Australian Government
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in brief

- In July–December 2004, total cargo throughput and total container traffic reached new records of 58.6 million tonnes and 2.376 million teus respectively (page 19).
- The five-port average crane rate decreased from the record of 28.2 containers per hour in the June quarter 2004 to 27.1 containers in the December quarter 2004. (page 3).
- The five-port average vessel working rate has increased over the period from 32.6 containers per hour in the September quarter 2004 to 33.1 in the December quarter 2004. (page 3).
- The five port total of container moves increased from 776 215 in the September quarter 2004 to a record 819 744 in the December quarter 2004 (page 3).
- The national port interface cost index for exporting a container has risen to $581/teu in 2001 constant prices for Jul–Dec 2004. This is 1.2 per cent higher than Jan–Jun 2004 when it was $574/teu. (page 10). It is however at the same price as in Jan–Jun 2003.
- Berth availability was 85.0 per cent in the September 2004 and 83 per cent in the December Quarter 2004 (page 22).
- The tonnage of cargo for which coastal permits were issued rose from 13.4 million tonnes for 2003 to 15 million tonnes for 2004 (page 20).
- Total ship visits increased only marginally in the year ended December 2004 (page 17).

FEATURE ARTICLE

This issue contains an article on Australian International Shipping. It summarises Australia's maritime trade 2002–2003, including cargo movements, main trading partners as well as major port activity with the main focus on international trade.

internet addresses

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internet

STEVEDORING PRODUCTIVI TY

Table 1 presents the December quarter 2002 to December quarter 2004 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 1997 to December quarter 2004 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, decreased to 27.5 containers per hour in the September quarter 2004 (1 per cent lower than the September quarter 2003 rate of 27.8). In the December quarter 2004, the crane rate fell again by 1.4 per cent to 27.1 containers per hour (0.4 per cent lower than the December quarter 2003 rate of 27.2).

In summary

- the five-port average crane rate (average productivity per crane while the ship is worked) was 27.7 in the March quarter 2004, 28.2 in the June quarter 2004, 27.5 in the September quarter 2004, and 27.1 containers per hour for the December quarter 2004;
- the five port total of container moves through reporting terminals increased from 776 125 in the September quarter 2004 to a new record of 819 744 moves in the December quarter 2004, an increase of 11.2 per cent on the previous reported record for June 2004 of 737 231;
- the five-port average vessel working rate (productivity per ship based on the time labour is aboard the ship) was 33.7 in the March quarter 2004, 34.1 in the June quarter 2004, 32.6 in the September quarter 2004, and 33.1 containers per hour in the December quarter 2004, which was 0.7 per cent lower than the rate of 33.3 achieved in the December quarter 2003.

The *Brisbane* (P&O Ports, Patrick) average crane rate decreased from 27.3 in the June quarter 2004 to 26.6 in the September quarter 2004, and fell marginally to 26.5 containers per hour in the December quarter 2004. The vessel working rate also decreased from 29.7 containers per hour in the June quarter 2004 to 26.0 in the September quarter 2004, and to 24.6 in the December quarter 2004.

The *Sydney* (P&O Ports, Patrick) average crane rate decreased from 27.5 in the June quarter 2004 to 27.1 in the September quarter 2004, and again to 26.7 containers per hour in the December quarter 2004. The vessel working rate decreased to 35.9 containers per hour in the June quarter 2004 to 33.7 in the September quarter 2004, and increased to 34.9 in the December quarter 2004.

The *Melbourne* (P&O Ports, Patrick) average crane rate decreased from 29.4 in the June quarter 2004 to 28.5 in the September quarter 2004, and again to 27.5 containers per hour in the December quarter 2004. The vessel working rate fell from 36.3 containers per hour in the June quarter 2004 to 35.9 in the September quarter 2004 and decreased further to 35.6 in the December quarter 2004.

The *Adelaide* (CSX World Terminals) average crane rate increased from 28.3 in the June quarter 2004 to 28.9 in the September quarter 2004, and increased further to 29.8 containers per hour in the December quarter 2004. The vessel working rate rose from 31.5 containers per hour in the June quarter 2004 to 34.4 in the September quarter 2004, and rose further to 35.3 in the December quarter 2004.

The *Fremantle* (P&O Ports, Patrick) average crane rate fell from 27.1 in the June quarter 2004 to 26.3 in the September quarter 2004, but increased to 27.2 containers per hour in the December quarter 2004. The vessel working rate fell from 28.6 containers per hour in the June quarter 2004 to 28.5 in the September quarter 2004, and then rose to 31.3 in the December quarter 2004.

Overall, stevedoring (or crane-rate) variability was reasonably stable over the June 2004 to December 2004 quarters.

Teus per hour

Table 20 on page 27 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 1 CONTAINER TERMINAL PERFORMANCE INDICATORS—PRODUCTIVITY IN CONTAINERS PER HOUR

Port / Indicator	Dec-02	Mar-03	Jun-03	Sep-03	Dec-03	Mar-04	Jun-04	Sep-04	Dec-04
Five ports									
Ships handled	856	821	822	841	850	801	825	905	936
Total containers	685 458	643 406	639 157	686 067	734 597	698 685	737 231	776 125	819 744
Crane rate	26.0	26.1	27.5	27.8	27.2	27.7	28.2	27.5	27.1
Vessel working rate	30.7	31.6	32.5	34.4	33.3	33.7	34.1	32.6	33.1
Crane time not worked (per cent)	29	27	28	29	28	28	28	29	28
40-foot containers (per cent)	37	35	36	39	39	38	38	41	42
Ship rate	43.4	43.4	45.1	48.3	46.1	46.7	47.6	45.9	45.6
Throughput pbm	96	90	90	96	103	98	103	109	115
Brisbane									
Ships handled	216	206	184	192	194	179	175	219	227
Total containers	107 692	98 482	92 872	107 257	114 580	106 652	110 300	132 527	134 274
Crane rate	26.7	25.5	26.7	25.5	25.7	26.3	27.3	26.6	26.5
Vessel working rate	24.1	24.7	27.0	24.9	26.3	27.0	29.7	26.0	24.6
Crane time not worked (per cent)	40	35	34	36	35	36	34	38	40
40-foot containers (per cent)	34	32	34	37	38	37	37	42	43
Stevedoring variability (per cent)	57	52	54	58	52	57	54	53	56
Ship rate	40.4	38.1	41.1	39.2	40.6	42.2	44.8	41.7	41.3
Throughput pbm	67	61	58	67	71	66	69	82	84
Sydney									
Ships handled	210	211	217	228	238	221	231	253	262
Total containers	215 863	201 358	194 177	215 321	236 567	217 419	231 556	241 539	256 898
Crane rate	25.2	25.9	27.2	28.0	26.2	26.7	27.5	27.1	26.7
Vessel working rate	32.7	33.5	35.4	37.8	33.1	36.2	35.9	33.7	34.9
Crane time not worked (per cent)	26	25	26	27	27	25	25	25	26
40-foot containers (per cent)	40	38	40	41	42	41	42	44	45
Stevedoring variability (per cent)	56	48	50	41	49	54	51	48	53
Ship rate	44.2	44.8	48.0	51.8	45.5	48.2	47.7	45.3	47.0
Throughput pbm	111	104	100	111	122	112	119	124	132
Melbourne									
Ships handled	243	229	235	240	241	223	244	266	272
Total containers	250 679	234 243	240 028	246 024	259 334	254 261	273 495	279 831	301 997
Crane rate	26.1	26.1	27.8	28.5	28.6	29.3	29.4	28.5	27.5
Vessel working rate	32.0	33.7	33.0	37.2	38.1	36.5	36.3	35.9	35.6
Crane time not worked (per cent)	29	26	27	28	26	28	30	29	25
40-foot containers (per cent)	37	36	37	39	39	38	39	42	41
Stevedoring variability (per cent)	63	63	52	57	58	62	66	62	65
Ship rate	45.3	45.6	45.1	52.0	51.6	50.5	52.0	50.6	47.7
Throughput pbm	137	128	131	135	142	139	150	153	165
Adelaide									
Ships handled	58	50	58	62	63	60	60	54	56
Total containers	30 214	29 401	32 093	35 221	36 954	35 100	35 207	35 950	34 654
Crane rate	24.0	25.9	27.4	28.0	28.2	28.1	28.3	28.9	29.8
Vessel working rate	34.0	36.2	36.0	31.1	33.7	32.8	31.5	34.4	35.3
Crane time not worked (per cent)	11	12	15	18	13	13	13	16	10
40-foot containers (per cent)	30	28	25	26	29	25	26	24	27
Stevedoring variability (per cent)	na	na	na	na	na	na	na	na	na
Ship rate	38.2	41.3	42.4	37.7	38.7	37.9	36.1	40.9	39.2
Throughput pbm	64	63	68	75	79	75	75	76	74
Fremantle									
Ships handled	129	125	128	119	114	118	115	113	119
Total containers	81 010	79 922	79 987	82 244	87 162	85 253	86 673	86 278	91 921
Crane rate	28.1	27.5	28.1	28.1	27.0	27.0	27.1	26.3	27.2
Vessel working rate	28.9	27.8	28.6	30.4	28.8	28.0	28.6	28.5	31.3
Crane time not worked (per cent)	30	31	35	32	31	31	31	30	28
40-foot containers (per cent)	37	34	33	38	37	36	34	39	41
Stevedoring variability (per cent)	36	44	49	46	52	41	38	41	41
Ship rate	41.2	40.5	44.1	44.9	41.7	40.6	41.6	40.7	43.4
Throughput pbm	63	62	62	64	67	66	67	67	71

pbm per berth metre

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

2. 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 13.

3. Crane time not worked is the difference between the ship and the vessel working rates as a percentage of the net rate.

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

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CONTAINER TERMINAL PRODUCTIVITY

FIGURE 1 FIVE MAJOR PORTS

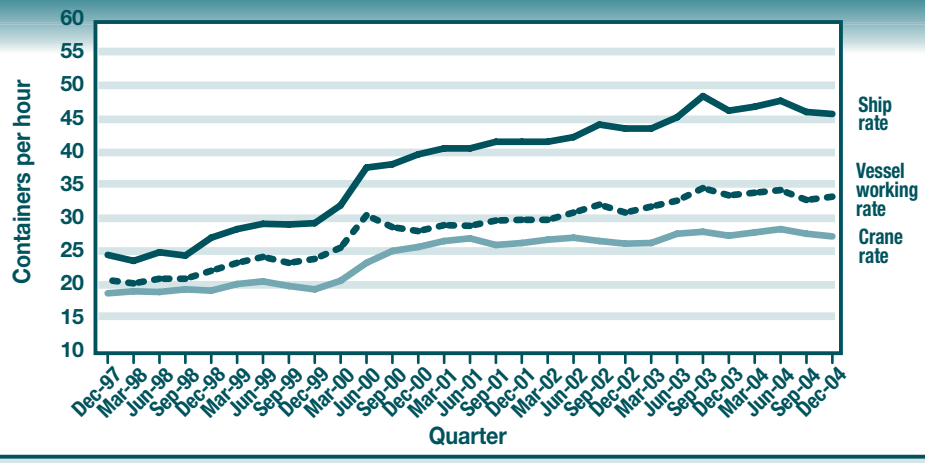


FIGURE 2 BRISBANE

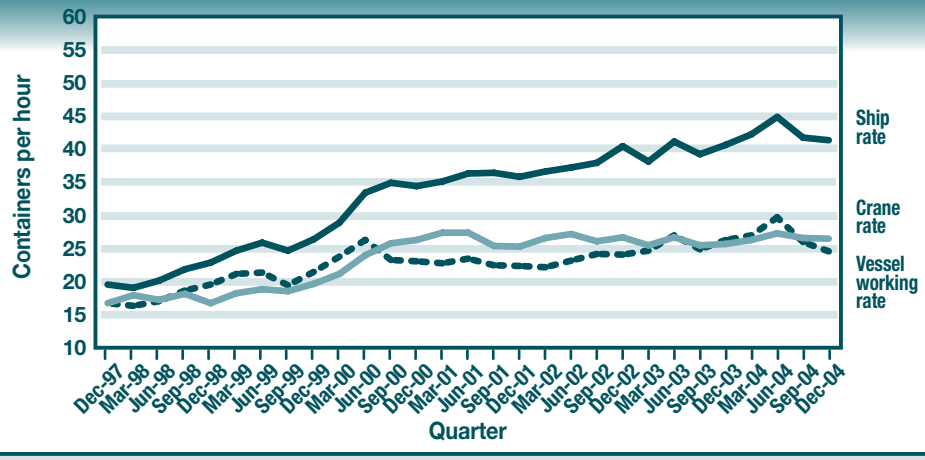
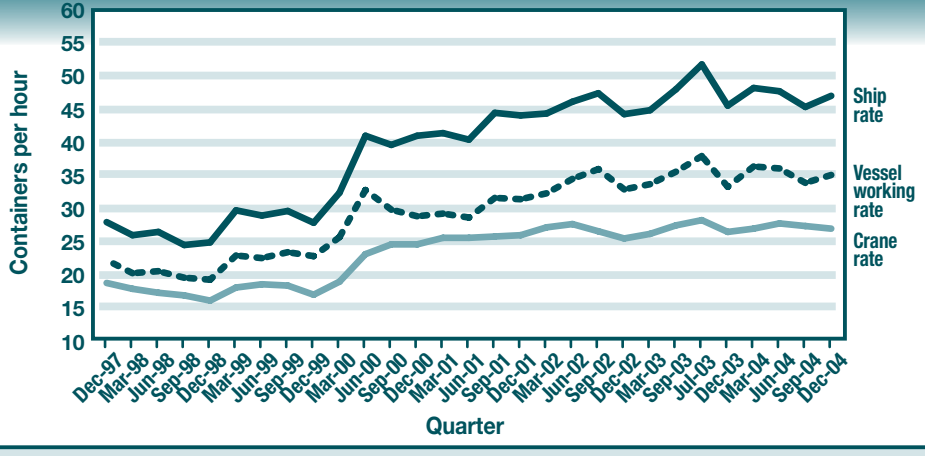


