Australian Government
Department of Transport and Regional Services
Bureau of Transport and Regional Economics

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in brief

- The national port interface cost index for exporting a container has fallen to $547/teu in 1999 constant prices (page 6).
- Towage charges remained largely unchanged during 2002–03 (page 7).
- See page 10 for trends in ship visits.
- The five-port average crane rate increased to a record 27.5 containers per hour in the June quarter 2003 (page 14).
- The five-port vessel working rate increased to 32.5 containers per hour (page 14).
- Berth availability increased to 97 per cent in the June quarter 2003 (page 18).

CHANGING THE FACE OF WATERLINE

Readers may be aware that we have been reviewing the indicators used in Waterline. Following consultation with key interest groups and industry representatives, the following new indicators and name changes appear in this issue:

- **Harbour Towage Charges**: the list prices for two vessel sizes will be reported on an annual basis for selected ports (Adelaide, Brisbane, Bunbury, Burnie, Fremantle, Gladstone, Melbourne, Newcastle, Port Kembla and Sydney).
- **Ship Visits by GRT**: to measure trends in ship size.
- We have renamed the *Elapsed Labour Rate* indicator as the **Vessel Working Rate**. The meaning of the current term is not readily apparent and we consider the new term better reflects overall terminal productivity.
- We have also renamed the *Elapsed Time Not Worked* indicator as the **Crane Time Not Worked** as this more closely reflects the way in which time not worked is calculated by stevedores.

It is anticipated that additional changes will appear in Waterline 36, including:

- The inclusion of **Terminal Land Use Rate**: calculated as teus per berth metre.
- Include a schedule reliability indicator in the **Waterfront Reliability** measure.
- Discontinue publication of the **Ship Rate**.

If readers wish to comment on any of the proposed changes, please contact the *Waterline* Team at Waterline@dotars.gov.au.

The BTRE is continuing to explore the development of intermodal indicators with relevant parties and will report on progress in future issues of *Waterline*.

We have also taken the opportunity to give *Waterline* a new look, with an improved layout, new paper and colour scheme. We welcome your comments on other ways to improve the publication.

internet addresses

Download this issue of *Waterline* and back issues:
http://www.btre.gov.au/wline.htm

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http://www.btre.gov.au

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PORT INTERFACE COST INDEX

The port interface cost index provides a measure of shore-based shipping costs (charges) for containers moved through Australian mainland capital city ports. Data for July–December 2002 and January–June 2003 are presented in tables 1 to 5. The port interface cost index is based on an indicative approach; that is, the index is not an average of all costs, but is based on those costs typically charged by service providers in most instances.

TABLE 1 PARAMETERS USED IN THE PORT INTERFACE COST INDEX, 2002–2003

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003
Vessel size GRT 17215										
Average Teus exchanged[a]										
All	601	606	983	826	934	948	na	421	1 129	1 085
Loaded	455	482	824	702	801	829	na	369	846	790
Empty	146	124	159	124	133	119	na	52	283	295
Loaded inwards	283	335	527	434	374	415	na	81	504	474
Loaded outwards	172	147	298	268	427	414	na	288	342	316
Ship call parameters[a]										
Number of port calls	5	5	3	3	4	4	na	1	6	3
Elapsed berth time (hrs)	25	22	37	33	33	34	na	18	30	30
Vessel size GRT 37394										
Average Teus exchanged[b]										
All	1 085	1 069	1 811	1 839	1 901	1 859	721	668	613	671
Loaded	787	733	1 413	1 302	1 577	1 435	549	456	511	512
Empty	298	336	398	538	324	424	171	212	102	160
Loaded inwards	391	372	1 008	893	875	804	211	170	255	271
Loaded outwards	396	362	405	409	702	631	338	286	257	240
Ship call parameters[b]										
Number of port calls	4	4	4	4	4	4	5	3	5	4
Elapsed berth time (hrs)	26	29	41	36	41	38	17	18	24	24

a. Mean value for ships between 15 000 and 20 000 GRT.
b. Mean value for ships between 35 000 and 40 000 GRT.
na not available

Sources BTRE estimates based on ship call data supplied by relevant port authorities/corporations and other port service providers.

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Port and related charges

Table 1 provides the parameters used to determine the port and related charges in tables 2 and 3. These parameters relate to a representative port call by container ships (Lloyd's ship classification UCC) in the 15 000 to 20 000 GRT and 35 000 to 40 000 GRT ranges.

Tables 2 and 3 provide the port and related charges at the five mainland capital city ports for the 15 000 to 20 000 GRT range and the 35 000 to 40 000 GRT range respectively, for July–December 2002 and January–June 2003. Port and related charges comprise ship-based charges and cargo-based charges.

Ship-based charges

Overall ship-based charges changed little in January–June 2003. There were some significant changes in charges per teu, mainly reflecting the variation in the average number of teus exchanged per ship call.

Compared to the previous period, the overall changes in total ship-based charges per teu in January–June 2003 for ships in the 15 000 to 20 000 GRT range were:

at *Brisbane*—a 1 per cent decrease;

at *Sydney*—a 19 per cent increase;

at *Melbourne*—a 0.5 per cent decrease; and

at *Fremantle*—a 4 per cent increase.

For ships in this range, the average number of teus exchanged changed little at Brisbane and Melbourne, but decreased by 16 per cent at Sydney and by 4 per cent at Fremantle when compared to the previous period. There were no visits from ships in this range at Adelaide for 2002, but there were 6 ship visits with an average

TABLE 2 PORT AND RELATED CHARGES,FOR SHIPS IN THE 15 000–20 000 GRT RANGE, 2002–2003

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003
Ship-based charges ($/teu)										
Conservancy	3.98	3.95	-	-	-	-	na	6.28	-	-
Tonnage	-	-	7.51	8.94	5.52	5.43	na	10.28	2.47	2.57
Pilotage	9.71	9.62	3.37	4.01	6.75	6.65	na	6.14	2.04	2.12
Towage	14.84	14.71	9.06	10.79	9.81	9.65	na	36.15	4.89	5.09
Mooring, unmooring	3.05	3.02	3.19	3.80	1.12	1.11	-	-	1.07	1.12
Berth hire[a]	-	-	-	-	6.74	6.94	-	-	-	-
Total[b]	31.59	31.30	23.13	27.56	29.94	29.78	na	58.85	10.47	10.90
Cargo-based charges ($/teu)										
Wharfage										
Imports	28.60	28.60	66.00	66.00	30.36	30.36	58.30	58.30	49.50	49.50
Exports	28.60	28.60	49.50	49.50	30.36	30.36	58.30	58.30	49.50	49.50
Harbour dues	46.20	46.20	-	-	-	-	-	-	-	-
Berth charge	-	-	-	-	-	-	-	-	15.29	15.29
Total port and related charges ($/teu)[b]										
Loaded imports	106	106	89	94	60	60	na	117	75	76
Loaded exports	106	106	73	77	60	60	na	117	75	76
Charges per ship visit ($/visit)										
Total ship-based charges	18 974	18 974	22 752	22 752	27 959	28 243	na	24 776	11 820	11 820
Empty teus[c]	2 275	1 941	-	-	-	-	-	-	-	-

- not applicable
a. Charged by stevedores and itemised separately from basic stevedoring charge.
b. Components may not sum to totals due to rounding.
c. Sum of wharfage, harbour dues and berth charge per empty teu, multiplied by average exchange of empty teus.
na not available.

Note Port and related charges are based on the parameters described in table 1.

Sources BTRE estimates based on: ship call data supplied by relevant port authorities/corporations, and price schedules of relevant port authorities/corporations, towage operators and pilotage service providers.

TABLE 3 PORT AND RELATED CHARGES FOR SHIPS IN THE 35 000–40 000 GRT RANGE, 2002–2003

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003
Ship-based charges ($/teu)										
Conservancy	4.79	4.86	-	-	-	-	3.25	5.25	-	-
Tonnage	-	-	8.86	8.72	5.89	6.02	8.24	9.05	9.87	9.02
Pilotage	7.74	7.85	3.11	3.06	4.21	4.31	5.18	5.58	3.75	3.42
Towage	10.39	10.54	5.24	5.16	5.15	5.27	27.20	29.32	12.48	11.40
Mooring, unmooring	1.69	1.71	2.38	2.34	0.55	0.56	-	-	1.97	1.80
Berth hire[a]	-	-	-	-	4.18	3.95	-	-	-	-
Total[b]	**24.60**	**24.97**	**19.58**	**19.28**	**19.99**	**20.10**	**43.86**	**49.19**	**28.07**	**25.65**
Cargo-based charges ($/teu)										
Wharfage										
Imports	28.60	28.60	66.00	66.00	30.36	30.36	58.30	58.30	49.50	49.50
Exports	28.60	28.60	49.50	49.50	30.36	30.36	58.30	58.30	49.50	49.50
Harbour dues	46.20	46.20	-	-	-	-	-	-	-	-
Berth charge	-	-	-	-	-	-	-	-	15.29	15.29
Total port and related charges ($/teu)[b]										
Loaded imports	99	100	86	85	50	50	102	107	93	90
Loaded exports	99	100	69	69	50	50	102	107	93	90
Charges per ship visit ($/visit)										
Total ship-based charges	26 685	26 685	35 468	35 468	37 994	37 369	31 599	32 883	17 223	17 223
Empty teus[c]	4 655	5 244	-	-	-	-	-	-	-	-

- not applicable
a. Charged by stevedores and itemised separately from basic stevedoring charge.
b. Components may not sum to totals due to rounding.
c. Sum of wharfage, harbour dues and berth charge per empty teu, multiplied by average exchange of empty teus.

Note Port and related charges are based on the parameters described in table 1.

Sources BTRE estimates based on: ship call data supplied by relevant port authorities/corporations, and price schedules of relevant port authorities/corporations, towage operators and pilotage service providers.

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of 421 teus exchanged during January–June 2003. Compared to the previous period, the overall changes in total ship-based charges per teu in January–June 2003 for ships in the 35 000 to 40 000 GRT range were:

at *Brisbane*—a 1.5 per cent increase;

at *Sydney*—a 15 per cent decrease;

at *Melbourne*—a 0.6 per cent increase;

at *Adelaide*—a 12 per cent increase; and

at *Fremantle*—a 9 per cent decrease.

In the 35 000 to 40 000 GRT range, the average number of teus exchanged rose at Sydney and Fremantle, but fell at Brisbane, Melbourne and Adelaide in January–June 2003 when compared to the previous period. The increases were 1.5 per cent at Sydney and 9 per cent at Fremantle. Adelaide decreased by 7 per cent, Brisbane by 1.5 per cent and Melbourne by 2 per cent.

Fremantle had the lowest ship-based charges on a per ship visit basis for the representative ships in table 1.

Cargo-based charges

There were no changes in cargo-based charges compared with July–December 2002.

Stevedoring charges per teu

The stevedoring charges used in this issue of *Waterline* are those published in the most recently available ACCC report on stevedoring prices (October 2002). As the report does not include charges beyond the first half of 2002, the stevedoring charges included in the port interface cost index are provisional figures and will be updated in *Waterline* 36.

Land-based charges per teu

Average customs brokers' fees and road transport charges for July–December 2002 and January–June 2003 are included in tables 4 and 5. These charges are based on data provided by 30 customs brokers and 30 road transport operators.

