issue 23

waterline

JUNE 2000

bureau of bte transport economics

in brief

in brief

- The five-port average crane rate was 20.4 containers per hour in the March quarter 2000, compared with 19.1 for the December quarter 1999, and is the highest achieved since the series commenced.
- The five-port elapsed labour rate of 25.4 containers per hour, and net ship rate of 31.8 containers per hour, both exceeded the previous quarter's figures.
- Berth availability was 94 per cent in the March quarter, up from 88 per cent in the previous quarter, and was at the highest level since the series commenced.
- In 1999, the overall tonnage of cargo moved under coastal permits increased by 25 per cent compared with 1998.
- The development of an Action Agenda has been announced for the freight transport logistics industry.
- The BTE has developed a general framework for undertaking port impact studies in Australia, with a case study of the Port of Fremantle measuring the impact of port-related activities on the Western Australian economy in 1998–99.

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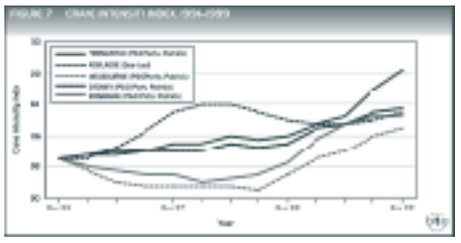

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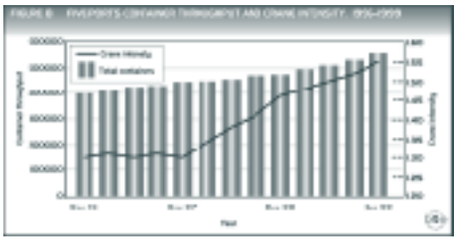

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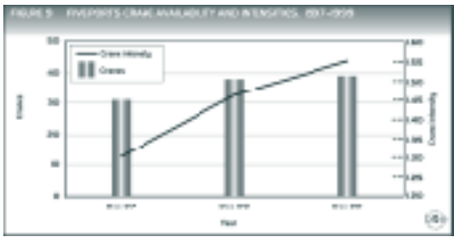

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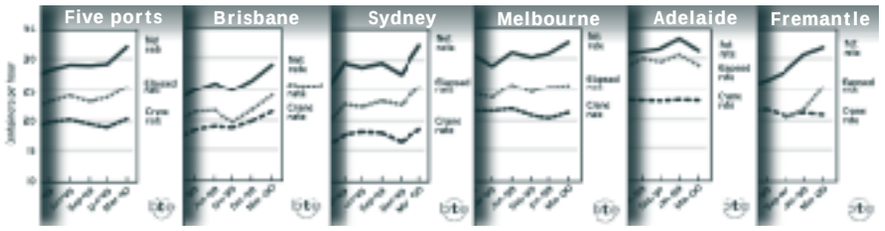
Container terminals' productivity—pages 4 & 5



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STEVEDORING PRODUCTIVITY

Table 1 presents the March quarter 1998 to March quarter 2000 indicators of stevedoring productivity at the five major Australian container ports, expressed in *container moves per hour*. Figures 1 to 6 present these data over the December quarter 1995 to March quarter 2000 period. The data for Sydney, Melbourne and Fremantle are weighted averages for the terminals operated by P&O Ports and Patrick. The Adelaide data cover the Sea-Land terminal, while the Brisbane data cover the P&O Ports, Patrick and Sea-Land terminals. This is the first occasion that Sea-Land Brisbane stevedoring data have been included in *Waterline*. The Sea-Land terminal at Brisbane commenced operations in July 1998.

Overall, national crane rate productivity, as measured by the five-port average, improved in the March quarter 2000 compared with the December quarter 1999. Excluding the newly incorporated Sea-Land Brisbane data, the five-port average for the March quarter 2000 equalled the June quarter 1999 peak. However, inclusion of the Sea-Land Brisbane data nudged the crane rate productivity slightly ahead to a new peak. During the March quarter 2000, the elapsed labour and net ship rates continued to improve to new highs. Crane intensities (the number of cranes used per ship) also reached new peaks at most terminals during the quarter.

