



# waterline

JUNE 2001

## in brief

- The five-port average crane rate improved further to 26.4 containers per hour for the March quarter 2001.
- The five-port elapsed labour rate and the ship rate both increased for the March quarter.
- In 2000, the overall tonnage of cargo moved under coastal permits increased by 30 per cent compared with 1999.
- Berth availability was 99 per cent in the March quarter—the highest level since the commencement of the series.

## at a glance

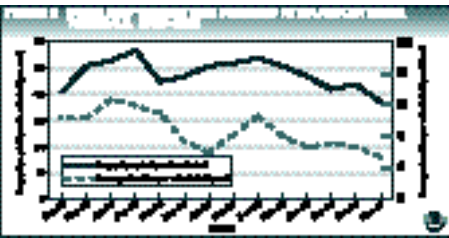
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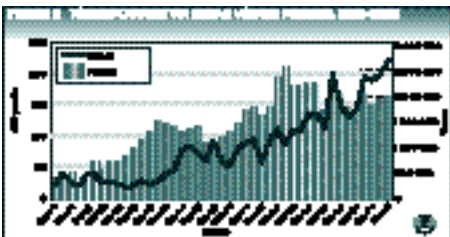
## at a glance

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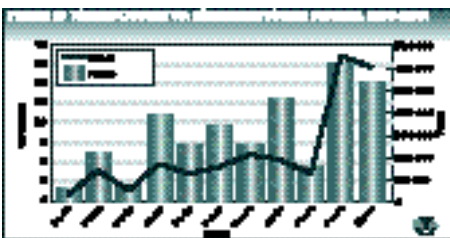
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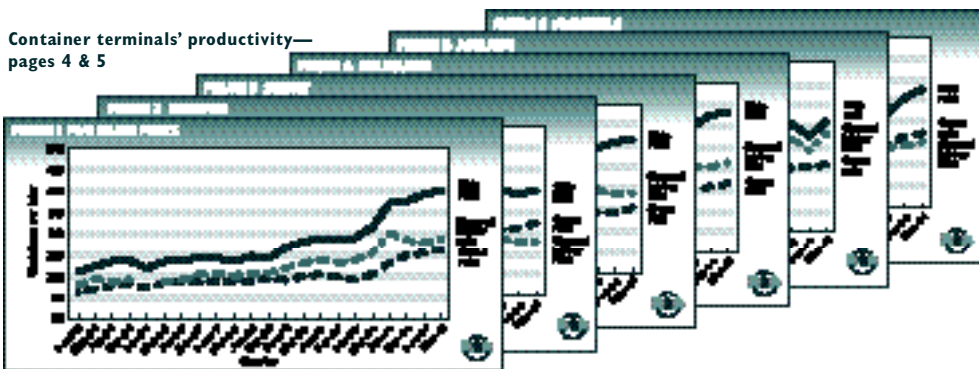
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Container terminals' productivity—pages 4 & 5



## Trial audit program introduced to check stevedoring productivity data

At present, *Waterline* is the only publicly available source of information on waterfront productivity in Australia and is widely used to monitor changes in stevedoring productivity. In view of this, the Commonwealth Minister for Transport and Regional Services, the Hon John Anderson MP, has decided to trial an audit program for one year, with the aim of ensuring that stevedoring productivity data are reported accurately on a consistent and comparable basis.

Patrick the Australian Stevedore, P&O Ports and CSX World Terminals (the three firms in Australia that undertake stevedoring at Australia's five largest container ports) have agreed to an audit protocol developed by the Bureau of Transport Economics (BTE). This protocol covers desk audits, access to information and visits by BTE staff to stevedoring productivity information collation points to examine the integrity of the data collection and processing procedures used by the stevedores and adherence to the agreed definitions. BTE visited the premises of all of these stevedores in the period from February to April 2001 to check the stevedoring productivity data submitted and will continue to audit their data throughout 2001. BTE would like to thank the stevedores for their cooperation in ensuring that the figures published in *Waterline* are as accurate as possible.

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<http://www.bte.gov.au/>



### STEVEDORING PRODUCTIVITY

Table 1 presents the March quarter 1999 to March quarter 2001 indicators of stevedoring productivity at the five major Australian container ports, expressed in *container moves per hour*. Figures 1 to 6 present these data over the December quarter 1995 to March quarter 2001 period. The Brisbane data are the weighted averages for the container terminals operated by P&O Ports, Patrick and CSX World Terminals. The data for Sydney, Melbourne and Fremantle are weighted averages for the container terminals operated by P&O Ports and Patrick. The Adelaide data are for the CSX World Terminals container terminal.

The national crane rate productivity, as measured by the five-port average for the March quarter 2001, continued the trend of steady improvement that began approximately a year ago.

In summary:

- the five-port average *crane rate* (productivity *per crane* while the ship is worked) was 26.4 containers per hour for the March quarter 2001 compared with 25.5 in the December quarter 2000;
- the five-port average *elapsed labour rate* (productivity *per ship* based on the time labour is aboard the ship) was 28.8 containers per hour for the March quarter 2001 compared with 27.9 in the December quarter 2000; and
- the five-port average *ship rate* (productivity *per ship* while the ship is worked) was 40.4 containers per hour for the March quarter 2001 compared with 39.5 in the December quarter 2000.

The *Brisbane* (P&O Ports, Patrick, CSX World Terminals) average crane rate was 27.4 containers per hour in the March quarter, up from 26.3 in the December quarter. The elapsed labour rate of 22.8 containers per hour was down, and the ship rate of 35.1 containers per hour was up compared with the previous quarter's figures.

The *Sydney* (P&O Ports, Patrick) average crane rate was 25.3 containers per hour in the March quarter, up from 24.3 containers per hour in the December quarter. The elapsed labour rate of 29.0 containers per hour and the ship rate of 41.3 containers per hour were both up compared with the previous quarter's figures.

The *Melbourne* (P&O Ports, Patrick) average crane rate was 26.5 containers per hour in the March quarter, up from 25.8 in the December quarter. The elapsed labour rate of 31.5 containers per hour and the ship rate of 43.2 containers per hour were both up compared with the previous quarter's figures.