Customs brokers' fees for imports are higher than fees for exports, reflecting the more complex clearance procedures for import containers. During January–June 2003 the average fee for imports decreased at Brisbane (18 per cent), Sydney (5 per cent) and Fremantle (9 per cent), and increased at Melbourne (2 per cent). For exports the average fee increased significantly at Brisbane (30 per cent) and Fremantle (3 per cent), and decreased at Sydney (0.9 per cent) and Melbourne (8 per cent). There was no change at Adelaide for imports or exports.

Road transport charges increased at Brisbane (9 per cent), Melbourne (0.3 per cent), Adelaide (14 per cent), and Fremantle (14 per cent), and decreased at Sydney (11 per cent). One of the parameters used to estimate road transport charges is the time taken to move containers between the wharf and the customer's warehouse. Both distance and traffic congestion impact on this parameter and therefore, to some extent, help explain the significant difference between road transport charges at Melbourne and Sydney compared with Brisbane, Adelaide and Fremantle.

Indices for individual ports

Table 4 indicates that, for ships in the 15 000 to 20 000 GRT range between July–December 2002 and January–June 2003, costs per teu for both import and export containers decreased by around 5 per cent at Sydney. Costs per teu for import containers at Melbourne increased by 0.6 per cent and costs per teu for exports decreased by 1 per cent. At Brisbane, costs per teu for import containers decreased by 2 per cent and costs per teu for exports increased by 7 per cent. At Fremantle, the costs per teu for imports and exports increased by 4 per cent and 6 per cent respectively.

Table 5 indicates that, for ships in the 35 000 to 40 000 GRT range, costs per teu for import and export containers decreased at Sydney (6 per cent and 5 per cent respectively) and increased at Adelaide (5 per cent and 6 per cent respectively) and at Fremantle (3 per cent and 5 per cent respectively). Costs per teu for imports at Melbourne increased by 0.6 per cent while costs per teu for exports decreased by 1 per cent. For Brisbane, costs per teu for imports decreased by 1 per cent and costs per teu for exports increased by 7 per cent compared with the previous period.

These results should be interpreted with caution, given the provisional nature of the reported stevedoring charges. Moreover, the use of a single stevedoring charge for all ports reflects the scope of the available information, which is not disaggregated on an individual port basis. In practice, container stevedoring charges tend to vary between ports.

TABLE 4 PORT INTERFACE COSTS FOR SHIPS IN THE 15 000–20 000 GRT RANGE, 2002–2003

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003
Import										
Ship-based charges	32	31	23	28	30	30	na	59	10	11
Cargo-based charges	75	75	66	66	30	30	58	58	65	65
Stevedoring[p]	165	165	165	165	165	165	165	165	165	165
Customs brokers' fees	148	121	141	134	127	130	130	130	160	155
Road transport charges	209	227	337	301	296	297	187	214	193	220
Import total[a]	**629**	**619**	**733**	**693**	**648**	**652**	**na**	**626**	**593**	**616**
Export										
Ship-based charges	32	31	23	28	30	30	na	59	10	11
Cargo-based charges	75	75	50	50	30	30	58	58	65	65
Stevedoring[p]	165	165	165	165	165	165	165	165	165	165
Customs brokers' fees	76	99	110	109	88	81	92	92	87	90
Road transport charges	209	227	337	301	296	297	187	214	193	220
Export total[a]	**557**	**597**	**685**	**652**	**609**	**603**	**na**	**588**	**519**	**551**

a. Components may not sum to totals due to rounding.
p. Provisional, will be updated after the release of the next ACCC stevedoring monitoring report.
na not available.
Notes 1. Based on parameters described in table 1.
2. Waterline data on customs brokers' fees and road transport charges are collected for the purpose of monitoring trends in charges over time. They should not be used for inter-port comparisons, as sample characteristics may vary between ports.
3. The stevedoring charge used in Waterline is monitored by the ACCC and is the weighted average for Brisbane, Sydney, Melbourne, Adelaide, Fremantle and Burnie. Stevedoring charges vary between ports but detailed data for individual ports are not publicly available.
Sources BTRE estimates based on: ship call data supplied by relevant port authorities/corporations; price schedules of relevant port authorities/corporations, towage operators and pilotage service providers; surveys of customs brokers and road transport operators; and stevedoring charge data supplied by the ACCC.

TABLE 5 PORT INTERFACE COSTS FOR SHIPS IN THE 35 000–40 000 GRT RANGE, 2002–2003

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2002	Jan–Jun 2003
Import										
Ship-based charges	25	25	20	19	20	20	44	49	28	26
Cargo-based charges	75	75	66	66	30	30	58	58	65	65
Stevedoring[p]	165	165	165	165	165	165	165	165	165	165
Customs brokers' fees	148	121	141	134	127	130	130	130	160	155
Road transport charges	209	227	337	301	296	297	187	214	193	220
Import total[a]	**622**	**613**	**729**	**685**	**638**	**642**	**584**	**616**	**610**	**631**
Export										
Ship-based charges	25	25	20	19	20	20	44	49	28	26
Cargo-based charges	75	75	50	50	30	30	58	58	65	65
Stevedoring[p]	165	165	165	165	165	165	165	165	165	165
Customs brokers' fees	76	99	110	109	88	81	92	92	87	90
Road transport charges	209	227	337	301	296	297	187	214	193	220
Export total[a]	**550**	**591**	**681**	**644**	**599**	**593**	**546**	**578**	**537**	**565**

a. Components may not sum to totals due to rounding.
p. Provisional, will be updated after the release of the next ACCC stevedoring monitoring report.
Notes 1. Based on parameters described in table 1.
2. Waterline data on customs brokers' fees and road transport charges are collected for the purpose of monitoring trends in charges over time. They should not be used for inter-port comparisons, as sample characteristics may vary between ports.
3. The stevedoring charge used in Waterline is monitored by the ACCC and is the weighted average for Brisbane, Sydney, Melbourne, Adelaide, Fremantle and Burnie. Stevedoring charges vary between ports but detailed data for individual ports are not publicly available.
Sources BTRE estimates based on: ship call data supplied by relevant port authorities/corporations; price schedules of relevant port authorities/corporations, towage operators and pilotage service providers; surveys of customs brokers and road transport operators; and stevedoring charge data supplied by the ACCC.

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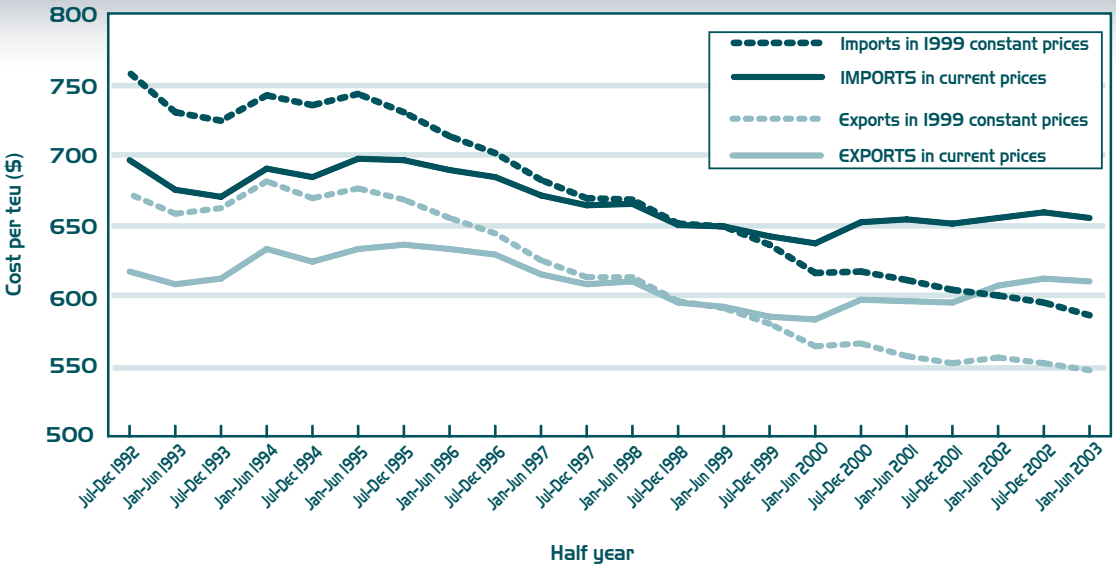
National index

Figure 1 provides the national port interface cost index for ships in the 15 000 to 20 000 GRT range from 1993 onwards. In current prices, the national index for imports decreased from $659 per teu in July–December 2002 to $655 in January–June 2003. The index for exports decreased from $612 per teu to $610 per teu.

FIGURE 1 NATIONAL PORT INTERFACE COST INDEX FOR SHIPS IN THE 15 000–20 000 GRT RANGE, 1992–2003



Sources *BTRE estimates based on: ship call data supplied by port authorities/corporations; price schedules of port authorities/corporations, towage operators and pilotage service providers; surveys of customs brokers and road transport operators; stevedoring charges data supplied by the ACCC and industry sources; and ABS 5206.041 National Accounts table.*

In real terms (in 1999 prices, using ABS chain volume and current price statistics to calculate the deflator), the national index per import teu has declined by 19 per cent since 1993. The charge per export teu has declined by 16 per cent.

Table 6 shows the national port interface cost index from January–June 2001 for ships in the 35 000 to 40 000 GRT range. The national index for imports decreased from $657 in July–December 2002 to $648 per teu in January–June 2003. The index for exports decreased from $606 to $604 per teu.

TABLE 6 NATIONAL PORT INTERFACE COST INDEX FOR SHIPS IN THE 35 000–40 000 GRT RANGE, 2001–2003

	Jan–Jun 2001	Jul–Dec 2001	Jan–Jun 2002	Jul–Dec 2002	Jan–Jun 2003
IMPORTS in current prices	659	651	653	657	648
Imports in 1999 constant prices	615	604	598	592	577
EXPORTS in current prices	601	595	602	606	604
Exports in 1999 constant prices	561	552	551	547	537

Sources *BTRE estimates based on: ship call data supplied by port authorities/corporations; price schedules of port authorities/corporations, towage operators and pilotage service providers; surveys of customs brokers and road transport operators; stevedoring charges data supplied by the ACCC and industry sources; and ABS 5206.041 National Accounts table.*

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HARBOUR TOWAGE CHARGES

On 27 March 2003, the Government announced its response to the Productivity Commission's report: *Economic regulation of harbour towage and related services*. In that response, it was proposed that the Government would undertake limited reporting of harbour towage charges to determine trends over time.

The BTRE was tasked with reporting towage charge prices on an annual basis with the results to be published in *Waterline*. Accordingly, data has been collected for the five mainland capital city ports already covered in *Waterline*, Adelaide, Brisbane, Fremantle, Melbourne and Sydney as well as the regional ports of Bunbury, Burnie, Gladstone, Newcastle and Port Kembla.

Table 7 provides the publicly available towage charges effective at 30 June 2002 and 30 June 2003 for the two representative vessel sizes, 19 999 GRT and 59 999 GRT.

Only two of the ten ports recorded changes to towage charges during this period:

- *Bunbury*—a 2 per cent increase for both vessel sizes; and
- *Melbourne*—a 3 per cent decrease in the 19 999 GRT vessel size and a 1 per cent decrease in the 59 999 GRT vessel size.

Consequently, the five port average charge levels varied little between the two periods with the most significant change being recorded in the 19 999 GRT vessel size at the mainland capital city ports—a decrease of 0.7 per cent.

The towage charge figures should be interpreted with caution. They may vary for individual ship operators based on negotiated contracts.

Towage charges are collected for the purpose of monitoring trends in charges over time. They should not be used for inter-port comparisons as local conditions vary between ports.

