduce the number of times that trains will be required to stop for train control reasons. Table A2 presents the average number of intermodal train stops for each line segment.

Average speed

Average train speed is an overall measure of physical railway performance—both train and infrastructure. As with other train pattern 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. Prevailing speeds reflect a range of infrastructure-based factors, including the number of stops (especially when there are intermediate cities such as Sydney to traverse), track alignment and condition.

Table A2 shows the average scheduled speed for intermodal trains on seven line segments. The highest average speed for freight trains is where trains travel from Melbourne to Sydney; here the average scheduled speed was 68 km/h in June 2008. The slowest average scheduled speeds were on the Brisbane–Sydney leg, with an average 50 km/h for southbound trains and 49 km/h for northbound trains. These average speeds rise as infrastructure enhancements are reflected in the working timetables.

MARKET INDICATORS

This section presents two key indicators of railway performance in the market. An indicator of access revenue yield is presented. The indicator is a composite measure that shows the impact of infrastructure improvements on ARTC's network and the resulting train operator uptake of the improved infrastructure capabilities. The second set of indicators present the intermodal and bulk rail freight task performed.

Access revenue yield indicator

Access revenue is the infrastructure manager's income derived from train operators using the railway. ARTC's access charge has two components. The first component is a flagfall charge, which is a reservation charge for booking a train path on a given line segment; the charge is invariant with tonnage. The second component is a variable charge, which varies directly with the train operator's gross tonne kilometres. As tonnage on the train rises, the average access charge per tonne will decline—the fixed reservation charge is spread over more tonnes, reducing the effective access charge rate.

The access charge provides an incentive for train operators to operate longer trains. In principle, operating longer trains enables infrastructure managers to achieve greater tonnage throughput than when shorter trains are operated as there is a limit to the number of trains that can operate over the network. However, to have longer trains requires infrastructure managers to provide trackage that can deal with the length. In recent years, interstate network infrastructure has been expanded to take longer trains; if train operators respond to the access charging structure, they run longer trains and effective freight costs per tonne will fall.

The effective access charge per tonne can therefore provide a useful indicator of both infrastructure capability and train operator uptake of that capability. The infrastructure manager's access revenue yield is a measure of price change, as well as change in the utilisation of available capacity by the operator. Movements in this composite indicator may arise through changes in:

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

This indicator changes when price changes or infrastructure changes permit operators to increase train length or axle loads. For example, for a constant two-part access charge, if the operator runs heavier trains then access revenue yield (per tonne) goes down, and if the operator runs lighter trains then access revenue yield (per tonne) goes up.

This report presents results on an index of the maximum access revenue yield for the interstate network managed by ARTC, based on ARTC data and analysis.

This indicator measures the changes (relative to the base year) in the maximum access revenue yield per gross tonne kilometre. Table 1 shows that there were significant differences between segments in 2007–08, compared to the base year, with the variation ranging between 11.2 per cent down and 13.6 per cent up on the base year. This variation was due to a pricing re-alignment in 2007–08 resulting in an approximately 7 per cent weighted increase in price for East–West segments while North–South segments remaining roughly the same as the previous year. The expectation is that once the current investment in infrastructure is completed, longer and heavier trains will be able to run on the North–South segments and the access revenue yield will decline.

T1 Index of real maximum access revenue yield ($/gross tonne km), 2003–04 to 2007–08 (2004–05 = 100)

Line segment		2003–04	2004–05	2005–06	2006–07	2007–08
North–South Corridor	Border Loop–Newcastle		100.00	97.47	95.82	93.50
	Macarthur–Albury		100.00	97.45	95.81	99.11
	Albury–Tottenham	101.26	100.00	98.84	97.16	88.81
East–West Corridor	Melbourne–Adelaide	101.23	100.00	98.84	97.64	99.41
	Adelaide–Kalgoorlie	101.25	100.00	98.85	97.65	108.32
	Cootamundra–Parkes		100.00	97.46	95.82	101.90
	Parkes–Broken Hill		100.00	97.47	95.82	100.87
	Broken Hill–Crystal Brook	101.24	100.00	98.83	97.63	113.62

Notes:

1. Blanks mean no data is available for that period.
2. ARTC commenced managing the following line segments in 2004–05: Border Loop–Newcastle, Macarthur–Albury, Cootamundra–Parkes and Parkes–Broken Hill.

Source: ARTC.

Maximum access revenue yield does not automatically change in response to rail infrastructure enhancements unless train operators utilise those enhancements. If train operators do not utilise enhancements, then the index of maximum access revenue yield 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.

Rail task

Table A6 details the rail freight task, from data provided by above-rail train operators who have provided data or for whom data can be established from published material. These above-rail operators are the predominant operators in Australia. However, the data exclude freight carried by some smaller intrastate above-rail operators. The freight task is measured in terms of tonnes and net-tonne kilometres; Box 2 includes an outline of issues involved in the measurement of the freight task.

The railway freight task in Australia is dominated by bulk freight. The total rail task of the included operators amounted to 197.6 billion net tonne kilometres in 2007–08, of which 25.9 billion net tonne kilometres was intermodal freight and 171.7 billion net tonne kilometres was bulk freight.

Box 2 Measuring net tonnage

The freight task presented in this report use the conventional net tonnage rather than tonnage inclusive of the tare (non-payload) weight of the vehicle.

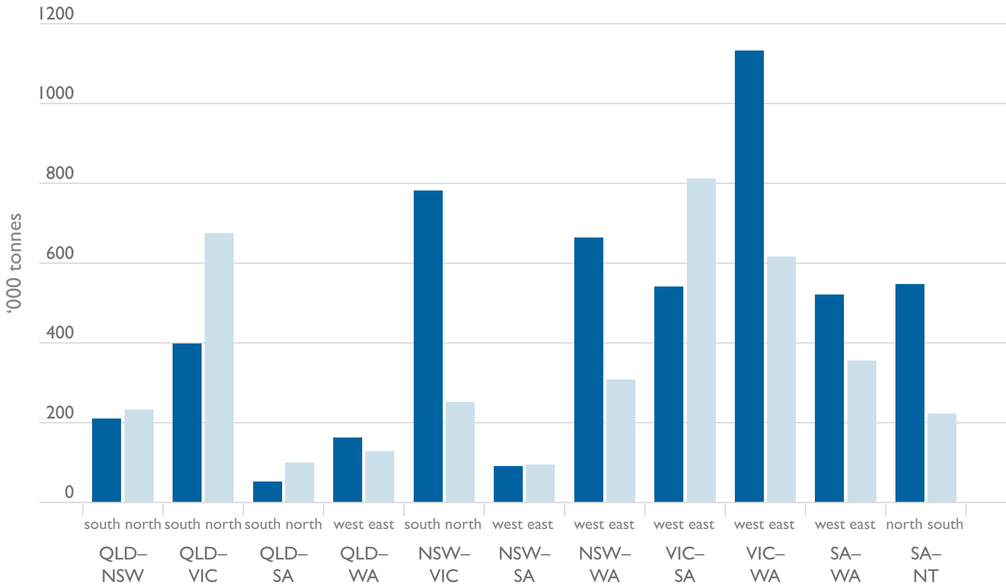
For purposes of consistency with other modes—particularly sea freight—this report also assumes that the tare weight of railed containers is part of the tare weight of the wagon. (By way of example, the tare weight of a container is of the order of 2.4 to 3.9 tonnes for a 9'6" hi-cube container. See BTRE 2006a, pp. 110–111, for further details.) Thus, in this context, the container is not part of the payload, even though train operators may receive revenue from customers (such as freight forwarders) for repositioning empty containers for exporters or re-use by domestic customers.

Excluding the container weight from the payload is appropriate when a train operator is repositioning its own containers. However, there is a case for including the container weight within the payload because the train operator directly generates revenue when repositioning containers for a third-party: this freight task fulfils an important logistical task. This implies that the merits of including the container weight should be made on a case-by-case basis. Given the volumes of freight that would need to be assessed, this would be an impractical approach.

By contrast with Table A6, which shows the rail task by tonne kilometres, Figure 13 presents the principal intermodal rail flows by tonnage. The principal intermodal rail flows are on the East–West corridor, especially between Victoria and Western Australia. The relatively strong flows between Victoria and South Australia reflect the international landbridging traffic between Adelaide and the Port of Melbourne.

The most marked freight flow imbalance is between NSW and Victoria, with the southbound flow being more than 3.5 times the northbound flow between the States. This imbalance may partly reflect the onwards movement of the southbound freight to Tasmania (to the extent that the rail freight flow in the southerly direction is greater than in the northerly direction). It should also be noted that the observed flow imbalance is partly compensated by the strong northbound flow from Victoria to Queensland (primarily in intermodal freight). Box 3 discusses issues of reporting of origins and destinations of goods; some reporting bias may misrepresent the freight flows.

F13 Principal intermodal freight flows between states/territory, by direction, 2007–08



Note: Trains denoted as 'south' are southbound trains (such as Brisbane to Sydney) and 'north' refers to northbound trains; similarly, trains denoted as 'west' are westbound and 'east' train are eastbound.

Source: Principal train operators (Asciano, Freightlink, QR, SCT)

Box 3 Measuring freight origins and destinations

This report presents the intermodal task performed, defined by the origin–destination of the goods. The data used to compile this freight task matrix are provided by train operators. The operators typically use billing information and goods dispatch records to compile their data.

A deficiency in these data sources arises when goods are interlined between operators. The correct origin–destination pair is unlikely to be recorded. For instance, if a wagon is conveyed from Melbourne to Darwin, Pacific National may shift the wagon to Adelaide, where it is interlined to Freightlink's Darwin train. Pacific National's records will show the goods originating in Melbourne and destined for Adelaide while Freightlink will record the goods as originating in Adelaide and being delivered to Darwin.

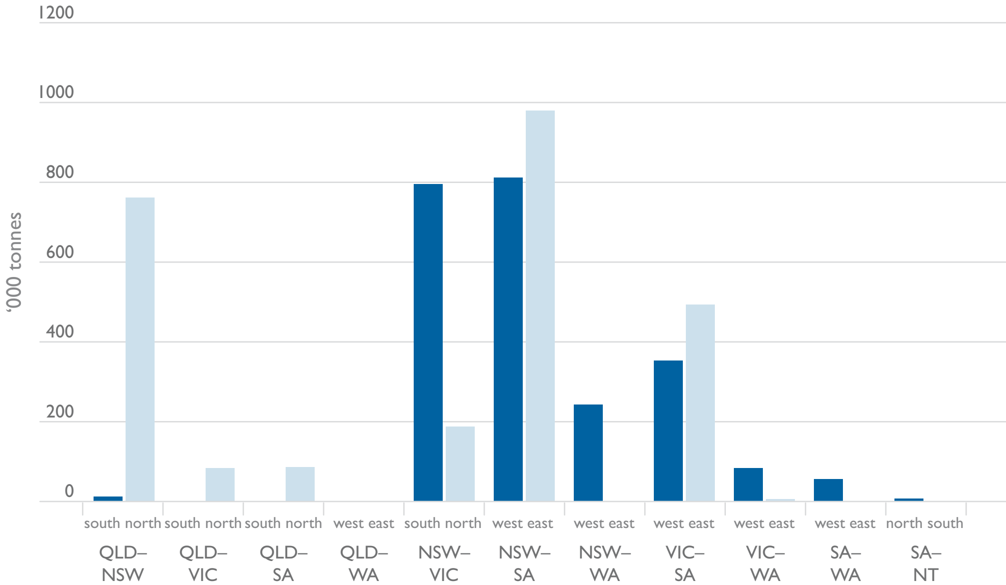
In aggregate, the tonne kilometres recorded by this method will be correct but the attribution of origin and destination may be incorrect. The implication of this data deficiency is that the implied length of reported interstate and intercity freight movement will be less than actually occurs. Also, the attribution to freight of the wrong origin (i.e., not the true origin) or the wrong destination (i.e., not the final destination) is probably not random: it is likely to occur in specific flows when service on a given line segment is undertaken by only one operator. For instance, on the Tarcoola–Darwin line, Freightlink is the only operator so goods originating from eastern states (where Freightlink does not operate its own trains) must necessarily be interlined to Freightlink from a second operator.

A related data deficiency arises when goods are transferred across gauges or trans-shipped. One example is Brisbane. Depending on how traffic from the southern states to north Queensland is handled when it arrives in Brisbane, the origin of the goods may be recorded as Brisbane (intrastate) rather than Victoria or NSW. That is, the freight originating from south of the Queensland border may be understated. Similarly, Tasmanian-bound goods on the mainland are recorded as having a Melbourne (rather than a Tasmanian) destination, from where they are conveyed by coastal shipping. That is, only the last mode (ship) is recorded for the interstate freight task. When those goods are shifted by rail within Tasmania, they will be recorded as being 'intrastate'.

A similar data deficiency may arise if freight moves across more than one division within the firm: if each division has its own billing system, the freight origin–destination pair may be the locations where the goods are transferred between the operating divisions. The consequence is origin–destination misreporting that is akin to when the goods are shifted across independent train operators.

Figure 14 presents the principal bulk rail flows, by tonnage. In 2007–08, the predominant bulk flows were from NSW, to SA, Victoria and Queensland; and from SA to NSW. The principal underlying driver of these patterns is steel movements, such as movements from NSW to Westernport (Victoria) and from Whyalla (SA) to Newcastle and Sydney. Some of the flow also reflects the movement of ores and minerals, such as from the Broken Hill region to Port Pirie and Port Adelaide.

F14 Principal bulk freight flows between states/territory, by direction, 2007–08



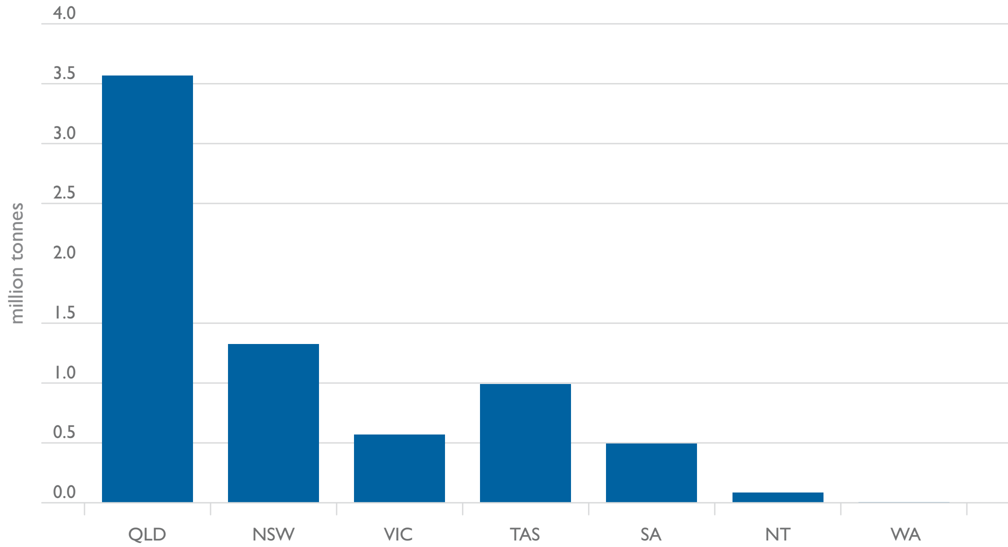
Note: Trains denoted as 'south' are southbound trains (such as Brisbane to Sydney) and 'north' refers to northbound trains; similarly, trains denoted as 'west' are westbound and 'east' train are eastbound.

Source: Principal train operators (Asciano, Freightlink, QR, SCT).