The *Adelaide* (CSX World Terminals) average crane rate was 26.0 containers per hour in the March quarter, up from 25.3 containers per hour in the December quarter. The elapsed labour rate of 33.1 containers per hour and the ship rate of 36.1 containers per hour were both up compared with the previous quarter's figures.

The *Fremantle* (P&O Ports, Patrick) average crane rate was 27.5 containers per hour in the March quarter, up from 26.8 containers per hour in the December quarter. The elapsed labour rate of 25.4 containers per hour and the ship rate of 37.8 containers per hour were both up compared with the previous quarter's figures.

### Teus per hour

Table 6 presents the stevedoring productivity indicators in terms of teus per hour. These data are retained in *Waterline* for the purpose of long-term historical comparison; they are not directly comparable with the data in table 1 because indicators based on teus per hour may be affected by changes in the mix of 20-foot and 40-foot containers from one period to the next.




**TABLE I CONTAINER TERMINAL PERFORMANCE INDICATORS—  
PRODUCTIVITY IN CONTAINERS PER HOUR**

Port / Indicator	Quarter								
	Mar-99	Jun-99	Sep-99	Dec-99	Mar-00	Jun-00	Sep-00	Dec-00	Mar-01
<b>Five ports</b>									
Ships handled	942	958	979	933	875	808	840	814	787
Total containers	448 224	469 742	506 696	557 659	517 533	505 802	531 700	545 075	472 797
Crane rate	19.9	20.3	19.6	19.1	20.4	23.1	24.9	25.5	26.4
Elapsed labour rate	23.1 <sup>a</sup>	24.0 <sup>a</sup>	23.1	23.7	25.4	30.3	28.5	27.9	28.8
Ship rate	28.2	29.0	28.9	29.1	31.8	37.5	38.0	39.5	40.4
Elapsed time not worked (per cent)	18	17	20	19	20	19	25	29	29
40-foot containers (per cent)	28	28	30	30	31	32	33	34	34
<b>Brisbane</b>									
Ships handled	176	193	224	232	219	178	187	179	167
Total containers	61 204	71 008	77 914	84 354	77 992	71 679	80 366	83 082	63 177
Crane rate	18.3	18.9	18.6	19.7	21.2	24.0	25.8	26.3	27.4
Elapsed labour rate	21.2	21.4	19.5	21.5	23.8	26.3	23.3	23.1	22.8
Ship rate	24.7	25.9	24.7	26.4	28.9	33.4	34.9	34.4	35.1
Elapsed time not worked (per cent)	14	18	21	19	18	21	33	33	35
40-foot containers (per cent)	23	24	27	26	25	27	29	30	30
<b>Sydney</b>									
Ships handled	221	243	259	244	221	218	223	211	201
Total containers	142 767	154 062	170 684	195 544	171 164	166 212	173 988	176 106	148 316
Crane rate	17.7	18.2	18.0	16.6	18.6	22.8	24.3	24.3	25.3
Elapsed labour rate	22.6	22.2	23.1	22.5	25.4	32.6	29.6	28.6	29.0
Ship rate	29.5	28.7	29.4	27.6	32.2	40.9	39.5	40.9	41.3
Elapsed time not worked (per cent)	24	23	21	18	21	20	25	30	30
40-foot containers (per cent)	31	32	33	33	34	35	37	37	37
<b>Melbourne</b>									
Ships handled	271	282	278	266	247	217	227	218	214
Total containers	161 894	167 942	183 058	195 723	184 710	178 156	189 306	189 580	170 250
Crane rate	21.5	21.8	20.8	20.3	21.2	23.0	25.0	25.8	26.5
Elapsed labour rate	23.6	25.8	24.5	25.4	25.7	30.7	30.5	30.5	31.5
Ship rate	28.8	31.0	30.2	30.8	32.6	37.6	40.1	42.7	43.2
Elapsed time not worked (per cent)	18	17	19	17	21	18	24	29	27
40-foot containers (per cent)	28	28	32	31	32	33	34	35	33
<b>Adelaide</b>									
Ships handled	73	66	62	62	56	56	62	63	57
Total containers	24 221	24 445	23 969	26 090	21 803	25 245	26 836	27 800	25 051
Crane rate	23.2	23.1	23.0	23.2	23.1	23.0	25.3	25.3	26.0
Elapsed labour rate	28.5	30.0	29.4	30.6	28.9	30.3	32.1	29.3	33.1
Ship rate	30.7	31.1	31.5	33.1	31.2	34.0	35.5	32.6	36.1
Elapsed time not worked (per cent)	7	4	7	7	7	11	10	10	8
40-foot containers (per cent)	29	21	18	17	27	21	15	27	29
<b>Fremantle</b>									
Ships handled	201	174	156	129	132	139	141	143	148
Total containers	58 138	52 285	51 071	55 948	61 864	64 510	61 204	68 507	66 003
Crane rate	21.4	21.7	20.7	21.2	20.9	23.3	24.9	26.8	27.5
Elapsed labour rate	na	na	20.4	21.7	25.3	27.5	24.1	24.4	25.4
Ship rate	25.6	26.6	28.0	30.7	31.8	34.1	32.1	35.9	37.8
Elapsed time not worked (per cent)	na	na	27	29	21	19	25	32	33
40-foot containers (per cent)	25	26	27	28	30	31	35	36	36

na not available

a. Four-port average only as Fremantle elapsed rate data were not available.

Notes 1. The definitions used in compiling the stevedoring productivity data are detailed in Waterline 26, pages 2-3.

2. Data from CSX World Terminals at Brisbane are incorporated from the December quarter 1999 onwards.

3. The data in this table are expressed in container moves per hour and therefore are not directly comparable with the teus per hour data in table 6.