FIGURE 3 SYDNEY



Note *These figures are based on data contained in table 1. Readers should refer to the notes in that table.*

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

CONTAINER TERMINAL PRODUCTIVITY

FIGURE 4 MELBOURNE

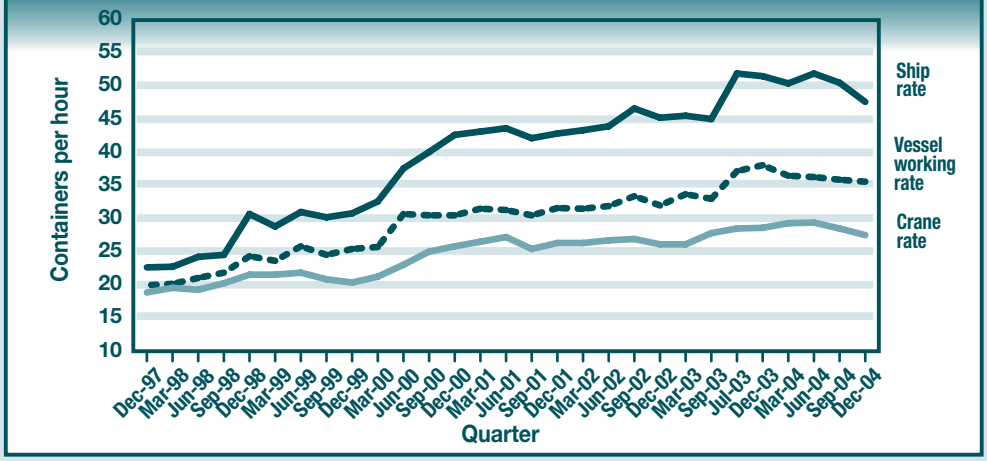


FIGURE 5 ADELAIDE

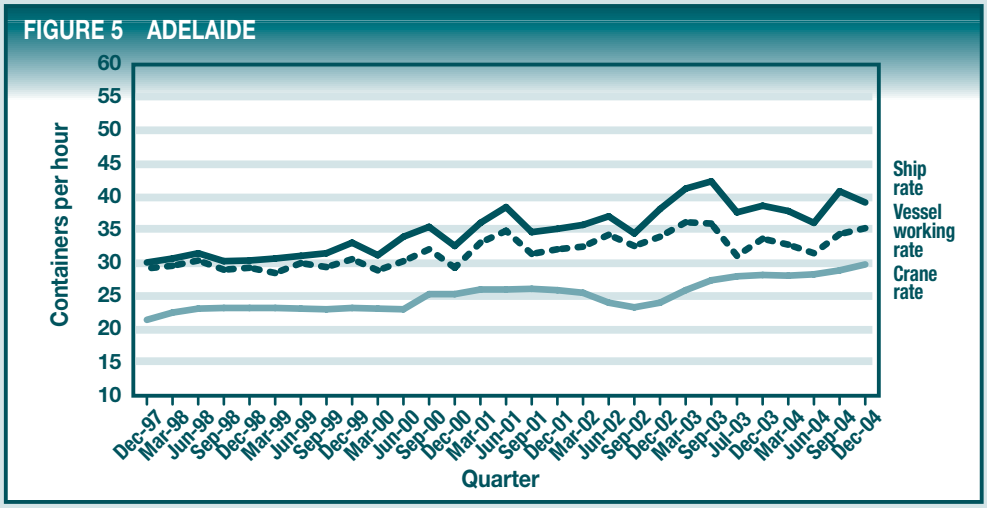
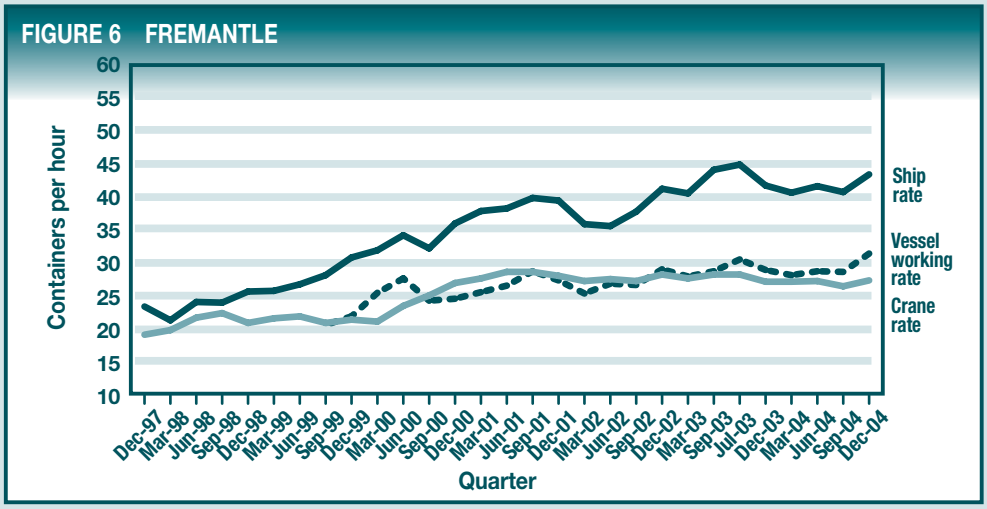


FIGURE 6 FREMANTLE



Note *These figures are based on data contained in table 1. Readers should refer to the notes in that table.*

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

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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. These five ports account for approximately 90 per cent of Australia's container traffic. Data for January–June 2004 and July–December 2004 are presented in tables 2 to 6. 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.

Port and related charges

Table 2 provides the parameters used to determine the port and related charges in tables 3 and 4. These parameters relate to a representative port call by container ships using the Lloyd's ship classification *unitised cellular container* ship (UCC). For the 15 000 to 20 000 GT range the representative vessel size used is 17 215 GT and for the 35 000 to 40 000 GT range, the representative vessel size is 37 394 GT.

TABLE 2 PARAMETERS USED IN THE PORT INTERFACE COST INDEX, 2004

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jan-Jun 2004	Jul-Dec 2004	Jan-Jun 2004	Jul-Dec 2004	Jan-Jun 2004	Jul-Dec 2004	Jan-Jun 2004	Jul-Dec 2004	Jan-Jun 2004	Jul-Dec 2004
Vessel size GT 17 215										
Average Teus exchanged[a]										
All	629	697	977	751	1 243	1 222	504	902	1 167	1 281
Loaded	504	462	823	562	1 071	1 024	369	466	985	1 221
Empty	125	235	154	189	173	198	136	436	182	60
Loaded inwards	318	291	537	401	549	605	120	151	406	696
Loaded outwards	185	171	286	161	522	419	249	315	579	525
Ship call parameters[a]										
Number of port calls	4	6	2	4	2	4	1	1	3	1
Elapsed berth time (hrs)	26	24	27	27	35	35	18	20	31	18
Vessel size GT 37 394										
Average Teus exchanged[b]										
All	1 263	1 276	1 783	1 648	1 921	1 793	653	804	726	850
Loaded	859	992	1 280	1 161	1 560	1 437	499	478	522	620
Empty	404	284	503	487	360	356	154	326	204	230
Loaded inwards	498	632	885	828	862	859	188	138	311	329
Loaded outwards	361	360	396	334	698	579	311	340	211	291
Ship call parameters[b]										
Number of port calls	3	4	3	4	3	4	2	2	4	3
Elapsed berth time (hrs)	34	34	36	34	38	39	20	23	24	14

a. Mean value for ships between 15 000 and 20 000 GT.
b. Mean value for ships between 35 000 and 40 000 GT.

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

Tables 3 and 4 provide the port and related charges at the five mainland capital city ports for the 15 000 to 20 000 GT range and the 35 000 to 40 000 GT range respectively, for January–June 2004 and July–December 2004. Port and related charges comprise ship-based charges and cargo-based charges.

Ship-based charges

While overall ship-based charges changed little in July–December 2004, 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 July–December 2004 for ships in the 15 000 to 20 000 GT range were:

- at *Brisbane*—a 15 per cent decrease;
- at *Sydney*—a 30 per cent increase due a significant decrease in the number of teus exchanged;
- at *Melbourne*—a 3 per cent increase;
- at *Adelaide*—a 40 per cent decrease due to a significant increase in the number teus exchanged; and
- at *Fremantle*—a 8 per cent decrease.

For ships in this range, the average number of teus exchanged increased by 11 per cent at Brisbane and 79 per cent at Adelaide, but decreased by, 2 per cent at Melbourne, 23 per cent at Sydney and 10per cent at Fremantle when compared to the previous period.

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TABLE 3 PORT AND RELATED CHARGES FOR SHIPS IN THE 15 000–20 000 GT RANGE, 2004

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004
Ship-based charges ($/teu)										
Conservancy	4.05	1.88	-	-	-	-	5.34	3.17	-	-
Tonnage	-	-	7.56	9.84	4.19	4.27	9.09	5.36	2.39	2.18
Pilotage	9.87	9.16	3.39	4.41	5.26	5.51	5.64	4.02	1.97	1.79
Towage	14.18	12.80	9.12	11.87	7.36	7.49	30.19	17.38	4.31	4.05
Mooring, unmooring	2.95	2.67	3.14	4.09	0.84	0.86	-	-	0.75	0.69
Berth hire[a]	-	-	-	-	-	-	-	-	-	-
Total[b]	31.07	26.50	23.21	30.22	17.66	18.13	50.25	29.93	9.42	8.71
Cargo-based charges ($/teu)										
Wharfage										
Imports	28.60	28.60	66.00	66.00	31.24	34.54	58.30	59.95	49.50	49.50
Exports	28.60	28.60	49.50	49.50	31.24	34.54	58.30	59.95	49.50	49.50
Harbour dues	46.20	46.20	-	-	-	-	-	-	-	-
Berth charge	-	-	-	-	-	-	-	-	15.29	15.29
Total port and related charges ($/teu)[b]										
Loaded imports	106	101	89	96	49	53	109	90	74	74
Loaded exports	106	101	73	80	49	53	109	90	74	74
Charges per ship visit ($/visit)										
Total ship-based charges	19 529	18 467	22 684	22 684	21 962	22 157	25 337	27 004	10 995	11 160
Empty teus[c]	1 951	3 669	-	-	-	-	-	-	-	-

- 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 2.