TABLE 7 HARBOUR TOWAGE CHARGES, 2002 AND 2003

Capital City Port	Adelaide		Brisbane		Fremantle		Melbourne		Sydney[b]		5 Ports Average	
	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun
Vessel size (GRT)	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
19 999 GRT												
$ Per Tug Rate[a]	3 805	3 805	2 972	2 971	2 761	2 761	3 710	3 592	2 971	2 971	3 244	3 220
59 999 GRT												
$ Per Tug Rate[a]	5 109	5 109	4 368	4 368	4 455	4 455	4 036	3 988	3 436	3 436	4 281	4 271

Regional Port	Bunbury		Burnie		Gladstone		Newcastle		Port Kembla		5 Ports Average	
	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun	30-Jun
Vessel size (GRT)	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
19 999 GRT												
$ Per Tug Rate[a]	2 845	2 909	3 080	3 080	1 793	1 793	3 028	3 028	2 416	2 416	2 632	2 645
59 999 GRT												
$ Per Tug Rate[a]	4 243	4 339	-	-	3 339	3 339	4 802	4 802	5 377	5 377	4 440	4 464

- not applicable.
a. Cost for each tug to assist a ship arriving at or departing from a berth within the limits of the port at any time.
b. Sydney is represented by tariffs charged at Port Botany only.
Source BTRE estimates based on towage operators' tariff schedules, where there is more than one operator, the charges have been averaged.

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TABLE 8 NON-FINANCIAL PERFORMANCE INDICATORS FOR SELECTED AUSTRALIAN PORTS, 2000–2003

	Jan–Jun 2000	Jul–Dec 2000	Jan–Jun 2001	Jul–Dec 2001	Jan–Jun 2002	Jul–Dec 2002	Jan–Jun 2 003
Five ports[d]							
Total cargo throughput ('000 tonnes)[r]	47 714	50 915	49 139	50 638	51 422	52 127	51 811
Non-containerised general cargo ('000 tonnes)[a,r]	2 256	2 290	1 557	1 876	1 964	2 143	2 060
Containerised cargo (teus exchanged)[r]							
Full import	673 039	761 155	629 916	767 239	714 041	898 549	834 191
Empty import	111 826	121 683	139 901	144 929	134 785	127 665	117 616
Full export	565 292	615 766	596 836	640 288	632 229	659 965	618 896
Empty export	206 094	213 409	167 603	192 083	213 298	302 462	344 846
TOTAL	1 556 251	1 712 013	1 534 256	1 744 539	1 694 353	1 988 641	1 915 549a
Average total employment[b]	822	796	814	759	795	803	816
Port turnaround time (hrs)[c]							
Median result	-	-	-	-	-	-	-
95th percentile	-	-	-	-	-	-	-
Brisbane							
Total cargo throughput ('000 tonnes)[r]	11 279	11 898	11 206	11 642	11 525	12 189	12 413
Non-containerised general cargo ('000 tonnes)[a,r]	310	324	250	306	304	317	304
Containerised cargo (teus exchanged)[r]							
Full import	72 305	86 526	67 177	88 281	85 688	114 878	107 977
Empty import	30 515	35 509	39 135	37 675	32 112	35 719	28 565
Full export	84 531	99 194	94 922	102 634	95 966	101 229	91 446
Empty export	18 201	17 651	13 143	17 874	21 393	41 581	48 809
TOTAL	205 552	238 880	214 377	246 464	235 159	293 407	276 797
Average total employment[b]	234	216	218	206	212	215	209
Sydney							
Total cargo throughput ('000 tonnes)	11 811	13 005	11 684	12 462	11 838	12 073	11 485
Non-containerised general cargo ('000 tonnes)[a]	348	311	241	291	279	319	316
Containerised cargo (teus exchanged)							
Full import	242 228	274 119	217 570	270 691	236 594	309 070	277 860
Empty import	8 312	8 602	11 303	13 341	8 853	8 071	6 005
Full export	139 587	157 448	148 651	159 494	147 918	154 314	139 456
Empty export	98 842	97 683	73 591	78 535	94 027	123 810	141 927
TOTAL	488 969	537 852	451 115	522 061	487 392	595 265	565 248
Average total employment[b]	188	183	192	195	199	198	199
Port turnaround time (hrs)[c]							
Median result	35	32	32	32	30	36	32
95th percentile	67	60	57	68	55	63	58
Melbourne							
Total cargo throughput ('000 tonnes)	10 846	11 157	11 078	11 452	12 138	12 388	12 283
Non-containerised general cargo ('000 tonnes)[a]	1 092	1 110	605	753	834	896	930
Containerised cargo (teus exchanged)							
Full import	278 325	307 289	263 888	310 034	295 343	358 818	337 671
Empty import	41 992	45 993	52 401	60 384	58 936	52 600	52 238
Full export	251 730	265 442	258 077	273 910	279 866	291 272	277 392
Empty export	67 456	69 562	54 013	68 761	73 547	104 266	119 541
TOTAL	639 503	688 286	628 379	713 089	707 692	806 956	786 842
Average total employment[b]	80	83	89	93	96	95	102
Port turnaround time (hrs)[c]							
Median result	39	36	34	36	35	37	36
95th percentile	71	65	57	68	63	68	62
Adelaide							
Total cargo throughput ('000 tonnes)	3 604	3 407	4 039	3 934	4 446	4 130	3 524
Non-containerised general cargo ('000 tonnes)[a]	168	180	159	189	239	251	171
Containerised cargo (teus exchanged)							
Full import	18 049	20 143	17 865	21 097	19 591	21 864	19 015
Empty import	9 325	9 923	11 136	11 714	15 055	11 715	13 050
Full export	27 581	32 174	31 120	34 482	35 793	37 358	33 468
Empty export	4 197	5 790	5 085	4 117	3 377	5 660	6 203
TOTAL	59 152	68 030	65 206	71 410	73 816	76 597	71 736
Average total employment[b]	151	147	149	98	95	97	95
Port turnaround time (hrs)[c]							
Median result	19	20	19	22	21	19	21
95th percentile	35	40	50	43	43	29	40
Fremantle							
Total cargo throughput ('000 tonnes)	10 174	11 447	11 132	11 147	11 476	11 348	12 105
Non-containerised general cargo ('000 tonnes)[a]	338	364	301	337	309	361	338
Containerised cargo (teus exchanged)							
Full import	62 132	73 078	63 416	77 136	76 825	93 919	91 668
Empty import	21 682	21 656	25 926	21 815	19 829	19 560	17 758
Full export	61 863	61 508	64 066	69 768	72 686	75 792	77 134
Empty export	17 398	22 723	21 771	22 796	20 954	27 145	28 366
TOTAL	163 075	178 965	175 179	191 515	190 294	216 416	214 926
Average total employment[b]	169	167	166	167	193	199	211
Port turnaround time (hrs)[c]							
Median result	23	24	20	21	22	25	25
95th percentile	49	66	47	46	52	60	52

- not applicable

a. Excludes bulk cargoes.

b. Comparisons between ports are not appropriate because each port authority/corporation has a different structure.

c. Port turnaround times refer only to ships calling at container terminals. Comparisons between ports are not appropriate because each port has a different set of parameters to measure the turnaround time. Normally, only inter-temporal comparison at individual ports is of use.

d. Components may not sum to totals due to rounding.

r. Revised

Source AAPMA.

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PORT PERFORMANCE—NON-FINANCIAL

The January–June 2000 to January–June 2003 non-financial indicators for the five mainland capital city ports are presented in table 8.

Cargo throughput

Total cargo throughput at the five ports was 51.8 million tonnes for January–June 2003, compared with 52.1 million tonnes for the previous half-year and 51.4 million tonnes for January–June 2002. This represented a decrease of 0.6 per cent in total cargo throughput for the five ports compared with July–December 2002 and an increase of 0.8 per cent for the five ports compared with January–June 2002.

Note that the Brisbane figures have been revised due to receipt of more accurate data. The revisions have only a marginal effect on the Five Ports aggregate and Brisbane figures (less than 0.1 per cent).

Compared with January–June 2002, total cargo throughput in January–June 2003 increased 8 per cent at Brisbane, 1 per cent at Melbourne, and 5 per cent at Fremantle. Total throughput declined 3 per cent at Sydney and 21 per cent at Adelaide.

Non-containerised general cargo throughput at the five ports was 2.060 million tonnes for January–June 2003, compared with 2.143 million tonnes for July–December 2002 and 1.964 million tonnes for January–June 2002. This represented a decrease of 4 per cent from the previous half-year and an increase of 5 per cent from the corresponding previous half-year.

Total container traffic throughput for the five ports was 1.916 million teus for January–June 2003, compared with 1.989 million teus for July–December 2002 and 1.694 million teus for January–June 2002. This represented a decrease of 4 per cent from the previous half-year and an increase of 13 per cent from January–June 2002.

Compared with January–June 2002, loaded teus increased by 8 per cent, with loaded imports increasing by 17 per cent and loaded exports decreasing by 2 per cent.

The 2002–03 five-port total container traffic increased by 14 per cent to 3.904 million teus.

ERRATUM
BTRE wishes to advise readers of an error in the following feature article Coastal Shipping Permits 2000-01, it states that 280 Coastal Voyage Permits (CVPs) were used to carry cargo around the Australian coast. That figure refers to the number of voyages undertaken by ships using CVPs during that period. BTRE regrets any confusion caused by this error.

FEATURE—COASTAL SHIPPING PERMITS 2000–2001

This article reproduces Chapter 3 from BTRE Information Paper 48: Australian Seafreight 2000–2001

In 2000–2001, there were 896 shipping permits used by foreign flag shipping to move cargo around the Australian coast. The split between single voyage permits (SVPs) and continuing voyage permits (CVPs), was 616 to 280 permits respectively. The split between commodity groups is shown in table 9. Coastal permits are at present not often used in the bauxite alumina industries, however other industries such as iron ore and oil petroleum industries are using coastal permits much more extensively.

TABLE 9 CVPS AND SVPS BY COMMODITY TYPE, 2000–2001

Cargo group	Permit type	No of Permits	Tonnes carried	teus carried
Bauxite Alumina	SVP	7	130 730	0
Crude oil	SVP	27	787 686	0
Iron ore	SVP	36	2 626 097	0
Petroleum products	SVP	94	1 441 001	0
Other	SVP	452	1 752 831	45 885
Other	CVP	280	258 265	14 232
Total	-	**896**	**6 996 609**	**60 117**

Source *DOTARS, SVP and CVP Registers, unpublished.*

Note that the information provided in this article on SVPs and CVPs is different from that previously published for the same period in *Waterline*. Previous figures in *Waterline* report tonnes and teus as specified on the permits when issued; while in this article the figures reported are the actual tonnes and teus carried, as estimated by the permit holders after they have used the permit.

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In terms of pack type (table 10) the split between different pack types is not in the same proportions as in the total coastal freight market. That is, dry bulk using coastal permits only represents 13.8 per cent of total coastal dry bulk cargo loaded, liquid bulk 14.9 per cent, containerised cargo 16.8 per cent and other non bulk 1.6 per cent.

TABLE 10 TONNES CARRIED UNDER SVPS AND CVPS BY PACK TYPE

Pack type	1999–2000	2000–01
Dry bulk	1 864 074	4 049 276
Liquid bulk	1 431 537	2 380 265
Containerised	375 987	505 537
Other non bulk	43 666	61 531
Total	**3 715 264**	**6 996 609**

Source DOTARS, SVP and CVP Registers, unpublished

The proportion of total coastal freight moved using coastal permit shippers in 2000–01 was 13.5 per cent by weight or 28.9 per cent of tonne kilometres performed (table 10). This was up significantly from 1999–2000 when it was 7.2 per cent by weight or 9.1 per cent of tonne kilometres performed. In general the use of coastal permits is patchy, with permits being used more on longer coastal routes than on the shorter routes.