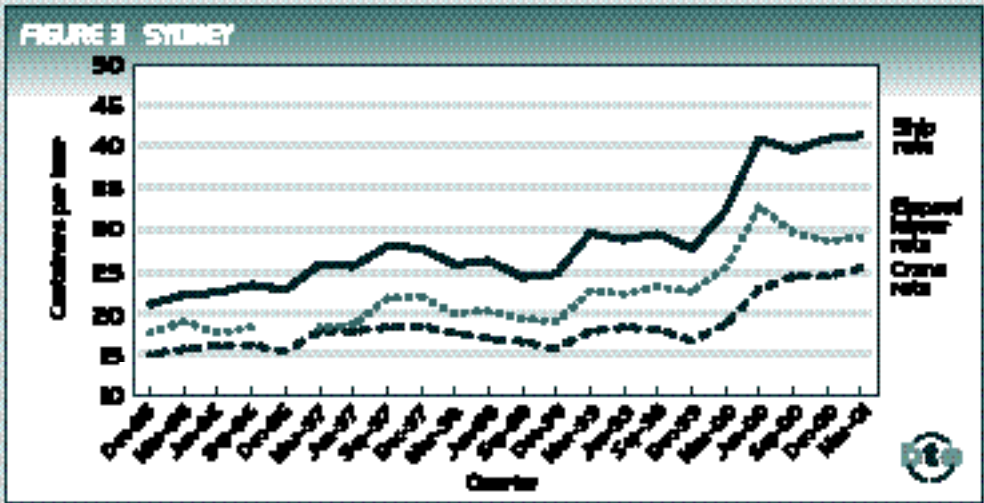
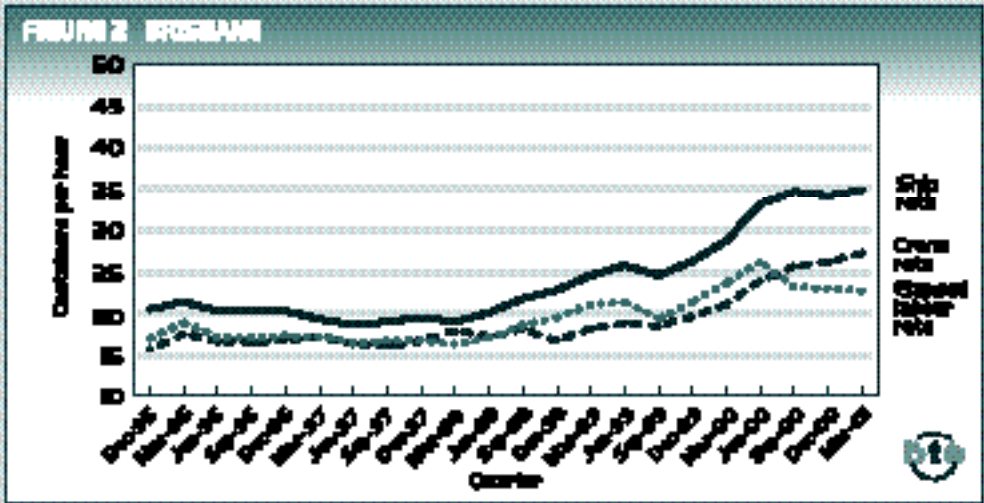
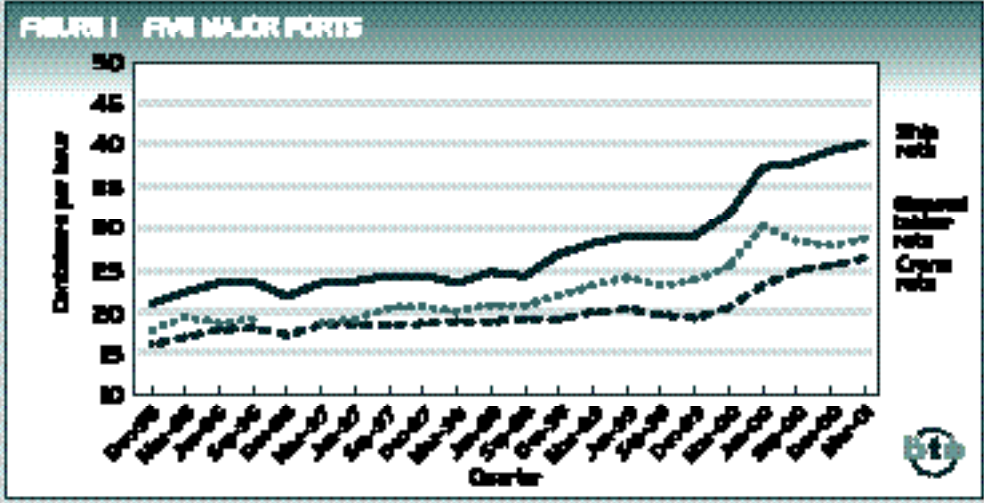
4. Elapsed time not worked is the difference between the ship and elapsed rates as a percentage of the net rate.

Sources Patrick, P&O Ports and CSX World Terminals.