In summary:

- the five-port average *crane rate* (productivity *per crane* while the ship is worked) was 20.4 containers per hour for the March quarter compared with 19.1 in the December quarter 1999;
- the five-port average *elapsed labour rate* (productivity *per ship* based on the time labour is aboard the ship) was 25.4 containers per hour for the March quarter compared with 23.7 in the December quarter 1999; and
- the five-port average *net ship rate* (productivity *per ship* while the ship is worked) was 31.8 containers per hour for the March quarter compared with 29.1 in the December quarter 1999.

During the March quarter 2000, the average crane rates at Brisbane and Sydney exceeded all their previous levels. Compared with the December quarter 1999, the crane rate improved at Melbourne, fell very slightly at Fremantle, and remained almost static at Adelaide. Additionally, among the ten container terminals that submit data for *Waterline*, the elapsed rate rose at seven terminals, and the net ship rate rose at six terminals, compared with the December quarter 1999.

The five-port average ***crane rate*** is the highest achieved *since the series commenced.*

The *Brisbane* average crane rate was 21.2 containers per hour in the March quarter, up from 19.7 in the December quarter. The elapsed labour rate of 23.8 containers per hour and the net ship rate of 28.9 containers per hour were both up on the December quarter figures of 21.5 and 26.4 respectively. The average proportion of elapsed time not worked was approximately 18 per cent.

The *Sydney* average crane rate was 18.6 containers per hour in the March quarter, up from 16.6 in the December quarter. The Sydney elapsed labour rate of 25.4 containers per hour and the net ship rate of 32.2 containers per hour were both up on the December quarter figures. The average proportion of elapsed time not worked was approximately 21 per cent.

The *Melbourne* average crane rate was 21.2 containers per hour in the March quarter, up from 20.3 in the December quarter. The Melbourne elapsed labour rate of 25.7 containers per hour and the net ship rate of 32.6 containers per hour were both up on the December quarter figures. The average proportion of elapsed time not worked was approximately 21 per cent.

The *Adelaide* average crane rate was 23.1 containers per hour in the March quarter, down marginally from 23.2 in the December quarter. The Adelaide elapsed labour rate of 28.9 containers per hour and the net ship rate of 31.2 containers per hour were both down on the December quarter figures. The average proportion of elapsed time not worked was approximately 7 per cent.

The *Fremantle* average crane rate was 20.9 containers per hour in the March quarter, down from 21.2 containers per hour in the December quarter. The elapsed labour rate of 25.3 containers per hour and the net ship rate of 31.8 containers per hour were both up on the December quarter figures. The average proportion of elapsed time not worked was approximately 21 per cent.