The intrastate rail freight task dominates the total rail freight task—of the Australian 197.6 billion net tonne kilometre task that has been measured, 170.1 billion net tonne kilometres (86 per cent) are performed within a jurisdiction (that is, are intrastate). (See Table A6.)

Figure 15 presents the principal intermodal freight flow task within each state/territory, defined in millions of tonnes; Table A6 presents the intrastate task in terms of tonne kilometres. Around 19 per cent of the intermodal freight task is for origin–destination pairs entirely within a jurisdiction, that is, intrastate. Queensland has the largest intrastate intermodal task, reflecting the long intermodal task linking the cities between Brisbane and Cairns.

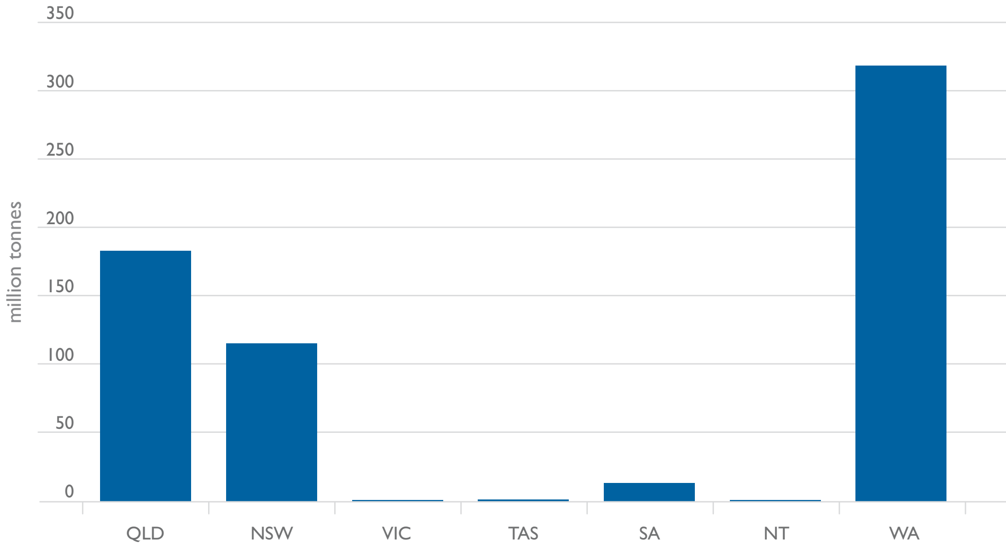
F15 Principal intermodal freight flows within state/territory, 2007–08



Source: Principal train operators (Asciano, Freightlink, QR, SCT).

By contrast with intermodal freight, the bulk haulage is almost entirely (96.2 per cent) intrastate. (See Table A6.) As is illustrated in Figure 16, the biggest bulk haulage task (defined in tonnes) is in WA, dominated by rail's iron ore task in the Pilbara region. The other sizable intrastate bulk flows are recorded in Queensland and NSW, reflecting the coal haulage in those states.

F16 Principal bulk freight flows within state/territory, 2007–08



Source: Asciano, FreightLink, QR, SCT Logistics, Fortescue and BHP Billiton and estimates of Rio Tinto's railways from publicly-available data.

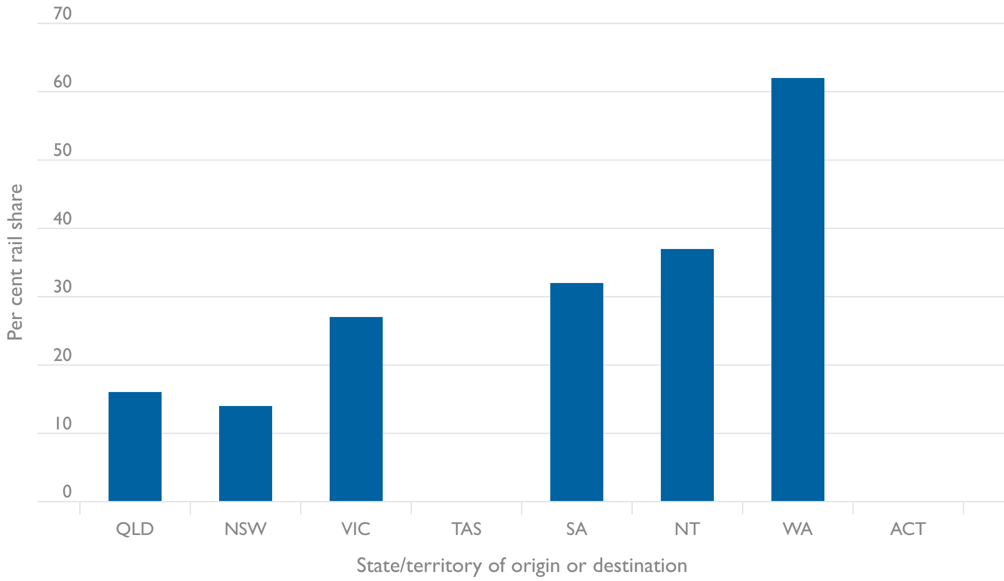
Intermodal state-to-state market share

Table A7 presents estimates of the intermodal freight task (in tonne kilometres) by road, rail and coastal shipping for 2006–07 (the latest year for which road data are available); the largest flows are between NSW and Victoria.

Table A8 summarises the mode shares for 2006–07. The explanatory notes outline the methodology used to estimate these shares.

Table A9a through to Table A9h present a time series of estimates of road, rail and coastal shipping shares of the interstate intermodal freight task. Using these estimates, Figure 17 provides a summary of rail's share of the intermodal interstate freight task, that is, rail's share of the combined road, rail and coastal shipping task performed in 2006–07. The strength of rail's performance on the East–West corridor, with a 62 per cent mode share, is evident in the relatively high rail shares for SA and WA. By contrast, the performance of rail on the North–South corridor is weaker.

F17 State-to-state rail share of road, rail and coastal shipping intermodal freight task, 2006–07



Note: See Box 3 for a discussion of the Tasmanian interstate rail share.

Source: BITRE calculations, from data in Table A8.

Statistical annex

TA.1 Intercapital intermodal transit times, by service

Intercity pair	Direction	Number of scheduled weekly trains with city pair origin–destination, June 2008	Transit time (hours:minutes) Average scheduled June 2008	Average actual 2007–08	ATC target
North–South Corridor					
1. Brisbane–Sydney	Brisbane to Sydney	1	18:46	20:07	17:30
	Sydney to Brisbane	0	na	26:53	
2. Sydney–Melbourne	Sydney to Melbourne	3	16:03	16:12	10:30
	Melbourne to Sydney	3	14:34	14:38	
3. Brisbane–Melbourne	Brisbane to Melbourne	16	36:06	36:46	29:30
	Melbourne to Brisbane	17	35:29	38:09	
4. Brisbane–Adelaide	Brisbane to Adelaide	5	55:09	54:24	na
	Adelaide to Brisbane	4	56:41	58:57	
East–West Corridor					
5. Melbourne–Adelaide	Melbourne to Adelaide	17	13:41	13:26	11:30
	Adelaide to Melbourne	17	13:51	14:01	
6. Melbourne–Perth	Melbourne to Perth	16	56:29	59:07	56:00
	Perth to Melbourne	16	67:12	68:51	
7. Sydney–Adelaide	Sydney to Adelaide	0	na	na	26:00
	Adelaide to Sydney	0	na	na	
8. Sydney–Perth	Sydney to Perth	8	62:10	64.28	65:00
	Perth to Sydney	8	68:11	69:39	
9 Adelaide–Perth	Adelaide to Perth	2	45:48	47:57	41:00
	Perth to Adelaide	2	44:13	44:09	
Central Corridor					
10. Adelaide–Darwin	Adelaide to Darwin	5	42:48	43:53	na
	Darwin to Adelaide	5	45:01	46:19	

na not applicable

Note 1: Average scheduled transit times are the elapsed times between origin and destination terminals. The June 2008 calculations are extracted from infrastructure managers' Working Timetables current at the end of June 2008. The average actual transit times are calculated from infrastructure managers' records of actual train departure and arrival times for all trains operating during 2007–08. The explanatory notes provide further details on the calculation process.

Note 2: The 2006–07 rail performance indicator report (Information Paper 62) reported incorrect estimates of average transit time for Sydney–Perth services. Sydney to Perth average scheduled transit time in June 2007 was 62:30; and average actual transit time for 2006–07 was 63:39. Perth to Sydney average scheduled transit time in June 2007 was 67:56; and average actual transit time for 2006–07 was 69:49.

Source: BITRE calculations, from data provided by infrastructure managers: ARTC, FreightLink, QR Network Access, RailCorp and WestNet.

TA.2 Scheduled intercapital intermodal train flow patterns, by line segment, June 2008

Line segment	Direction	Number of weekly intermodal trains	Average speed (km/h)	Average number of stops	Average scheduled transit time (mins) a	Average dwell time (mins) b	Percentage dwell time (per cent) c	Dwell time per stop (mins) d
North–South Corridor								
1. Brisbane–Sydney	Brisbane to Sydney	22	50	14	1 186	252	21	18
	Sydney to Brisbane	21	49	13	1 195	255	21	20
2. Sydney–Melbourne	Sydney to Melbourne	24	64	5	901	110	12	24
	Melbourne to Sydney	24	68	4	847	69	8	16
3. Brisbane–Melbourne	Brisbane to Melbourne	21	53	19	2 246	482	22	25
	Melbourne to Brisbane	21	53	18	2 187	457	21	25
East–West Corridor								
4. Melbourne–Adelaide	Melbourne to Adelaide	38	62	7	803	127	16	18
	Adelaide to Melbourne	37	60	7	831	156	19	21
5. Adelaide–Perth	Adelaide to Perth	18	66	15	2 428	374	15	25
	Perth to Adelaide	18	59	17	2713	683	25	40
6. Cootamundra–Crystal Brook	Cootamundra to Crystal Brook	4	67	9	1 136	248	22	27
	Crystal Brook to Cootamundra	7	58	10	1 309	290	22	30
Central Corridor								
7. Tarcoola–Darwin	Tarcoola to Darwin	5	73	3	1 850	221	12	85
	Darwin to Tarcoola	5	71	4	1 900	339	18	77

a The average scheduled transit time for June in this column differs from the June 2008 figures in Table A1 because this table calculates times for all intermodal trains on the line segment, not just origin–destination services between the two city pairs.

b This measure is the average of the dwell times for each train.

c This is the ratio of average scheduled dwell time to average scheduled transit time, expressed as a percentage.

d This indicator is the the average dwell time divided by the number of stops on the line segment.

TA.3 Number of scheduled weekly intercapital freight trains, by line segment, June 2006, June 2007 and June 2008

Line segment	Intermodal			Steel			Total		
	June 06	June 07	June 08	June 06	June 07	June 08	June 06	June 07	June 08
North–South corridor									
1. Brisbane–Sydney	50	47	43	11	14	12	61	61	55
2. Sydney–Melbourne									
Sydney–Cootamundra	61	68	59	23	21	21	84	89	80
Cootamundra–Melbourne	51	58	48	12	10	10	63	68	58
East–West corridor									
3. Sydney–Crystal Brook via Broken Hill									
Sydney–Parkes via Lithgow	6	6	5	0	0	0	6	6	5
Cootamundra–Parkes	10	10	11	11	11	11	21	21	22
Parkes–Crystal Brook	16	16	20	11	11	11	27	27	31
4. Melbourne–Crystal Brook									
Melbourne–Adelaide	66	74	75	12	10	11	78	84	86
Adelaide–Crystal Brook	38	40	46	13	12	10	51	52	56
5. Crystal Brook–Perth									
Crystal Brook–Pt Augusta	54	56	66	13	23	17	67	79	83
Pt Augusta–Tarcoola	54	56	66	6	6	7	60	62	73
Tarcoola–Perth	54	46	56	6	6	7	60	52	63
Central corridor									
6. Darwin–Tarcoola	10	10	10	0	0	0	10	10	10

Source: BITRE calculations from data provided by infrastructure managers: ARTC, FreightLink, QR Network Access, RailCorp and WestNet.

TA.4 Infrastructure provision: train length and double-stacking capability, by line segment, 2007–08

Line segment	Train length			Double-stacking capability	
	Unrestricted a	Restricted a	ATC target	Clearance	ATC target
North–South corridor					
Acacia Ridge (Loadstone)–Qld/NSW Border	1 200	1 500	1 500	Single-stack[b]	None
Qld/NSW Border–Sydney	1 500		1 500	Single-stack[b]	None
Sydney–Melbourne	1 500		1 500	Single-stack[b]	None
East–West corridor					
Melbourne–Adelaide	1 500		1 500	Single-stack[b]	None
Sydney–Parkes					
– via Cootamundra	1 500		1 500	Single-stack[b]	None
– via Lithgow	1 500		1 500	Single-stack[b]	None
Parkes–Crystal Brook	1 800		1 800	Double-stack[c]	Double-stack
Crystal Brook–Adelaide	1 800		1 800	Double-stack[c]	Double-stack
Crystal Brook–Kalgoorlie	1 800		1 800	Double-stack[c]	Double-stack
Kalgoorlie–Perth	1 420	1 800	1 800	Double-stack[c]	Double-stack
Central corridor					
Tarcoola–Darwin	1 800		None	Double-stack[c]	Double-stack

a 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.

b The single-stacked container clearance is 4.03 metres between the top of the rail and the top of the container. This clearance permits the conveyance of a single 'hi-cube' (9 feet 6 inches, or 2.896 metres high) container on a flat wagon. A 'maxicube' (10 feet 6 inches high; 3.20 metres high) container can be conveyed within the 4.03 metre clearance only by use of a well wagon. See BTRE 2006a, pp. 108–18 for further discussion.

c Double-stacking capability here is defined as the ability to stack one 'hi-cube' (9 feet 6 inches high; 2.896 metres high) container on top of another 'hi-cube' container and to convey them within a low-floor (well) wagon. The permitted clearance between the top of the rail and the top of the container is 6.5 metres.

Source: ARTC, FreightLink, QR Network Access, RailCorp and WestNet.

TA.5 Interstate rail freight task by origin pair, 2007–08

		Tonnes (thousands)			Net tonne km (thousands)		
State of origin	State of destination	Intermodal	Bulk	Total	Intermodal	Bulk	Total
From Queensland	to NSW	210	12	222	223 555	10 040	233 596
From NSW	to Queensland	232	763	995	248 214	767 309	1 015 522
From Queensland	to Victoria	398		398	860 486	382	860 868
From Victoria	to Queensland	675	83	758	1 442 741	164 290	1 607 031
From Queensland	to SA	52		52	145 073		145 073
From SA	to Queensland	100	86	186	277 868	241 465	519 333
From Queensland	to WA	162		163	819 788	2 272	822 060
From WA	to Queensland	129		129	636 546	703	637 250
From NSW	to Victoria	781	797	1 578	568 113	588 148	1 156 261
From Victoria	to NSW	251	188	439	234 322	161 673	395 995
From NSW	to SA	91	814	905	185 765	562 740	748 506
From SA	to NSW	95	982	1 076	169 484	1 752 225	1 921 709
From NSW	to WA	664	243	907	2 555 935	1 075 921	3 631 856
From WA	to NSW	308	1	308	1 201 519	4 053	1 205 572
From Victoria	to SA	541	354	895	690 981	216 828	907 809
From SA	to Victoria	812	494	1 306	448 804	486 490	935 294
From Victoria	to WA	1 132	84	1 216	3 884 727	296 835	4 181 562
From WA	to Victoria	616	6	622	2 140 227	9 718	2 149 945
From SA	to WA	521	56	577	1 325 172	135 601	1 460 773
From WA	to SA	355	1	356	937 812	1 913	939 725
From SA	to NT	547	7	554	1 387 808	496	1 388 304
From NT	to SA	223		346	557 853		557 853

Source: BITRE computations based on data from Asciano, FreightLink, QR, and SCT Logistics.