## CONTAINER TERMINAL PRODUCTIVITY

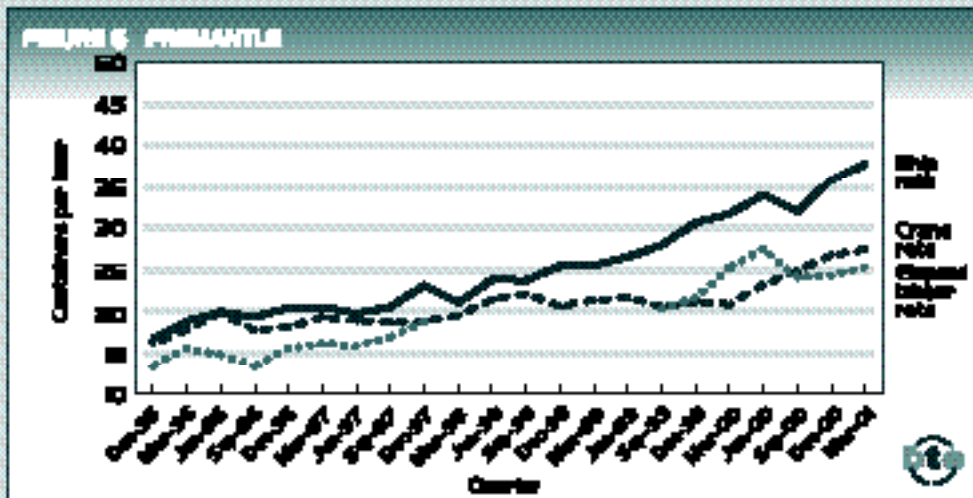
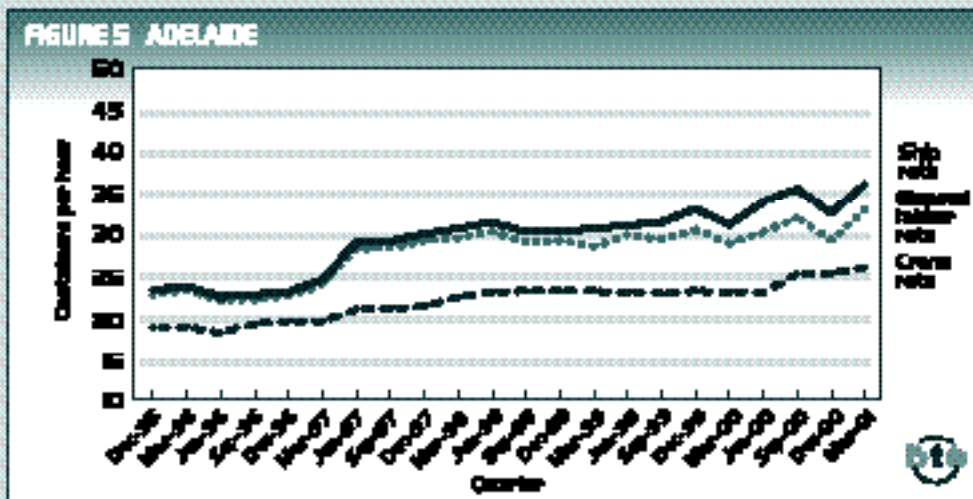
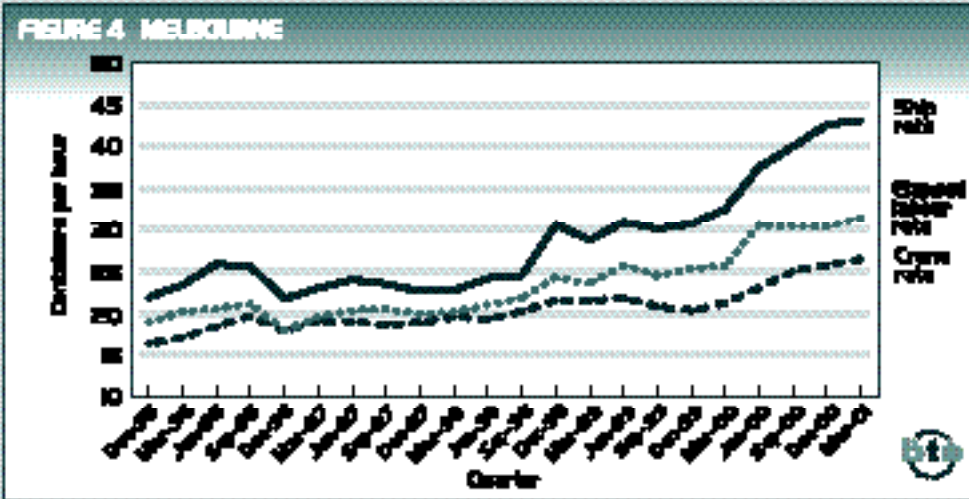


Note These figures are based on the data contained in table I. Readers should refer to the notes in that table.  
 Sources Patrick, P&O Ports and CSX World Terminals.





## CONTAINER TERMINAL PRODUCTIVITY



Note These figures are based on the data contained in table I. Readers should refer to the notes in that table.

Sources Patrick, P&O Ports and CSX World Terminals.



**WATERFRONT RELIABILITY**

The *Waterline* reliability indicators provide partial measures of the variability of waterfront performance for container traffic at major Australian ports. They cover the timeliness of selected port services, sources of other ship waiting time, aspects of stevedoring performance and the accuracy of ship arrival advice.

**Berth availability, pilotage, towage**

Table 2 presents information on berth availability, pilotage and towage for a sample of ship calls in the March quarter 2001. It indicates the extent to which selected port services were available at the scheduled or confirmed time.

The sample for the March quarter 2001 covers 210 ship calls, equivalent to around 27 per cent of total ship calls at the major container terminals during the period. The proportion of ship calls covered at individual ports ranges from 18 per cent at Adelaide to 34 per cent at Sydney. The sample includes calls by container ships operating to and from Europe, the Mediterranean, the Middle East, North America, Asia and New Zealand.

The *berth availability* indicator measures the proportion of ship arrivals where a berth is available within four hours of the scheduled berthing time. Figure 7 shows that berth availability for the sample of ship calls was 99 per cent in the March quarter 2001. This was higher than in the previous quarter, and is the highest figure recorded since the series commenced in the March quarter of 1997. Caution should be used in undertaking inter-port comparisons of the berth availability data, as there is significant variation between ports in sample sizes and ship call patterns.

Average waiting time for ships unable to obtain a berth within four hours of the scheduled berthing time was 10.5 hours in the March quarter 2001, down from 23 hours in the previous quarter. This decrease represents a return to the levels of the June and September quarters of 2000.

The *pilotage* and *towage* indicators reported in *Waterline* measure the proportion of ship movements where the service is available to the ship within one hour of the confirmed ship arrival/departure time. The proportion was 100 per cent for the pilotage indicator in the March quarter 2001, the same as in the December quarter 2000. The proportion was 98.6 per cent for the towage indicator in the March quarter 2001, virtually unchanged from the December quarter 2000. Performance has been at similar levels since the first data (covering the March quarter 1997) were published in *Waterline*.

**Other waiting time**

The four shipping lines that supplied information for table 2 also provided data on other ship waiting time. This category incorporates waiting time that is attributable to factors other than the unavailability of a berth, pilot or towage service at the scheduled/confirmed time. The data on other ship waiting time reported in *Waterline* exclude ship schedule adjustments.