TABLE 1 CONTAINER TERMINAL PERFORMANCE INDICATORS— PRODUCTIVITY IN CONTAINERS PER HOUR

	Quarter								
Port/indicator	**Mar-98**	**Jun-98**	**Sep-98**	**Dec-98**	**Mar-99**	**Jun-99**	**Sep-99**	**Dec-99**	**Mar-00**
Five ports									
Ships handled	909	845	1020	942	942	958	979	933[r]	875
Total containers	421 769	406 938	493 502	477 744	448 224	469 742	506 696	557 659[r]	517 533
Crane rate	18.8	18.7	19.1	18.9	19.9	20.3	19.6	19.1[r]	20.4
Elapsed labour rate	20.0[a]	20.7[a]	20.7[a]	21.9[a]	23.1[a]	24.0[a]	23.1	23.7[r]	25.4
Net ship rate	23.4	24.7	24.2	26.9	28.2	29.0	28.9	29.1[r]	31.8
Brisbane									
Ships handled	170	168	192	180	176	193	224	232[r]	219
Total containers	49 197	58 939	70 200	67 691	61 204	71 008	77 914	84 354[r]	77 992
Crane rate	18.0	17.3	18.2	16.8	18.3	18.9	18.6	19.7[r]	21.2
Elapsed labour rate	16.4	17.1	18.7	19.6	21.2	21.4	19.5	21.5[r]	23.8
Net ship rate	19.1	20.2	21.9	22.9	24.7	25.9	24.7	26.4[r]	28.9
Elapsed time not worked (per cent)	14	15	15	14	14	18	21	19	18
Sydney									
Ships handled	238	219	267	230	221	243	259	244	221
Total containers	137 600	130 513	160 007	155 063	142 767	154 062	170 684	195 544	171 164
Crane rate	17.5	16.9	16.5	15.7	17.7	18.2	18.0	16.6	18.6
Elapsed labour rate	19.9	20.2	19.2	18.9	22.6	22.2	23.1	22.5	25.4
Net ship rate	25.7	26.2	24.2	24.6	29.5	28.7	29.4	27.6	32.2
Elapsed time not worked (per cent)	23	23	21	23	24	23	21	18	21
Melbourne									
Ships handled	276	234	309	274	271	282	278	266	247
Total containers	166 284	147 122	187 696	170 056	161 894	167 942	183 058	195 723	184 710
Crane rate	19.5	19.2	20.2	21.5	21.5	21.8	20.8	20.3	21.2
Elapsed labour rate	20.1	21.0	21.8	24.3	23.6	25.8	24.5	25.4	25.7
Net ship rate	22.7	24.2	24.5	30.7	28.8	31.0	30.2	30.8	32.6
Elapsed time not worked (per cent)	12	13	11	21	18	17	19	17	21
Adelaide									
Ships handled	60	66	63	74	73	66	62	62	56
Total containers	18 163	23 293	21 444	26 319	24 221	24 445	23 969	26 090	21 803
Crane rate	22.5	23.1	23.2	23.2	23.2	23.1	23.0	23.2	23.1
Elapsed labour rate	29.6	30.4	29.0	29.3	28.5	30.0	29.4	30.6	28.9
Net ship rate	30.7	31.5	30.3	30.4	30.7	31.1	31.5	33.1	31.2
Elapsed time not worked (per cent)	4	3	4	4	7	4	7	7	7
Fremantle									
Ships handled	165	158	189	184	201	174	156	129	132
Total containers	50 525	47 071	54 155	58 615	58 138	52 285	51 071	55 948	61 864
Crane rate	19.6	21.5	22.2	20.7	21.4	21.7	20.7	21.2	20.9
Elapsed labour rate	na	na	na	na	na	na	20.4	21.7	25.3
Net ship rate	21.1	23.9	23.8	25.5	25.6	26.6	28.0	30.7	31.8
Elapsed time not worked (per cent)	na	na	na	na	na	na	27	29	21

na not available
r revised, to include Sea-Land Brisbane data
a. Four-port average only, as Fremantle elapsed rate data were not available.

Notes
1. *Data from the Sea-Land terminal at Brisbane are incorporated from the December quarter 1999 onwards.*
2. *The June quarter 1998 figures do not include data for Patrick covering the 8 April to 7 May 1998 period of the major industrial dispute with the MUA.*
3. *The data in this table are expressed in containers (ie. lifts or moves) per hour and therefore are not directly comparable with the teus per hour data in table 10.*
4. *Elapsed time not worked is the difference between the net and elapsed rates as a percentage of the net rate.*

Sources Patrick, P&O Ports and Sea-Land (see Indemnity Statement on back page).