The largest group of shippers using coastal permits in terms of tonne kilometres is the iron ore industry, 53.8 per cent in terms of tonne kilometres performed but only 38.9 per cent in terms of tonnes loaded. For bauxite alumina industry the use is only 1.7 per cent and 1.1 per cent respectively.

TABLE 11 IMPACT OF CVPS AND SVPS ON COASTAL TRADE, 2000–2001

	Tonnes (millions)			*Tonne kilometres (billion)*		
Cargo group	Coastal	SVP and CVP	Per cent coastal	Coastal	SVP and CVP (estimate)	Per cent coastal
Iron ore	6.7	2.6	38.9%	28.3	15.2	53.8%
Bauxite Alumina	11.6	0.1	1.1%	25.7	0.4	1.7%
Crude oil	7.5	0.8	19.2%	15.2	3.5	23.2%
Petroleum products	5.8	1.4	13.6%	9.4	2.8	29.9%
Other	20.3	2.0	9.9%	25.9	8.2	31.8%
Total	**52.0**	**7.0**	**13.5%**	**104.5**	**30.2**	**28.9%**

Source DOTARS, SVP and CVP Registers, unpublished

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SHIP VISITS

Table 12 provides the five-port total number of ship visits and the average number of teus exchanged per ship visit for container vessels with sizes ranging from 5 000 to 60 000 GRT.

Total ship visits increased steadily from June 1996, peaking between June 1998 and June 1999. Since then ship visits have remained relatively constant, with minor fluctuations. In the 5 000–15 000 GRT ship range, both the number of ship visits and average number of teus exchanged per ship visit have decreased since June 1996. In the 15 000–35 000 GRT and 55 000–60 000 GRT ranges, the number of ship visits declined from 1997, while the average number of teus exchanged increased, and in most cases, more than doubled.

Table 14 provides the GRT range distribution of ship visits by port for the 2002–2003 financial year. The distribution varies between the ports, with a higher percentage of ship visits at Fremantle comprising larger ships. The range with the most number of ship visits in Brisbane and Sydney is the 20 000–25 000 GRT, with 16 per cent and 20 percent of total visits respectively. At Fremantle, 22 per cent of all ship visits were in the 30 000–35 000 GRT range.

On a national level, 18 per cent of all ship visits were vessels in the 25 000–30 000 GRT range, and only 13 per cent were in the 15 000–20 000 GRT range. This is in contrast with 2001–02 where only 10 per cent of all ship visits were of vessels in the 25 000–30 000 range but 19 per cent of ship visits were in the 15 000–20 000 GRT range.

TABLE 12 FIVE PORT AVERAGE NUMBER OF TEUS EXCHANGED AND TOTAL SHIP VISITS PER 6 MONTH PERIOD FOR SELECTED GRT RANGES, WEIGHTED BY NUMBER OF SHIPS

GRT	Jan–Jun 1996	Jul–Dec 1996	Jan–Jun 1997	Jul–Dec 1997	Jan–Jun 1998	Jul–Dec 1998	Jan–Jun 1999	Jul–Dec 1999	Jan–Jun 2000	Jul–Dec 2000	Jan–Jun 2001	Jul–Dec 2001	Jan–Jun 2002	Jul–Dec 2002	Jan–Jun 2003
5 000–10 000															
average teus exchanged	0	0	302	321	347	323	217	369	380	383	456	284	239	188	158
total ship visits	0	0	189	159	130	145	143	123	88	118	93	77	66	78	75
10 000–15 000															
average teus exchanged	576	503	513	569	473	530	546	660	683	702	702	706	712	423	406
total ship visits	103	112	141	204	172	143	146	183	152	123	106	108	79	59	53
15 000–20 000															
average teus exchanged	534	547	547	605	539	678	656	768	776	813	825	885	763	837	828
total ship visits	394	421	337	329	361	309	349	363	255	278	330	293	285	223	190
20 000–25 000															
average teus exchanged	503	515	425	518	506	598	629	790	754	833	838	830	762	816	889
total ship visits	235	247	219	217	200	278	280	249	270	314	276	240	233	241	215
25 000–30 000															
average teus exchanged	583	566	513	559	608	545	591	740	682	636	869	777	888	1 067	1 040
total ship visits	100	105	103	105	97	125	95	129	153	132	116	129	186	252	312
30 000–35 000															
average teus exchanged	814	782	808	951	754	695	696	821	912	1 041	991	1 061	1 014	1 146	1 246
total ship visits	48	130	207	192	206	251	252	180	208	222	187	196	216	232	201
35 000–40 000															
average teus exchanged	811	739	746	799	793	807	831	945	1 071	1 149	1 111	1 223	1 262	1 401	1 413
total ship visits	140	160	188	205	235	246	239	207	193	224	210	197	203	223	222
40 000–45 000															
average teus exchanged	681	813	716	869	759	894	878	1 013	1 073	1 133	1 102	1 246	1 228	1 462	1 450
total ship visits	59	75	84	76	91	146	137	148	153	140	158	176	195	172	170
45 000–50 000															
average teus exchanged	0	0	0	0	35	174	188	233	0	0	0	0	808	936	1 209
total ship visits	0	0	0	0	4	3	3	1	0	0	0	0	5	38	90
50 000–55 000															
average teus exchanged	213	295	254	678	734	810	737	932	1 007	1 274	1 143	1 062	1 134	1 240	1 003
total ship visits	1	6	5	28	24	61	64	68	56	63	55	56	60	67	61
55 000–60 000															
average teus exchanged	409	599	513	1 139	991	1 026	1 046	1 248	1 099	1 223	1 072	1 019	1 069	1 164	1 253
total ship visits	3	5	5	36	36	25	31	28	29	21	13	17	15	14	3
Total ship visits	**1 083**	**1 261**	**1 478**	**1 551**	**1 556**	**1 732**	**1 739**	**1 679**	**1 557**	**1 635**	**1 544**	**1 489**	**1 543**	**1 599**	**1 592**

Source *BTRE estimates based on ship call data supplied by relevant port authorities/corporations.*

TABLE 13 SHIP VISITS BY PORT, 2002–2003

GRT Range	Brisbane	Sydney	Melbourne	Adelaide	Fremantle
5 000–10 000	105	0	48	0	0
10 000–15 000	40	28	44	0	0
15 000–20 000	76	129	143	6	59
20 000–25 000	110	165	138	4	39
25 000–30 000	92	151	169	56	96
30 000–35 000	81	80	106	49	117
35 000–40 000	92	133	123	34	63
40 000–45 000	47	71	95	46	83
45 000–50 000	26	34	33	8	27
50 000–55 000	13	26	28	24	37
55 000–60 000	5	6	6	0	0

Source *BTRE estimates based on ship call data supplied by relevant port authorities/corporations.*

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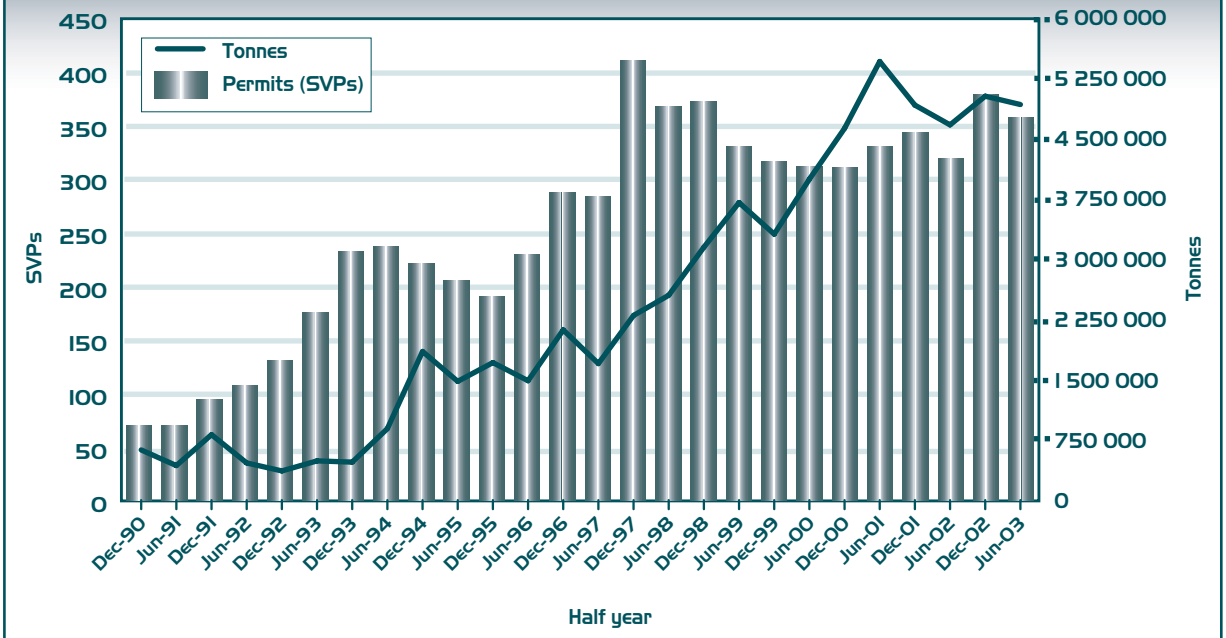
COASTAL SHIPPING PERMITS

Total tonnages of cargo provided by applicants under SVPs and CVPs increased marginally from 11.5 million tonnes in 2001–02 to 11.6 million tonnes in 2002–03.

Single voyage permits

Figure 2 illustrates the number of SVPs issued, and the tonnes of cargo to be carried, between July–December 1990 and January–June 2003. The number of SVPs issued in January–June 2003 decreased by 6 per cent compared with July–December 2002, and increased by 12 per cent compared with January–June 2002. The associated tonnes of cargo to be carried decreased by 2 per cent compared with July–December 2002, and increased by 5 per cent compared with January–June 2002.

FIGURE 2 TONNES TO BE CARRIED VIA SINGLE VOYAGE PERMITS, 1990–2003



Note *All tonnages are pre-voyage estimates.*

Sources *Regulatory Group, Department of Transport and Regional Services.*

On a financial year basis the total number of SVPs issued in 2002–03 was 737, compared with 664 in 2001–02. This represented an increase of 11 per cent. Over the same period, SVP cargo increased by 4 per cent from 9.6 million tonnes to 10 million tonnes.

Table 14 gives a breakdown of SVPs by cargo types for January–June 2003. General cargo (including containerised cargo) permits continue to lead the tally for SVPs issued. However, bulk cargo accounts for over 96 per cent of the total tonnage moved under SVPs.

TABLE 14 SUMMARY OF SINGLE SHIPPING PERMITS ISSUED, JANUARY–JUNE 2003

Cargo Category	*Permits*	*Tonnes*
Bulk Cargo		
Petroleum Products	41	1 510 599
Liquefied Gas	29	82 300
Other Bulk Liquids	20	148 075
Dry Bulk	105	3 015 320
General Cargo	163	180 047
Total	**358**	**4 936 341**

Note *All tonnages are pre-voyage estimates.*

Source *Regulatory Group of the Department of Transport and Regional Services.*

Continuing voyage permits

Although CVPs were available prior to 1998, they were rarely requested or issued during this period. However, as shown in figure 3, since 1998 there have been significant fluctuations in both the number of permits issued and the tonnage to be carried. In January–June 2003, a total of 0.4 million tonnes were carried under CVPs, compared with 1.3 million tonnes in July–December 2002, and 1 million tonnes in January–June 2002. CVPs issued since the start of 2003 have been for 3 months maximum duration rather than the 6 months allowed previously. Much of the large decrease in tonnage is due to this change.