TA.6 Origin/destination for interstate and intrastate rail freight, 2007–08 (million net tonne kilometres)

State/territory of origin	State/territory of destination								
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Intermodal									
NSW	205	568	248	186	2 556	–	–	–	3 763
VIC	234	128	1 443	691	3 885	–	–	–	6 381
QLD	224	860	4 071	145	820	–	–	–	6 120
SA	169	449	278	80	1 325	–	1 388	–	3 689
WA	1 202	2 140	637	938	1	–	–	–	4 918
TAS	–	–	–	–	–	337	–	–	337
NT	–	–	–	558	–	–	107	–	665
ACT	–	–	–	–	–	–	–	–	–
Subtotal	2 034	4 145	6 677	2 598	8 587	337	1 495		25 873
Bulk									
NSW	16 262	588	767	563	1 076	–	–	–	19 256
VIC	162	458	164	217	297	–	–	–	1 298
QLD	10	0	40 839	–	2	–	–	–	40 851
SA	1 752	486	241	1 819	136	–	0	–	4 434
WA	4	10	1	2	105 047	–	–	–	105 064
TAS	–	–	–	–	–	119	–	–	119
NT	–	–	–	–	–	–	673	–	673
ACT	–	–	–	–	–	–	–	–	–
Subtotal	18 190	1 542	42 012	2 601	106 558	119	673	–	171 695
Total Freight									
NSW	16 466	1 156	1 015	749	3 632	–	–	–	23 018
VIC	396	586	1 607	908	4 182	–	–	–	7 679
QLD	234	861	44 910	145	822	–	–	–	46 972
SA	1 922	935	519	1 899	1 461	–	1388	–	8 123
WA	1 206	2 150	637	940	105 048	–	–	–	109 981
TAS	–	–	–	–	–	456	–	–	456
NT	–	–	–	558	–	–	780	–	1 338
ACT	–	–	–	–	–	–	–	–	–
Total	20 224	5 687	48 688	5 199	115 145	456	2 168	–	197 567

Notes:

1. Row labels indicate origin states and territories and column labels indicate the destination states and territories for freight. The entries of '0' in the table mean that volumes are small and less than one million net tonne kilometres; entries of '-' denote nil volume.
2. Excludes freight carried by various smaller intrastate train operators.
3. The only regular freight between the ACT and other jurisdictions in 2007–08 was the transport of a small volume of oil to the territory; the train operator classed this train as operating to Queanbeyan, NSW (on the ACT border). This traffic therefore appears as part of the intra-NSW traffic.
4. This table should not be compared with the 2006–07 data presented in Table A6 (page 47) in BITRE 2008. The data in the current year are net of container weight whereas the 2006–07 data include the container weight in measuring payload. (See Box 2 for a further discussion of measuring net tonnage.) Also, some historical data have been revised by operators in order to obtain better estimates of freight origins and destinations. (Box 3 discusses the issues of estimating freight origins and destinations.)

Source: Asciano, FreightLink, QR, SCT Logistics, Fortescue and BHP Billiton and estimates of Rio Tinto's railways from publicly-available data.

TA.7 Intermodal state-to-state freight task by road, rail and coastal shipping, 2006 07 (million net tonne kilometres)

State/territory of origin	State/territory of destination								
	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
NSW	na	10 325	9 909	2 680	4 625	50	108	710	28 407
VIC	9 698	na	6 267	5 104	5 592	1 207	27	33	27 928
QLD	7 461	5 950	na	1 224	1 719	2	591	0	16 947
SA	2 803	4 730	1 478	na	3 414	2	1 320	1	13 748
WA	2 618	3 165	1 201	2 674	na	48	485	2	10 193
TAS	113	1 006	3	2	600	na	6	0	1 730
NT	43	14	308	524	262	5	na	0	1 156
ACT	192	39	0	0	0	0	0	na	231
Total	22 928	25 229	19 166	12 208	16 212	1 314	2 537	746	100 340

The entries of '0' in the table mean that volumes are small and less than one million net tonne kilometres.

na not applicable

Source: BITRE estimates. See the explanatory notes for further discussion.

TA.8 Intermodal state-to-state freight task, market shares of road, rail and coastal shipping, 2006 07

State/territory of origin		State/territory of destination								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
NSW	Road share	na	0.90	0.86	0.79	0.13	0.00	0.88	1.00	0.75
	Rail share	na	0.10	0.12	0.20	0.62	0.00	0.00	0.00	0.20
	Coastal shipping share	na	0.01	0.03	0.01	0.25	1.00	0.12	0.00	0.06
VIC	Road share	0.91	na	0.59	0.71	0.08	0.00	1.00	1.00	0.60
	Rail share	0.09	na	0.37	0.26	0.78	0.00	0.00	0.00	0.32
	Coastal shipping share	0.00	na	0.04	0.04	0.14	1.00	0.00	0.00	0.09
QLD	Road share	0.97	0.78	na	0.83	0.18	0.00	0.85	0.00	0.81
	Rail share	0.03	0.22	na	0.16	0.51	0.00	0.00	0.00	0.15
	Coastal shipping share	0.00	0.00	na	0.01	0.31	1.00	0.15	0.00	0.04
SA	Road share	0.82	0.72	0.58	na	0.44	0.00	0.47	1.00	0.63
	Rail share	0.18	0.28	0.41	na	0.55	0.00	0.53	0.00	0.36
	Coastal shipping share	0.00	0.00	0.01	na	0.01	1.00	0.00	0.00	0.00
WA	Road share	0.29	0.10	0.25	0.57	na	0.00	0.93	1.00	0.33
	Rail share	0.68	0.88	0.73	0.42	na	0.00	0.00	0.00	0.64
	Coastal shipping share	0.03	0.03	0.02	0.01	na	1.00	0.07	0.00	0.03
TAS	Road share	0.00	0.00	0.00	0.00	0.00	na	0.00	0.00	0.00
	Rail share	0.00	0.00	0.00	0.00	0.00	na	0.00	0.00	0.00
	Coastal shipping share	1.00	1.00	0.00	1.00	1.00	na	1.00	0.00	1.00
NT	Road share	1.00	1.00	1.00	0.47	0.98	0.00	na	0.00	0.75
	Rail share	0.00	0.00	0.00	0.53	0.00	0.00	na	0.00	0.24
	Coastal shipping share	0.00	0.00	0.00	0.00	0.02	1.00	na	0.00	0.01
ACT	Road share	1.00	1.00	0.00	0.00	0.00	0.00	0.00	na	1.00
	Rail share	0.00	0.00	0.00	0.00	0.00	0.00	0.00	na	0.00
	Coastal shipping share	0.00	0.00	0.00	0.00	0.00	0.00	0.00	na	0.00
Total	Road share	0.84	0.70	0.71	0.70	0.19	0.00	0.66	1.00	0.64
	Rail share	0.15	0.25	0.26	0.28	0.61	0.00	0.28	0.00	0.29
	Coastal shipping share	0.01	0.05	0.03	0.02	0.19	1.00	0.06	0.00	0.07

na not applicable

Source: BITRE estimates. See the explanatory notes for further discussion.

TA.9a Intermodal state-to-state total freight and market shares of road, rail and coastal shipping in transporting freight originating from New South Wales, 1971–72 to 2006–07

Year	NSW–VIC Total intermodal freight (m.ntk)	NSW–VIC Shares Road	NSW–VIC Shares Rail	NSW–VIC Shares Coastal shipping	NSW–QLD Total intermodal freight (m.ntk)	NSW–QLD Shares Road	NSW–QLD Shares Rail	NSW–QLD Shares Coastal shipping	NSW–SA Total intermodal freight (m.ntk)	NSW–SA Shares Road	NSW–SA Shares Rail	NSW–SA Shares Coastal shipping	NSW–WA Total intermodal freight (m.ntk)	NSW–WA Shares Road	NSW–WA Shares Rail	NSW–WA Shares Coastal shipping
1971–72	1 453	0.57	0.30	0.13	977	0.47	0.39	0.13	289	0.90	0.07	0.02	882	0.05	0.34	0.61
1972–73	1 574	0.64	0.27	0.09	1 135	0.52	0.37	0.11	341	0.92	0.06	0.02	936	0.05	0.42	0.53
1973–74	1 679	0.70	0.25	0.05	1 287	0.55	0.35	0.10	387	0.93	0.06	0.02	989	0.04	0.49	0.47
1974–75	1 728	0.73	0.24	0.03	1 345	0.57	0.36	0.07	408	0.93	0.06	0.02	1 006	0.04	0.57	0.38
1975–76	1 859	0.76	0.23	0.01	1 467	0.60	0.35	0.04	451	0.93	0.05	0.01	1 290	0.24	0.52	0.24
1976–77	1 927	0.77	0.22	0.01	1 537	0.61	0.35	0.04	474	0.93	0.06	0.01	1 317	0.24	0.53	0.23
1977–78	1 944	0.78	0.21	0.01	1 567	0.61	0.36	0.03	484	0.92	0.06	0.01	1 342	0.24	0.54	0.22
1978–79	2 082	0.79	0.20	0.01	1 693	0.63	0.34	0.02	526	0.92	0.07	0.01	1 371	0.23	0.56	0.21
1979–80	2 276	0.81	0.18	0.01	1 867	0.66	0.32	0.02	582	0.92	0.07	0.01	1 402	0.23	0.57	0.20
1980–81	2 405	0.83	0.17	0.00	2 012	0.67	0.32	0.01	614	0.93	0.06	0.01	1 384	0.24	0.56	0.20
1981–82	2 453	0.86	0.13	0.00	2 060	0.71	0.28	0.01	645	0.94	0.05	0.01	1 312	0.26	0.54	0.20
1982–83	2 177	0.88	0.11	0.00	1 839	0.70	0.29	0.01	607	0.91	0.05	0.03	1 231	0.27	0.52	0.21
1983–84	2 635	0.89	0.11	0.00	2 247	0.73	0.26	0.01	700	0.94	0.05	0.00	1 517	0.22	0.50	0.28
1984–85	2 697	0.89	0.10	0.00	2 311	0.74	0.25	0.02	719	0.94	0.06	0.00	1 593	0.21	0.47	0.32
1985–86	2 974	0.90	0.10	0.00	2 610	0.74	0.25	0.01	776	0.96	0.04	0.00	1 757	0.20	0.50	0.30
1986–87	3 081	0.88	0.12	0.00	2 643	0.75	0.25	0.00	812	0.93	0.07	0.00	1 550	0.23	0.59	0.19
1987–88	3 360	0.90	0.10	0.00	2 987	0.75	0.25	0.00	898	0.92	0.08	0.00	1 762	0.20	0.80	0.00
1988–89	3 683	0.90	0.10	0.00	3 372	0.74	0.25	0.00	977	0.92	0.08	0.00	1 986	0.18	0.78	0.04
1989–90	3 833	0.90	0.10	0.00	3 483	0.76	0.24	0.00	1 037	0.90	0.09	0.01	1 705	0.21	0.78	0.00
1990–91	3 832	0.91	0.08	0.00	3 408	0.79	0.21	0.00	1 039	0.91	0.08	0.01	1 652	0.22	0.76	0.01
1991–92	3 870	0.92	0.08	0.00	3 394	0.81	0.19	0.00	1 022	0.94	0.06	0.00	1 796	0.20	0.76	0.03
1992–93	4 182	0.92	0.08	0.00	3 676	0.82	0.18	0.00	1 130	0.91	0.08	0.01	1 873	0.20	0.78	0.02
1993–94	4 449	0.91	0.09	0.00	3 923	0.82	0.17	0.00	1 176	0.92	0.08	0.01	2 012	0.19	0.77	0.05
1994–95	4 718	0.91	0.09	0.00	4 167	0.83	0.17	0.00	1 255	0.90	0.09	0.01	2 243	0.17	0.73	0.10
1995–96	5 146	0.92	0.08	0.00	4 590	0.85	0.15	0.01	1 374	0.90	0.09	0.01	2 237	0.17	0.74	0.09
1996–97	5 504	0.92	0.07	0.00	4 862	0.88	0.12	0.00	1 460	0.90	0.10	0.00	2 356	0.17	0.73	0.10
1997–98	5 975	0.91	0.07	0.02	5 313	0.87	0.11	0.02	1 538	0.91	0.09	0.00	2 437	0.16	0.73	0.11
1998–99	6 328	0.93	0.06	0.00	5 750	0.89	0.10	0.01	1 650	0.91	0.09	0.00	2 198	0.18	0.82	0.00
1999–00	6 784	0.93	0.06	0.00	6 205	0.89	0.09	0.02	1 745	0.92	0.08	0.00	2 720	0.15	0.67	0.19
2000–01	7 010	0.93	0.07	0.00	6 300	0.92	0.07	0.01	1 847	0.89	0.08	0.03	2 817	0.14	0.65	0.21
2001–02	7 381	0.94	0.06	0.00	6 689	0.93	0.07	0.00	1 886	0.92	0.08	0.00	2 920	0.14	0.63	0.23
2002–03	7 837	0.94	0.06	0.01	7 248	0.92	0.06	0.02	1 999	0.91	0.07	0.01	3 073	0.14	0.61	0.26
2003–04	8 208	0.94	0.05	0.00	7 798	0.91	0.06	0.03	2 078	0.92	0.07	0.00	3 065	0.14	0.61	0.25
2004–05	8 578	0.95	0.05	0.00	8 138	0.93	0.06	0.02	2 167	0.92	0.07	0.01	3 056	0.14	0.62	0.24
2005–06	8 978	0.95	0.05	0.00	8 586	0.93	0.05	0.02	2 257	0.92	0.07	0.01	3 377	0.13	0.57	0.31
2006–07	9 848	0.94	0.05	0.01	9 014	0.94	0.03	0.03	2 367	0.89	0.10	0.01	5 206	0.12	0.59	0.30
Annual growth rate																
2001–02 to 2006–07	5.9%				6.1%				4.7%				12.3%			
1996–97 to 2006–07	6.0%				6.4%				5.0%				8.3%			
1971–72 to 2006–07	5.8%				6.8%				6.4%				5.4%			

(continued)