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 4 PORT AND RELATED CHARGES FOR SHIPS IN THE 35 000–40 000 GT RANGE, 2004

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004
Ship-based charges ($/teu)										
Conservancy	4.38	4.45	-	-	-	-	5.42	4.72	-	-
Tonnage	-	-	8.99	9.73	5.90	6.31	10.43	9.36	8.34	7.13
Pilotage	7.08	7.17	3.16	3.42	4.33	4.77	6.28	5.47	3.17	2.71
Towage	8.92	7.98	5.32	5.75	5.10	5.46	30.01	25.11	10.26	9.05
Mooring, unmooring	1.47	1.46	2.02	2.19	0.55	0.59	-	-	1.21	1.04
Berth hire[a]	-	-	-	-	-	-	-	-	-	-
Total[b]	21.85	21.06	19.49	21.09	15.87	17.13	52.14	44.66	22.98	19.92
Cargo-based charges ($/teu)										
Wharfage										
Imports	28.60	28.60	66.00	66.00	31.24	34.54	58.30	59.95	49.50	49.50
Exports	28.60	28.60	49.50	49.50	31.24	34.54	58.30	59.95	49.50	49.50
Harbour dues	46.20	46.20	-	-	-	-	-	-	-	-
Berth charge	-	-	-	-	-	-	-	-	15.29	15.29
Total port and related charges ($/teu)[b]										
Loaded imports	97	96	85	87	47	52	110	105	88	85
Loaded exports	97	96	69	71	47	52	110	105	88	85
Charges per ship visit ($/visit)										
Total ship-based charges	27 597	26 877	34 766	34 766	30 475	30 722	34 049	35 904	16 684	16 926
Empty teus[c]	6 315	4 439	-	-	-	-	-	-	-	-

- 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 2.

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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Compared to the previous period, the overall changes in total ship-based charges per teu in July–December 2004 for ships in the 35 000 to 40 000 GT range were:

- at *Brisbane*—a 4 per cent decrease;
- at *Sydney*—a 8 per cent increase;
- at *Melbourne*—a 8 per cent increase);
- at *Adelaide*—a 14 per cent decrease; and
- at *Fremantle*—a 13 per cent decrease.

In the 35 000 to 40 000 GT range, the average number of teus exchanged rose at Brisbane, Adelaide and Fremantle in July–December 2004 when compared to the previous period. The increases were 1 per cent at Brisbane, 17 per cent at Fremantle and Adelaide 23 per cent. Sydney decreased by 8 per cent and Melbourne by 7 per cent.

Fremantle continues to have the lowest ship-based charges on a per ship visit basis for representative vessel sizes for ships in the 15 000 to 20 000 GT range while Melbourne now has the lowest ship based charges for ships in the 35 000 to 40 000 GT range.

Cargo-based charges

Cargo-based charges increased by 10 per cent in Melbourne and 3 per cent in Adelaide over the period July 2004 quarter to the Dec 2004 quarter. There were no cargo based increases in Sydney, Melbourne and Fremantle over the same period.

Stevedoring charges per teu

The stevedoring charges per teu used in this issue of Waterline are those published in the most recently available ACCC report on stevedoring prices (2003–04 data reported in Report No. 6 of November 2004). This issue updates the provisional stevedoring charges figures published for the July–December 2003 and January–June 2004 periods from $169.0 per teu to $171.49 per teu.

LAND–BASED CHARGES PER TEU

Average customs brokers' fees and road transport charges for January–June 2004 and July–December 2004 are included in tables 5 and 6. These charges are based on data provided by some 30 customs brokers and 30 road transport operators.

Customs brokers' fees for import are higher than fees for export, reflecting the more complex clearance procedures for import containers. During July–December 2004 the average customs broker fee for imports decreased by 2 per cent at Sydney, 4 per cent at Melbourne, and 2 per cent at Fremantle, increased by 3 per cent at Adelaide and did not change at Brisbane. For exports the average fee remained unchanged at Sydney, decreased by 5 per cent at Brisbane, 6 per cent at Adelaide, and 12.5 per cent at Fremantle. Average fees increased by 5 per cent at Melbourne.

Road transport charges increased at Brisbane by 9 per cent, Melbourne by 9 per cent, and at Adelaide by 5 per cent, while decreasing at Sydney by 4 per cent and Fremantle by 3 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, help explain the significant difference between road transport charges at Melbourne and Sydney compared with Brisbane, Adelaide and Fremantle.

Indices for individual ports

Table 5 indicates that for ships in the 15 000 to 20 000 GT range between January–June 2004 and July–December 2004, costs per teu for both import and export containers decreased 1 per cent at Sydney and increased by 4 per cent and 6 per cent at Melbourne. At Brisbane, costs per teu for import containers increased by 2 per cent for exports and imports. At Fremantle, the costs per teu for imports and exports decreased by 2 per cent for imports and 3 per cent for exports respectively, and at Adelaide, by 1 per cent and 3 per cent.

Table 6 indicates that for ships in the 35 000 to 40 000 GT range, between January–June 2004 and July–December 2004 there were slight increases at Brisbane of 2.9 per cent for imports and 2.3 per cent for exports, and at Sydney both decreased by 2 per cent respectively. There were increases at Melbourne of 4 and 6 per cent. At Adelaide, imports increased by 1 per cent and exports decreased marginally, while Fremantle decreased by 2 per cent and 3 per cent respectively.

These results should be interpreted with caution. 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.

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TABLE 5 PORT INTERFACE COSTS FOR SHIPS IN THE 15 000–20 000 GT RANGE, 2004

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004
Import										
Ship-based charges	31	27	23	30	18	18	50	30	9	9
Cargo-based charges	75	75	66	66	31	31	58	58	65	65
Stevedoring[p]	171	171	171	171	171	171	171	171	171	171
Customs brokers' fees	132	132	134	131	134	129	125	129	153	150
Road transport charges	223	243	360	346	310	336	196	205	202	196
Import total[a]	**633**	**647**	**755**	**744**	**664**	**690**	**601**	**596**	**600**	**591**
Export										
Ship-based charges	31	27	23	30	18	18	50	30	9	9
Cargo-based charges	75	75	50	50	31	31	58	58	65	65
Stevedoring[p]	171	171	171	171	171	171	171	171	171	171
Customs brokers' fees	104	99	112	112	77	81	77	73	72	63
Road transport charges	223	243	360	346	310	336	196	205	202	196
Export total[a]	**605**	**615**	**716**	**709**	**607**	**641**	**553**	**539**	**519**	**505**

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

p. Provisional, updated annually after the release of the ACCC stevedoring monitoring report.

Notes 1. Based on parameters described in table 2.

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 6 PORT INTERFACE COSTS FOR SHIPS IN THE 35 000–40 000 GT RANGE, 2004

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004	Jan–Jun 2004	Jul–Dec 2004
Import										
Ship-based charges	22	21	19	21	16	17	52	45	23	20
Cargo-based charges	75	75	66	66	31	31	58	58	65	65
Stevedoring[p]	171	171	171	171	171	171	171	171	171	171
Customs brokers' fees	132	132	134	131	134	129	125	129	153	150
Road transport charges	223	243	360	346	310	336	196	205	202	196
Import total[a]	**624**	**642**	**751**	**735**	**663**	**689**	**603**	**610**	**614**	**602**
Export										
Ship-based charges	22	21	19	21	16	17	52	45	23	20
Cargo-based charges	75	75	50	50	31	31	58	58	65	65
Stevedoring[p]	171	171	171	171	171	171	171	171	171	171
Customs brokers' fees	104	99	112	112	77	81	77	73	72	63
Road transport charges	223	243	360	346	310	336	196	205	202	196
Export total[a]	**596**	**609**	**712**	**699**	**605**	**640**	**555**	**553**	**533**	**516**

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

p. Provisional, updated annually after the release of the ACCC stevedoring monitoring report.

Notes 1. Based on parameters described in table 2.

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.

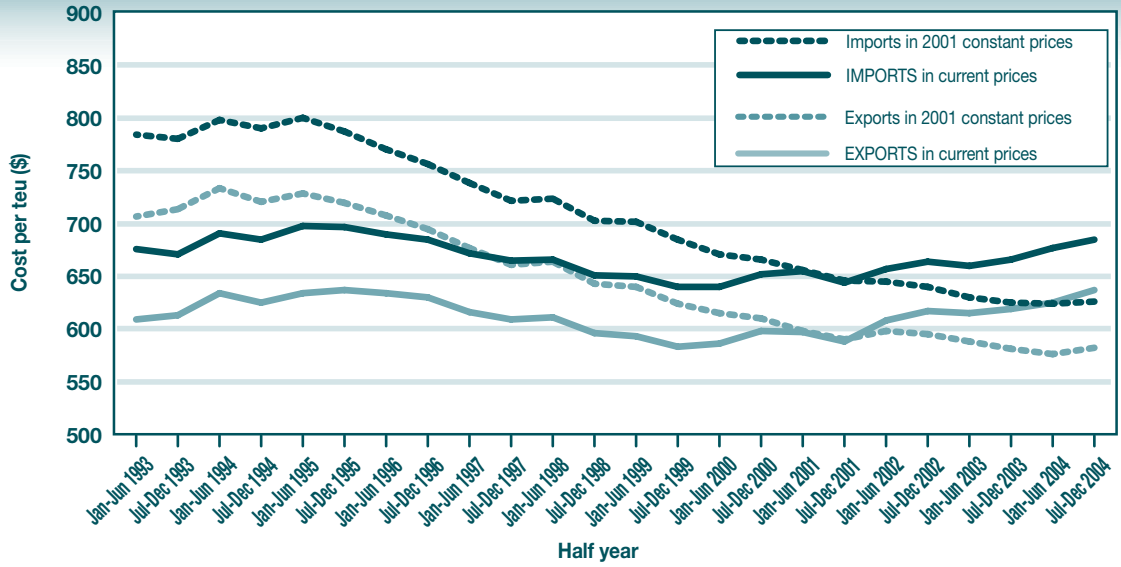
Sources BTRE estimates based on: ship call data supplied by relevant port authorities/corporations; price schedules of relevant port authorities/corporations, towage operators and pilotage service providers; surveys of customs brokers and road transport operators; and stevedoring charge data supplied by the ACCC.

National index

Figure 7 provides the national port interface cost index for ships in the 15 000 to 20 000 GT range from 1992 onwards. In current prices, the national index for imports increased from $676 per teu in January–June 2004 to $686 in July–December 2004. At the same time the index for exports decreased from $624 per teu to $638 per teu.

In real terms (2001 prices), the national cost index per import teu has declined by 20 per cent since 1993, and by 18 per cent per export teu.

FIGURE 7 NATIONAL PORT INTERFACE COST INDEX FOR SHIPS IN THE 15 000–20 000 GT RANGE, 1993–2004



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.*

Table 7 shows the national port interface cost index from July–December 2001 for ships in the 35 000 to 40 000 GT range. The national index for imports increased from $674 January–June 2004 to $680 per teu in July–December 2004 in current prices. The index for exports increased from $623 to $632 per teu in current prices.

TABLE 7 NATIONAL PORT INTERFACE COST INDEX FOR SHIPS IN THE 35 000–40 000 GT RANGE, 2001–2004

	Jul–Dec 2001	Jan–Jun 2002	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2003	Jan–Jun 2004	Jul–Dec 2004
IMPORTS in current prices	643	654	660	653	661	674	684
Imports in 2001 prices	645	642	637	623	620	621	625
EXPORTS in current prices	588	603	610	608	614	623	636
Exports in 2001 prices	589	592	589	581	576	574	581

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.*

AUSTRALIAN INTERNATIONAL SHIPPING

This article summarises Australia's maritime trade for 2002–2003, including cargo movements, main trading partners and major port activity. More detailed information is available in the BTRE *Australian Sea Freight* publications which are appear annually and are available at http://www.btre.gov.au/index.aspx under Publications, Information Papers. *Australian Sea Freight 2002–2003* was released on 21 March 2005.

Overview

In 2002, shipping carrying Australia's international and domestic trade represented 11.3 per cent of the world maritime task (Table 8). In terms of tonne kilometres, Australia's proportion of world maritime trade task is 5 500 billion tonne kilometres, or 12.8 per cent of the world task. In 2003, the Australian trade task grew by 4.7 per cent over 2002. Australia's international and domestic sea trade have both been steadily increasing over the last 12 years.

In terms of overall maritime trade in 2002–2003:

- 712.0 million tonnes of cargo moved across Australian wharves. This represented a 6.2 per cent increase over 2001-2002, making it the busiest year on record. 76.1 per cent of this cargo was international exports, 8.9 per cent international imports, and 7.5 per cent each for coastal cargo loaded and discharged.
- 178 258 international sea passengers cleared Australian customs in 2002–2003. This is up from 88 854 passengers in 1997–98 representing a 14.9 per cent annual growth over 5 years, and a 20.1 per cent increase over 2001–2002[1].
- Domestic inter-state passenger movements on the Bass Strait ferries were 314 600 passengers in 2001–02, while intra-state passenger ferry movements, including urban ferries, are estimated 18.85 million[2] .