CONTAINER TERMINAL PRODUCTIVITY

FIGURE 1 FIVE MAJOR PORTS

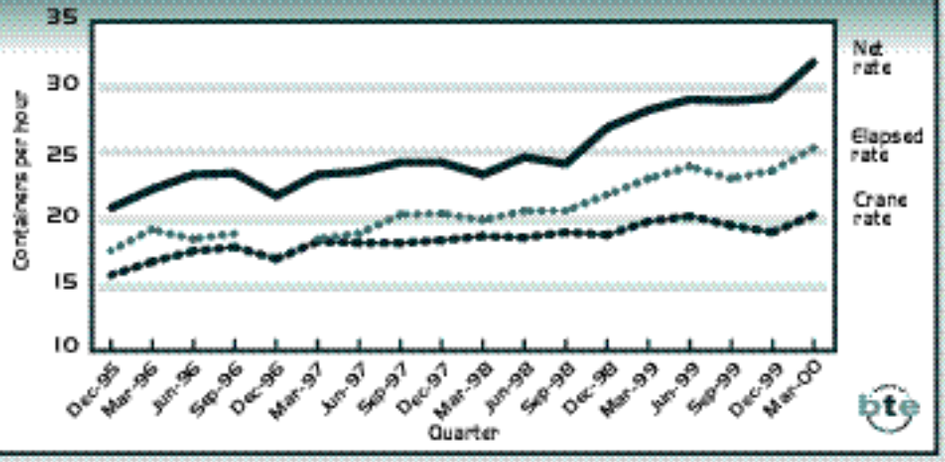


FIGURE 2 BRISBANE

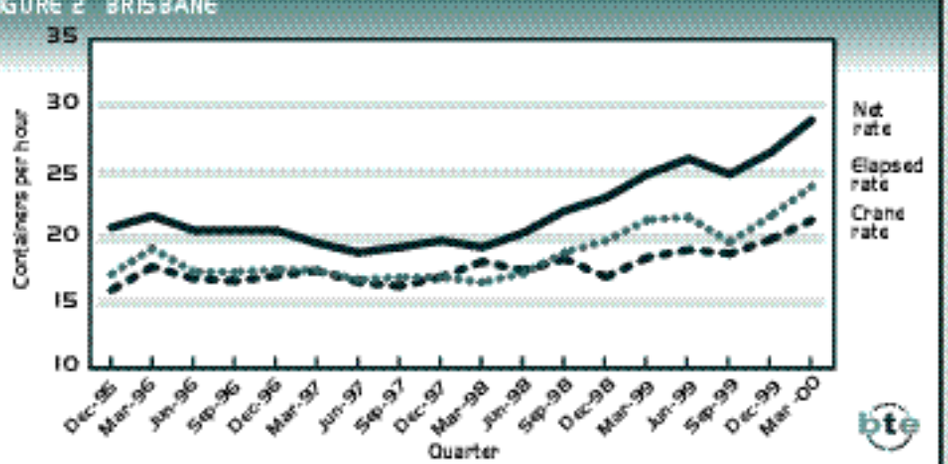
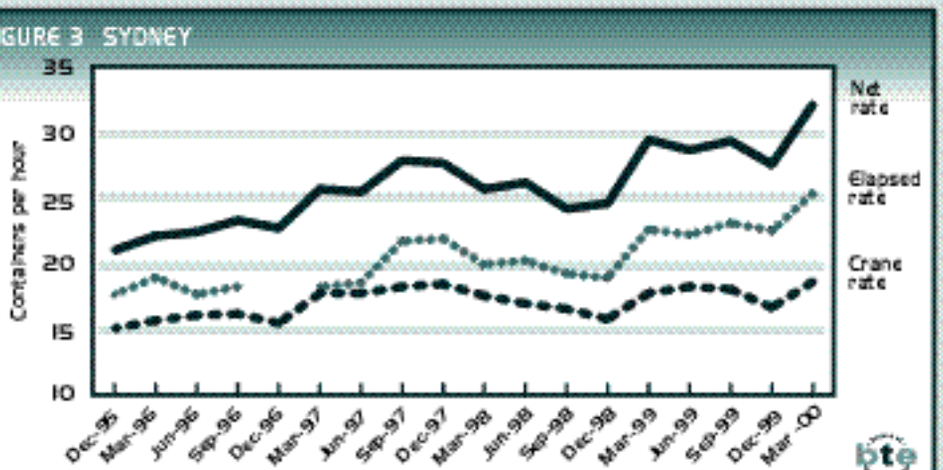