In 2002–03 there were 102 CVPs issued compared with 89 in 2001–02. A total of 1.7 million tonnes of coastal trade were to be moved using CVPs in 2002–03, representing a decrease of 14 per cent over the previous year.

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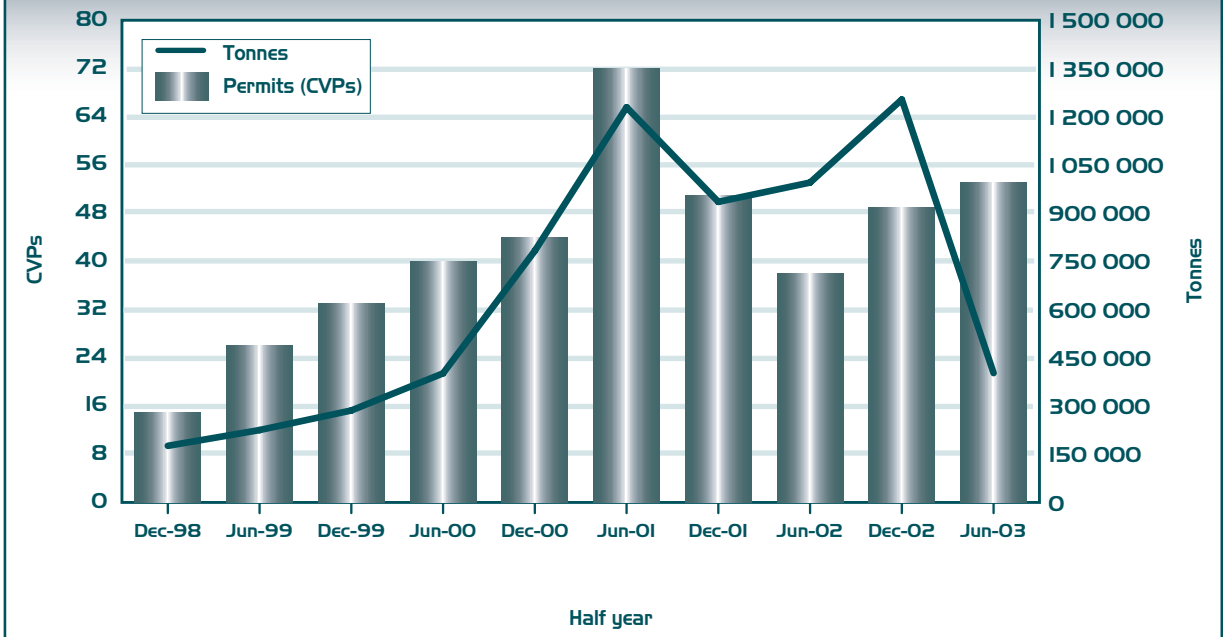
Recent changes to CVPs mean one CVP now typically extends for a period of three months, and is now approximately equivalent to three SVPs.

More information on coastal permits can be found on the Department of Transport and Regional Services' internet site at http://www.dotars.gov.au/transreg/str_permits.htm.

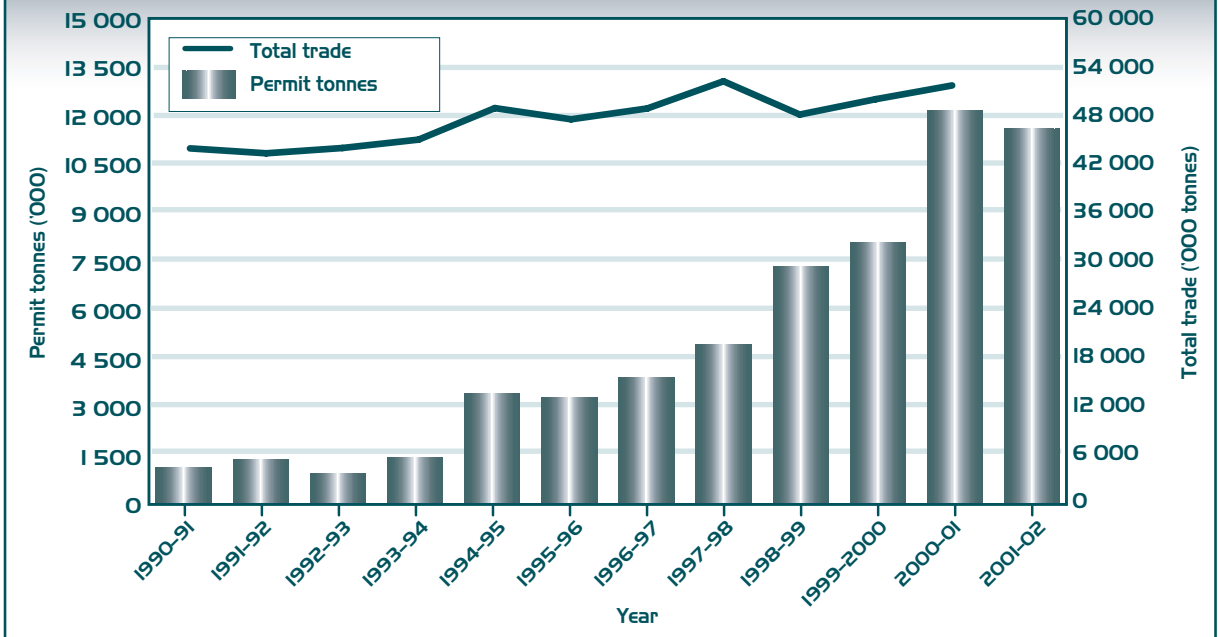
FIGURE 3 TONNES TO BE CARRIED VIA CONTINUING VOYAGE PERMITS, 1998–2003



Note *All tonnages are pre-voyage estimates.*

Sources *Regulatory Group, Department of Transport and Regional Services.*

FIGURE 4 TOTAL COASTAL TRADE



Note *Total coastal trade figures for 2001–02 are not available at time of publishing.*

Sources *BTRE estimates and the Regulatory Group, Department of Transport and Regional Services.*

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STEVEDORING PRODUCTIVITY

Table 15 presents the June quarter 2001 to June quarter 2003 indicators of stevedoring productivity at the five major Australian container ports, expressed in container moves per hour. Figures 5 to 10 present these data over the June quarter 1997 to June quarter 2003 period. The data for Brisbane, 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.

National crane rate productivity, as measured by the five-port average, increased to 26.1 containers per hour in the March quarter 2003 compared to the previously reported December quarter 2002 rate of 26.0, and to a record 27.5 container per hour in the June quarter 2003.

In summary:

- the five-port average *crane rate* (average productivity *per crane* while the ship is worked) was 27.5 containers per hour for the June quarter 2003, compared with 26.1 in the March quarter 2003 and 26.0 in the December quarter 2002;
- the five-port average *vessel working rate* (productivity *per ship* based on the time labour is aboard the ship) was 32.5 containers per hour for the June quarter 2003, compared with 31.6 in the March quarter 2003 and 30.7 in the December quarter 2002; and
- the five-port average *ship rate* (productivity *per ship* for total period ship is worked) was 45.1 containers per hour for the June quarter 2003, compared with 43.4 in both the March 2003 and December 2002 quarters.

The *Brisbane* (P&O Ports, Patrick) average crane rate increased to 26.7 containers per hour in the June quarter 2003, up from 25.5 in the March quarter 2003 and 26.7 in the December quarter 2002. The vessel working rate of 27.0 containers per hour for the June quarter 2003 was a significant increase on the previous three quarters, which have averaged 24.3 containers per hour. The ship rate in the June quarter 2003 was 41.1 containers per hour.

The *Sydney* (P&O Ports, Patrick) average crane rate increased to 27.2 containers per hour in the June quarter 2002 compared with 25.9 in the March quarter 2003 and 25.2 in the December quarter 2002. The vessel working rate of 35.4 containers per hour and the ship rate of 48.0 containers per hour were up from the previous two quarters' figures.

The *Melbourne* (P&O Ports, Patrick) average crane rate increased to 27.8 containers per hour in the June quarter 2003 from 26.1 in the previous two quarters. The vessel working rate of 33.0 containers per hour was down from the March quarter 2003 figure of 33.7 but up from the December quarter 2002 figure of 32.0, while the ship rate of 45.1 containers per hour was down compared with the previous two quarters' figures.

The *Adelaide* (CSX World Terminals) average crane rate increased to 27.4 containers per hour in the June quarter 2003, from 25.9 in the March quarter 2003 and 24.0 in the December quarter 2002. The vessel working rate of 36.0 containers per hour was slightly down from the March quarter 2003 figure of 36.2, but up from the December quarter 2002 figure of 34.0. The ship rate of 42.4 containers per hour was up compared with the previous two quarters' figures.

The *Fremantle* (P&O Ports, Patrick) average crane rate increased to 28.1 containers per hour in the June quarter 2003, from 27.5 containers per hour in the March quarter 2003, and matching the rate for December quarter 2002. The vessel working rate of 28.6 containers per was up from 27.8 in the March quarter 2003 and slightly down on the 28.9 recorded for the December quarter 2002. The ship rate of 44.1 containers per hour was up on the March quarter 2003 rate of 40.5 and slightly lower than the December Quarter 2002 figure of 41.2 containers per hour.

Overall, the crane-rate variability changed little in the March and June 2003 quarters compared with previous movement patterns with two exceptions. Melbourne crane-rate variability dropped sharply in the June quarter 2003 compared to the previous two quarters. Fremantle showed a significant increase in crane-rate variability from 36 percent in the December quarter 2002 to 44 percent in the March quarter 2003 and increased again to 49 per cent in the June quarter 2003.

Teus per hour

Table 21 on page 23 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 15 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.