TABLE 8 AUSTRALIA'S MARITIME TASK, 1999 TO 2003

	Loaded				*Discharged*			
Item / year	Domestic	Exports	Total loaded	Per cent world	Imports	Per cent world	World	Total % world trade
Trade (million tonnes)								
1999	47	438	486	9.4	58	1.1	5 169	10.5
2000	52	486	538	9.9	55	1.0	5 434	10.9
2001	52	495	548	9.9	56	1.0	5 515	10.9
2002	53	515	568	10.2	60	1.1	5 549	11.3
2003	53	541	593	na	63	na	na	na
Trade task (billion tonne km)								
2001	107	4 688	4 796	11.1	537	1.2	43 066	12.4
2002	113	4 813	4 926	11.4	574	1.3	43 084	12.8
2003	117	5 017	5 134	na	622	na	na	na

na Data for the world task is currently not available for 2003.
Note Trade task data only available for 2001 onwards

Sources ABS, International Cargo Statists, unpublished; BTRE, Australian transport Statistics, 2002, 2003, 2004; BTRE, Australian Sea Freight, 2002-2004; ISL, Shipping Statistics Yearbook 2003, 2004.

TABLE 9 INTERNATIONAL SEA FREIGHT, 1994–1995 TO 2002–2003

	Weight (tonnes)			*Value ($billion)*		
Year	Exports	Imports	Total	Exports	Imports	Total
1994–1995	362.4	45.9	408.3	53.0	54.5	107.6
1995–1996	372.9	47.1	420.0	60.0	55.8	115.8
1996–1997	404.0	49.8	453.8	63.4	56.9	120.4
1997–1998	427.1	51.9	479.0	69.6	64.1	133.7
1998–1999	431.8	56.3	488.1	68.2	68.5	136.7
1999–2000	462.0	56.7	518.7	78.2	76.5	154.6
2000–2001	495.0	55.0	550.0	99.4	83.0	182.3
2001–2002	501.0	57.8	558.7	99.5	85.2	184.7
2002–2003	529.4	62.2	591.6	93.4	94.9	188.4

Note Weight figures have been revised from those appearing in BTRE 2004, IP50.
Source ABS, International Cargo Statistics, unpublished

1 Australian Custom Services, *Custom Figures, Australian Custom Services Quarterly Statistical Bulletins*, Canberra

2 Apelbaum Consulting Group, 2004, *Commonwealth Transport Facts*, ABN 72 007 166 510, Melbourne

International Freight

Approximately 591.6 million tonnes of international cargo moved across Australian wharves in 2002–2003 (Table 9). This represents a 5.4 per cent increase in exports and a 7.1 per cent increase in imports by weight over 2001–2002. However, in terms of value, there was a 6.5 per cent decrease in exports, and a 10.2 per cent increase in imports.

The largest exporting state (by weight and value) continues to be Western Australia, with Queensland emerging as the largest importing state by weight. New South Wales remains the largest importing state by value, with Victoria in second place.

Commodity split (Table 10)

Australia's main imports are crude oil, general cargo, and hazardous and noxious materials . The main commodity groups under 'general cargo' are machinery, motor vehicles (including agricultural machinery) household goods, electrical equipment, textiles and apparel, motor vehicle parts and tyres.

TABLE 10 AUSTRALIAN MARITIME TRADE BY COMMODITY, 2002–2003

	Weight (tonnes)		*Value ($'000s)*	
Commodity group	**Imports**	**Exports**	**Imports**	**Exports**
Hazardous and Noxious	9 034 288	2 039 675	9 120 478	3 100 545
Dry bulk				
Alumina/bauxite	18 689	12 820 191	12 190	3 587 636
Iron ore	4 610 788	193 093 693	114 473	5 329 457
Coal	167 105	209 728 606	18 709	11 991 856
Other dry bulk	4 063 764	52 733 029	902 928	9 678 233
Sub-total[a]	8 860 346	468 375 520	1 048 299	30 587 183
Liquid bulk				
Liquefied natural gas (LNG)[b]	0	0	*	2 607 099
Liquefied petroleum gas (LPG)	153 989	1 733 565	78 148	856 211
Crude oil	23 313 746	15 006 160	8 626 027	5 875 244
Petroleum products	4 964 589	3 800 898	1 876 019	1 692 528
Other liquid bulk	304 509	714 819	365 005	339 433
Sub-total[a]	28 736 832	21 255 443	10 945 199	11 370 514
General cargo including containers				
Reefer	962 623	3 368 378	3 048 095	8 910 560
Live animals	394	638 981	670	1 024 818
Other general cargo	13 792 958	17 036 893	70 212 089	34 441 759
Sub-total[a]	14 755 975	21 044 251	73 260 854	44 377 137
Confidential	822 345	16 640 805	572 646	3 993 251
Total	**62 209 786**	**529 355 694**	**94 947 476**	**93 428 630**

* *Nil imported or exported , while the value zero means rounded to zero.*
a. *Sub totals exclude items in Hazardous and Noxious, and Confidential.*
b. *For LNG weights are confidential but the value of LNG is not confidential.*

Source ABS, International Cargo Statistics, unpublished.

Australia's main commodity exports by weight are coal and iron ore, while by value the major items are general cargo, coal, other dry bulk and reefer. The main commodity groups under 'general cargo' are wool, wine, aluminium, motor vehicles, cotton and dried milk.

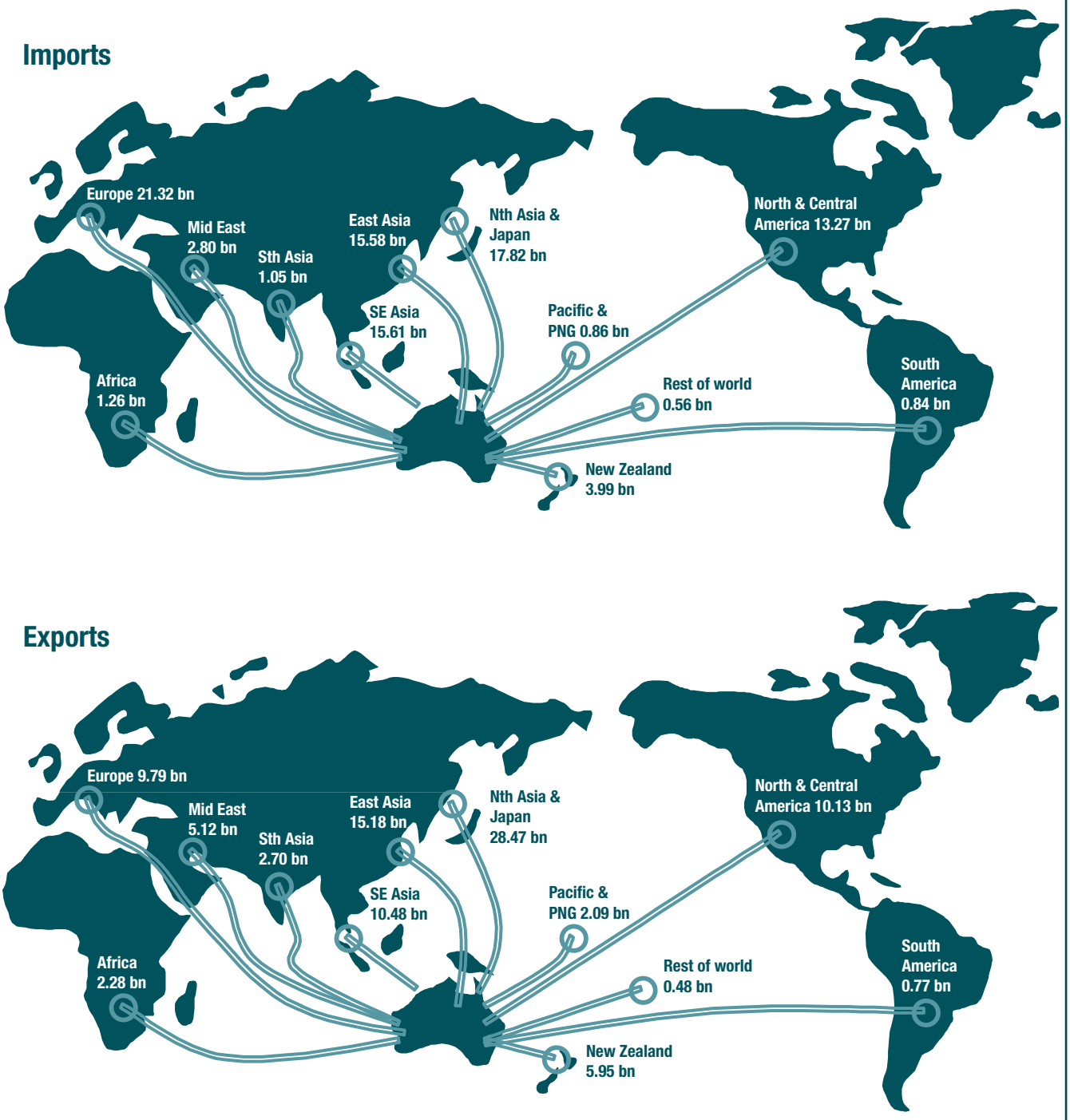
Although Australian maritime exports and imports are roughly equal by value, exports dominate imports when measured by weigh by approximately nine to one, primarily due to the dry bulk and liquid petroleum and gas trades.

Maritime Markets

Figures 8 and 9 show the major markets for Australian maritime trade. Japan is Australia's largest trading partner for imports and exports by value followed by China and the United States of America, (Table 11—page 15). While trade with China is growing, trade with the USA is decreasing.

Our near neighbours, New Zealand (5th imports and exports), Indonesia (8th exports and 6th imports) and Papua New Guinea (26th on imports and 21st on exports), remain important as trading partners for Australia.

FIGURE 8 INTERNATIONAL FREIGHT BY REGION OF ORIGIN/FINAL DESTINATION, 2002–2003 ($billion)



Source *ABS, International Cargo Statistics, unpublished.*

Exports

Japan and North Asia are Australia's largest export market by both value ($28.34 billion) and weight (278.9 million tonnes), followed by *East Asia* and *South-East Asia* (3rd in value, 4th in weight), (Figures 8 and 9). The main commodity items and their destination markets are:

- general cargo (South-East Asia, East Asia, and Japan and North Asia);
- coal (Japan and North Asia, Europe, India and East Asia);
- reefer (Japan and North Asia, North and Central America, South East Asia and East Asia); and
- crude oil (Japan and North Asia, and South East Asia).

In terms of weight the main export items are

- coal (Japan and North Asia, Europe, South Asia and East Asia); and
- iron ore (Japan and North Asia, and East Asia).

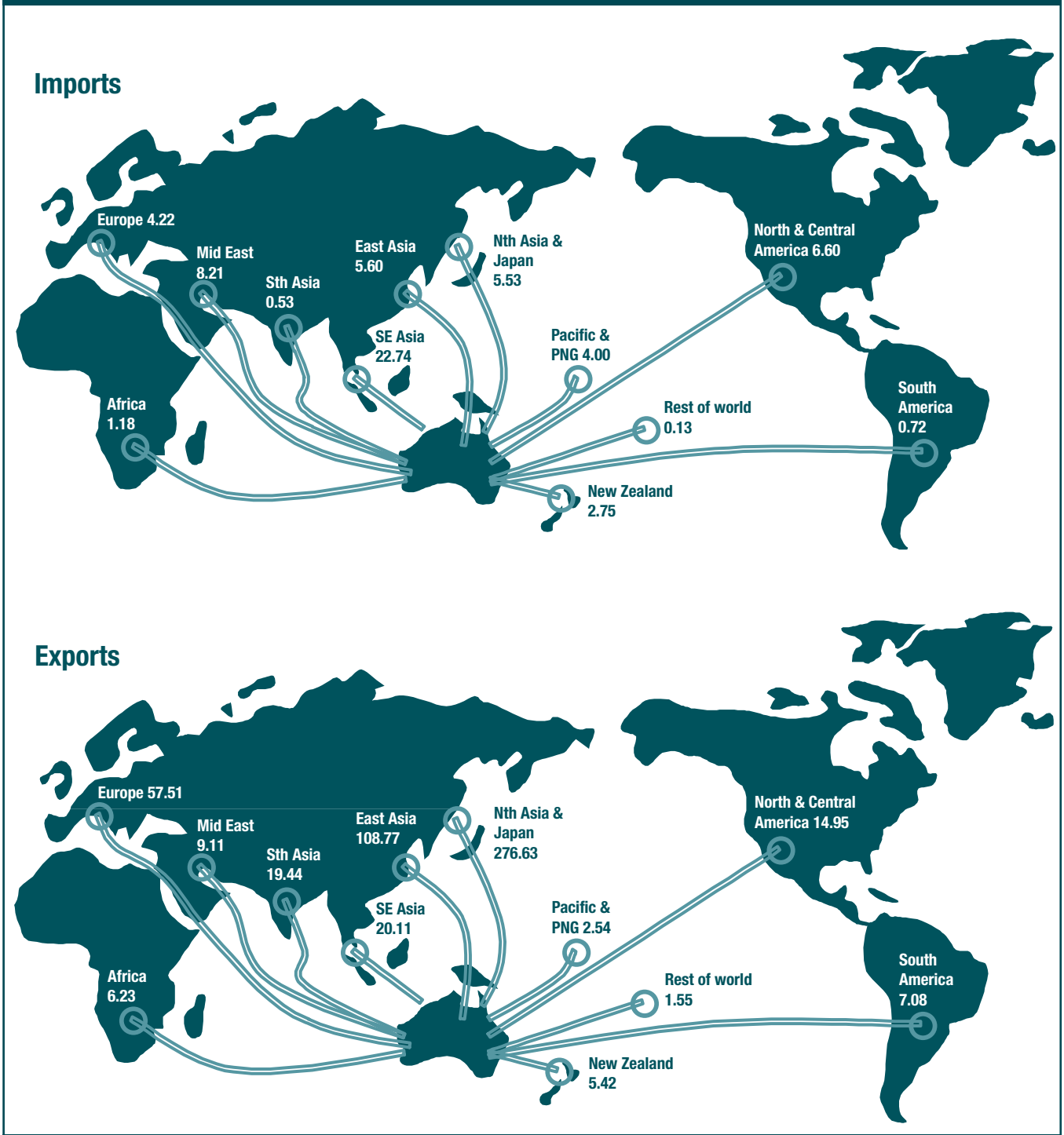
Imports

In terms of region of origin of Australian imports, *Europe* maintains its place as our largest supplier by value, followed by *Japan/North Asia* and *South East Asia.* *South East Asia* also dominated our imports in terms of weight (Figures 8 and 9).