FIGURE 3 SYDNEY



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

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

CONTAINER TERMINAL PRODUCTIVITY

FIGURE 4 MELBOURNE

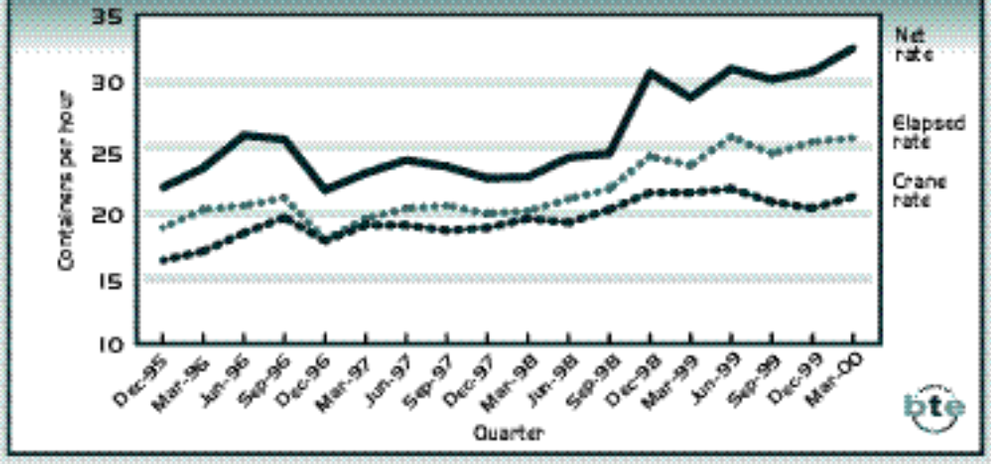


FIGURE 5 ADELAIDE

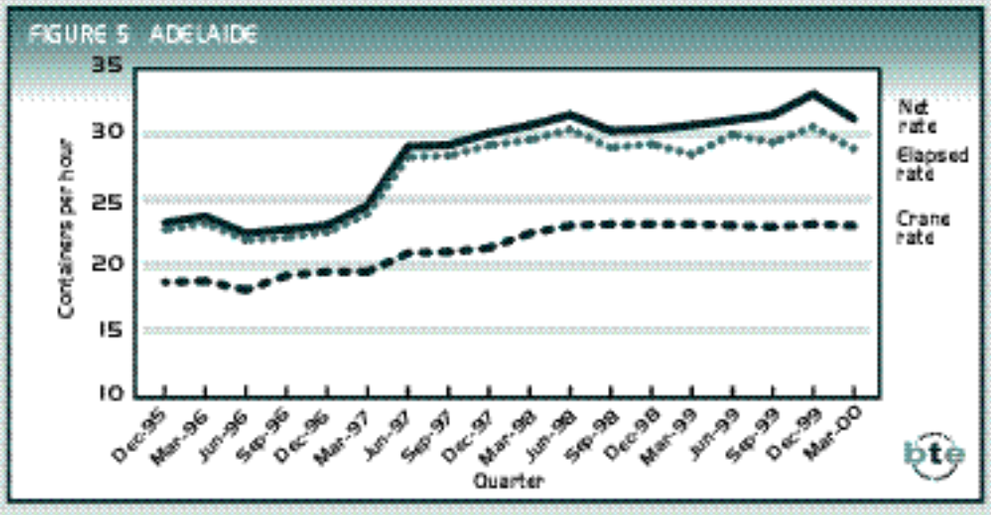
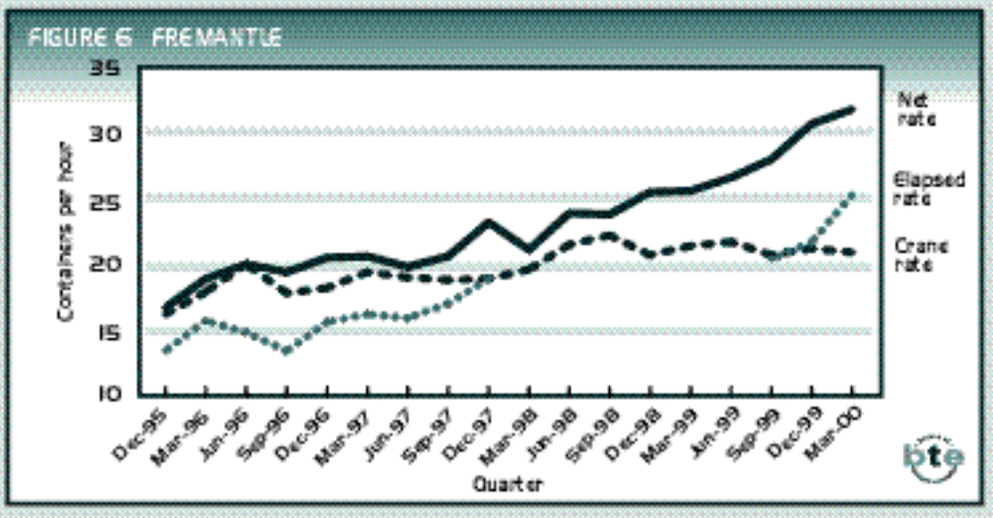