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TABLE 15 CONTAINER TERMINAL PERFORMANCE INDICATORS—PRODUCTIVITY IN CONTAINERS PER HOUR

Port / Indicator	Quarter								
	Jun-01	Sep-01	Dec-01	Mar-02	Jun-02	Sep-02	Dec-02	Mar-03	Jun-03
Five ports									
Ships handled	813	825	846	824	868	858	856	821	822
Total containers	502 037	575 130	591 070	544 135	591 247	645 506	685 458	643 406	639 157
Crane rate	26.8	25.8	26.1	26.6	26.9	26.4	26.0	26.1	27.5
Vessel working rate	28.7	29.5	29.6	29.6	30.7	31.9	30.7	31.6	32.5
Ship rate	40.4	41.4	41.4	41.4	42.1	44.0	43.4	43.4	45.1
Crane time not worked (per cent)	29	29	29	29	27	28	29	27	28
40-foot containers (per cent)	32	33	33	33	33	36	37	35	36
Brisbane									
Ships handled	188	175	198	202	211	216	216	206	184
Total containers	84 854	81 935	88 669	78 160	94 230	103 537	107 692	98 482	92 872
Crane rate	27.4	25.4	25.3	26.6	27.2	26.1	26.7	25.5	26.7
Vessel working rate	23.5	22.5	22.4	22.2	23.2	24.2	24.1	24.7	27.0
Ship rate	36.3	36.4	35.8	36.6	37.2	37.9	40.4	38.1	41.1
Crane time not worked (per cent)	35	38	37	39	38	36	40	35	34
40-foot containers (per cent)	28	29	27	28	29	32	34	32	34
Stevedoring variability (per cent)	51	68	65	55	54	53	57	52	54
Sydney									
Ships handled	202	208	206	196	203	204	210	211	217
Total containers	152 650	179 506	184 559	167 278	172 599	200 825	215 863	201 358	194 177
Crane rate	25.3	25.5	25.7	26.9	27.4	26.3	25.2	25.9	27.2
Vessel working rate	28.4	31.4	31.2	32.1	34.3	35.8	32.7	33.5	35.4
Ship rate	40.3	44.4	44.0	44.3	46.1	47.4	44.2	44.8	48.0
Crane time not worked (per cent)	29	29	29	28	26	25	26	25	26
40-foot containers (per cent)	34	35	37	37	37	38	40	38	40
Stevedoring variability (per cent)	48	53	66	56	46	59	56	48	50
Melbourne									
Ships handled	215	243	249	234	251	250	243	229	235
Total containers	174 149	214 752	221 647	205 435	221 786	239 564	250 679	234 243	240 028
Crane rate	27.2	25.4	26.3	26.3	26.7	26.9	26.1	26.1	27.8
Vessel working rate	31.3	30.5	31.6	31.5	31.9	33.4	32.0	33.7	33.0
Ship rate	43.7	42.2	42.9	43.4	44.0	46.7	45.3	45.6	45.1
Crane time not worked (per cent)	28	28	26	28	28	28	29	26	27
40-foot containers (per cent)	31	33	33	33	33	36	37	36	37
Stevedoring variability (per cent)	59	57	59	59	62	66	63	63	52
Adelaide									
Ships handled	57	57	57	54	59	55	58	50	58
Total containers	25 928	28 369	28 857	24 505	32 735	28 815	30 214	29 401	32 093
Crane rate	26.0	26.1	25.9	25.5	24.0	23.3	24.0	25.9	27.4
Vessel working rate	34.9	31.4	32.1	32.5	34.3	32.6	34.0	36.2	36.0
Ship rate	38.5	34.7	35.2	35.8	37.1	34.5	38.2	41.3	42.4
Crane time not worked (per cent)	9	10	9	9	8	6	11	12	15
40-foot containers (per cent)	28	23	27	30	28	30	30	28	25
Stevedoring variability (per cent)	na	na	na	na	na	na	na	na	na
Fremantle									
Ships handled	151	142	136	138	144	133	129	125	128
Total containers	64 456	70 568	67 338	68 757	69 897	72 765	81 010	79 922	79 987
Crane rate	28.5	28.5	27.9	27.1	27.4	27.1	28.1	27.5	28.1
Vessel working rate	26.4	28.6	27.2	25.2	26.7	26.5	28.9	27.8	28.6
Ship rate	38.2	39.8	39.4	35.8	35.5	37.7	41.2	40.5	44.1
Crane time not worked (per cent)	31	28	31	30	25	30	30	31	35
40-foot containers (per cent)	33	32	35	30	34	36	37	34	33
Stevedoring variability (per cent)	38	22	36	35	40	35	36	44	49

na not available

Notes 1. The definitions used in compiling the stevedoring productivity data are detailed in Waterline 33, pages 15–17.

2. Data from CSX World Terminals at Brisbane are incorporated from the December quarter 1999 until June quarter 2001.

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 21.

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

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

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CONTAINER TERMINAL PRODUCTIVITY

FIGURE 5 FIVE MAJOR PORTS

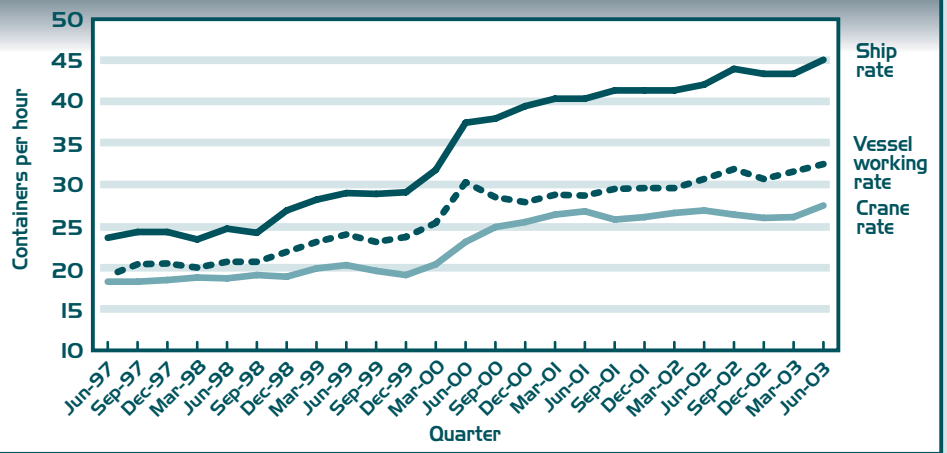


FIGURE 6 BRISBANE

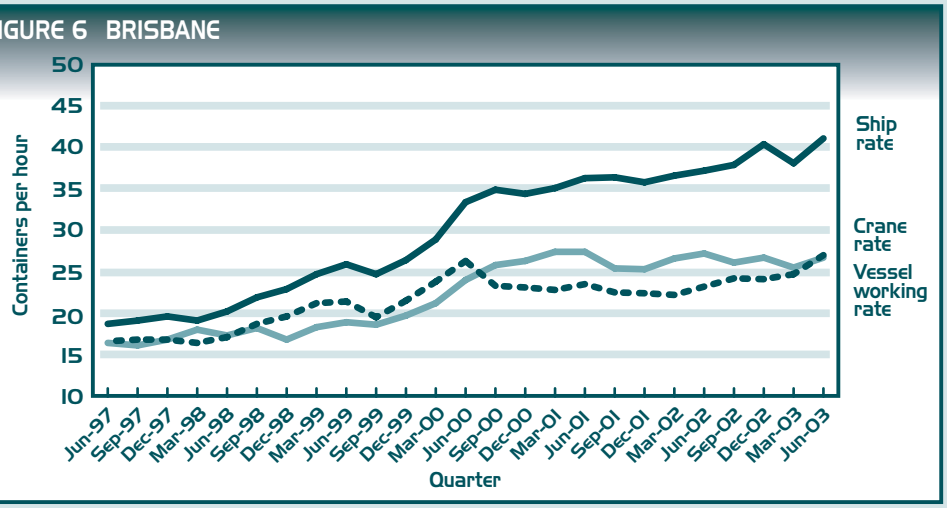
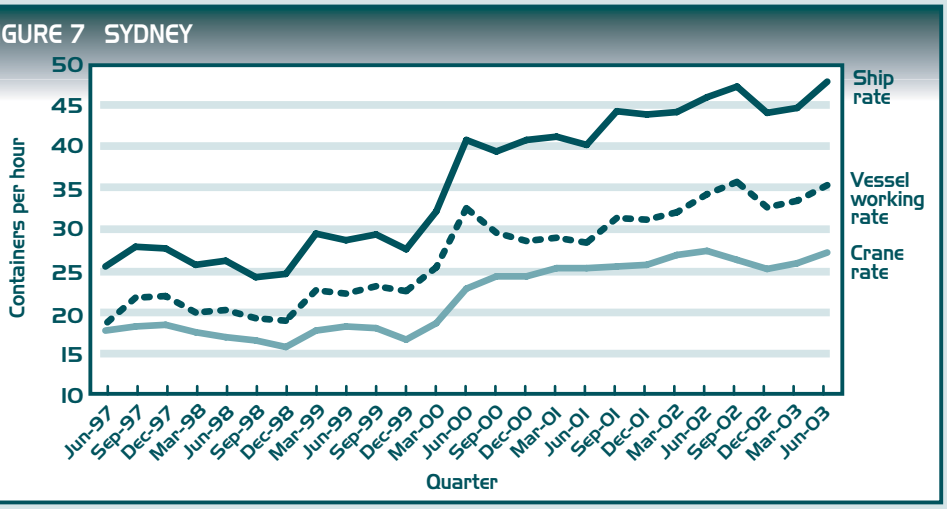


FIGURE 7 SYDNEY



Note *These figures are based on the data contained in table 15. Readers should refer to the notes in that table.*