For imports the largest commodity groups by weight and value are:

- general cargo (Europe, Japan and North Asia, East Asia, North and Central America, and South East Asia);
- hazardous and noxious goods (Europe, and North and Central America); and
- crude oil (South East Asia, and Middle East).

FIGURE 9 INTERNATIONAL FREIGHT BY REGION OF ORIGIN/FINAL DESTINATION, 2002–2003 (tonnes million)



Source *ABS, International Cargo Statistics, unpublished.*

TABLE 11 TOP TWENTY TRADING PARTNERS BY SEA, 2002–2003

	Imports		*Exports*		
Country of origin	**$'000s**	**Tonnes**	**Country of final destination**	**$'000s**	**Tonnes**	
Japan	14 702 841	4 182 617	Japan	20 782 571	211 262 870	1
China (including Hong Kong& Macau)	12 762 599	3 724 684	China (including Hong Kong & Macau)	10 279 721	75 701 191	2
USA	11 434 754	4 635 876	USA	7 955 717	7 695 573	3
Germany	6 035 554	736 369	Korea, Republic of	7 561 446	65 226 765	4
New Zealand	3 988 608	2 750 415	New Zealand	5 950 830	5 416 394	5
Indonesia	3 533 466	6 454 389	Taiwan	3 861 179	31 737 635	6
United Kingdom	3 214 975	770 178	Singapore	3 158 717	5 969 216	7
Italy	3 120 862	707 656	Indonesia	2 996 890	6 242 476	8
Korea, Republic of	3 072 683	1 253 512	United Kingdom	2 457 318	12 131 149	9
Thailand	3 010 852	1 503 031	India	1 940 108	16 800 241	10
Malaysia	2 968 966	3 304 571	Saudi Arabia	1 919 263	969 123	11
Singapore	2 924 006	3 959 744	Malaysia	1 877 510	5 291 864	12
Vietnam	2 482 709	5 675 832	Italy	1 782 966	7 447 780	13
Taiwan	2 390 126	1 159 365	Thailand	1 723 266	1 784 118	14
France	1 849 378	294 215	Canada	1 561 159	3 164 874	15
Canada	1 316 556	1 859 955	Netherlands	1 173 203	10 354 342	16
Saudi Arabia	1 283 246	4 272 996	South Africa	1 158 461	3 263 604	17
Sweden	989 776	176 381	Philippines	977 268	1 324 893	18
South Africa	958 938	481 996	United Arab Emirates	967 076	1 649 291	19
Netherlands	901 828	255 417	France	914 327	8 967 312	20
Rest of World	12 004 755	14 050 587	Rest of World	12 429 632	46 954 981	
Total	**94 947 476**	**62 209 786**	**Total**	**93 428 630**	**529 355 694**	

Source *ABS, International Cargo Statistics, unpublished.*

Ports

In 2002–2003 there was an increase in the number of international trading ships entering Australia, the number of international voyages trading ships made to Australia and the number of ports they visited (Table 12). The number of international voyages increased by 1.8 per cent, while ship calls increased by 9.8 per cent.

In terms of the top Australian ports of loading/unloading, very little has changed since 1999–2000 (Table 13). Sydney continues to be the largest importer by weight and value, while Melbourne is the largest exporter by value and Dampier the largest exporter by weight.

TABLE 12 SUMMARY OF AUSTRALIAN PORT VISITS[a] 1996–1997 TO 2002–2003

Year	Number of ships entering Australia from overseas[b]	Number of voyages into Australia from overseas[b]	Number of ship calls at Australian ports (includes coastal)[c]
1996–1997	2 870	8 138	18 643
1997–1998	3 239	9 706	20 322
1998–1999	3 187	9 744	20 899
1999–2000	3 165	9 893	21 683
2000–2001	3 162	9 738	21 542
2001–2002	3 103	8 779	21 358
2002–2003	3 140	8 935	23 454

a. Standard visits, as defined by Lloyd's Marine Information Unit

b. Excludes ships that do not leave the Australian coast

c. Ship calls includes ships coasting around Australia

Note A ship which sails to Australia 3 times and makes a total of 15 port calls in Australia in a year, counts as 1 ship, 3 voyages and 15 ship calls or visits.

Source *Lloyd's Marine Information Unit, Lloyd's Voyage Record, unpublished.*

TABLE 13 TOP 20 PORTS BY WEIGHT AND VALUE 2002–03

Australian port	Total international value ($,000s)	Australian port	Total international weight (tonnes)	Australian port	International and domestic weight (tonnes)	Rank
Melbourne	49 967 218	Dampier	101 217 015	Dampier	101 928 968	1
Sydney	43 091 533	Port Hedland	77 390 731	Port Hedland	81 842 503	2
Brisbane	19 631 446	Hay Point	76 018 545	Newcastle	77 124 573	3
Fremantle	15 356 119	Newcastle	74 862 131	Hay Point	76 083 545	4
Dampier	11 069 262	Gladstone	41 879 092	Gladstone	54 942 286	5
Adelaide	7 228 209	Port Walcott	39 614 013	Port Walcott	39 614 013	6
Newcastle	5 306 367	Brisbane	18 644 298	Melbourne	25 032 772	7
Hay Point	5 189 672	Fremantle	17 881 561	Brisbane	24 462 880	8
Gladstone	3 873 523	Melbourne	17 588 501	Fremantle	24 243 113	9
Townsville	3 115 839	Sydney	16 611 243	Port Kembla	23 460 030	10
Geelong	2 690 031	Port Kembla	13 118 142	Sydney	23 057 540	11
Port Hedland	2 524 830	Abbot Point	10 783 432	Weipa	13 454 987	12
Bunbury	2 344 327	Bunbury	10 427 430	Bunbury	10 929 061	13
Port Kembla	1 995 255	Townsville	8 396 358	Abbot Point	10 783 432	14
Darwin	1 511 869	Geelong	7 990 307	Adelaide	10 737 461	15
Wyndham	1 306 461	Adelaide	7 169 495	Geelong	10 582 465	16
Portland	1 272 397	Esperance	5 766 803	Townsville	10 314 014	17
Launceston	1 129 468	Conf NT Ports	5 515 345	Launceston	6 567 501	18
Geraldton	935 356	Launceston	3 780 212	Esperance	6 130 782	19
Conf NT Ports	874 309	Weipa	3 746 568	Conf NT Ports	5 515 345	20

Source *ABS, International Cargo Statistics, unpublished; BTRE, Coastal Freight database, unpublished.*

End of feature article.

Waterline continues on next page.

SHIP VISITS

Table 14 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 5 000–60 000 GT. Ship visits measures the number of times a ship calls at a port or ports, for example, a ship that sails to Australia 3 times and makes a total of 15 port calls in a year counts as 1 ship, 3 voyages and 15 ship visits.

Total ship visits increased marginally in the year ended December 2004[3] compared to the preceding year, with ship visits peaking at 1632 to December 2003. In most ranges, the number of ship visits varied in each period. The lowest variation was in the mid ranges, while the largest was in the 55 000–60 000 GT range. There were no visits in this category in the six month period to June 2004 and 6 in the December 2004 period. The average number of teus carried decreased in all ranges except the 25 000–30 000 GT range where they rose by 13 per cent.

On a national level, 15 per cent of all ship visits were vessels in the 25 000–30 000 GT range, and 82 per cent of ship visits fell within the 15 000–45 000 GT ranges. This pattern reflects the slow but steady range 'creep' that has been occurring in recent years as the number of older smaller ships are phased out and many mid–ranged ships are modified to take more 40-foot containers.

The average number of teus exchanged had grown in recent years, however the trend of increases shown in the June 2004 quarter has been replaced by a decline in the December 2004 quarter. The biggest decline has been in the 30 000–35 000 GT and the 40 000–45 000 GT ranges. In the 30 000–35 000 GT range average teus have decreased by 39 per cent and in the 40 000–55 000 GT range the average decrease has been 37 per cent.

TABLE 14 FIVE PORT AVERAGE NUMBER OF TEUS EXCHANGED AND TOTAL SHIP VISITS PER 6 MONTH PERIOD FOR SELECTED GT RANGES, WEIGHTED BY NUMBER OF SHIPS

GT	Dec-96	Jun-97	Dec-97	Jun-98	Dec-98	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Dec-01	Jun-02	Dec-02	Jun-03	Dec-03	Jun-04	Dec-04
5,000–10,000																	
average teus exchanged	0	302	321	347	323	217	369	380	383	456	284	239	187	161	193	333	73
total ship visits	0	189	159	130	145	143	123	88	118	93	77	66	78	75	72	93	39
10,000–15,000																	
average teus exchanged	503	513	569	473	530	546	660	683	702	702	706	712	424	405	485	688	646
total ship visits	112	141	204	172	143	146	183	152	123	106	108	79	59	53	54	40	105
15,000–20,000																	
average teus exchanged	547	547	605	539	678	656	768	776	813	825	885	763	839	839	826	971	914
total ship visits	421	337	329	361	309	349	363	255	278	330	293	285	223	181	191	153	148
20,000–25,000																	
average teus exchanged	515	425	518	506	598	629	790	754	833	838	830	762	818	902	990	1014	994
total ship visits	247	219	217	200	278	280	249	270	314	276	240	233	241	182	214	199	324
25,000–30,000																	
average teus exchanged	566	513	559	608	545	591	740	682	636	869	777	888	1 070	1 027	1 031	959	1 081
total ship visits	105	103	105	97	125	95	129	153	132	116	129	186	252	286	323	344	224
30,000–35,000																	
average teus exchanged	782	808	951	754	695	696	821	912	1041	991	1 061	1 014	1 149	1 262	1 374	1 478	899
total ship visits	130	207	192	206	251	252	180	208	222	187	196	216	232	175	257	247	188
35,000–40,000																	
average teus exchanged	739	746	799	793	807	831	945	1 071	1 149	1 111	1 223	1 262	1 403	1 408	1 445	1 474	1 402
total ship visits	160	188	205	235	246	239	207	193	224	210	197	203	223	214	189	225	224
40,000–45,000																	
average teus exchanged	813	716	869	759	894	878	1 013	1 073	1 133	1 102	1 246	1 228	1 465	1 450	1 558	1 601	1 096
total ship visits	75	84	76	91	146	137	148	153	140	158	176	195	172	162	186	181	154
45,000–50,000																	
average teus exchanged	0	0	0	35	174	188	233	0	0	0	0	808	938	1201	1270	1379	872
total ship visits	0	0	0	4	3	3	1	0	0	0	0	5	38	72	77	75	47
50,000–55,000																	
average teus exchanged	295	254	678	734	810	737	932	1 007	1 274	1 143	1 062	1 134	1 027	995	1 044	1 366	804
total ship visits	6	5	28	24	61	64	68	56	63	55	56	60	55	61	69	22	71
55,000–60,000																	
average teus exchanged	599	513	1 139	991	1 026	1 046	1 248	1 099	1 223	1 072	1 019	1 069	1 166	1 252	0	0	1
total ship visits	5	5	36	36	25	31	28	29	21	13	17	15	14	3	0	0	6
Total ship visits	**1 261**	**1 478**	**1 551**	**1 556**	**1 732**	**1 739**	**1 679**	**1 557**	**1 635**	**1 544**	**1 489**	**1 543**	**1 587**	**1 464**	**1 632**	**1 579**	**1 530**

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

3 Correction: the increase of 3.6 per cent reported in Waterline 37 should have read 5 per cent.

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PORT PERFORMANCE—NON-FINANCIAL

The July–December 2001 to July–December 2004 non-financial indicators for the five mainland capital city ports are presented in table 15.