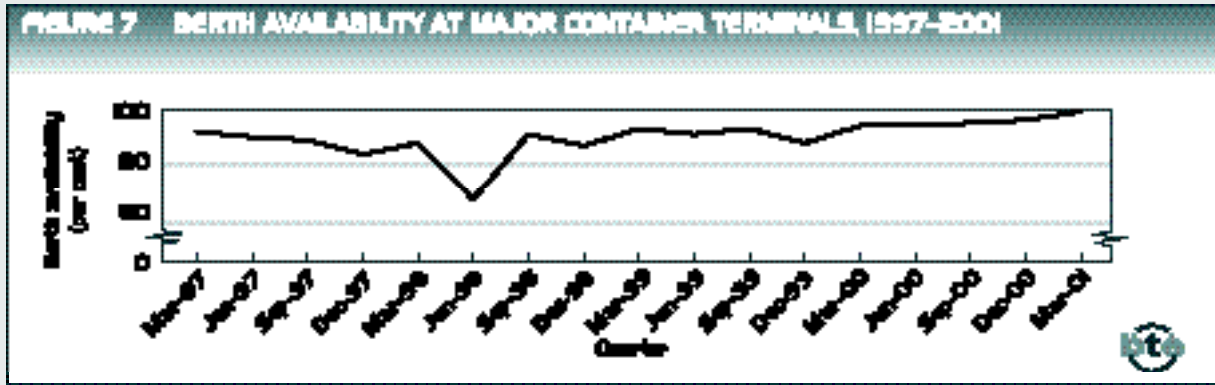
**TABLE 2 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, MARCH QUARTER 2001**

Port/operation	(Number of ship calls)								Total no. of ship calls	Availability indicator (per cent)
	Delay (hrs)									
	0	1	2	3	4	5-10	11-20	>20		
<b>Brisbane</b>										
Berth availability	32	0	0	0	0	0	0	0	32	
Pilotage	32	0	0	0	0	0	0	0	32	
Towage	28	2	0	1	1	0	0	0	32	
<b>Sydney</b>										
Berth availability	68	0	0	0	0	0	0	0	68	
Pilotage	68	0	0	0	0	0	0	0	68	
Towage	68	0	0	0	0	0	0	0	68	
<b>Melbourne</b>										
Berth availability	70	0	0	0	0	0	0	0	70	
Pilotage	70	0	0	0	0	0	0	0	70	
Towage	70	0	0	0	0	0	0	0	70	
<b>Adelaide</b>										
Berth availability	9	0	0	0	0	1	0	0	10	
Pilotage	10	0	0	0	0	0	0	0	10	
Towage	10	0	0	0	0	0	0	0	10	
<b>Fremantle</b>										
Berth availability	29	0	0	0	0	0	1	0	30	
Pilotage	30	0	0	0	0	0	0	0	30	
Towage	29	0	0	1	0	0	0	0	30	
<b>Five ports</b>										
Berth availability	208	0	0	0	0	1	1	0	210	99.0
Pilotage	210	0	0	0	0	0	0	0	210	100.0
Towage	205	2	0	2	1	0	0	0	210	98.6

*Note* Inter-port comparisons should be interpreted with caution as there is significant variation between ports in factors such as sample sizes and ship call patterns.

*Sources* Data for a sample of ship calls provided by shipping lines.





Sources Data for a sample of ship calls provided by shipping lines.

Table 3 summarises the data on other waiting time incidents, which had a duration of at least one hour, in the March quarter 2001. The shipping lines identified a total of 109 incidents (affecting 77 ship calls) for the sample of ship calls over this period. These incidents involved both ship-related and waterfront factors.

The total waiting time attributable to particular incident types reflects the number of incidents and the waiting time associated with individual incidents. The largest single source of other ship waiting time in the March quarter 2001 was the category of ship repairs or maintenance, which accounted for 22 per cent of total waiting time. Awaiting labour accounted for 16 per cent of total waiting time, and stevedoring finished early was related to a further 14 per cent of total waiting time.

In the March quarter 2001, 37 per cent of ship calls in the sample were affected by other waiting time incidents that had a duration of at least one hour, down from 44 per cent in the December

quarter 2000. The average duration of other waiting time was 5.3 hours per affected ship call in the March quarter 2001, down from 6.6 hours per affected ship call in the previous quarter.

Figure 8 provides information on other ship waiting time over the period since the December quarter 1997. It indicates the proportion of ship calls affected and the average duration of other waiting time per affected ship call in each quarter.

### Stevedoring

Table 4 presents the available information on two aspects of stevedoring reliability at major container terminals—stevedoring rate and cargo receipt. Data were not available for Adelaide.

*Stevedoring rate* provides a partial indicator of the variability of stevedoring productivity at each port. It is defined as the proportion of ship visits where the average crane rate for the ship is within two containers per hour (plus or minus) of the quarterly average crane rate for the terminal. The stevedoring rates in the March quarter 2001 were comparable with those for the December quarter 2000 for the three ports for which data were available.

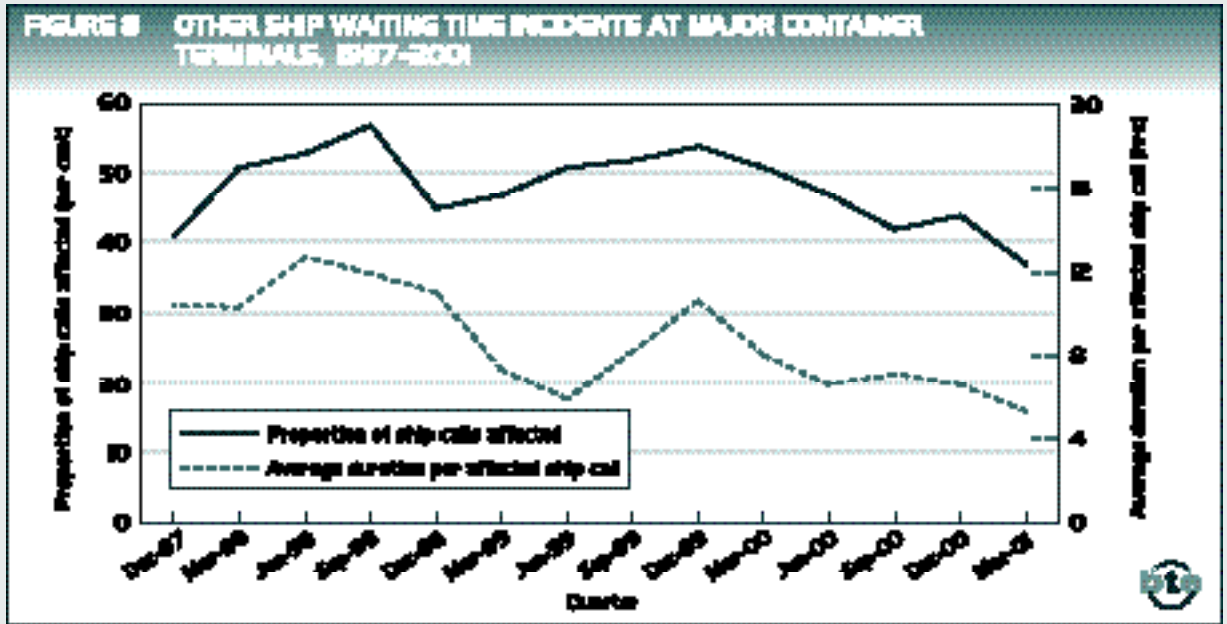
**TABLE 3 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, MARCH QUARTER 2001**