FIGURE 6 FREMANTLE



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

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

Container port activity

Table 1 also provides information on container ship visits and container throughput at each of the five mainland capital city ports. The March quarter 2000 five-port average showed ship visits decreased by 6 per cent, and container throughput decreased by 7 per cent, compared with the December quarter 1999. The declines occurred at all ports except Fremantle. Leading as they do into Christmas, September and December quarter throughputs traditionally surge in Australia. By comparison, the follow-on March quarter records lower-volume container movements. However, even discounting Sea-Land Brisbane data, the March quarter 2000 throughput was the second highest container exchange on record. It exceeded the September quarter 1999 throughput by about half of one per cent, but was second to the unusually high December quarter 1999 throughput.

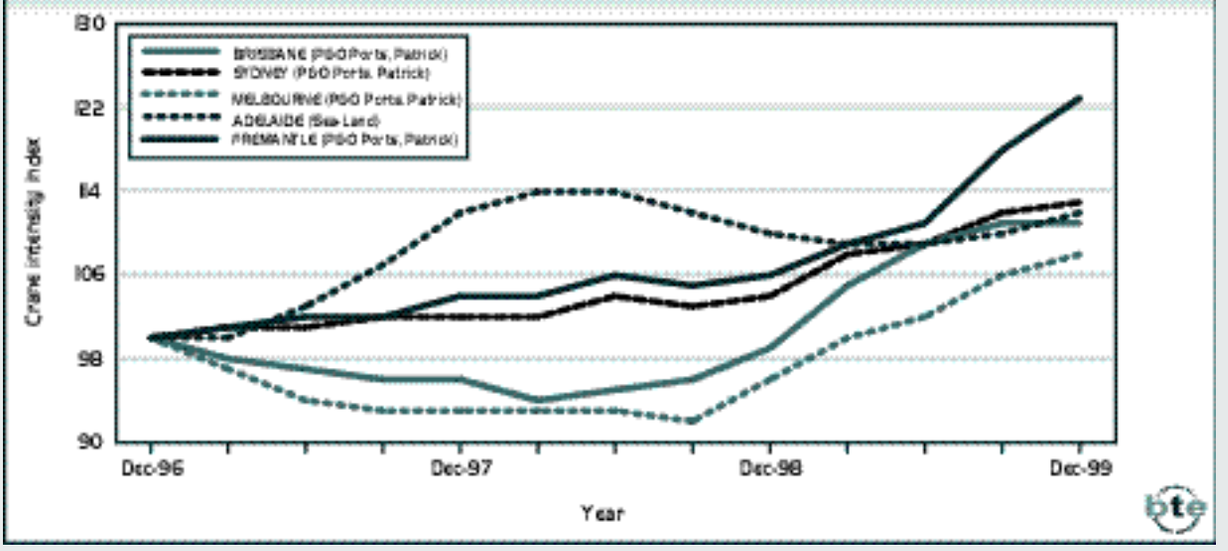
...although *fewer ship visits* are made, the average container exchange *per ship* has ***increased*** ***significantly***

Compared with the March quarter of the previous year, and discounting Sea-Land Brisbane data, the five-port average for container ship visits decreased by 7 per cent, while the five-port average for container throughput increased by 15 per cent. This reflects a change in shipping patterns whereby, although fewer ship visits are made, the average container exchange per ship has increased significantly.