TA.9a Intermodal state-to-state total freight and market shares of road, rail and coastal shipping in transporting freight originating from New South Wales, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	NSW–ACT Shares Road	NSW–ACT Shares Rail	NSW–ACT Shares Coastal shipping	Total intermodal freight (m.ntk)	NSW–NT Shares Road	NSW–NT Shares Rail	NSW–NT Shares Coastal shipping	Total intermodal freight (m.ntk)	NSW–TAS Shares Road	NSW–TAS Shares Rail	NSW–TAS Shares Coastal shipping
1971–72	128	0.51	0.49	0.00	190	0.34	0.04	0.62	168	0.00	0.00	1.00
1972–73	129	0.62	0.38	0.00	183	0.37	0.04	0.59	175	0.00	0.00	1.00
1973–74	129	0.71	0.29	0.00	175	0.39	0.04	0.56	182	0.00	0.00	1.00
1974–75	125	0.79	0.21	0.00	167	0.42	0.04	0.54	192	0.00	0.00	1.00
1975–76	127	0.87	0.13	0.00	160	0.45	0.05	0.51	203	0.00	0.00	1.00
1976–77	131	0.89	0.11	0.00	152	0.48	0.05	0.47	186	0.00	0.00	1.00
1977–78	131	0.90	0.10	0.00	143	0.51	0.05	0.44	169	0.00	0.00	1.00
1978–79	140	0.92	0.08	0.00	135	0.55	0.05	0.40	153	0.00	0.00	1.00
1979–80	153	0.94	0.06	0.00	128	0.59	0.06	0.35	136	0.00	0.00	1.00
1980–81	161	0.96	0.04	0.00	120	0.64	0.06	0.30	119	0.00	0.00	1.00
1981–82	169	0.97	0.03	0.00	112	0.69	0.06	0.24	102	0.00	0.00	1.00
1982–83	153	0.98	0.02	0.00	101	0.75	0.07	0.18	86	0.00	0.00	1.00
1983–84	183	0.98	0.02	0.00	91	0.87	0.08	0.05	121	0.00	0.00	1.00
1984–85	187	0.99	0.01	0.00	87	0.92	0.08	0.00	117	0.00	0.00	1.00
1985–86	206	1.00	0.00	0.00	89	0.92	0.08	0.00	139	0.00	0.00	1.00
1986–87	209	1.00	0.00	0.00	89	0.92	0.08	0.00	129	0.00	0.00	1.00
1987–88	232	1.00	0.00	0.00	91	0.92	0.08	0.00	120	0.00	0.00	1.00
1988–89	253	1.00	0.00	0.00	92	0.92	0.08	0.00	105	0.00	0.00	1.00
1989–90	265	1.00	0.00	0.00	93	0.92	0.08	0.00	97	0.00	0.00	1.00
1990–91	268	1.00	0.00	0.00	93	0.92	0.08	0.00	101	0.00	0.00	1.00
1991–92	271	1.00	0.00	0.00	94	0.92	0.08	0.00	147	0.00	0.00	1.00
1992–93	292	1.00	0.00	0.00	95	0.92	0.08	0.00	97	0.00	0.00	1.00
1993–94	309	1.00	0.00	0.00	114	0.78	0.06	0.16	107	0.00	0.00	1.00
1994–95	327	1.00	0.00	0.00	97	0.93	0.07	0.00	76	0.00	0.00	1.00
1995–96	359	1.00	0.00	0.00	103	0.89	0.07	0.04	44	0.00	0.00	1.00
1996–97	385	1.00	0.00	0.00	159	0.59	0.05	0.37	2	0.00	0.00	1.00
1997–98	412	1.00	0.00	0.00	126	0.75	0.06	0.19	14	0.00	0.00	1.00
1998–99	444	1.00	0.00	0.00	117	0.82	0.06	0.12	14	0.00	0.00	1.00
1999–00	476	1.00	0.00	0.00	199	0.49	0.04	0.48	36	0.00	0.00	1.00
2000–01	492	1.00	0.00	0.00	122	0.80	0.06	0.14	44	0.00	0.00	1.00
2001–02	519	1.00	0.00	0.00	111	0.89	0.07	0.05	34	0.00	0.00	1.00
2002–03	551	1.00	0.00	0.00	118	0.67	0.06	0.27	27	0.00	0.00	1.00
2003–04	580	1.00	0.00	0.00	110	0.73	0.07	0.21	33	0.00	0.00	1.00
2004–05	607	1.00	0.00	0.00	103	0.78	0.07	0.15	41	0.00	0.00	1.00
2005–06	636	1.00	0.00	0.00	94	0.86	0.08	0.06	63	0.00	0.00	1.00
2006–07	710	1.00	0.00	0.00	95	1.00	0.00	0.00	50	0.00	0.00	1.00
Annual growth rate												
2001–02 to 2006–07	6.4%				–3.1%				7.6%			
1996–97 to 2006–07	6.3%				–5.0%				37.9%			
1971–72 to 2006–07	5.2%				–2.0%				–3.5%			

TA.9b Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Victoria, 1971–72 to 2006–07

Year	NSW–VIC Total intermodal freight (m.ntk)	NSW–VIC Shares Road	NSW–VIC Shares Rail	NSW–VIC Shares Coastal shipping	NSW–QLD Total intermodal freight (m.ntk)	NSW–QLD Shares Road	NSW–QLD Shares Rail	NSW–QLD Shares Coastal shipping	NSW–SA Total intermodal freight (m.ntk)	NSW–SA Shares Road	NSW–SA Shares Rail	NSW–SA Shares Coastal shipping	NSW–WA Total intermodal freight (m.ntk)	NSW–WA Shares Road	NSW–WA Shares Rail	NSW–WA Shares Coastal shipping
1971–72	1 549	0.69	0.28	0.03	1 153	0.31	0.26	0.43	509	0.43	0.55	0.01	1 214	0.08	0.43	0.49
1972–73	1 721	0.70	0.25	0.05	1 298	0.43	0.25	0.32	546	0.47	0.51	0.02	1 317	0.07	0.48	0.45
1973–74	1 881	0.71	0.23	0.07	1 443	0.52	0.25	0.23	582	0.51	0.47	0.02	1 417	0.06	0.53	0.41
1974–75	1 957	0.72	0.21	0.07	1 431	0.55	0.26	0.19	615	0.52	0.44	0.04	1 355	0.07	0.64	0.30
1975–76	2 078	0.74	0.20	0.06	1 568	0.62	0.26	0.13	663	0.54	0.41	0.06	1 653	0.27	0.59	0.14
1976–77	2 089	0.77	0.20	0.03	1 579	0.62	0.27	0.11	688	0.55	0.39	0.05	1 582	0.28	0.58	0.13
1977–78	2 152	0.78	0.20	0.03	1 494	0.60	0.31	0.10	706	0.57	0.38	0.05	1 514	0.29	0.58	0.13
1978–79	2 279	0.79	0.19	0.02	1 614	0.62	0.30	0.07	744	0.59	0.36	0.05	1 441	0.30	0.58	0.12
1979–80	2 426	0.80	0.17	0.02	1 831	0.67	0.28	0.05	793	0.62	0.34	0.04	1 368	0.31	0.58	0.11
1980–81	2 547	0.81	0.16	0.02	1 878	0.69	0.27	0.04	856	0.62	0.34	0.04	1 435	0.30	0.61	0.09
1981–82	2 669	0.82	0.15	0.02	1 846	0.74	0.24	0.02	900	0.64	0.32	0.04	1 400	0.30	0.62	0.08
1982–83	2 633	0.82	0.15	0.02	1 287	0.70	0.29	0.01	891	0.64	0.33	0.04	1 379	0.31	0.63	0.06
1983–84	2 860	0.85	0.14	0.00	1 816	0.76	0.23	0.01	1 021	0.65	0.34	0.01	1 399	0.29	0.66	0.05
1984–85	3 009	0.85	0.15	0.00	1 736	0.76	0.24	0.01	1 067	0.66	0.34	0.01	1 574	0.26	0.59	0.15
1985–86	3 168	0.87	0.13	0.00	2 027	0.77	0.23	0.00	1 084	0.72	0.28	0.00	1 496	0.27	0.60	0.14
1986–87	3 285	0.87	0.13	0.00	1 817	0.77	0.22	0.00	1 116	0.73	0.27	0.00	1 552	0.26	0.65	0.10
1987–88	3 585	0.86	0.14	0.00	2 164	0.77	0.23	0.00	1 243	0.73	0.27	0.00	1 706	0.23	0.65	0.12
1988–89	3 881	0.86	0.14	0.00	2 506	0.75	0.25	0.00	1 384	0.72	0.28	0.00	1 882	0.20	0.73	0.07
1989–90	4 005	0.87	0.13	0.00	2 494	0.75	0.25	0.00	1 464	0.73	0.27	0.00	1 726	0.22	0.74	0.04
1990–91	4 113	0.88	0.12	0.00	2 390	0.71	0.29	0.00	1 537	0.73	0.27	0.00	1 611	0.24	0.75	0.02
1991–92	4 105	0.91	0.09	0.00	2 522	0.61	0.39	0.00	1 607	0.73	0.27	0.00	1 590	0.24	0.73	0.03
1992–93	4 381	0.91	0.09	0.00	2 719	0.61	0.38	0.01	1 716	0.74	0.26	0.00	1 574	0.24	0.68	0.08
1993–94	4 661	0.91	0.08	0.01	2 849	0.60	0.39	0.01	1 782	0.77	0.23	0.00	1 767	0.21	0.70	0.09
1994–95	4 917	0.91	0.09	0.00	2 946	0.60	0.39	0.00	1 850	0.80	0.20	0.00	2 011	0.18	0.69	0.12
1995–96	5 208	0.92	0.07	0.01	3 147	0.64	0.34	0.01	2 041	0.80	0.18	0.02	2 039	0.18	0.72	0.10
1996–97	5 479	0.94	0.06	0.00	3 435	0.64	0.35	0.01	2 261	0.78	0.21	0.00	2 232	0.16	0.72	0.13
1997–98	5 859	0.93	0.06	0.01	3 657	0.64	0.33	0.03	2 602	0.74	0.25	0.01	2 356	0.15	0.73	0.12
1998–99	6 158	0.94	0.05	0.00	4 196	0.60	0.38	0.01	2 754	0.76	0.23	0.00	2 598	0.13	0.71	0.16
1999–00	6 561	0.94	0.05	0.01	4 512	0.60	0.36	0.04	2 955	0.77	0.23	0.00	2 865	0.12	0.68	0.20
2000–01	6 837	0.95	0.05	0.00	4 332	0.60	0.38	0.02	3 129	0.77	0.22	0.01	2 918	0.12	0.71	0.17
2001–02	7 179	0.95	0.05	0.00	4 496	0.59	0.37	0.04	3 358	0.78	0.21	0.01	3 160	0.11	0.70	0.20
2002–03	7 595	0.95	0.04	0.00	4 741	0.58	0.35	0.06	3 576	0.79	0.20	0.01	3 539	0.09	0.66	0.25
2003–04	7 994	0.96	0.04	0.00	5 047	0.56	0.34	0.11	3 825	0.79	0.19	0.02	3 584	0.09	0.68	0.23
2004–05	8 408	0.96	0.04	0.00	5 038	0.56	0.34	0.10	4 074	0.79	0.19	0.02	3 722	0.09	0.69	0.22
2005–06	8 827	0.96	0.04	0.00	4 969	0.56	0.35	0.09	4 359	0.79	0.18	0.03	3 755	0.09	0.72	0.20
2006–07	9 507	0.93	0.07	0.00	5 725	0.65	0.31	0.04	4 844	0.74	0.22	0.04	6 178	0.07	0.80	0.13
Annual growth rate																
2001–02 to 2006–07	5.8%				5.0%				7.6%				14.3%			
1996–97 to 2006–07	5.7%				5.2%				7.9%				10.7%			
1971–72 to 2006–07	5.5%				4.8%				6.9%				4.9%			

(continued)

TA.9b Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Victoria, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	VIC–ACT Shares			Total intermodal freight (m.ntk)	VIC–NT Shares			Total intermodal freight (m.ntk)	VIC–TAS Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	85	0.93	0.07	0.00	71	0.00	0.14	0.86	675	0.00	0.00	1.00
1972–73	85	0.92	0.08	0.00	66	0.00	0.16	0.84	576	0.00	0.00	1.00
1973–74	84	0.92	0.08	0.00	62	0.00	0.19	0.81	477	0.00	0.00	1.00
1974–75	84	0.91	0.09	0.00	66	0.00	0.19	0.81	520	0.00	0.00	1.00
1975–76	83	0.90	0.10	0.00	70	0.00	0.19	0.81	563	0.00	0.00	1.00
1976–77	83	0.89	0.11	0.00	74	0.00	0.19	0.81	519	0.00	0.00	1.00
1977–78	82	0.88	0.12	0.00	79	0.00	0.19	0.81	475	0.00	0.00	1.00
1978–79	82	0.87	0.13	0.00	83	0.00	0.20	0.80	432	0.00	0.00	1.00
1979–80	81	0.86	0.14	0.00	87	0.00	0.20	0.80	388	0.00	0.00	1.00
1980–81	81	0.85	0.15	0.00	91	0.00	0.20	0.80	344	0.00	0.00	1.00
1981–82	80	0.85	0.15	0.00	95	0.00	0.19	0.81	301	0.00	0.00	1.00
1982–83	79	0.84	0.16	0.00	99	0.00	0.19	0.81	262	0.00	0.00	1.00
1983–84	81	0.81	0.19	0.00	33	0.00	0.69	0.31	307	0.00	0.00	1.00
1984–85	80	0.80	0.20	0.00	24	0.00	1.00	0.00	323	0.00	0.00	1.00
1985–86	77	0.82	0.18	0.00	21	0.00	1.00	0.00	354	0.00	0.00	1.00
1986–87	74	0.84	0.16	0.00	24	0.00	1.00	0.00	419	0.00	0.00	1.00
1987–88	71	0.86	0.14	0.00	27	0.00	1.00	0.00	430	0.00	0.00	1.00
1988–89	69	0.87	0.13	0.00	29	0.00	1.00	0.00	524	0.00	0.00	1.00
1989–90	67	0.87	0.13	0.00	29	0.00	1.00	0.00	544	0.00	0.00	1.00
1990–91	65	0.88	0.12	0.00	32	0.00	1.00	0.00	479	0.00	0.00	1.00
1991–92	63	0.89	0.11	0.00	32	0.00	1.00	0.00	513	0.00	0.00	1.00
1992–93	55	1.00	0.00	0.00	35	0.00	1.00	0.00	536	0.00	0.00	1.00
1993–94	54	1.00	0.00	0.00	38	0.01	0.99	0.00	558	0.00	0.00	1.00
1994–95	53	1.00	0.00	0.00	41	0.01	0.99	0.00	615	0.00	0.00	1.00
1995–96	51	1.00	0.00	0.00	45	0.02	0.98	0.00	400	0.00	0.00	1.00
1996–97	50	1.00	0.00	0.00	43	0.04	0.96	0.00	705	0.00	0.00	1.00
1997–98	49	1.00	0.00	0.00	42	0.08	0.92	0.00	405	0.00	0.00	1.00
1998–99	48	1.00	0.00	0.00	56	0.12	0.88	0.00	712	0.00	0.00	1.00
1999–00	47	1.00	0.00	0.00	54	0.23	0.77	0.00	762	0.00	0.00	1.00
2000–01	45	1.00	0.00	0.00	51	0.33	0.67	0.00	645	0.00	0.00	1.00
2001–02	44	1.00	0.00	0.00	62	0.45	0.55	0.00	539	0.00	0.00	1.00
2002–03	43	1.00	0.00	0.00	39	0.12	0.88	0.00	626	0.00	0.00	1.00
2003–04	42	1.00	0.00	0.00	42	0.19	0.81	0.00	726	0.00	0.00	1.00
2004–05	41	1.00	0.00	0.00	46	0.26	0.74	0.00	800	0.00	0.00	1.00
2005–06	40	1.00	0.00	0.00	53	0.35	0.65	0.00	818	0.00	0.00	1.00
2006–07	36	1.00	0.00	0.00	31	0.99	0.00	0.01	1 207	0.00	0.00	1.00
Annual growth rate												
2001–02 to 2006–07	–3.9%				–13.4%				17.5%			
1996–97 to 2006–07	–3.2%				–3.5%				5.5%			
1971–72 to 2006–07	–2.5%				–2.5%				1.7%			

TA.9c Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Queensland, 1971–72 to 2006–07