Incident type	(Number of incidents)							Total no. of incidents
	Ship waiting time (hrs)							
	1	2	3	4	5-10	11-20	>20	
Early ship arrival	5	7	5	1	2	0	0	20
Other	1	5	3	2	3	1	0	15
Awaiting labour	1	2	3	1	7	0	0	14
Crane breakdown	3	4	5	1	1	0	0	14
Pilot/tug booking not at preferred time	8	3	2	0	1	0	0	14
Ship repairs or maintenance	1	1	0	3	6	2	0	13
Stevedoring finished early	1	2	2	2	5	0	0	12
Weather or tides	0	2	2	1	0	0	0	5
Late ship arrival	0	0	0	0	1	0	0	1
Industrial action	0	1	0	0	0	0	0	1
Stevedoring finished late	0	0	0	0	0	0	0	0
<b>Total incidents</b>	<b>20</b>	<b>27</b>	<b>22</b>	<b>11</b>	<b>26</b>	<b>3</b>	<b>0</b>	<b>109<sup>a</sup></b>

a. These incidents affected 77 of the 210 ship calls covered in table 2.

Sources Data for a sample of ship calls provided by shipping lines.





Sources Data for a sample of ship calls provided by shipping lines.

Cargo receipt is the proportion of receipts (exports) completed by the stevedore's cut-off time. It provides a partial measure of one factor that can affect container terminal performance. Cargo receipt in the March quarter 2001 remained similar for Sydney, Melbourne and Fremantle.

**Ship arrival**

Table 4 includes data for two indicators of ship arrival advice. Data were not available for Melbourne for the March quarter 2001 and the December quarter 2000.

The first indicator is the proportion of ship arrivals within one hour (plus or minus) of the most recently advised arrival time available to the port authority/corporation at 24 hours prior to actual arrival. Compared with the previous quarter, this indicator rose for Sydney and Brisbane, fell for Adelaide, and remained similar for Fremantle, in the March quarter 2001.

The second indicator is the proportion of ship arrivals within one hour (plus or minus) of the last scheduled arrival time advised inside the 24 hours prior to actual arrival. This indicator remained nearly constant for all four ports providing data in the March quarter 2001.

**TABLE 4 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, DECEMBER QUARTER 2000 AND MARCH QUARTER 2001.**

Indicator	(per cent)									
	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Oct-Dec	Jan-Mar	Oct-Dec	Jan-Mar	Oct-Dec	Jan-Mar	Oct-Dec	Jan-Mar	Oct-Dec	Jan-Mar
<b>Stevedoring</b>										
Stevedoring rate	54	na	49	48	44	49	na	na	34	36
Cargo receipt	80	na	88	88	93	96	na	na	99	97
<b>Ship arrival</b>										
Advice at 24 hrs	60	73	52	60	na	na	66	45	51	48
Advice inside 24 hrs	94	94	96	97	na	na	90	91	86	88

na not available

Sources AAPMA, Patrick and P&O Ports.





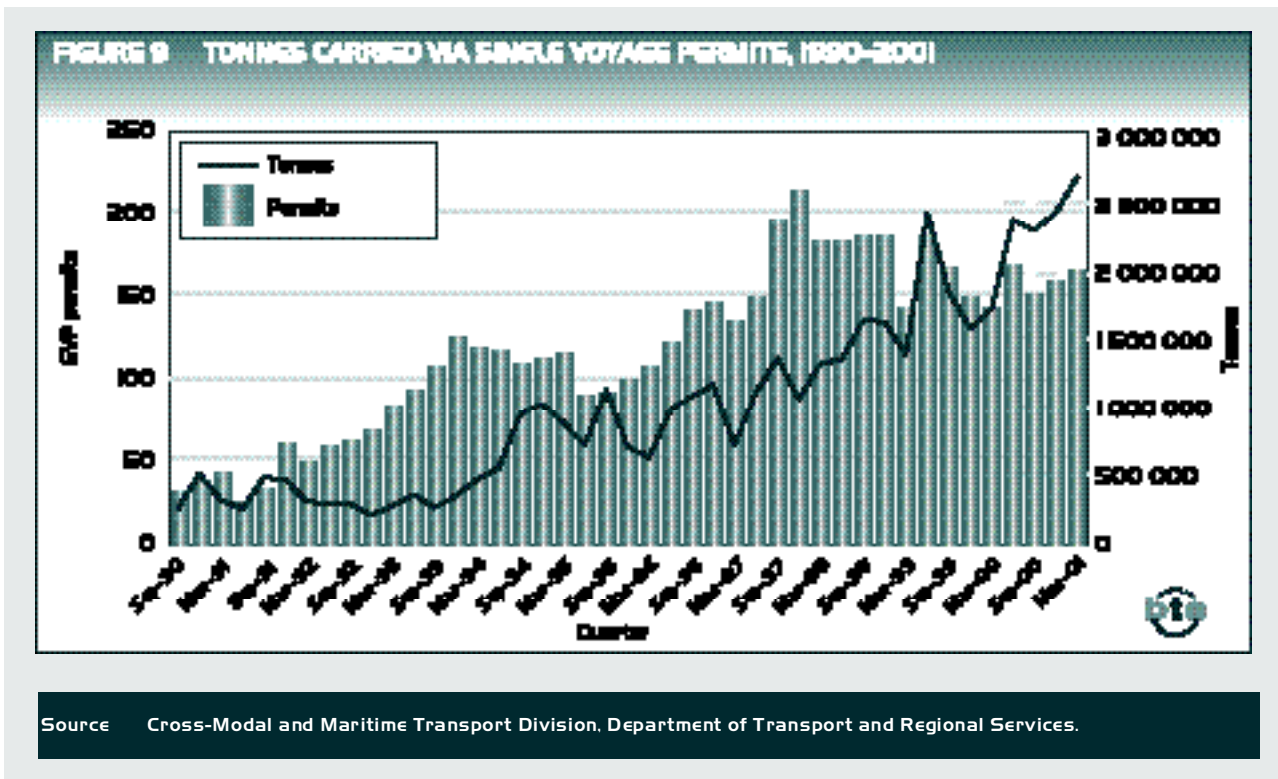


**COASTAL SHIPPING PERMITS**

Total tonnage of cargo moved under a combination of single voyage permits (SVPs) and continuing voyage permits (CVPs) increased from 7.6 million tonnes in 1999 to 9.8 million tonnes in 2000—an increase of 30 per cent.