Cargo throughput

Total cargo throughput at the five ports was a record 58.9 million tonnes for July–December 2004, compared with 57.7 million tonnes for the previous half-year and 54.3 million tonnes for July–December 2003 This represented an increase of 7.9 per cent in total cargo throughput for the five ports compared with July–December 2003 and an increase of 1.5 per cent compared with January–June 2004.

Compared with July–December 2003, total cargo throughput in July–December 2004 increased 2.0 per cent at Brisbane, 6.3 per cent at Sydney, 13.3 per cent at Melbourne, 17.7 per cent at Adelaide and 6.7 per cent at Fremantle.

Non-containerised general cargo throughput at the five ports was 2.338 million tonnes for July–December 2004, compared with 2.285 million tonnes for January–June 2004 and 2.316 million tonnes for July–December 2003. This represented an increase of 2.3 per cent from the previous half-year and an increase of 1 per cent from the corresponding previous half-year.

Total container traffic throughput for the five ports was 2.376 million teus for July–December 2004, compared with 2.139 million teus for January–June 2004 and 2.113 million teus for July–December 2003. This represented an increase of 11 per cent from the previous half-year and an increase of 12.4 per cent over July–December 2003.

Compared with July–December 2003, loaded teus at the five ports increased by 10.6 per cent, with loaded imports increasing by 10.4 per cent and loaded exports increasing by 10.7 per cent.

The annualised 2004 five-port total container traffic increased by 12.1 per cent from 2003, to 4.515 million teus.

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INTERNATIONAL SHIP PORT SECURITY CODE

Of the 6482 vessels assessed by the Office of Transport Security as at 31 December 2004, 6 foreign vessels were issued with Control Directions in accordance with the International Ship and Port Facility Security Code introduced on 1 July 2004.

2 Security Directions were issued on Australian flagged ships and none on Australian ports over the same period.

The Port of Brisbane received the highest number of ships over this period (628 or 9.6 per cent of Australian total). Panamanian registered ships accounted for 1996 or 30.6 per cent of the total ships assessed.

TABLE 15 NON-FINANCIAL PERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS, 2001–2004

	Jul–Dec 2001	Jan–Jun 2002	Jul–Dec 2002	Jan–Jun 2003	Jul–Dec 2003	Jan–Jun 2004	Jul–Dec 2004
Five ports[d]							
Total cargo throughput ('000 tonnes)	50 638	51 422	52 110	51 797	54 283	57 713	58 593
Non-containerised general cargo ('000 tonnes)[a]	1 876	1 964	2 143	2 060	2 316	2 285	2 338
Containerised cargo (teus exchanged)							
Full import	767 239	714 041	898 549	834 191	972 737	952 302	1 074 324
Empty import	144 929	134 785	127 665	117 616	116 179	129 114	115 887
Full export	640 288	632 229	659 965	618 896	651 772	694 261	721 595
Empty export	192 083	213 298	302 462	344 846	373 294	364 000	464 271
TOTAL	1 744 539	1 694 353	1 988 641	1 915 549	2 113 982	2 139 677	2 376 077
Average total employment[b]	759	795	803	816	865	914	934
Port turnaround time (hrs)[c]							
Median result	-	-	-	-	-	-	-
95th percentile	-	-	-	-	-	-	-
Brisbane							
Total cargo throughput ('000 tonnes)	11 642	11 525	12 172	12 399	12 745	12 326	13 006
Non-containerised general cargo ('000 tonnes)[a]	306	304	316	304	412	392	373
Containerised cargo (teus exchanged)							
Full import	88 281	85 688	114 878	107 977	137 111	124 773	158 781
Empty import	37 675	32 112	35 719	28 565	31 633	31 676	37 379
Full export	102 634	95 966	101 229	91 446	104 279	100 760	114 029
Empty export	17 874	21 393	41 581	48 809	56 923	52 117	73 495
TOTAL	246 464	235 159	293 407	276 797	329 946	309 326	383 684
Average total employment[b]	206	212	215	209	214	225	238
Port turnaround time (hrs)[c]							
Median result	34	32	32	31	35	32	36
95th percentile	53	52	55	49	59	59	72
Sydney							
Total cargo throughput ('000 tonnes)	12 462	11 838	12 073	11 485	12 429	12 738	13 215
Non-containerised general cargo ('000 tonnes)[a]	291	279	319	316	320	307	299
Containerised cargo (teus exchanged)							
Full import	270 691	236 594	309 070	277 860	320 061	323 051	336 037
Empty import	13 341	8 853	8 071	6 005	4 503	7 222	5 262
Full export	159 494	147 918	154 314	139 456	149 314	154 195	161 310
Empty export	78 535	94 027	123 810	141 927	154 189	157 721	185 558
TOTAL	522 061	487 392	595 265	565 248	628 067	642 189	688 167
Average total employment[b]	195	199	198	199	198	198	198
Port turnaround time (hrs)[c]							
Median result	32	30	36	32	32	32	33
95th percentile	68	55	63	58	66	55	55
Melbourne							
Total cargo throughput ('000 tonnes)	11 452	12 138	12 388	12 283	12 458	14 222	14 115
Non-containerised general cargo ('000 tonnes)[a]	753	834	896	930	984	1 032	1 015
Containerised cargo (teus exchanged)							
Full import	310 034	295 343	358 818	337 671	388 339	386 413	446 960
Empty import	60 384	58 936	52 600	52 238	48 478	57 082	51 113
Full export	273 910	279 866	291 272	277 392	276 401	315 000	323 454
Empty export	68 761	73 547	104 266	119 541	127 967	118 038	152 055
TOTAL	713 089	707 692	806 956	786 842	841 185	876 533	973 582
Average total employment[b]	93	96	95	102	142	170	171
Port turnaround time (hrs)[c]							
Median result	36	35	37	36	35	38	39
95th percentile	68	63	68	62	57	65	78
Adelaide							
Total cargo throughput ('000 tonnes)	3 934	4 446	4 130	3 524	4 478	4 982	5 273
Non-containerised general cargo ('000 tonnes)[a]	189	239	251	171	238	213	263
Containerised cargo (teus exchanged)							
Full import	21 097	19 591	21 864	19 015	22 214	19 317	20 564
Empty import	11 714	15 055	11 715	13 050	15 895	14 073	7 503
Full export	34 482	35 793	37 358	33 468	43 874	41 734	39 277
Empty export	4 117	3 377	5 660	6 203	6 757	5 244	16 774
TOTAL	71 410	73 816	76 597	71 736	88 740	80 368	84 118
Average total employment[b]	98	95	97	95	94	95	97
Port turnaround time (hrs)[c]							
Median result	22	21	19	21	23	24	23
95th percentile	43	43	29	40	41	43	60
Fremantle							
Total cargo throughput ('000 tonnes)	11 147	11 476	11 348	12 105	12 173	13 445	12 984
Non-containerised general cargo ('000 tonnes)[a]	337	309	361	338	361	341	389
Containerised cargo (teus exchanged)							
Full import	77 136	76 825	93 919	91 668	105 012	98 748	111 982
Empty import	21 815	19 829	19 560	17 758	15 670	19 061	14 630
Full export	69 768	72 686	75 792	77 134	77 904	82 572	83 525
Empty export	22 796	20 954	27 145	28 366	27 458	30 880	36 389
TOTAL	191 515	190 294	216 416	214 926	226 044	231 261	246 526
Average total employment[b]	167	193	199	211	217	226	230
Port turnaround time (hrs)[c]							
Median result	21	22	25	25	28	29	31
95th percentile	46	52	60	52	57	63	60

- 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.

Source AAPMA

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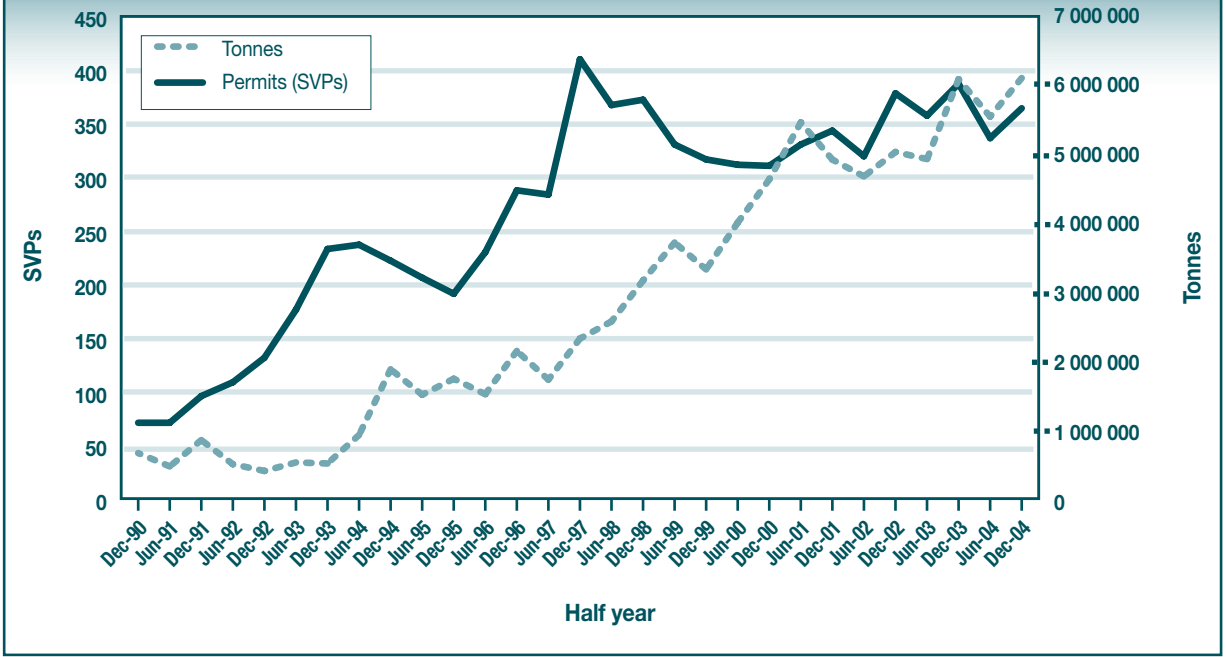
COASTAL SHIPPING PERMITS

Total tonnages of cargo allowed as issued to applicants under SVPs and CVPs increased by 12.1 per cent from 13.4 million tonnes in 2003 to 15.0 million tonnes in 2004.

Single voyage permits

Figure 10 illustrates the number of SVPs issued, and the pre-voyage estimation of tonnes of cargo to be carried, between July–December 1990 and July–December 2004. The number of SVPs issued in July–December 2004 increased by 8.3 per cent compared with January–June 2004, and decreased by 5.9 per cent compared with July–December 2003. The associated estimated tonnes of cargo to be carried increased by 10.1 per cent compared with January–June 2004, and increased by 0.3 per cent compared with July–December 2003.

FIGURE 10 TONNES TO BE CARRIED VIA SINGLE VOYAGE PERMITS, 1990–2004



Note *All tonnages are pre-voyage estimates.*
Source *Office of Transport Security, Department of Transport & Regional Services.*

On a calendar year basis the total number of SVPs issued in 2004 was 702, compared with 746 in 2003. This represented a decrease of 5.9 per cent. Over the same period, estimated SVP cargo increased by 5.8 per cent from 11.0 million tonnes to 11.7 million tonnes.

Table 16 gives a breakdown of SVPs by cargo types for July–December 2004. General cargo (including containerised cargo) permits no longer lead the tally for SVPs issued. They make up only 32.6 per cent of total permits issued. Also bulk cargo accounts for over 98 per cent of the total tonnage applied to be moved under issued SVPs.