Year	Total intermodal freight (m.ntk)	QLD–NSW Shares			Total intermodal freight (m.ntk)	QLD–VIC Shares			Total intermodal freight (m.ntk)	QLD–SA Shares			Total intermodal freight (m.ntk)	QLD–WA Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	756	0.56	0.35	0.09	315	0.38	0.26	0.36	121	0.60	0.29	0.11	270	0.05	0.12	0.83
1972–73	871	0.61	0.31	0.08	351	0.46	0.23	0.32	137	0.66	0.25	0.10	254	0.07	0.12	0.81
1973–74	979	0.66	0.28	0.07	387	0.51	0.20	0.29	152	0.70	0.22	0.09	238	0.09	0.12	0.79
1974–75	1 019	0.68	0.27	0.05	398	0.55	0.19	0.27	152	0.74	0.21	0.05	183	0.12	0.15	0.73
1975–76	1 116	0.71	0.25	0.03	430	0.60	0.16	0.23	159	0.81	0.19	0.00	153	0.31	0.17	0.52
1976–77	1 187	0.71	0.25	0.04	399	0.71	0.19	0.11	164	0.83	0.17	0.00	91	0.55	0.35	0.10
1977–78	1 225	0.70	0.25	0.05	412	0.71	0.19	0.10	164	0.84	0.16	0.00	97	0.53	0.38	0.09
1978–79	1 345	0.71	0.24	0.05	457	0.73	0.18	0.09	175	0.86	0.14	0.00	107	0.52	0.39	0.08
1979–80	1 506	0.73	0.22	0.05	521	0.76	0.16	0.08	193	0.89	0.11	0.00	120	0.53	0.40	0.07
1980–81	1 593	0.75	0.20	0.05	556	0.79	0.13	0.08	206	0.89	0.11	0.00	109	0.63	0.29	0.08
1981–82	1 725	0.75	0.20	0.05	608	0.80	0.13	0.07	210	0.94	0.06	0.00	109	0.68	0.24	0.08
1982–83	1 625	0.71	0.23	0.06	564	0.77	0.16	0.08	186	0.96	0.02	0.02	96	0.69	0.22	0.09
1983–84	1 847	0.79	0.17	0.04	793	0.72	0.17	0.11	239	0.92	0.08	0.00	107	0.76	0.20	0.04
1984–85	1 881	0.80	0.19	0.01	772	0.78	0.20	0.02	285	0.80	0.08	0.12	100	0.84	0.16	0.00
1985–86	2 198	0.78	0.22	0.00	858	0.82	0.18	0.00	280	0.91	0.09	0.00	105	0.90	0.10	0.00
1986–87	2 263	0.77	0.23	0.00	886	0.82	0.18	0.00	296	0.87	0.13	0.00	107	0.90	0.10	0.00
1987–88	2 459	0.80	0.20	0.00	1 010	0.84	0.16	0.00	355	0.81	0.17	0.02	161	0.67	0.33	0.00
1988–89	2 687	0.81	0.19	0.00	1 185	0.82	0.18	0.00	424	0.75	0.25	0.00	170	0.70	0.25	0.05
1989–90	2 838	0.82	0.18	0.00	1 297	0.80	0.20	0.00	532	0.63	0.30	0.08	152	0.83	0.17	0.00
1990–91	2 807	0.84	0.16	0.00	1 350	0.80	0.20	0.00	508	0.66	0.34	0.00	201	0.63	0.37	0.00
1991–92	2 855	0.83	0.16	0.00	1 468	0.75	0.25	0.00	480	0.71	0.29	0.00	265	0.48	0.50	0.02
1992–93	3 068	0.85	0.15	0.00	1 760	0.71	0.22	0.08	556	0.67	0.24	0.10	338	0.41	0.57	0.01
1993–94	3 245	0.86	0.14	0.00	1 785	0.76	0.23	0.01	533	0.74	0.24	0.02	462	0.32	0.55	0.12
1994–95	3 433	0.87	0.12	0.00	1 924	0.78	0.22	0.00	540	0.78	0.22	0.00	520	0.30	0.61	0.08
1995–96	3 758	0.89	0.11	0.00	2 089	0.82	0.18	0.00	568	0.82	0.18	0.00	657	0.27	0.72	0.02
1996–97	4 040	0.90	0.09	0.00	2 397	0.80	0.19	0.01	625	0.80	0.20	0.00	703	0.27	0.70	0.03
1997–98	4 500	0.88	0.11	0.01	2 719	0.79	0.21	0.01	668	0.81	0.19	0.00	776	0.26	0.60	0.14
1998–99	4 755	0.92	0.08	0.00	2 940	0.82	0.17	0.02	669	0.88	0.12	0.00	848	0.26	0.56	0.18
1999–00	5 162	0.92	0.08	0.00	3 285	0.81	0.18	0.01	749	0.85	0.14	0.01	848	0.28	0.57	0.15
2000–01	5 352	0.92	0.08	0.00	3 526	0.80	0.19	0.01	796	0.82	0.17	0.00	874	0.28	0.56	0.15
2001–02	5 678	0.93	0.07	0.00	3 863	0.80	0.20	0.00	838	0.83	0.17	0.00	945	0.28	0.53	0.19
2002–03	6 079	0.93	0.07	0.00	4 268	0.80	0.20	0.01	889	0.84	0.16	0.00	1 105	0.26	0.46	0.29
2003–04	6 439	0.94	0.06	0.00	4 644	0.80	0.20	0.00	936	0.84	0.16	0.00	1 052	0.28	0.49	0.23
2004–05	6 779	0.94	0.06	0.00	5 014	0.80	0.20	0.00	983	0.84	0.16	0.00	1 029	0.31	0.51	0.19
2005–06	7 156	0.94	0.06	0.00	5 431	0.80	0.20	0.00	1 054	0.83	0.15	0.02	1 112	0.30	0.48	0.23
2006–07	7 408	0.98	0.02	0.00	5 750	0.81	0.19	0.00	1 278	0.80	0.19	0.01	1 679	0.18	0.50	0.32
Annual growth rate																
2001–02 to 2006–07	5.5%				8.3%				8.8%				12.2%			
1996–97 to 2006–07	6.3%				9.1%				7.4%				9.1%			
1971–72 to 2006–07	6.9%				8.9%				7.2%				5.5%			

(continued)

TA.9c Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Queensland, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	QLD–ACT Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	QLD–NT Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	QLD–TAS Shares Road	Rail	Coastal shipping
1971–72	1	1.00	0.00	0.00	102	0.59	0.00	0.41	36	0.00	0.00	1.00
1972–73	1	1.00	0.00	0.00	138	0.53	0.00	0.47	18	0.00	0.00	1.00
1973–74	1	1.00	0.00	0.00	172	0.50	0.00	0.50	1	0.00	0.00	1.00
1974–75	1	1.00	0.00	0.00	166	0.55	0.00	0.45	4	0.00	0.00	1.00
1975–76	1	1.00	0.00	0.00	165	0.62	0.00	0.38	6	0.00	0.00	1.00
1976–77	1	1.00	0.00	0.00	171	0.63	0.00	0.37	8	0.00	0.00	1.00
1977–78	1	1.00	0.00	0.00	172	0.64	0.00	0.36	10	0.00	0.00	1.00
1978–79	1	1.00	0.00	0.00	183	0.66	0.00	0.34	12	0.00	0.00	1.00
1979–80	1	1.00	0.00	0.00	197	0.68	0.00	0.32	14	0.00	0.00	1.00
1980–81	1	1.00	0.00	0.00	207	0.70	0.00	0.30	16	0.00	0.00	1.00
1981–82	1	1.00	0.00	0.00	216	0.71	0.00	0.29	18	0.00	0.00	1.00
1982–83	1	1.00	0.00	0.00	203	0.69	0.00	0.31	21	0.00	0.00	1.00
1983–84	1	1.00	0.00	0.00	270	0.63	0.00	0.37	26	0.00	0.00	1.00
1984–85	1	1.00	0.00	0.00	198	0.88	0.00	0.12	2	0.00	0.00	1.00
1985–86	1	1.00	0.00	0.00	217	0.89	0.00	0.11	17	0.00	0.00	1.00
1986–87	1	1.00	0.00	0.00	216	0.91	0.00	0.09	28	0.00	0.00	1.00
1987–88	1	1.00	0.00	0.00	228	0.96	0.00	0.04	2	0.00	0.00	1.00
1988–89	1	1.00	0.00	0.00	239	1.00	0.00	0.00	9	0.00	0.00	1.00
1989–90	1	1.00	0.00	0.00	253	0.99	0.00	0.01	2	0.00	0.00	1.00
1990–91	1	1.00	0.00	0.00	253	1.00	0.00	0.00	2	0.00	0.00	1.00
1991–92	1	1.00	0.00	0.00	256	1.00	0.00	0.00	2	0.00	0.00	1.00
1992–93	1	1.00	0.00	0.00	279	0.99	0.00	0.01	7	0.00	0.00	1.00
1993–94	1	1.00	0.00	0.00	293	1.00	0.00	0.00	5	0.00	0.00	1.00
1994–95	1	1.00	0.00	0.00	317	0.98	0.00	0.02	12	0.00	0.00	1.00
1995–96	1	1.00	0.00	0.00	378	0.90	0.00	0.10	3	0.00	0.00	1.00
1996–97	1	1.00	0.00	0.00	454	0.81	0.00	0.19	3	0.00	0.00	1.00
1997–98	1	1.00	0.00	0.00	498	0.79	0.00	0.21	1	0.00	0.00	1.00
1998–99	1	1.00	0.00	0.00	462	0.92	0.00	0.08	3	0.00	0.00	1.00
1999–00	1	1.00	0.00	0.00	467	0.97	0.00	0.03	1	0.00	0.00	1.00
2000–01	1	1.00	0.00	0.00	564	0.83	0.00	0.17	15	0.00	0.00	1.00
2001–02	1	1.00	0.00	0.00	592	0.84	0.00	0.16	1	0.00	0.00	1.00
2002–03	1	1.00	0.00	0.00	755	0.87	0.00	0.13	11	0.00	0.00	1.00
2003–04	1	1.00	0.00	0.00	799	0.87	0.00	0.13	2	0.00	0.00	1.00
2004–05	1	1.00	0.00	0.00	816	0.89	0.00	0.11	1	0.00	0.00	1.00
2005–06	1	1.00	0.00	0.00	855	0.89	0.00	0.11	0	0.00	0.00	1.00
2006–07	0	0.00	0.00	0.00	590	0.85	0.00	0.15	3	0.00	0.00	1.00
Annual growth rate												
2001–02 to 2006–07	–100.0%				0.0%				36.9%			
1996–97 to 2006–07	–100.0%				2.7%				0.1%			
1971–72 to 2006–07	–100.0%				5.3%				–6.8%			

TA.9d Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from South Australia, 1971–72 to 2006–07

Year	SA–NSW Total intermodal freight (m.ntk)	SA–NSW Shares Road	SA–NSW Shares Rail	SA–NSW Shares Coastal shipping	SA–VIC Total intermodal freight (m.ntk)	SA–VIC Shares Road	SA–VIC Shares Rail	SA–VIC Shares Coastal shipping	SA–QLD Total intermodal freight (m.ntk)	SA–QLD Shares Road	SA–QLD Shares Rail	SA–QLD Shares Coastal shipping	SA–WA Total intermodal freight (m.ntk)	SA–WA Shares Road	SA–WA Shares Rail	SA–WA Shares Coastal shipping
1971–72	494	0.57	0.43	0.01	506	0.32	0.64	0.04	267	0.62	0.38	0.00	500	0.07	0.90	0.03
1972–73	548	0.61	0.38	0.01	545	0.38	0.58	0.04	285	0.68	0.32	0.00	620	0.09	0.89	0.02
1973–74	597	0.64	0.35	0.01	581	0.44	0.53	0.04	299	0.73	0.27	0.01	739	0.11	0.88	0.01
1974–75	615	0.66	0.34	0.00	583	0.47	0.51	0.02	298	0.76	0.23	0.01	846	0.11	0.88	0.01
1975–76	661	0.68	0.32	0.00	609	0.53	0.47	0.00	308	0.81	0.19	0.00	857	0.02	0.97	0.01
1976–77	715	0.66	0.34	0.00	637	0.54	0.46	0.00	345	0.75	0.25	0.00	844	0.02	0.98	0.00
1977–78	754	0.63	0.37	0.00	649	0.54	0.46	0.00	377	0.68	0.32	0.00	840	0.02	0.98	0.00
1978–79	827	0.63	0.37	0.00	696	0.56	0.44	0.00	426	0.65	0.35	0.00	839	0.03	0.97	0.00
1979–80	916	0.63	0.37	0.00	761	0.60	0.40	0.00	482	0.62	0.38	0.00	840	0.04	0.96	0.00
1980–81	980	0.63	0.37	0.00	813	0.61	0.39	0.00	459	0.69	0.31	0.00	780	0.05	0.95	0.00
1981–82	984	0.66	0.34	0.00	817	0.66	0.34	0.00	460	0.72	0.28	0.00	703	0.06	0.94	0.00
1982–83	927	0.64	0.33	0.03	723	0.66	0.34	0.01	419	0.72	0.28	0.00	615	0.05	0.95	0.00
1983–84	1 070	0.66	0.34	0.00	890	0.69	0.31	0.00	493	0.71	0.29	0.00	730	0.07	0.93	0.00
1984–85	1 078	0.68	0.32	0.00	893	0.71	0.29	0.00	500	0.72	0.28	0.01	687	0.09	0.91	0.00
1985–86	1 115	0.72	0.28	0.00	970	0.75	0.23	0.02	509	0.76	0.24	0.00	634	0.12	0.88	0.00
1986–87	1 126	0.72	0.28	0.00	990	0.75	0.25	0.00	513	0.75	0.25	0.00	887	0.09	0.91	0.00
1987–88	1 302	0.69	0.31	0.00	1 137	0.75	0.25	0.00	585	0.72	0.28	0.00	963	0.11	0.89	0.01
1988–89	1 444	0.67	0.30	0.03	1 269	0.75	0.25	0.00	663	0.68	0.32	0.00	1 067	0.12	0.88	0.00
1989–90	1 453	0.69	0.31	0.00	1 280	0.79	0.20	0.01	733	0.63	0.37	0.00	1 242	0.12	0.88	0.00
1990–91	1 368	0.75	0.25	0.00	1 271	0.81	0.19	0.00	690	0.67	0.33	0.00	1 125	0.13	0.86	0.00
1991–92	1 404	0.73	0.27	0.00	1 303	0.80	0.20	0.00	704	0.66	0.34	0.00	1 119	0.14	0.85	0.01
1992–93	1 548	0.71	0.29	0.00	1 444	0.79	0.21	0.00	763	0.64	0.36	0.00	1 207	0.15	0.83	0.01
1993–94	1 636	0.71	0.29	0.00	1 573	0.79	0.21	0.00	817	0.62	0.38	0.00	1 208	0.18	0.82	0.00
1994–95	1 724	0.71	0.29	0.00	1 697	0.78	0.22	0.00	870	0.61	0.39	0.00	1 239	0.20	0.79	0.01
1995–96	1 753	0.76	0.24	0.00	1 875	0.80	0.20	0.00	869	0.65	0.35	0.00	1 406	0.22	0.77	0.01
1996–97	1 777	0.80	0.20	0.00	1 981	0.83	0.17	0.00	902	0.66	0.34	0.00	1 468	0.25	0.74	0.00
1997–98	1 842	0.82	0.17	0.00	2 182	0.83	0.17	0.00	934	0.67	0.33	0.00	1 550	0.29	0.70	0.01
1998–99	1 926	0.84	0.16	0.00	2 289	0.87	0.13	0.00	998	0.66	0.34	0.00	1 639	0.33	0.66	0.01
1999–00	2 086	0.83	0.14	0.03	2 497	0.87	0.13	0.00	1 022	0.68	0.32	0.00	1 807	0.35	0.63	0.01
2000–01	2 092	0.85	0.14	0.00	2 678	0.85	0.13	0.02	1 032	0.69	0.31	0.01	1 957	0.36	0.61	0.04
2001–02	2 210	0.85	0.14	0.02	2 801	0.87	0.13	0.00	1 040	0.71	0.29	0.00	2 071	0.39	0.60	0.01
2002–03	2 283	0.87	0.13	0.00	3 018	0.87	0.13	0.00	1 058	0.72	0.28	0.00	2 279	0.41	0.57	0.02
2003–04	2 378	0.87	0.13	0.00	3 225	0.88	0.12	0.00	1 071	0.74	0.26	0.00	2 442	0.43	0.55	0.02
2004–05	2 466	0.88	0.12	0.00	3 415	0.88	0.12	0.00	1 082	0.75	0.25	0.00	2 637	0.45	0.53	0.02
2005–06	2 562	0.88	0.12	0.00	3 626	0.88	0.12	0.00	1 094	0.77	0.23	0.00	2 804	0.48	0.52	0.01
2006–07	2 526	0.91	0.09	0.00	4 926	0.69	0.31	0.00	1 262	0.68	0.31	0.01	3 266	0.46	0.53	0.01
Annual growth rate																
2001–02 to 2006–07	2.7%				12.0%				3.9%				9.5%			
1996–97 to 2006–07	3.6%				9.5%				3.4%				8.3%			
1971–72 to 2006–07	4.9%				6.9%				4.7%				5.7%			