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

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FIGURE 8 MELBOURNE

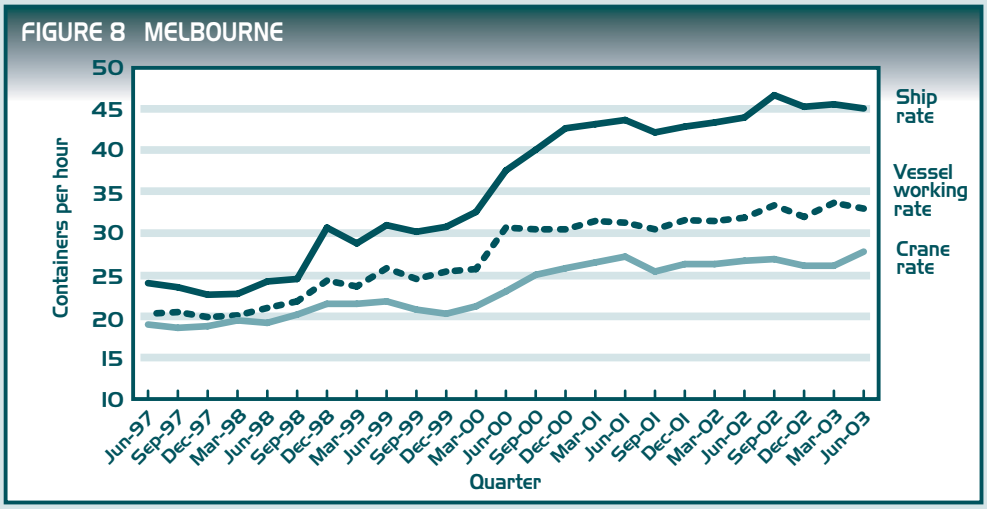


FIGURE 9 ADELAIDE

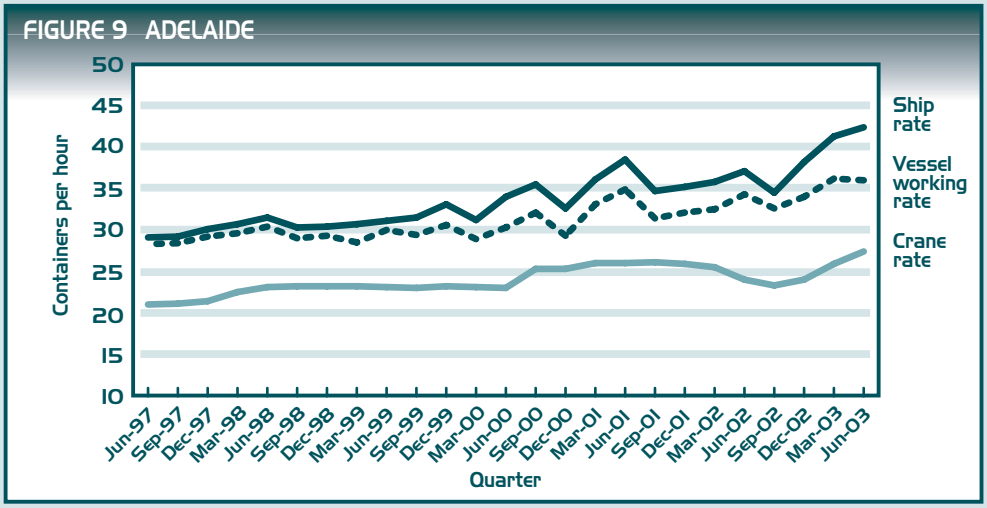
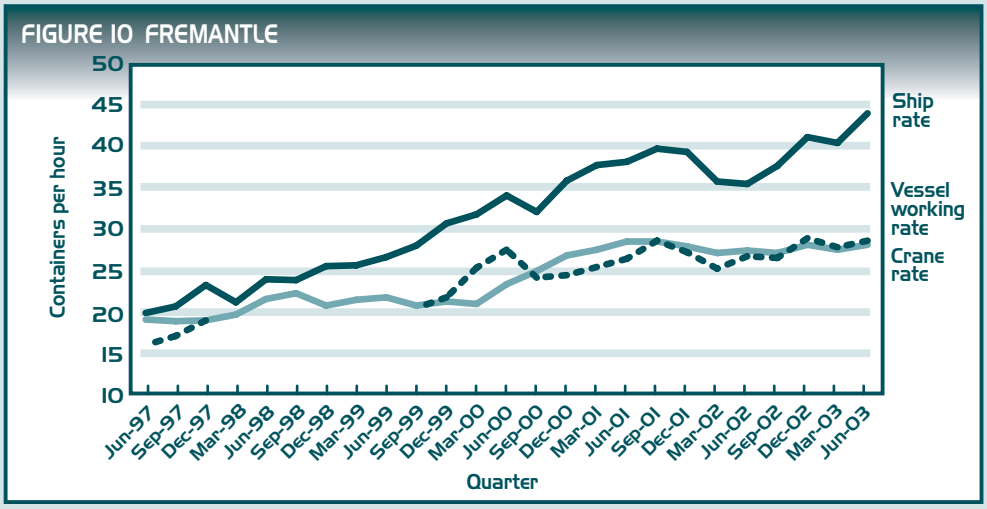


FIGURE 10 FREMANTLE



Note *These figures are based on the data contained in table 15. Readers should refer to the notes in that table.*

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

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WATERFRONT RELIABILITY

Waterline reliability indicators provide partial measures of the variability of waterfront performance for container movements at major Australian ports. They cover the timeliness of selected port services, factors contributing to ship waiting time, aspects of stevedoring performance and the accuracy of ship arrival advice.

TABLE 16 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, MARCH QUARTER 2003

(Number of ship calls)

	Delay (hours)									
Port/operation	0	1	2	3	4	5–10	11–20	>20	Total number of ship calls	Availability indicator(per cent)
Brisbane										
Berth availability	29	0	0	0	1	2	1	0	33	
Pilotage	33	0	0	0	0	0	0	0	33	
Towage	33	0	0	0	0	0	0	0	33	
Sydney										
Berth availability	38	0	0	0	1	0	0	0	39	
Pilotage	39	0	0	0	0	0	0	0	39	
Towage	39	0	0	0	0	0	0	0	39	
Melbourne										
Berth availability	44	1	1	0	1	2	0	0	49	
Pilotage	49	0	0	0	0	0	0	0	49	
Towage	49	0	0	0	0	0	0	0	49	
Adelaide										
Berth availability	14	0	0	0	0	0	1	0	15	
Pilotage	15	0	0	0	0	0	0	0	15	
Towage	14	0	0	0	0	1	0	0	15	
Fremantle										
Berth availability	24	0	0	0	0	0	0	0	24	
Pilotage	24	0	0	0	0	0	0	0	24	
Towage	24	0	0	0	0	0	0	0	24	
Five ports										
Berth availability	149	1	1	0	3	4	2	0	160	96.3
Pilotage	160	0	0	0	0	0	0	0	160	100.0
Towage	159	0	0	0	0	1	0	0	160	99.4

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.

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TABLE 17 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, JUNE QUARTER 2003

(Number of ship calls)

	Delay (hours)									
Port/operation	0	1	2	3	4	5–10	11–20	>20	Total number of ship calls	Availability indicator (per cent)
Brisbane										
Berth availability	27	0	0	0	0	0	0	0	27	
Pilotage	27	0	0	0	0	0	0	0	27	
Towage	27	0	0	0	0	0	0	0	27	
Sydney										
Berth availability	39	0	0	0	0	0	0	0	39	
Pilotage	39	0	0	0	0	0	0	0	39	
Towage	39	0	0	0	0	0	0	0	39	
Melbourne										
Berth availability	39	1	0	1	0	3	0	1	45	
Pilotage	45	0	0	0	0	0	0	0	45	
Towage	45	0	0	0	0	0	0	0	45	
Adelaide										
Berth availability	16	0	0	0	0	0	0	0	16	
Pilotage	16	0	0	0	0	0	0	0	16	
Towage	16	0	0	0	0	0	0	0	16	
Fremantle										
Berth availability	21	0	0	1	0	0	0	0	22	
Pilotage	22	0	0	0	0	0	0	0	22	
Towage	22	0	0	0	0	0	0	0	22	
Five ports										
Berth availability	142	1	0	2	0	3	0	1	149	97.3
Pilotage	149	0	0	0	0	0	0	0	149	100.0
Towage	149	0	0	0	0	0	0	0	149	100.0

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.

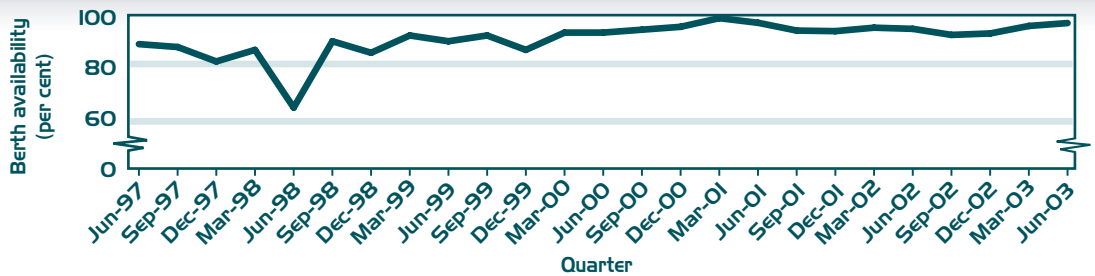
Sources Data for a sample of ship calls provided by shipping lines.

Berth availability, pilotage, towage

Tables 16 and 17 present information on berth availability, pilotage and towage for samples of ship calls in the March and June quarters 2003. They indicate the extent to which selected port services were available at the scheduled or confirmed time.

The sample for the March quarter 2003 covers 160 ship calls, equivalent to around 19 per cent of total ship calls at the five major container terminals during the period. The proportion of ship calls covered at individual ports ranges from 16 per cent at Brisbane to 30 per cent at Adelaide. The sample for the June quarter 2003 covers 149 ship calls, equivalent to around 18 per cent of total ship calls at the five major container terminals during the period. The proportion of ship calls covered at individual ports ranges from 15 per cent at Brisbane to 28 per cent at Adelaide for the half year to June 2003. The samples include calls by container ships operating to and from Europe, the Mediterranean, the Middle East, North America, Asia and New Zealand.

FIGURE 11 BERTH AVAILABILITY AT MAJOR CONTAINER TERMINALS, 1997–2003



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

The *berth availability* indicator measures the proportion of ship arrivals where a berth is available within four hours of the scheduled berthing time. Figure 11 shows that berth availability for the sample of ship calls was 96 per cent in the March quarter 2003. This was higher than in the previous quarter. Berth availability was 97 per cent in the June quarter 2003. 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 9 hours in the March quarter 2003, a decrease from 14 hours in the previous quarter. Average berth waiting time was 11 hours in the June quarter 2003.

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. In the March quarter 2003, the proportion was 100 per cent for the pilotage indicator, the same as in the previous quarter, and 99 per cent for the towage indicator, slightly less than in the previous quarter. In the June quarter 2003, the proportion was 100 per cent for the pilotage indicator, and for the towage indicator. Performance has been at similar levels since the first data (covering the March quarter 1997) were published in *Waterline*.

Other waiting time

The five shipping lines that supplied information for tables 16 and 17 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 18 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, MARCH QUARTER 2003

(Number of incidents)

Incident type	Ship waiting time (hrs) 1	2	3	4	5-10	11-20	>20	Total number of incidents
Awaiting labour	5	11	8	2	19	4	1	50
Crane breakdown	6	9	3	3	6	0	0	27
Other	1	3	6	2	0	1	0	13
Weather or tides	2	1	0	0	5	1	0	9
Pilot/tug booking not at preferred time	4	4	0	1	0	0	0	9
Stevedoring finished early	0	2	0	2	1	0	0	5
Early ship arrival	0	1	1	0	1	0	0	3
Stevedoring finished late	0	1	0	0	0	1	1	3
Ship repairs or maintenance	0	0	0	0	1	1	1	3
Late ship arrival	1	0	0	0	0	0	0	1
Industrial action	0	0	0	0	0	0	0	0
Total incidents	**19**	**32**	**18**	**10**	**33**	**8**	**3**	**123[a]**

a. *These incidents affected 89 of the 160 ship calls covered in table 16.*

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

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Tables 18 and 19 summarise the data on other waiting time incidents, which had a duration of at least one hour, in the March and June quarters 2003. The shipping lines identified a total of 123 incidents (affecting 89 ship calls) for the sample of ship calls in the March quarter 2003. They identified 117 incidents (affecting 83 ship calls) in the June quarter. These incidents involved both ship-related and waterfront factors.

TABLE 19 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, JUNE QUARTER 2003

(Number of incidents)

Incident type	Ship waiting time (hrs) 1	2	3	4	5-10	11-20	>20	Total number of incidents
Crane breakdown	10	14	5	0	6	0	0	35
Awaiting labour	8	5	3	4	8	1	1	30
Stevedoring finished early	1	3	4	3	1	0	0	12
Other	4	3	2	0	1	1	0	11
Pilot/tug booking not at preferred time	7	1	1	0	0	0	0	9
Weather or tides	2	1	1	0	0	0	2	6
Stevedoring finished late	2	2	0	0	2	0	0	6
Early ship arrival	2	1	0	0	1	1	0	5
Ship repairs or maintenance	0	0	0	0	1	0	1	2
Industrial action	0	0	0	1	0	0	0	1
Late ship arrival	0	0	0	0	0	0	0	0
Total incidents	**36**	**30**	**16**	**8**	**20**	**3**	**4**	**117[a]**

a. *These incidents affected 83 of the 149 ship calls covered in table 17.*

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

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 2003 was the category of awaiting labour, which accounted for 45 per cent of total waiting time. Crane breakdown accounted for 14 per cent of total waiting time, and ship repairs or maintenance was related to a further 9 per cent of total waiting time. The largest single source of other ship waiting time in the June quarter 2003 was the category of ship repairs or maintenance, which accounted for 24 per cent of total waiting time. Awaiting labour accounted for 23 per cent of total waiting time, and crane breakdown was related to a further 16 per cent of total waiting time.

In the March quarter 2003, 56 per cent of ship calls in the sample were affected by other waiting time incidents that had a duration of at least one hour, up from 55 per cent in the December quarter 2002. The average duration of other waiting time incidents was 7.0 hours per affected ship call in the March quarter 2003, down from 9.2 hours per affected ship call in the previous quarter. In the June quarter 2003, 56 per cent of ship calls in the sample were affected by other waiting time incidents that had a duration of at least one hour. The average duration of other waiting time incidents was 6.9 hours per affected ship call in the June quarter 2003.