TABLE 16 SUMMARY OF SINGLE VOYAGE PERMITS ISSUED, JULY–DECEMBER 2004

Cargo Category	Permits	Tonnes
Bulk Cargo		
Petroleum Products	67	1 918 570
Liquefied Gas	30	106 770
Other Bulk Liquids	14	47 310
Dry Bulk	135	3 903 728
General Cargo	**119**	**142 271**
Total	**365**	**6 118 649**

Note *Tonnages are the pre-voyage estimation of the tonnes to be carried.*
Source *Office of Transport Security, Department of Transport & Regional Services.*

Continuing voyage permits

Figure 11 illustrates the number of CVPs issued, and the pre-voyage estimation of tonnes of cargo to be carried, between July–December 1998 and July–December 2004. Although CVPs were available prior to 1998, they were rarely requested or issued during this period. However, since 1998 there have been significant fluctuations in both the number of permits issued and the tonnage to be carried. In July–December 2004, a total of 1.9 million tonnes were carried under CVPs, compared with 1.4 million tonnes in January–June 2004 and 1.4 million tonnes in July–December 2003. CVPs issued since the start of 2004 have been for 3 months maximum duration rather than the 6 months allowed previously. One CVP is estimated to be equivalent to three SVPs on average.

In 2004 there were 147 CVPs issued compared with 129 in 2003. A total of 3.3 million tonnes of coastal trade were to be moved using CVPs in 2004, representing an increase of 42.2 per cent over the previous year.

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.

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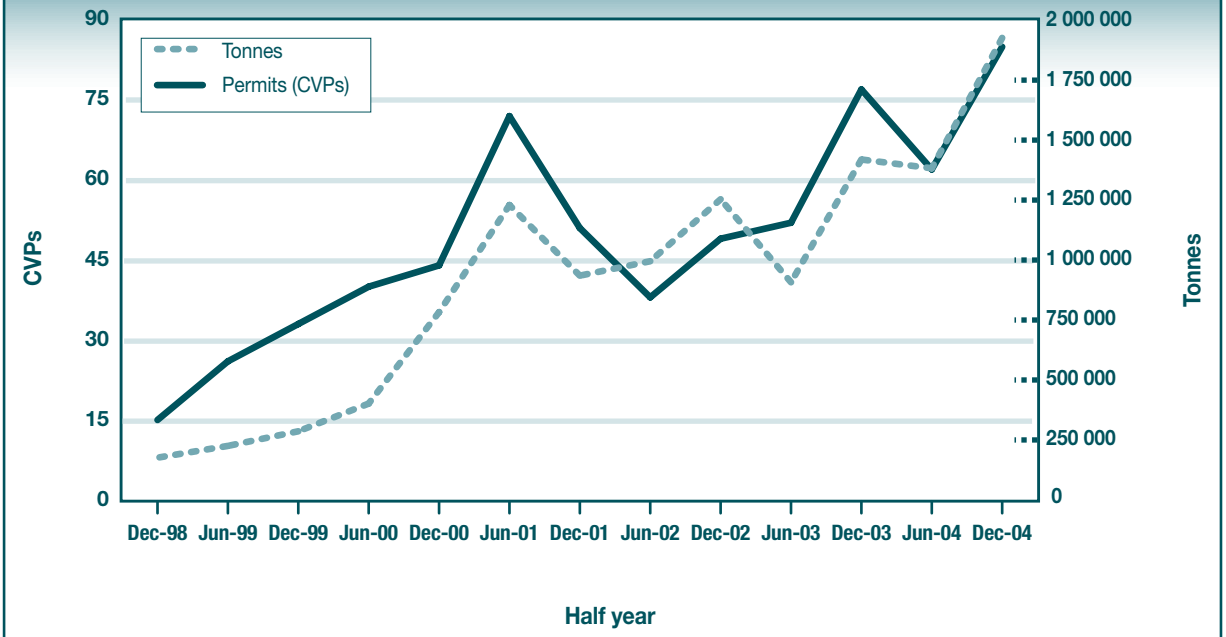
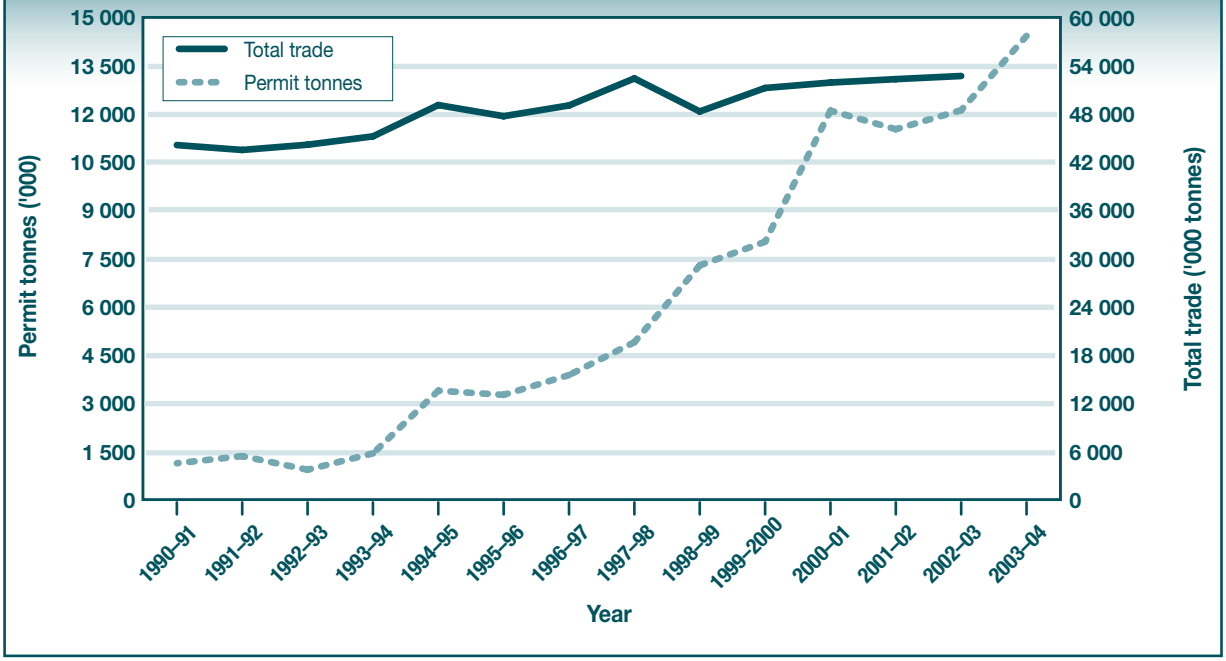
FIGURE 11 TONNES TO BE CARRIED VIA CONTINUING VOYAGE PERMITS, 1998–2004



Note *All tonnages are pre-voyage estimates.*
Source *Office of Transport Security, Department of Transport & Regional Services.*

FIGURE 12 TOTAL COASTAL TRADE, 1990–2004



Note *Total coastal trade figures for 2002–03 are not available at the time of publishing.*
Sources *BTRE estimates and the Office of Transport Security, Department of Transport & Regional Services.*

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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.

Berth availability, pilotage, towage

Table 17 presents information on berth availability, pilotage and towage services for samples of ship calls in the September and December quarters 2004, and indicates the extent to which selected port services were available at the scheduled or confirmed time.

TABLE 17 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, SEPTEMBER AND DECEMBER QUARTERS 2004

Number of ship calls—Delay in hours

	September Quarter 2004									December Quarter 2004								
Port/operation	0	1	2	3	4	5-10	11-20	>20	Total calls	0	1	2	3	4	5-10	11-20	>20	Total calls
Five ports																		
Berth availability	116	1	1	1	4	8	5	8	144	122	1	4	1	4	15	5	5	159
Pilotage	142	0	0	0	2	0	0	0	144	156	0	0	1	1	0	0	0	159
Towage	144	0	0	0	0	0	0	0	144	158	0	0	0	0	0	0	0	159
Brisbane																		
Berth availability	15	0	0	0	0	3	2	3	23	17	0	0	0	0	2	2	2	23
Pilotage	23	0	0	0	0	0	0	0	23	21	0	0	1	1	0	0	0	23
Towage	23	0	0	0	0	0	0	0	23	23	0	0	0	0	0	0	0	23
Sydney																		
Berth availability	40	1	0	1	1	1	2	0	46	43	0	1	0	1	9	2	1	57
Pilotage	46	0	0	0	0	0	0	0	46	57	0	0	0	0	0	0	0	57
Towage	46	0	0	0	0	0	0	0	46	57	0	0	0	0	0	0	0	57
Melbourne																		
Berth availability	42	0	1	0	3	4	0	5	55	45	1	2	0	3	3	1	2	58
Pilotage	54	0	0	0	1	0	0	0	55	58	0	0	0	0	0	0	0	58
Towage	55	0	0	0	0	0	0	0	55	58	0	0	0	0	0	0	0	58
Adelaide																		
Berth availability	10	0	0	0	0	0	1	0	11	12	0	0	0	0	0	0	0	13
Pilotage	11	0	0	0	0	0	0	0	11	12	0	0	0	0	0	0	0	13
Towage	11	0	0	0	0	0	0	0	11	12	0	0	0	0	0	0	0	13
Fremantle																		
Berth availability	9	0	0	0	0	0	0	0	9	5	0	1	1	0	1	0	0	8
Pilotage	8	0	0	0	1	0	0	0	9	8	0	0	0	0	0	0	0	8
Towage	9	0	0	0	0	0	0	0	9	8	0	0	0	0	0	0	0	8

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.

The sample for the September quarter 2004 covers 144 ship calls, equivalent to around 16 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 8 per cent at Fremantle to 21 per cent at Melbourne. The sample for the December quarter 2004 covers 159 ship calls, equivalent to around 17 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 7 per cent at Fremantle to 23 per cent at Adelaide. The figures for Fremantle should be treated with caution due to the low percentage of calls captured in the sample. The samples include 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 14 shows that berth availability for the sample of ship calls was 85 per cent in the September quarter 2004. This was lower than in the previous quarter. Berth availability was 83 per cent in the December quarter 2004. 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 14 hours in the December quarter 2004, a decrease from 18 hours in the June quarter 2004. Average waiting time was 21 hours in the September quarter 2004.

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 for the pilotage indicator in the September quarter 2004 was 99 per cent, lower than in the previous quarter, and 100 per cent for the towage indicator, the same as in the previous quarter. In the December quarter 2004, the proportion for the pilotage was 98 per cent and the towage indicator was 99 per cent. Performance has been at similar levels since the first data (covering the March quarter 1997) were published in *Waterline*.

Other ship waiting time

The five shipping lines that supplied information for table 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 summarises the data on other waiting time incidents which had a duration of at least one hour in the September and December quarters 2004. The shipping lines identified a total of 102 incidents (affecting 144 ship calls) for the sample of ship calls over the September quarter 2004, and 99 incidents (affecting 159 ship calls) in the December quarter 2004. These incidents involved both ship-related and waterfront factors.

TABLE 18 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, SEPTEMBER AND DECEMBER QUARTERS 2004

Number of incidents—Ship waiting time (hours)

	September Quarter 2004								December Quarter 2004							
Incident type	**1**	**2**	**3**	**4**	**5-10**	**11-20**	**>20**	**Total**	**1**	**2**	**3**	**4**	**5-10**	**11-20**	**>20**	**Total**
Awaiting labour	1	1	0	2	7	6	2	19	1	2	3	2	17	3	3	31
Early ship arrival	2	2	0	0	1	0	0	5	4	0	0	1	0	0	0	5
Stevedoring finished early	2	0	1	0	4	0	0	7	4	3	3	0	1	0	0	11
Crane breakdown	3	0	2	1	2	4	0	12	2	1	1	1	1	2	1	9
Pilot/tug booking not at preferred time	0	1	0	0	0	1	0	2	0	1	0	0	0	0	0	1
Stevedoring finished late	2	1	2	0	9	1	0	15	0	0	0	0	2	3	0	5
Late ship arrival	0	1	0	0	3	5	7	16	0	0	0	0	1	1	3	5
Industrial action	1	0	1	0	2	2	0	6	0	0	0	5	0	0	0	5
Ship repairs or maintenance	0	0	0	0	4	0	0	4	0	0	0	0	6	0	0	6
Weather or tides	0	0	0	0	1	2	2	5	0	0	0	0	0	2	0	2
Other	2	1	1	3	5	4	1	17	0	2	1	1	1	4	1	10
Total incidents	**13**	**7**	**7**	**6**	**38**	**25**	**12**	**108[a]**	**11**	**9**	**8**	**10**	**29**	**15**	**8**	**90[a]**

a. These incidents affected 102 of the 144 ship calls covered in the September Quarter.
b. These incidents affected 99 of the 159 ship calls covered in the December Quarter.