TA9d Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from South Australia, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	SA–ACT Shares			Total intermodal freight (m.ntk)	SA–NT Shares			Total intermodal freight (m.ntk)	SA–TAS Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	1	0.00	1.00	0.00	237	0.37	0.53	0.10	97	0.00	0.00	1.00
1972–73	2	0.00	1.00	0.00	227	0.46	0.49	0.05	81	0.00	0.00	1.00
1973–74	2	0.00	1.00	0.00	217	0.55	0.45	0.00	66	0.00	0.00	1.00
1974–75	2	0.00	1.00	0.00	210	0.61	0.39	0.00	88	0.00	0.00	1.00
1975–76	3	0.00	1.00	0.00	211	0.68	0.32	0.00	110	0.00	0.00	1.00
1976–77	3	0.00	1.00	0.00	231	0.65	0.35	0.00	100	0.00	0.00	1.00
1977–78	3	0.00	1.00	0.00	246	0.61	0.39	0.00	89	0.00	0.00	1.00
1978–79	3	0.00	1.00	0.00	273	0.60	0.40	0.00	79	0.00	0.00	1.00
1979–80	3	0.00	1.00	0.00	305	0.60	0.40	0.00	68	0.00	0.00	1.00
1980–81	3	0.00	1.00	0.00	314	0.62	0.38	0.00	58	0.00	0.00	1.00
1981–82	3	0.00	1.00	0.00	319	0.65	0.35	0.00	47	0.00	0.00	1.00
1982–83	2	0.00	1.00	0.00	295	0.64	0.36	0.00	38	0.00	0.00	1.00
1983–84	3	0.00	1.00	0.00	343	0.66	0.34	0.00	113	0.00	0.00	1.00
1984–85	2	0.00	1.00	0.00	345	0.68	0.32	0.00	94	0.00	0.00	1.00
1985–86	2	0.00	1.00	0.00	365	0.71	0.28	0.02	72	0.00	0.00	1.00
1986–87	2	0.00	1.00	0.00	385	0.68	0.32	0.00	62	0.00	0.00	1.00
1987–88	1	0.00	1.00	0.00	436	0.66	0.34	0.00	62	0.00	0.00	1.00
1988–89	1	0.00	1.00	0.00	470	0.67	0.33	0.00	2	0.00	0.00	1.00
1989–90	1	0.00	1.00	0.00	493	0.66	0.34	0.00	2	0.00	0.00	1.00
1990–91	1	0.00	1.00	0.00	505	0.65	0.35	0.00	2	0.00	0.00	1.00
1991–92	1	0.00	1.00	0.00	518	0.65	0.35	0.00	2	0.00	0.00	1.00
1992–93	1	1.00	0.00	0.00	570	0.63	0.37	0.00	2	0.00	0.00	1.00
1993–94	1	1.00	0.00	0.00	617	0.61	0.39	0.00	2	0.00	0.00	1.00
1994–95	1	1.00	0.00	0.00	665	0.60	0.40	0.00	2	0.00	0.00	1.00
1995–96	1	1.00	0.00	0.00	708	0.62	0.38	0.00	2	0.00	0.00	1.00
1996–97	1	1.00	0.00	0.00	737	0.63	0.37	0.00	2	0.00	0.00	1.00
1997–98	1	1.00	0.00	0.00	749	0.67	0.33	0.00	0	0.00	0.00	1.00
1998–99	1	1.00	0.00	0.00	776	0.69	0.31	0.00	1	0.00	0.00	1.00
1999–00	1	1.00	0.00	0.00	833	0.69	0.31	0.00	0	0.00	0.00	1.00
2000–01	1	1.00	0.00	0.00	873	0.68	0.32	0.00	2	0.00	0.00	1.00
2001–02	1	1.00	0.00	0.00	926	0.67	0.33	0.00	4	0.00	0.00	1.00
2002–03	1	1.00	0.00	0.00	835	0.61	0.39	0.00	0	0.00	0.00	1.00
2003–04	1	1.00	0.00	0.00	882	0.61	0.39	0.00	2	0.00	0.00	1.00
2004–05	1	1.00	0.00	0.00	927	0.60	0.40	0.00	0	0.00	0.00	1.00
2005–06	1	1.00	0.00	0.00	974	0.60	0.40	0.00	2	0.00	0.00	1.00
2006–07	0	0.00	0.00	0.00	1 740	0.35	0.65	0.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	–100.0%				13.5%				–100.0%			
1996–97 to 2006–07	–100.0%				9.0%				–100.0%			
1971–72 to 2006–07	–100.0%				6.0%				–100.0%			

TA.9e Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Western Australia, 1971–72 to 2006–07

Year	Total intermodal freight (m.ntk)	WA–NSW Shares			Total intermodal freight (m.ntk)	WA–VIC Shares			Total intermodal freight (m.ntk)	WA–QLD Shares			Total intermodal freight (m.ntk)	WA–SA Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	735	0.06	0.06	0.88	544	0.07	0.05	0.88	75	0.13	0.07	0.80	282	0.07	0.72	0.21
1972–73	686	0.08	0.21	0.71	584	0.08	0.12	0.80	109	0.12	0.42	0.46	265	0.11	0.77	0.12
1973–74	637	0.10	0.38	0.52	622	0.09	0.18	0.73	140	0.12	0.62	0.26	249	0.15	0.83	0.01
1974–75	651	0.11	0.52	0.37	525	0.11	0.30	0.59	169	0.11	0.75	0.14	254	0.17	0.83	0.01
1975–76	671	0.12	0.65	0.23	432	0.15	0.46	0.39	201	0.11	0.84	0.05	264	0.20	0.80	0.00
1976–77	484	0.18	0.82	0.00	288	0.24	0.73	0.03	164	0.15	0.80	0.06	271	0.21	0.79	0.00
1977–78	446	0.20	0.80	0.00	300	0.24	0.74	0.03	125	0.19	0.73	0.07	275	0.22	0.78	0.00
1978–79	417	0.23	0.77	0.00	319	0.24	0.73	0.03	90	0.31	0.60	0.09	287	0.24	0.76	0.00
1979–80	392	0.28	0.72	0.00	340	0.26	0.72	0.03	56	0.59	0.27	0.13	305	0.28	0.72	0.00
1980–81	405	0.30	0.70	0.00	434	0.21	0.77	0.02	64	0.58	0.32	0.11	384	0.25	0.75	0.00
1981–82	519	0.25	0.75	0.00	513	0.19	0.79	0.02	80	0.51	0.41	0.08	385	0.28	0.72	0.00
1982–83	611	0.19	0.81	0.00	578	0.16	0.83	0.01	86	0.41	0.53	0.06	358	0.26	0.74	0.00
1983–84	575	0.25	0.61	0.14	569	0.19	0.74	0.07	119	0.40	0.60	0.00	447	0.29	0.70	0.01
1984–85	632	0.24	0.57	0.19	508	0.22	0.68	0.10	121	0.41	0.59	0.00	505	0.27	0.73	0.00
1985–86	640	0.27	0.70	0.04	486	0.26	0.71	0.04	166	0.35	0.65	0.00	600	0.28	0.72	0.00
1986–87	592	0.29	0.71	0.00	576	0.22	0.75	0.03	192	0.31	0.69	0.00	579	0.29	0.71	0.00
1987–88	599	0.33	0.67	0.00	575	0.24	0.75	0.01	239	0.29	0.71	0.00	606	0.34	0.66	0.01
1988–89	662	0.33	0.64	0.03	647	0.24	0.74	0.02	311	0.26	0.69	0.05	706	0.34	0.64	0.01
1989–90	671	0.34	0.66	0.00	633	0.25	0.74	0.00	199	0.43	0.57	0.00	698	0.37	0.63	0.00
1990–91	635	0.36	0.64	0.00	673	0.24	0.75	0.01	318	0.28	0.71	0.02	669	0.40	0.60	0.00
1991–92	710	0.33	0.66	0.01	781	0.21	0.79	0.00	563	0.16	0.48	0.36	690	0.40	0.53	0.07
1992–93	833	0.31	0.68	0.01	858	0.21	0.78	0.01	411	0.25	0.75	0.00	729	0.43	0.56	0.01
1993–94	941	0.29	0.70	0.01	912	0.21	0.79	0.00	459	0.24	0.76	0.00	783	0.45	0.55	0.00
1994–95	1 072	0.27	0.71	0.02	984	0.20	0.79	0.01	514	0.23	0.76	0.01	899	0.43	0.51	0.06
1995–96	826	0.39	0.60	0.00	884	0.25	0.75	0.00	624	0.22	0.78	0.00	917	0.50	0.50	0.00
1996–97	1 082	0.33	0.67	0.01	899	0.26	0.73	0.01	699	0.22	0.77	0.00	902	0.58	0.42	0.00
1997–98	1 305	0.29	0.71	0.00	1 070	0.24	0.75	0.02	810	0.21	0.59	0.19	982	0.60	0.39	0.01
1998–99	1 668	0.25	0.72	0.03	1 163	0.23	0.76	0.01	775	0.25	0.67	0.08	1 206	0.56	0.43	0.01
1999–00	1 856	0.24	0.63	0.13	1 356	0.21	0.77	0.01	771	0.28	0.71	0.01	1 514	0.51	0.44	0.06
2000–01	1 715	0.27	0.66	0.07	1 565	0.19	0.77	0.03	804	0.28	0.71	0.01	1 633	0.50	0.49	0.01
2001–02	2 178	0.23	0.60	0.17	1 840	0.17	0.75	0.08	933	0.27	0.71	0.02	1 868	0.48	0.50	0.01
2002–03	2 632	0.20	0.56	0.23	2 147	0.16	0.72	0.13	1 135	0.24	0.66	0.10	2 123	0.47	0.51	0.02
2003–04	2 266	0.25	0.74	0.01	2 104	0.17	0.81	0.02	1 153	0.26	0.73	0.01	2 344	0.47	0.52	0.01
2004–05	2 577	0.23	0.72	0.05	2 330	0.16	0.80	0.04	1 255	0.25	0.74	0.00	2 595	0.46	0.52	0.01
2005–06	2 704	0.23	0.75	0.02	2 466	0.16	0.83	0.02	1 369	0.25	0.75	0.00	2 813	0.46	0.53	0.00
2006–07	2 564	0.30	0.67	0.03	3 148	0.10	0.87	0.03	1 160	0.26	0.72	0.02	2 813	0.54	0.45	0.01
Annual growth rate																
2001–02 to 2006–07	3.3%				11.3%				4.4%				8.5%			
1996–97 to 2006–07	9.0%				13.3%				5.2%				12.0%			
1971–72 to 2006–07	3.7%				5.3%				8.4%				7.0%			

TA.9e Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Western Australia, 1971–72 to 2006–07 (continued)

Year	WA–ACT Total intermodal freight (m.ntk)	WA–ACT Shares Road	WA–ACT Shares Rail	WA–ACT Shares Coastal shipping	WA–NT Total intermodal freight (m.ntk)	WA–NT Shares Road	WA–NT Shares Rail	WA–NT Shares Coastal shipping	WA–TAS Total intermodal freight (m.ntk)	WA–TAS Shares Road	WA–TAS Shares Rail	WA–TAS Shares Coastal shipping
1971–72	4	0.00	1.00	0.00	97	0.29	0.00	0.71	3	0.00	0.00	1.00
1972–73	6	0.00	1.00	0.00	104	0.34	0.00	0.66	3	0.00	0.00	1.00
1973–74	8	0.00	1.00	0.00	110	0.38	0.00	0.62	3	0.00	0.00	1.00
1974–75	10	0.00	1.00	0.00	112	0.40	0.00	0.60	3	0.00	0.00	1.00
1975–76	13	0.00	1.00	0.00	117	0.44	0.00	0.56	3	0.00	0.00	1.00
1976–77	12	0.00	1.00	0.00	120	0.46	0.00	0.54	3	0.00	0.00	1.00
1977–78	10	0.00	1.00	0.00	120	0.47	0.00	0.53	3	0.00	0.00	1.00
1978–79	9	0.00	1.00	0.00	125	0.50	0.00	0.50	3	0.00	0.00	1.00
1979–80	8	0.00	1.00	0.00	133	0.53	0.00	0.47	3	0.00	0.00	1.00
1980–81	8	0.00	1.00	0.00	138	0.56	0.00	0.44	3	0.00	0.00	1.00
1981–82	7	0.00	1.00	0.00	142	0.58	0.00	0.42	3	0.00	0.00	1.00
1982–83	7	0.00	1.00	0.00	133	0.56	0.00	0.44	29	0.00	0.00	1.00
1983–84	8	0.00	1.00	0.00	158	0.58	0.00	0.42	58	0.00	0.00	1.00
1984–85	10	0.00	1.00	0.00	155	0.62	0.00	0.38	71	0.00	0.00	1.00
1985–86	12	0.00	1.00	0.00	184	0.59	0.00	0.41	61	0.00	0.00	1.00
1986–87	8	0.00	1.00	0.00	186	0.59	0.00	0.41	74	0.00	0.00	1.00
1987–88	4	0.00	1.00	0.00	183	0.68	0.00	0.32	125	0.00	0.00	1.00
1988–89	4	0.00	1.00	0.00	203	0.68	0.00	0.32	116	0.00	0.00	1.00
1989–90	4	0.00	1.00	0.00	242	0.60	0.00	0.40	132	0.00	0.00	1.00
1990–91	4	0.00	1.00	0.00	178	0.82	0.00	0.18	67	0.00	0.00	1.00
1991–92	4	0.00	1.00	0.00	183	0.81	0.00	0.19	39	0.00	0.00	1.00
1992–93	2	0.00	1.00	0.00	200	0.81	0.00	0.19	3	0.00	0.00	1.00
1993–94	2	0.00	1.00	0.00	247	0.70	0.00	0.30	22	0.00	0.00	1.00
1994–95	2	0.00	1.00	0.00	248	0.75	0.00	0.25	42	0.00	0.00	1.00
1995–96	2	0.00	1.00	0.00	257	0.80	0.00	0.20	18	0.00	0.00	1.00
1996–97	2	0.00	1.00	0.00	275	0.82	0.00	0.18	37	0.00	0.00	1.00
1997–98	2	0.00	1.00	0.00	286	0.85	0.00	0.15	110	0.00	0.00	1.00
1998–99	2	0.00	1.00	0.00	311	0.86	0.00	0.14	58	0.00	0.00	1.00
1999–00	2	0.00	1.00	0.00	325	0.89	0.00	0.11	41	0.00	0.00	1.00
2000–01	2	0.00	1.00	0.00	339	0.88	0.00	0.12	21	0.00	0.00	1.00
2001–02	2	0.00	1.00	0.00	355	0.90	0.00	0.10	1 005	0.00	0.00	1.00
2002–03	2	0.00	1.00	0.00	385	0.89	0.00	0.11	30	0.00	0.00	1.00
2003–04	2	0.00	1.00	0.00	413	0.88	0.00	0.12	15	0.00	0.00	1.00
2004–05	2	0.00	1.00	0.00	401	0.96	0.00	0.04	25	0.00	0.00	1.00
2005–06	2	0.00	1.00	0.00	424	0.96	0.00	0.04	21	0.00	0.00	1.00
2006–07	0	0.00	1.00	0.00	484	0.93	0.00	0.07	48	0.00	0.00	1.00
Annual growth rate												
2001–02 to 2006–07	–100.0%				6.4%				–45.6%			
1996–97 to 2006–07	–100.0%				5.8%				2.7%			
1971–72 to 2006–07	–100.0%				4.8%				8.3%			