**Single voyage permits**

Figure 9 illustrates the number of SVPs issued, and tonnes of cargo carried, over the September quarter 1990 to March quarter 2001 period. The number of SVPs issued in the March quarter 2001 increased by 4 per cent compared with the December quarter 2000, and by 15 per cent compared with the March quarter 2000. The associated tonnes of cargo carried increased by 11 per cent compared with the December quarter 2000, and by 58 per cent compared with the March quarter 2000.



The total number of SVPs issued in 2000 was 623, compared with 648 in 1999, representing a decrease of 4 per cent. Over the same period, the number of tonnes of cargo carried using SVPs rose from 7.0 million to 8.6 million, representing an increase of 23 per cent.

**TABLE 5 SUMMARY OF SINGLE VOYAGE PERMITS ISSUED, 1 OCTOBER 2000 TO 31 MARCH 2001**

Cargo category	Permits issued	Tonnes carried
<b>Bulk cargo</b>		
Petroleum products	34	774 725
Crude oil & feedstocks	24	653 809
Liquefied gas	26	50 500
Other bulk liquids	8	25 960
Dry bulk	82	3 207 090
<b>General Cargo</b>		
Containerised	103	222 578
Break bulk	47	101 071
<b>Total</b>	<b>324</b>	<b>5 035 733</b>

Source: Cross-Modal and Maritime Transport Division, Department of Transport and Regional Services.



Table 5 gives a breakdown of SVPs by cargo types for the six months between 1 October 2000 and 31 March 2001. Containerised cargo permits continue to lead the tally for SVP permits issued; however, permits for dry bulk cargo have increased significantly over recent years. Bulk cargo accounts for nearly 94 per cent of the total tonnage moved under SVP permits.

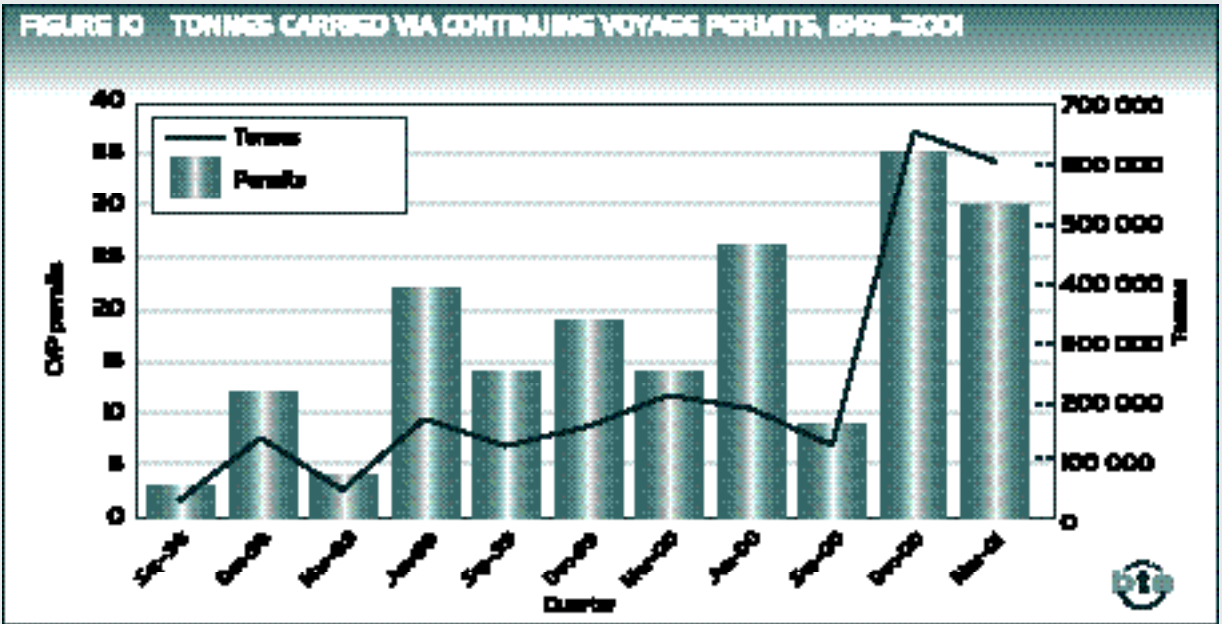
**Continuing voyage permits**

Although CVPs were available, they were rarely requested or issued prior to 1998.





However, as indicated in figure 10, since 1998 there have been significant quarterly fluctuations in both the number of permits issued and the tonnage carried. During 2000, there were 84 CVPs issued, compared with 59 in 1999. Approximately 1.2 million tonnes of coastal trade were moved using CVPs in 2000. Compared with 1999, this represents an increase of 132 per cent. Each CVP covers a six-month period, which is equivalent to approximately six voyages that may otherwise have been undertaken under SVP.



Source Cross-Modal and Maritime Transport Division, Department of Transport and Regional Services.

**General information**

Part VI of the *Navigation Act 1912* provides for licensed vessels to carry passengers and cargo in the coasting trade. The Act does not restrict the class of vessels that may obtain a coasting trade licence. Any ship, regardless of registry, is able to obtain a licence provided the crew is paid Australian wage rates while it is engaged in the coasting trade, and the ship is not in receipt of foreign government subsidies and has not received such a subsidy in the previous twelve months.

Ships that obtain a licence must also conform to the requirements of the Navigation Act, including specified safety, manning, and crew qualifications, and rehabilitation and compensation provisions. Where suitable licensed vessels are not available, the Act also provides for the issue of single or continuing voyage permits to unlicensed vessels—where this is considered to be in the public interest. The application fee is \$200 for a cargo SVP, \$400 for an urgent cargo SVP, and \$400 for a CVP. A fee of \$22 applies for obtaining a coasting trade licence.