Figure 12 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.

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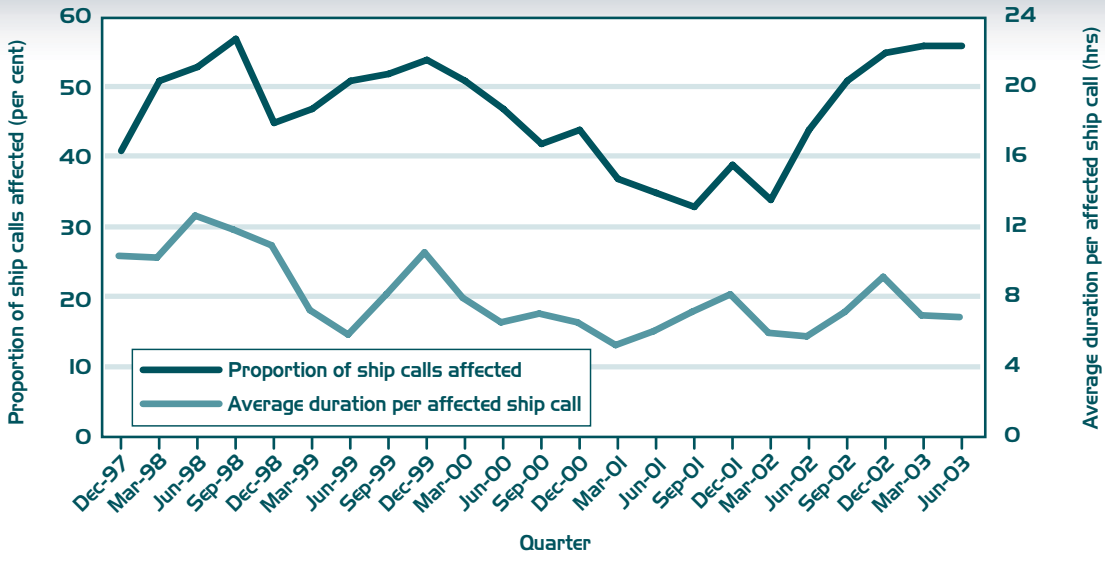
FIGURE 12 OTHER SHIP WAITING TIME INCIDENTS AT MAJOR CONTAINER TERMINALS, 1997–2003



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

Stevedoring

Table 20 presents the available information on an aspect of stevedoring reliability at major container terminals —cargo receival. Data were not available for Adelaide.

TABLE 20 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, MARCH AND JUNE QUARTERS 2003

(per cent)

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
Indicator	Mar-03	Jun-03	Mar-03	Jun-03	Mar-03	Jun-03	Mar-03	Jun-03	Mar-03	Jun-03
Stevedoring										
Cargo receival	97	98	86	91	89	78	na	na	96	98
Ship arrival										
Advice at 24 hrs	64	66	52	61	na	na	56	53	56	46
Advice inside 24 hrs	94	94	98	98	na	na	92	90	86	86

na not available

Sources AAPMA, Patrick and P&O Ports.

Stevedoring rate is no longer recorded in table 20. From issue 34 it appears in table 15 under the name *stevedoring variability*.

Cargo receival is the proportion of receivals (exports) completed by the stevedore's cut-off time. It provides a partial measure of one factor that can affect container terminal performance. Cargo receival in the March quarter 2003 increased at Brisbane and Fremantle, was unchanged at Melbourne, and fell at Sydney compared with the December quarter 2002. Cargo receival in the June quarter 2003 increased at Sydney and Fremantle, changed little at Brisbane, and fell at Melbourne compared with the March quarter 2003.

Ship arrival

Table 20 includes data for two indicators of ship arrival advice. Data were not available for Melbourne for the March and June quarters 2003.

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 at all four ports in the March quarter 2003. The indicator rose at Sydney and Brisbane, and fell at Adelaide and Fremantle, in the June quarter 2003.

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*. In the March quarter 2003 this indicator increased at Sydney, Brisbane and Adelaide, and fell at Fremantle. In the June quarter 2003 this indicator was unchanged at Sydney, Brisbane and Fremantle, and fell slightly at Adelaide.

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ABBREVIATIONS

AAPMA	Association of Australian Ports and Marine Authorities
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
BTRE	Bureau of Transport and Regional Economics
CVP	Continuing Voyage Permit
DOTARS	Department of Transport and Regional Services
Five-port	The five mainland capital city ports (Brisbane, Sydney, Melbourne, Adelaide, Fremantle)
GRT	Gross Registered Tonnage
SVP	Single Voyage Permit
teu	Twenty-foot equivalent unit
UCC	Fully cellular container vessel

STEVEDORING PRODUCTIVITY DEFINITIONS

Containers Handled
The total number of containers lifted on/off fully cellular ships.

Crane Intensity
The total number allocated crane hours, divided by the elapsed time from labour first boarding the ship and labour last leaving the ship.

Crane Rate
The total containers/teus handled divided by the Elapsed Crane Time.

Elapsed Crane Time
The total allocated crane hours, less operational and non-operational delays.

Elapsed Labour Time
The elapsed time between labour first boarding the ship and labour last leaving the ship, less non-operational delays.

Ship Rate
The Crane Rate multiplied by Crane Intensity (as defined above).

Ships
Only fully cellular ships are included in calculations. Fully cellular ships are defined as purpose-built container ships equipped with 40-foot cell guides below deck as a minimum, and exclude such vessels if used for mixed cargoes of containers and general cargo.

TEUs Handled
The total 40-foot containers lifted on/off fully cellular ships multiplied by 2, plus the total 20-foot containers lifted on/off fully cellular ships.

Vessel Working Rate
Formerly known as Elapsed Labour rate. The total containers/teus handled divided by the Elapsed Labour Time.

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TABLE 21 CONTAINER TERMINAL PERFORMANCE INDICATORS BY QUARTER, SELECTED AUSTRALIAN PORTS—PRODUCTIVITY IN TEUS PER HOUR

	Jun-99	Sep-99	Dec-99	Mar-00	Jun-00	Sep-00	Dec-00	Mar-01	Jun-01	Sep-01	Dec-01	Mar-02	Jun-02	Sep-02	Dec-02	Mar-03	Jun-03
Five Ports																	
Ships handled	958	979	933	875	808	840	814	787	813	825	846	824	868	858	856	821	822
Total teus	602 501	660 593	726 590	678 046	666 967	708 433	731 936	634 003	661 326	762 202	787 093	724 311	788 090	876 522	938 913	871 089	870 861
Crane rate	25.9	25.4	24.8	26.6	30.4	33.2	34.2	35.4	35.2	34.2	34.8	35.4	35.9	35.9	35.6	35.3	37.4
Vessel working rate	na	30.1	30.8	33.3	40.0	38.0	37.6	38.6	37.8	39.2	39.6	39.6	41.1	43.4	42.2	42.9	44.3
Ship rate	37.3	37.7	37.8	41.7	49.5	50.8	53.2	54.3	53.3	55.0	55.4	55.4	56.3	59.9	59.4	58.8	61.7
Brisbane																	
Ships handled	193	224	232	219	178	187	179	167	188	175	198	202	211	216	216	206	184
Total teus	88 311	98 944	106 096	97 431	90 932	103 654	107 812	81 864	108 810	105 746	112 586	100 033	121 920	136 771	143 882	130 384	124 854
Crane rate	23.4	23.3	24.6	26.4	30.5	33.4	34.0	35.5	35.1	32.7	32.1	34.1	35.2	34.6	35.6	33.8	35.8
Vessel working rate	26.7	24.7	27.0	29.8	33.4	30.0	29.7	29.6	30.2	28.7	28.5	28.5	30.0	32.0	32.3	32.6	36.3
Ship rate	32.2	31.2	33.1	36.1	42.3	45.1	44.5	46.1	46.5	46.8	45.5	46.9	48.2	50.2	53.9	50.4	55.3
Sydney																	
Ships handled	243	259	244	221	218	223	211	201	202	208	206	196	203	204	210	211	217
Total teus	203 536	226 784	260 927	229 014	224 445	237 843	240 720	203 217	205 126	242 823	252 521	228 723	235 664	277 733	302 267	278 456	271 501
Crane rate	24.0	23.7	22.1	24.8	30.9	33.1	33.2	34.7	34.0	34.4	35.2	36.8	37.4	36.2	35.2	35.7	38.0
Vessel working rate	29.3	30.6	30.1	34.0	44.1	40.5	39.0	39.7	38.2	42.5	42.7	43.9	46.7	49.4	45.8	46.2	49.5
Ship rate	38.0	38.9	36.8	43.0	55.4	53.9	55.8	56.6	54.1	60.1	60.2	60.7	62.8	65.5	61.7	61.9	67.2
Melbourne																	
Ships handled	282	278	266	247	217	227	218	214	215	243	249	234	251	250	243	229	235
Total teus	215 379	241 775	257 147	243 277	236 306	253 568	255 022	226 612	228 400	285 947	294 753	274 108	295 284	325 945	342 684	317 711	327 822
Crane rate	28.1	27.4	26.5	27.9	30.3	33.5	34.7	35.3	35.7	33.9	35.0	35.1	35.6	36.6	35.7	35.3	38.0
Vessel working rate	33.1	32.4	33.4	33.8	40.5	40.9	41.1	41.9	41.0	40.7	41.9	42.0	42.4	45.5	43.8	45.7	45.1
Ship rate	39.7	39.9	40.4	43.0	49.4	53.8	57.6	57.5	57.3	56.2	57.1	57.9	58.5	63.6	61.9	61.8	61.6
Adelaide																	
Ships handled	66	62	62	56	56	62	63	57	57	57	57	54	59	55	58	50	58
Total teus	29 569	28 271	30 597	27 736	30 551	30 945	35 339	32 251	33 308	34 867	36 633	31 815	41 829	37 317	39 354	37 731	40 012
Crane rate	27.9	27.2	27.2	29.4	27.8	29.1	32.2	33.5	33.4	32.1	32.8	33.0	30.7	30.2	31.3	33.2	34.2
Vessel working rate	36.3	34.7	35.9	36.8	36.7	37.0	37.2	42.6	44.9	38.6	40.8	42.2	43.9	42.2	44.3	46.5	44.9
Ship rate	37.6	37.2	38.8	39.7	41.1	41.0	41.5	46.5	49.5	42.7	44.7	46.5	47.4	44.7	49.7	53.1	52.8
Fremantle																	
Ships handled	174	156	129	132	139	141	143	148	151	142	136	138	144	133	129	125	128
Total teus	65 706	64 819	71 823	80 588	84 733	82 423	93 043	90 059	85 682	92 819	90 600	89 632	93 393	98 756	110 726	106 807	106 672
Crane rate	27.3	26.1	27.2	27.4	30.5	33.5	36.5	37.7	37.9	37.4	37.5	35.4	36.6	36.8	38.4	36.7	37.3
Vessel working rate	na	25.8	27.9	33.0	36.0	32.4	33.6	34.5	35.0	37.8	36.6	32.8	35.7	36.0	39.5	37.2	38.3
Ship rate	33.4	35.3	38.8	41.6	44.7	43.2	48.7	51.3	50.8	52.3	53.0	46.6	47.4	51.2	56.2	54.2	59.1

na not available

Notes 1. Data from CSX World Terminals at Brisbane are incorported from the December quarter 1999 until June quarter 2001.

2. For data back to the September quarter 1993, refer to Waterline 34.

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

Australian Government
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