TA.9f Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Tasmania, 1971–72 to 2006–07

Year	Total intermodal freight (m.ntk)	TAS–NSW Shares			Total intermodal freight (m.ntk)	TAS–VIC Shares			Total intermodal freight (m.ntk)	TAS–QLD Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	255	0.00	0.00	1.00	744	0.00	0.00	1.00	10	0.00	0.00	1.00
1972–73	171	0.00	0.00	1.00	491	0.00	0.00	1.00	13	0.00	0.00	1.00
1973–74	87	0.00	0.00	1.00	239	0.00	0.00	1.00	16	0.00	0.00	1.00
1974–75	75	0.00	0.00	1.00	205	0.00	0.00	1.00	17	0.00	0.00	1.00
1975–76	63	0.00	0.00	1.00	172	0.00	0.00	1.00	18	0.00	0.00	1.00
1976–77	94	0.00	0.00	1.00	202	0.00	0.00	1.00	35	0.00	0.00	1.00
1977–78	125	0.00	0.00	1.00	232	0.00	0.00	1.00	53	0.00	0.00	1.00
1978–79	156	0.00	0.00	1.00	263	0.00	0.00	1.00	71	0.00	0.00	1.00
1979–80	187	0.00	0.00	1.00	293	0.00	0.00	1.00	89	0.00	0.00	1.00
1980–81	218	0.00	0.00	1.00	323	0.00	0.00	1.00	107	0.00	0.00	1.00
1981–82	249	0.00	0.00	1.00	353	0.00	0.00	1.00	125	0.00	0.00	1.00
1982–83	281	0.00	0.00	1.00	383	0.00	0.00	1.00	143	0.00	0.00	1.00
1983–84	331	0.00	0.00	1.00	450	0.00	0.00	1.00	140	0.00	0.00	1.00
1984–85	318	0.00	0.00	1.00	443	0.00	0.00	1.00	125	0.00	0.00	1.00
1985–86	271	0.00	0.00	1.00	440	0.00	0.00	1.00	120	0.00	0.00	1.00
1986–87	341	0.00	0.00	1.00	583	0.00	0.00	1.00	155	0.00	0.00	1.00
1987–88	190	0.00	0.00	1.00	572	0.00	0.00	1.00	68	0.00	0.00	1.00
1988–89	306	0.00	0.00	1.00	656	0.00	0.00	1.00	10	0.00	0.00	1.00
1989–90	147	0.00	0.00	1.00	712	0.00	0.00	1.00	28	0.00	0.00	1.00
1990–91	170	0.00	0.00	1.00	788	0.00	0.00	1.00	3	0.00	0.00	1.00
1991–92	210	0.00	0.00	1.00	692	0.00	0.00	1.00	3	0.00	0.00	1.00
1992–93	186	0.00	0.00	1.00	682	0.00	0.00	1.00	5	0.00	0.00	1.00
1993–94	147	0.00	0.00	1.00	816	0.00	0.00	1.00	3	0.00	0.00	1.00
1994–95	206	0.00	0.00	1.00	783	0.00	0.00	1.00	3	0.00	0.00	1.00
1995–96	87	0.00	0.00	1.00	429	0.00	0.00	1.00	0	0.00	0.00	1.00
1996–97	0	0.00	0.00	1.00	589	0.00	0.00	1.00	2	0.00	0.00	1.00
1997–98	10	0.00	0.00	1.00	430	0.00	0.00	1.00	0	0.00	0.00	1.00
1998–99	3	0.00	0.00	1.00	812	0.00	0.00	1.00	10	0.00	0.00	1.00
1999–00	174	0.00	0.00	1.00	713	0.00	0.00	1.00	0	0.00	0.00	1.00
2000–01	22	0.00	0.00	1.00	654	0.00	0.00	1.00	4	0.00	0.00	1.00
2001–02	1	0.00	0.00	1.00	560	0.00	0.00	1.00	3	0.00	0.00	1.00
2002–03	6	0.00	0.00	1.00	945	0.00	0.00	1.00	8	0.00	0.00	1.00
2003–04	3	0.00	0.00	1.00	921	0.00	0.00	1.00	7	0.00	0.00	1.00
2004–05	320	0.00	0.00	1.00	1 136	0.00	0.00	1.00	7	0.00	0.00	1.00
2005–06	15	0.00	0.00	1.00	1 124	0.00	0.00	1.00	9	0.00	0.00	1.00
2006–07	113	0.00	0.00	1.00	1 005	0.00	0.00	1.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	170.5%				12.4%				–100.0%			
1996–97 to 2006–07	115.3%				5.5%				–100.0%			
1971–72 to 2006–07	–2.4%				0.9%				–100.0%			

TA.9f Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from Tasmania, 1971–72 to 2006–07 (continued)

	Total intermodal freight (m.ntk)	TAS–SA Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	TAS–WA Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	TAS–NT Shares Road	Rail	Coastal shipping
1971–72	65	0.00	0.00	1.00	24	0.00	0.00	1.00	6	0.00	0.00	1.00
1972–73	42	0.00	0.00	1.00	24	0.00	0.00	1.00	6	0.00	0.00	1.00
1973–74	19	0.00	0.00	1.00	24	0.00	0.00	1.00	6	0.00	0.00	1.00
1974–75	25	0.00	0.00	1.00	17	0.00	0.00	1.00	6	0.00	0.00	1.00
1975–76	31	0.00	0.00	1.00	10	0.00	0.00	1.00	6	0.00	0.00	1.00
1976–77	41	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1977–78	50	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1978–79	60	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1979–80	70	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1980–81	80	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1981–82	90	0.00	0.00	1.00	3	0.00	0.00	1.00	6	0.00	0.00	1.00
1982–83	101	0.00	0.00	1.00	177	0.00	0.00	1.00	6	0.00	0.00	1.00
1983–84	94	0.00	0.00	1.00	184	0.00	0.00	1.00	17	0.00	0.00	1.00
1984–85	40	0.00	0.00	1.00	243	0.00	0.00	1.00	6	0.00	0.00	1.00
1985–86	2	0.00	0.00	1.00	205	0.00	0.00	1.00	6	0.00	0.00	1.00
1986–87	40	0.00	0.00	1.00	243	0.00	0.00	1.00	6	0.00	0.00	1.00
1987–88	47	0.00	0.00	1.00	205	0.00	0.00	1.00	6	0.00	0.00	1.00
1988–89	28	0.00	0.00	1.00	191	0.00	0.00	1.00	6	0.00	0.00	1.00
1989–90	2	0.00	0.00	1.00	163	0.00	0.00	1.00	6	0.00	0.00	1.00
1990–91	7	0.00	0.00	1.00	156	0.00	0.00	1.00	6	0.00	0.00	1.00
1991–92	28	0.00	0.00	1.00	62	0.00	0.00	1.00	6	0.00	0.00	1.00
1992–93	21	0.00	0.00	1.00	104	0.00	0.00	1.00	6	0.00	0.00	1.00
1993–94	3	0.00	0.00	1.00	87	0.00	0.00	1.00	6	0.00	0.00	1.00
1994–95	30	0.00	0.00	1.00	80	0.00	0.00	1.00	6	0.00	0.00	1.00
1995–96	0	0.00	0.00	1.00	163	0.00	0.00	1.00	6	0.00	0.00	1.00
1996–97	1	0.00	0.00	1.00	193	0.00	0.00	1.00	6	0.00	0.00	1.00
1997–98	1	0.00	0.00	1.00	64	0.00	0.00	1.00	6	0.00	0.00	1.00
1998–99	8	0.00	0.00	1.00	380	0.00	0.00	1.00	6	0.00	0.00	1.00
1999–00	3	0.00	0.00	1.00	208	0.00	0.00	1.00	12	0.00	0.00	1.00
2000–01	2	0.00	0.00	1.00	41	0.00	0.00	1.00	6	0.00	0.00	1.00
2001–02	20	0.00	0.00	1.00	608	0.00	0.00	1.00	6	0.00	0.00	1.00
2002–03	1	0.00	0.00	1.00	895	0.00	0.00	1.00	6	0.00	0.00	1.00
2003–04	10	0.00	0.00	1.00	1 367	0.00	0.00	1.00	6	0.00	0.00	1.00
2004–05	6	0.00	0.00	1.00	40	0.00	0.00	1.00	6	0.00	0.00	1.00
2005–06	0	0.00	0.00	1.00	470	0.00	0.00	1.00	6	0.00	0.00	1.00
2006–07	0	0.00	0.00	0.00	601	0.00	0.00	1.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	–100.0%				–0.2%				–100.0%			
1996–97 to 2006–07	–100.0%				12.1%				–100.0%			
1971–72 to 2006–07	–100.0%				9.9%				–100.0%			

TA.9g Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from the Northern Territory, 1971–72 to 2006–07

Year	Total intermodal freight (m.ntk)	NT–NSW Shares Road	NT–NSW Shares Rail	NT–NSW Shares Coastal shipping	Total intermodal freight (m.ntk)	NT–VIC Shares Road	NT–VIC Shares Rail	NT–VIC Shares Coastal shipping	Total intermodal freight (m.ntk)	NT–QLD Shares Road	NT–QLD Shares Rail	NT–QLD Shares Coastal shipping	Total intermodal freight (m.ntk)	NT–SA Shares Road	NT–SA Shares Rail	NT–SA Shares Coastal shipping
1971–72	28	0.56	0.00	0.44	42	0.05	0.00	0.95	125	1.00	0.00	0.00	92	0.31	0.69	0.00
1972–73	30	0.56	0.03	0.41	40	0.06	0.00	0.94	138	1.00	0.00	0.00	95	0.40	0.60	0.00
1973–74	32	0.55	0.06	0.39	37	0.06	0.00	0.94	149	1.00	0.00	0.00	98	0.48	0.52	0.00
1974–75	29	0.62	0.10	0.28	35	0.06	0.00	0.94	154	1.00	0.00	0.00	96	0.53	0.47	0.00
1975–76	27	0.70	0.14	0.15	32	0.07	0.00	0.93	164	1.00	0.00	0.00	99	0.60	0.40	0.00
1976–77	23	0.83	0.17	0.00	29	0.08	0.00	0.92	168	1.00	0.00	0.00	109	0.58	0.42	0.00
1977–78	23	0.83	0.17	0.00	27	0.08	0.00	0.92	169	1.00	0.00	0.00	117	0.56	0.44	0.00
1978–79	24	0.84	0.16	0.00	24	0.09	0.00	0.91	177	1.00	0.00	0.00	132	0.56	0.44	0.00
1979–80	24	0.84	0.16	0.00	21	0.11	0.00	0.89	188	1.00	0.00	0.00	150	0.58	0.42	0.00
1980–81	25	0.85	0.15	0.00	18	0.12	0.00	0.88	195	1.00	0.00	0.00	159	0.60	0.40	0.00
1981–82	25	0.85	0.15	0.00	15	0.15	0.00	0.85	201	1.00	0.00	0.00	162	0.64	0.36	0.00
1982–83	23	0.90	0.10	0.00	12	0.18	0.00	0.82	224	0.86	0.00	0.14	144	0.63	0.37	0.00
1983–84	25	0.89	0.11	0.00	7	0.30	0.00	0.70	281	0.75	0.00	0.25	182	0.65	0.35	0.00
1984–85	25	0.89	0.11	0.00	2	1.00	0.00	0.00	215	1.00	0.00	0.00	184	0.67	0.33	0.00
1985–86	26	0.91	0.09	0.00	2	1.00	0.00	0.00	234	0.97	0.00	0.03	197	0.72	0.28	0.00
1986–87	27	0.88	0.12	0.00	5	0.45	0.55	0.00	228	1.00	0.00	0.00	211	0.69	0.31	0.00
1987–88	28	0.87	0.13	0.00	7	0.29	0.71	0.00	241	1.00	0.00	0.00	244	0.69	0.31	0.00
1988–89	29	0.87	0.13	0.00	7	0.29	0.71	0.00	252	1.00	0.00	0.00	271	0.70	0.30	0.00
1989–90	30	0.87	0.13	0.00	7	0.29	0.71	0.00	258	1.00	0.00	0.00	288	0.70	0.30	0.00
1990–91	30	0.87	0.13	0.00	7	0.29	0.71	0.00	259	1.00	0.00	0.00	297	0.69	0.31	0.00
1991–92	30	0.87	0.13	0.00	7	0.29	0.71	0.00	261	1.00	0.00	0.00	306	0.69	0.31	0.00
1992–93	31	0.88	0.12	0.00	10	0.21	0.79	0.00	271	1.00	0.00	0.00	336	0.69	0.31	0.00
1993–94	35	0.78	0.11	0.12	11	0.19	0.81	0.00	282	0.99	0.00	0.01	362	0.70	0.30	0.00
1994–95	36	0.78	0.11	0.11	12	0.18	0.82	0.00	287	1.00	0.00	0.00	389	0.70	0.30	0.00
1995–96	34	0.85	0.11	0.04	13	0.17	0.83	0.00	302	1.00	0.00	0.00	434	0.72	0.28	0.00
1996–97	34	0.88	0.11	0.01	10	0.21	0.79	0.00	313	1.00	0.00	0.00	451	0.76	0.24	0.00
1997–98	35	0.88	0.11	0.01	2	1.00	0.00	0.00	325	1.00	0.00	0.00	524	0.72	0.28	0.00
1998–99	38	0.82	0.10	0.08	7	0.28	0.72	0.00	338	1.00	0.00	0.00	549	0.77	0.23	0.00
1999–00	36	0.89	0.11	0.00	9	0.24	0.76	0.00	351	0.99	0.00	0.01	606	0.76	0.24	0.00
2000–01	37	0.89	0.10	0.00	10	0.20	0.76	0.04	363	0.98	0.00	0.02	642	0.75	0.25	0.00
2001–02	37	0.89	0.10	0.00	10	0.21	0.79	0.00	365	1.00	0.00	0.00	696	0.75	0.25	0.00
2002–03	49	0.92	0.08	0.00	12	0.32	0.68	0.00	263	1.00	0.00	0.00	385	0.51	0.49	0.00
2003–04	49	0.92	0.08	0.00	12	0.32	0.68	0.00	292	0.92	0.00	0.08	415	0.51	0.49	0.00
2004–05	50	0.92	0.08	0.00	12	0.32	0.68	0.00	277	1.00	0.00	0.00	429	0.53	0.47	0.00
2005–06	51	0.92	0.07	0.00	12	0.32	0.68	0.00	283	1.00	0.00	0.00	444	0.54	0.46	0.00
2006–07	43	1.00	0.00	0.00	5	1.00	0.00	0.00	308	1.00	0.00	0.00	698	0.35	0.65	0.00
Annual growth rate																
2001–02 to 2006–07	3.1%				–13.9%				–3.4%				0.1%			
1996–97 to 2006–07	2.5%				–7.3%				–0.2%				4.5%			
1971–72 to 2006–07	1.3%				–6.2%				2.7%				6.2%			