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 September quarter 2004 was the category awaiting labour, which accounted for 17.6 per cent of total waiting time. Late ship arrival accounted for 14.8 per cent of total waiting time, and stevedoring finished late was related to a further 13.9 per cent of total waiting time. The largest single source of other ship waiting time in the December quarter 2004 was again the category of awaiting labour, which accounted for 34.4 per cent of total waiting time. Stevedoring finished early accounted for 12.2 per cent of total waiting time, and crane breakdown was related to a further 10.0 per cent of total waiting time.

In the September quarter 2004, 71 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 70 per cent in the June quarter 2004. The average duration of other waiting time incidents was 13 hours per affected ship call in the September quarter 2004, up from 9.5 hours per affected ship call in the previous quarter.

In the December quarter 2004, 62 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 9 hours per affected ship call in the December quarter 2004.

Figure 13 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—Cargo Receival

Table 19 presents the available information on an aspect of stevedoring reliability at major container terminals—cargo receival. Data were not available for Adelaide.

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 September quarter 2004 increased at Sydney and Fremantle and fell at Brisbane and Melbourne compared with the previous quarter. Cargo receival in the December quarter 2004 decreased at Sydney and Melbourne remained the same at Brisbane and Fremantle, compared with the previous quarter.

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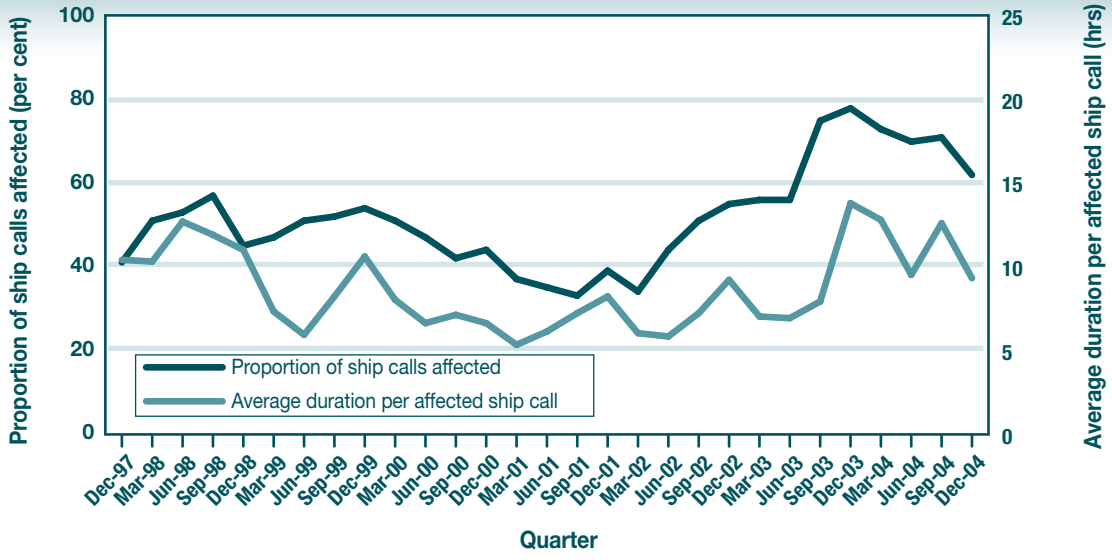
FIGURE 13 OTHER SHIP WAITING TIME INCIDENTS AT MAJOR CONTAINER TERMINALS, 1997–2004



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

TABLE 19 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, SEPTEMBER AND DECEMBER QUARTERS 2004

(per cent)

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
Indicator	Jul-Sept	Oct-Dec	Jul-Sept	Oct-Dec	Jul-Sept	Oct-Dec	Jul-Sept	Oct-Dec	Jul-Sept	Oct-Dec
Stevedoring										
Cargo receival	92	92	93	90	84	79	na	na	98	98
Ship arrival										
Advice at 24 hrs	48	45	43	40	na	na	na	94	55	52
Advice inside 24 hrs	96	94	94	91	na	na	na	96	92	86

na *not available*

Sources *AAPMA, Patrick and P&O Ports.*

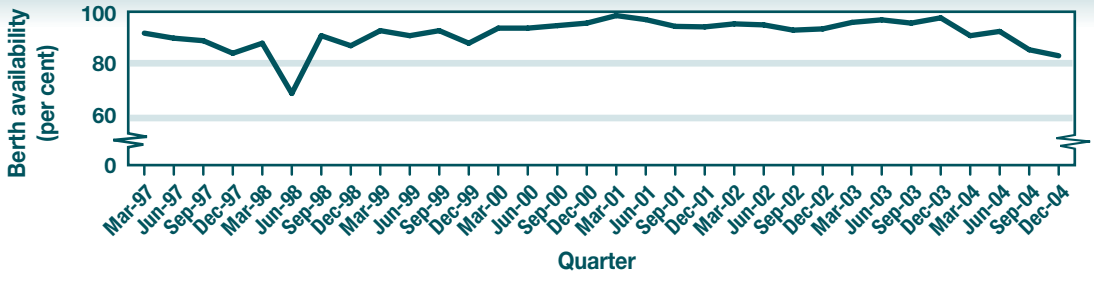
Ship arrival

Table 18 also includes data for two indicators of ship arrival advice. Data were not available for Melbourne for the September and December quarters 2004.

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 Fremantle, and fell at Sydney and Brisbane, in the September quarter 2004. It was not available for Melbourne and Adelaide. The indicator fell at Brisbane, Sydney and Fremantle, in the December quarter 2004.

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 September quarter 2004 this indicator increased at Sydney and Fremantle, and fell at Brisbane compared to the previous quarter. In the December quarter 2004 this indicator fell at Brisbane, Sydney and Fremantle, complete figures for the other ports were not available for comparison.

FIGURE 14 BERTH AVAILABILITY AT MAJOR CONTAINER TERMINALS, 1997–2004



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

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ABBREVIATIONS AND OTHER PORT SERVICE PROVIDERS

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)
GT	Gross Tons, formerly GRT
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	The total containers/teus handled divided by the Elapsed Labour Time.

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Tomorrow's Transport Infrastructure

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TABLE 20 CONTAINER TERMINAL PERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS—PRODUCTIVITY IN TEUS PER HOUR

	Dec-00	Mar-01	Jun-01	Sep-01	Dec-01	Mar-02	Jun-02	Sep-02	Dec-02	Mar-03	Jun-03	Sep-03	Dec-03	Mar-04	Jun-04	Sep-04	Dec-04
Five Ports																	
Ships handled	814	787	813	825	846	824	868	858	856	821	822	841	850	801	825	905	936
Total teus	731 936	634 003	661 326	762 202	787 093	724 311	788 090	876 522	938 913	871 089	870 861	952 273	1023 224	963 667	1018 623	1096 611	1161 451
Crane rate	34.2	35.4	35.2	34.2	34.8	35.4	35.9	35.9	35.6	35.3	37.4	38.5	37.8	38.2	39.0	38.9	38.4
Vessel working rate	37.6	38.6	37.8	39.2	39.6	39.6	41.1	43.4	42.2	42.9	44.3	47.9	46.5	46.7	47.3	46.2	46.6
Ship rate	53.2	54.3	53.3	55.0	55.4	55.4	56.3	59.9	59.4	58.8	61.7	67.4	64.4	64.6	66.1	65.0	64.8
Throughput pbm	102.6	88.8	92.7	106.8	110.3	101.5	110.4	122.8	131.6	122.1	122.0	133.4	143.4	135.0	142.7	153.7	162.7
Brisbane																	
Ships handled	179	167	188	175	198	202	211	216	216	206	184	192	194	179	175	219	227
Total teus	107 812	81 864	108 810	105 746	112 586	100 033	121 920	136 771	143 882	130 384	124 854	147 273	158 065	146 104	151 138	188 092	191 414
Crane rate	34.0	35.5	35.1	32.7	32.1	34.1	35.2	34.6	35.6	33.8	35.8	35.0	35.4	36.1	37.5	37.7	37.8
Vessel working rate	29.7	29.6	30.2	28.7	28.5	28.5	30.0	32.0	32.3	32.6	36.3	34.2	36.3	36.9	40.7	36.9	33.1
Ship rate	44.5	46.1	46.5	46.8	45.5	46.9	48.2	50.2	53.9	50.4	55.3	53.7	55.9	57.7	61.5	59.3	58.9
Throughput pbm	67.1	50.9	67.7	65.8	70.1	62.2	75.9	85.1	89.5	81.1	77.7	91.6	98.4	90.9	94.0	117.0	119.1
Sydney																	
Ships handled	211	201	202	208	206	196	203	204	210	211	217	228	238	221	231	253	262
Total teus	240 720	203 217	205 126	242 823	252 521	228 723	235 664	277 733	302 267	278 456	271 501	303 745	336 988	306 080	327 661	347 047	371 243
Crane rate	33.2	34.7	34.0	34.4	35.2	36.8	37.4	36.2	35.2	35.7	38.0	39.4	37.3	37.7	39.0	39.0	38.6
Vessel working rate	39.0	39.7	38.2	42.5	42.7	43.9	46.7	49.4	45.8	46.2	49.5	53.3	47.1	51.0	51.0	48.5	50.4
Ship rate	55.8	56.6	54.1	60.1	60.2	60.7	62.8	65.5	61.7	61.9	67.2	73.0	64.8	67.8	67.7	65.1	68.0
Throughput pbm	124.0	104.6	105.6	125.0	130.0	117.8	121.4	143.0	155.6	143.4	139.8	156.4	173.5	157.6	168.7	178.7	191.2
Melbourne																	
Ships handled	218	214	215	243	249	234	251	250	243	229	235	240	241	223	244	266	272
Total teus	255 022	226 612	228 400	285 947	294 753	274 108	295 284	325 945	342 684	317 711	327 822	342 966	361 225	351 753	379 002	397 048	425 247
Crane rate	34.7	35.3	35.7	33.9	35.0	35.1	35.6	36.6	35.7	35.3	38.0	39.7	39.8	40.6	40.8	40.5	38.7
Vessel working rate	41.1	41.9	41.0	40.7	41.9	42.0	42.4	45.5	43.8	45.7	45.1	51.9	53.0	50.4	50.3	50.9	50.1
Ship rate	57.6	57.5	57.3	56.2	57.1	57.9	58.5	63.6	61.9	61.8	61.6	72.4	71.8	69.9	72.1	71.7	67.2
Throughput pbm	139.7	124.1	125.1	156.6	161.4	150.1	161.7	178.5	187.7	174.0	179.5	187.8	197.8	192.6	207.6	217.4	232.9
Adelaide																	
Ships handled	63	57	57	57	57	54	59	55	58	50	58	62	63	60	60	54	56
Total teus	35 339	32 251	33 308	34 867	36 633	31 815	41 829	37 317	39 354	37 731	40 012	44 510	47 571	43 768	44 335	44 741	43 850
Crane rate	32.2	33.46	33.4	32.14	32.8	33	30.7	30.2	31.3	33.2	34.2	35.4	36.4	35	35.7	36	37.7
Vessel working rate	37.2	42.57	44.9	38.6	40.8	42.2	43.9	42.2	44.3	46.5	44.9	39.4	43.4	40.9	39.7	42.9	44.7
Ship rate	41.5	46.45	49.5	42.7	44.7	46.5	47.4	44.7	49.7	53.1	52.8	47.6	49.9	47.3	45.4	50.9	49.6
Throughput pbm	75.2	68.6	70.9	74.2	77.9	67.7	89.0	79.4	83.7	80.3	85.1	94.7	101.2	93.1	94.3	95.2	93.3
Fremantle																	
Ships handled	143	148	151	142	136	138	144	133	129	125	128	119	114	118	115	113	119
Total teus	93 043	90 059	85 682	92 819	90 600	89 632	93 393	98 756	110 726	106 807	106 672	113 779	119 375	115 962	116 487	119 683	129 697
Crane rate	36.5	37.7	37.9	37.4	37.5	35.4	36.6	36.8	38.4	36.7	37.3	38.7	36.7	36.7	36.3	36.4	38.3
Vessel working rate	33.6	34.5	35.0	37.8	36.6	32.8	35.7	36.0	39.5	37.2	38.3	42.3	40.0	38.2	38.5	40.1	44.6
Ship rate	48.7	51.3	50.8	52.3	53.0	46.6	47.4	51.2	56.2	54.2	59.1	62.5	57.6	55.4	56.1	57.0	61.7
Throughput pbm	72.0	69.7	66.3	71.9	70.2	69.4	72.3	76.5	85.7	82.7	82.6	88.1	92.4	89.8	90.2	92.7	100.4

pbm per berth metre

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 December quarter 1993, refer to Waterline 34."

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

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