More information on coastal permits can be found on the Department of Transport and Regional Services' internet site at <http://www.dotrs.gov.au/xmt/ss/ssindex1.htm>.





**TABLE 6 CONTAINER TERMINAL PERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS—  
PRODUCTIVITY IN TEUS PER HOUR**

	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Mar-00	Jun-00	Sep-00	Dec-00	Mar-01	
<b>FIVE PORTS</b>																		
Ships handled	865	891	907	963	909	845	1020	942	942	958	979	933	875	808	840	814	787	
Total teus	441 697	483 372	549 247	585 474	527 881	514 409	633 107	612 019	573 444	602 501	660 593	726 590	678 046	666 967	708 433	731 936	634 003	
Crane rate	22.8	22.8	23.2	23.3	23.5	23.6	24.4	24.2	25.5	25.9	25.4	24.8	26.6	30.4	33.2	34.2	35.4	
Elapsed rate	23.1	23.8	26.0	25.8	na	na	na	na	na	na	30.1	30.8	33.3	40.0	38.0	37.6	38.6	
Ship rate	29.0	29.5	31.0	30.8	29.6	31.3	31.3	34.7	36.2	37.3	37.7	37.8	41.7	49.5	50.8	53.2	54.3	
<b>Brisbane</b>																		
Ships handled	156	164	162	177	170	168	192	180	176	193	224	232	219	178	187	179	167	
Total teus	47 471	65 572	73 184	71 043	58 857	74 023	87 373	84 200	75 444	88 311	98 944	106 096	97 431	90 932	103 654	107 812	81 864	
Crane rate	20.0	20.5	20.2	20.5	21.6	21.6	22.5	20.9	22.6	23.4	23.3	24.6	26.4	30.5	33.4	34.0	35.5	
Elapsed rate	20.3	20.6	21.2	20.8	19.9	21.5	23.6	24.7	26.3	26.7	24.7	27.0	29.8	33.4	30.0	29.7	29.6	
Ship rate	22.7	23.3	24.0	24.2	23.0	25.4	27.5	28.7	30.6	32.2	31.2	33.1	36.1	42.3	45.1	44.5	46.1	
<b>Sydney</b>																		
Ships handled	251	249	243	266	238	219	267	230	221	243	259	244	221	218	223	211	201	
Total teus	158 323	167 705	183 978	201 535	176 496	168 234	209 619	203 042	187 287	203 536	226 784	260 927	229 014	224 445	237 843	240 720	203 217	
Crane rate	22.3	22.6	23.5	23.5	22.5	21.8	21.6	20.4	23.2	24.0	23.7	22.1	24.8	30.9	33.1	33.2	34.7	
Elapsed rate	22.7	23.6	28.0	28.2	25.6	26.1	25.4	24.8	29.6	29.3	30.6	30.1	34.0	44.1	40.5	39.0	39.7	
Ship rate	32.2	32.7	36.1	35.5	33.1	33.9	32.0	32.3	36.8	38.0	38.9	36.8	43.0	55.4	53.9	55.8	56.6	
<b>Melbourne</b>																		
Ships handled	230	249	268	281	276	234	309	274	271	282	278	266	247	217	227	218	214	
Total teus	162 156	177 070	208 200	223 465	207 346	185 803	242 456	219 549	206 727	215 379	241 775	257 147	243 277	236 306	253 568	255 022	226 612	
Crane rate	23.6	23.5	23.6	23.6	24.3	24.3	26.1	27.7	27.5	28.1	27.4	26.5	27.9	30.3	33.5	34.7	35.3	
Elapsed rate	24.3	25.1	26.0	25.2	26.3	26.8	28.4	31.7	30.2	33.1	32.4	33.4	33.8	40.5	40.9	41.1	41.9	
Ship rate	28.7	29.7	29.9	28.7	28.6	30.7	31.9	39.7	36.9	39.7	39.9	40.4	43.0	49.4	53.8	57.6	57.5	
<b>Adelaide</b>																		
Ships handled	69	65	68	66	60	66	63	74	73	66	62	62	56	56	62	63	57	
Total teus	21 963	20 933	25 982	25 188	22 260	27 975	25 493	32 556	31 326	29 589	28 271	30 597	27 736	30 551	30 945	36 339	32 251	
Crane rate	24.6	26.0	26.1	26.0	27.5	27.7	27.6	28.7	30.0	27.9	27.2	27.2	29.4	27.8	29.1	32.2	33.5	
Elapsed rate	30.2	35.1	35.2	35.4	36.3	36.5	34.5	36.2	36.8	36.3	34.7	35.9	36.8	36.7	37.0	37.2	42.6	
Ship rate	30.9	36.0	36.2	36.5	37.6	37.8	36.0	37.6	39.7	37.6	37.2	38.8	39.7	41.1	41.0	41.5	46.5	
<b>Fremantle</b>																		
Ships handled	159	164	166	173	165	158	189	184	201	174	156	129	132	139	141	143	148	
Total teus	51 784	52 092	57 903	64 243	62 922	58 374	68 166	72 672	72 660	65 706	64 819	71 823	80 588	84 733	82 423	93 043	90 059	
Crane rate	23.3	22.9	23.1	23.6	24.5	26.7	27.9	25.7	26.6	27.3	26.1	27.2	27.4	30.5	33.5	36.5	37.7	
Elapsed rate	19.7	19.5	21.0	22.2	na	na	na	na	na	na	25.8	27.9	33.0	36.0	32.4	33.6	34.5	
Ship rate	25.0	24.0	25.5	28.8	26.4	29.8	30.2	31.7	32.0	33.4	35.3	38.8	41.6	44.7	43.2	48.7	51.3	

na not available

Notes 1. Data from CSX World Terminals at Brisbane are incorporated from the December quarter 1999 onwards.

2. For data back to the December quarter 1989, refer to Waterline 15.

Sources Patrick, P&O Ports and Sea-Land.





## abbreviations

AAPMA	Association of Australian Ports and Marine Authorities
BTE	Bureau of Transport Economics
CVP	Continuing Voyage Permit
SVP	Single Voyage Permit
teu	Twenty-foot equivalent unit

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