TA.9g Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from the Northern Territory, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	NT–WA Shares			Total intermodal freight (m.ntk)	NT–ACT Shares			Total intermodal freight (m.ntk)	NT–TAS Shares		
		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping		Road	Rail	Coastal shipping
1971–72	74	0.15	0.00	0.85	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1972–73	83	0.18	0.10	0.72	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1973–74	91	0.20	0.19	0.61	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1974–75	108	0.19	0.24	0.58	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1975–76	126	0.19	0.27	0.54	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1976–77	123	0.21	0.27	0.53	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1977–78	118	0.22	0.26	0.52	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1978–79	116	0.25	0.26	0.49	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1979–80	116	0.30	0.25	0.46	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1980–81	113	0.34	0.23	0.43	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1981–82	110	0.38	0.21	0.41	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1982–83	98	0.37	0.21	0.42	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1983–84	82	0.58	0.35	0.07	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1984–85	80	0.62	0.30	0.07	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1985–86	88	0.65	0.25	0.10	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1986–87	87	0.68	0.26	0.07	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1987–88	97	0.70	0.23	0.06	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1988–89	109	0.71	0.21	0.08	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1989–90	105	0.78	0.16	0.06	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1990–91	109	0.76	0.16	0.08	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1991–92	120	0.71	0.14	0.15	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1992–93	123	0.77	0.14	0.10	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1993–94	135	0.76	0.13	0.11	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1994–95	137	0.81	0.12	0.06	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1995–96	150	0.85	0.11	0.04	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1996–97	142	0.99	0.00	0.01	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1997–98	157	0.99	0.00	0.01	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1998–99	184	0.94	0.00	0.06	2	1.00	0.00	0.00	5	0.00	0.00	1.00
1999–00	196	0.97	0.00	0.03	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2000–01	208	0.96	0.00	0.04	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2001–02	216	1.00	0.00	0.00	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2002–03	240	0.98	0.00	0.02	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2003–04	296	0.85	0.00	0.15	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2004–05	273	0.99	0.00	0.01	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2005–06	294	0.98	0.00	0.02	2	1.00	0.00	0.00	5	0.00	0.00	1.00
2006–07	262	0.98	0.00	0.02	0	0.00	0.00	0.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	3.9%				–100.0%				–100.0%			
1996–97 to 2006–07	6.3%				–100.0%				–100.0%			
1971–72 to 2006–07	3.8%				–100.0%				–100.0%			

TA.9h Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from the Australian Capital Territory, 1971–72 to 2006–07

Year	Total intermodal freight (m.ntk)	ACT–NSW Shares Road	ACT–NSW Shares Rail	ACT–NSW Shares Coastal shipping	Total intermodal freight (m.ntk)	ACT–VIC Shares Road	ACT–VIC Shares Rail	ACT–VIC Shares Coastal shipping	Total intermodal freight (m.ntk)	ACT–QLD Shares Road	ACT–QLD Shares Rail	ACT–QLD Shares Coastal shipping
1971–72	19	0.85	0.15	0.00	5	1.00	0.00	0.00	1	1.00	0.00	0.00
1972–73	22	0.88	0.12	0.00	8	1.00	0.00	0.00	1	1.00	0.00	0.00
1973–74	26	0.89	0.11	0.00	11	1.00	0.00	0.00	1	1.00	0.00	0.00
1974–75	27	0.90	0.10	0.00	12	1.00	0.00	0.00	1	1.00	0.00	0.00
1975–76	30	0.91	0.09	0.00	15	1.00	0.00	0.00	1	1.00	0.00	0.00
1976–77	32	0.91	0.09	0.00	14	1.00	0.00	0.00	1	1.00	0.00	0.00
1977–78	32	0.92	0.08	0.00	13	1.00	0.00	0.00	1	1.00	0.00	0.00
1978–79	35	0.92	0.08	0.00	15	1.00	0.00	0.00	1	1.00	0.00	0.00
1979–80	39	0.93	0.07	0.00	18	1.00	0.00	0.00	1	1.00	0.00	0.00
1980–81	42	0.93	0.07	0.00	19	1.00	0.00	0.00	1	1.00	0.00	0.00
1981–82	45	0.94	0.06	0.00	19	1.00	0.00	0.00	1	1.00	0.00	0.00
1982–83	41	0.93	0.07	0.00	12	1.00	0.00	0.00	1	1.00	0.00	0.00
1983–84	49	0.94	0.06	0.00	19	1.00	0.00	0.00	1	1.00	0.00	0.00
1984–85	51	0.95	0.05	0.00	18	1.00	0.00	0.00	1	1.00	0.00	0.00
1985–86	56	0.95	0.05	0.00	21	1.00	0.00	0.00	1	1.00	0.00	0.00
1986–87	57	0.95	0.05	0.00	18	1.00	0.00	0.00	1	1.00	0.00	0.00
1987–88	63	0.96	0.04	0.00	22	1.00	0.00	0.00	1	1.00	0.00	0.00
1988–89	69	0.96	0.04	0.00	25	1.00	0.00	0.00	1	1.00	0.00	0.00
1989–90	72	0.96	0.04	0.00	24	1.00	0.00	0.00	1	1.00	0.00	0.00
1990–91	73	0.96	0.04	0.00	21	1.00	0.00	0.00	1	1.00	0.00	0.00
1991–92	74	0.96	0.04	0.00	19	1.00	0.00	0.00	1	1.00	0.00	0.00
1992–93	80	0.97	0.03	0.00	20	1.00	0.00	0.00	1	1.00	0.00	0.00
1993–94	85	0.97	0.03	0.00	21	1.00	0.00	0.00	1	1.00	0.00	0.00
1994–95	90	0.97	0.03	0.00	21	1.00	0.00	0.00	1	1.00	0.00	0.00
1995–96	99	0.97	0.03	0.00	24	1.00	0.00	0.00	1	1.00	0.00	0.00
1996–97	106	0.97	0.03	0.00	25	1.00	0.00	0.00	1	1.00	0.00	0.00
1997–98	114	0.98	0.02	0.00	27	1.00	0.00	0.00	1	1.00	0.00	0.00
1998–99	123	0.98	0.02	0.00	29	1.00	0.00	0.00	1	1.00	0.00	0.00
1999–00	132	0.98	0.02	0.00	31	1.00	0.00	0.00	1	1.00	0.00	0.00
2000–01	136	0.98	0.02	0.00	29	1.00	0.00	0.00	1	1.00	0.00	0.00
2001–02	142	1.00	0.00	0.00	29	1.00	0.00	0.00	1	1.00	0.00	0.00
2002–03	151	1.00	0.00	0.00	30	1.00	0.00	0.00	1	1.00	0.00	0.00
2003–04	159	1.00	0.00	0.00	30	1.00	0.00	0.00	1	1.00	0.00	0.00
2004–05	167	1.00	0.00	0.00	29	1.00	0.00	0.00	1	1.00	0.00	0.00
2005–06	175	1.00	0.00	0.00	29	1.00	0.00	0.00	1	1.00	0.00	0.00
2006–07	192	1.00	0.00	0.00	39	1.00	0.00	0.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	6.3%				6.1%				–100.0%			
1996–97 to 2006–07	6.1%				4.4%				–100.0%			
1971–72 to 2006–07	7.1%				6.2%				–100.0%			

TA.9h Intermodal state-to-state total freight, and market shares of road, rail and coastal shipping in transporting freight originating from the Australian Capital Territory, 1971–72 to 2006–07 (continued)

Year	Total intermodal freight (m.ntk)	ACT–SA Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	ACT–WA Shares Road	Rail	Coastal shipping	Total intermodal freight (m.ntk)	ACT–NT Shares Road	Rail	Coastal shipping
1971–72	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1972–73	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1973–74	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1974–75	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1975–76	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1976–77	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1977–78	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1978–79	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1979–80	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1980–81	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1981–82	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1982–83	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1983–84	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1984–85	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1985–86	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1986–87	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1987–88	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1988–89	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1989–90	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1990–91	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1991–92	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1992–93	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1993–94	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1994–95	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1995–96	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1996–97	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1997–98	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1998–99	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
1999–00	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2000–01	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2001–02	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2002–03	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2003–04	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2004–05	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2005–06	1	1.00	0.00	0.00	2	1.00	0.00	0.00	2	1.00	0.00	0.00
2006–07	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
Annual growth rate												
2001–02 to 2006–07	–100.0%				–100.0%				–100.0%			
1996–97 to 2006–07	–100.0%				–100.0%				–100.0%			
1971–72 to 2006–07	–100.0%				–100.0%				–100.0%			

Source: BITRE estimates.

Significant railway events

Date	Description of event
July 1991	The Federal Government and the State Governments of Queensland, New South Wales, Victoria and Western Australia agreed that a newly-formed National Rail Corporation would take over the operation of interstate rail services from the states.
April 1993	National Rail began third-party access freight operations on interstate track.
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; main line re-routed from Ballarat, with conversion of North Geelong–Cressy–Ararat–Adelaide line to standard gauge.
July 1995	SCT Logistics, an Australian logistics 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.
1997	Standard gauge line to Fisherman Islands (Port of Brisbane) opened.
October 1997	Great Southern Railway consortium purchased Pax Rail, the Australian National Railways' passenger business (consisting of The Overland, The Ghan and the Indian Pacific).
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.

Date	Description of event
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 between Albury, Melbourne and the South Australia border.
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	Passenger train accident at Glenbrook, NSW.
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 surrendered its Melbourne urban and V/Line passenger service provision contracts.
January 2003	Passenger train accident, 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 infrastructure upgrading on the Brisbane–Sydney rail corridor.
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 NSW's 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	QR 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.
October 2006	SCT Logistics commenced freight service between Parkes and Perth.
November 2006	Opening of Sandgate flyover, enabling unimpeded movement of coal trains, between Hunter Valley and Kooragang Island.
December 2006	Pacific National won a contract extension with BlueScope Steel and OneSteel for seven years, to shift steel products around the country.
January 2007	Tasmanian government resumed financial responsibility for the State's commercial rail infrastructure; day-to-day infrastructure management remains with Pacific National.
January 2007	New Wagga Wagga bridge opened.
February 2007	CRT ceased its Altona North–Port of Melbourne shuttle.

Date	Description of event
February 2007	ACCC approved SCT Logistics' purchase of train assets (including nine locomotives) from Pacific National, as part of Toll's takeover of Patrick.
March 2007	Australian Government announced $78 funding of remedial work on AusLink section of Tasmanian railway system with $40 million more from the Tasmanian Government and commitment by Pacific National to spend $38 million on locomotive and wagon upgrades.
April 2007	ACCC approves the split of Toll Holdings, with new company Asciano Ltd, which included Pacific National and Patrick Portlink assets.
April 2007	Victorian government bought back leased intrastate track from Pacific National, giving control of the network to V/Line Passenger.
October 2007	Opening of 58 km Lang Hancock Railway between Hope Downs and existing Rio Tinto railway.
November 2007	QR National commenced new thrice-weekly Melbourne–Perth service, incorporating the weekday P&O Melbourne–Adelaide operation.
November 2007	Asciano Ltd announced end of grain and intrastate intermodal services in Tasmania, Victoria and NSW, to take effect from early 2008.
January 2008	El Zorro began broad gauge grain train competition in Victoria, the first in that state.
March 2008	Pacific National began withdrawal of freight services in Victoria, following earlier (Nov. 2007) announcement of closure of operations.
May 2008	Fortescue Metals Group's 260 km Cloudbreak railway in the Pilbara opened
June 2008	Pacific National announced cessation of its Tasmanian train operations, later indicating it would sell the business.

Source: Compiled by BITRE.

Explanatory notes

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

Scheduled intermodal transit time

Scheduled transit time across a given line segment measures transit time for all trains going across the specified line, irrespective of a train's origin or ultimate destination. Scheduled transit time by service measures transit time for the specified origin and destination pairs.

Actual intermodal 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 Australian Rail Track Corporation, FreightLink, QR Network Access, RailCorp and WestNet. 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 2007–08. In practice, the results reported have had to be based on a subset of the total number of the relevant intermodal trains. This occurred where infrastructure managers did not record train arrivals and departures for all trains or where origin and destination times did not correspond across different infrastructure networks.

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) published 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 the standard deviations of 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' and '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 intercapital city 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:

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.

ARTC TQI (Standardised TQI across ARTC network)

This measure is applied across the ARTC-managed network and consists of:

- gauge
- twist (short), measured over 2.0 metres
- vertical irregularities ('top'), deviation over a 20 metre inertial reading (average of left and right rail), and
- horizontal rail irregularities ('versine'), 5/10 metre chord emulation (average of left and right rail).

These are based on average of Standard Deviations over 100 metre sections.

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.

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.

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.

Figure 11 and Figure 12 present maximum, minimum and median dwell times. The median is the middle number in a list of numbers, ordered from smallest to largest. The median dwell time shows the point at which half the services had shorter dwell time and the other half had longer dwell times.

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 may be operational reasons (a need to change crews or refuel the locomotives) or there may be 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.

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.

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.

The estimates are derived from the following data sources:

- Rail data from various sources detailed in BTRE (2007) was used to derive time series on rail non-bulk freight from 1971–72 to 2004–05. For 2005–06 and 2006–07, data supplied by the rail industry.
- Coastal shipping data is collected by BITRE using a survey of ports.
- Road data is derived from the ABS Survey of Motor Vehicle Use (SMVU) using a methodology developed by BTRE and published in BTRE (2006).

For a state-to-state market segment, the total interstate freight market is given by the sum of the net tonne kilometres 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 net tonne kilometres of freight transported by the mode divided by the total interstate freight market for the state-to-state freight market segment.

Rail

The rail data in this report, for the years from 1971–72 to 2006–07 is based on the following sources:

- data provided by infrastructure managers and rail operators to BITRE for 2006 and 2007
- 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 number 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 number 9212.0)
- unpublished data on intersystem rail freight movements in 1984–85 from train operators, and
- data from BTE (1976, 1979, 1983).

As discussed in Box 3, there is an element of distortion in the rail origin–destination data. Where goods are shifted across operators, or shifted across operating divisions of a company, involve trans-shipment or use more than one significant mode, then the origin–destination pairs reflect a stage of a journey rather than the complete freight origin–destination movement. As a related issue, movements of freight such as coastal shipments from Victoria to Tasmania will report a 'Victoria' origin whereas the true origin may be a state beyond Victoria.

Coastal Shipping

Data is collected annually by BITRE from ports and the coastal shipping industry by way of a questionnaire.

Road

The main data source for road is the annual ABS Survey of Motor Vehicle Use (SMVU). This data requires adjustment, as discussed in BTRE (2006) and Soames et al (2007).

The 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.

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ARA	Australasian Railway Association
ARTC	Australian Rail Track Corporation
ATC	Australian Transport Council
BITRE	Bureau of Infrastructure, Transport and Regional Economics
BTE	Bureau of Transport Economics
BTRE	Bureau of Transport and Regional Economics
GTK	Gross tonne kilometres
m.ntk	Million net tonne kilometres
NTK	Net tonne kilometres
SMVU	Survey of Motor Vehicle Use
TQI	Track Quality Index

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