On a port-by-port basis, the March quarter 2000 *container exchange* at:

- Brisbane was down 8 per cent on the December quarter figure and, discounting Sea-Land because comparative data are unavailable, up 13 per cent compared with the March quarter 1999;
- Sydney was down 12 per cent on the December quarter figure, and up 20 per cent compared with the March quarter 1999;

FIGURE 7 CRANE INTENSITY INDEX, 1996–1999



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

- Melbourne was down 6 per cent on the December quarter figure, and up 14 per cent compared with the March quarter 1999;
- Adelaide was down 16 per cent on the December quarter figure, and down 10 per cent compared with the March quarter 1999; and
- Fremantle was up 11 per cent on the December quarter figure, and up 6 per cent compared with the March quarter 1999.

Crane intensities

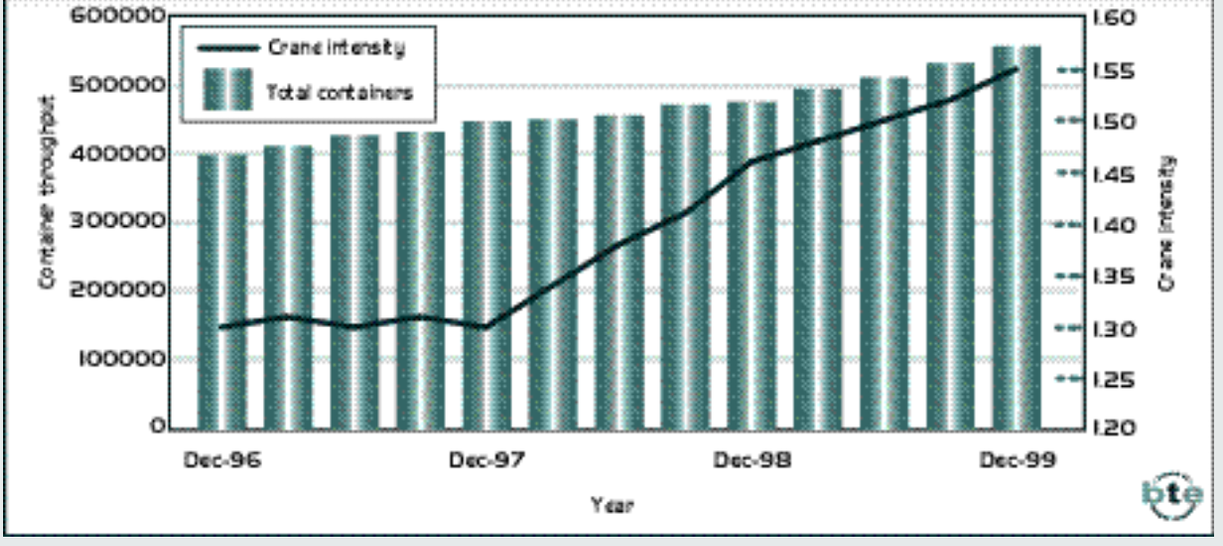
Crane intensity is defined as the number of cranes used during the period the ship is worked, and can be determined fairly closely by dividing the net ship rate by the net crane rate. The number of cranes used by a stevedore to work a ship depends on:

- the size of the ship;
- the stowage pattern and number of containers to be exchanged;
- the total number of cranes at the terminal;
- crane availability; and
- the cost of using the cranes (in terms of labour and maintenance).

Using an index of 100 for crane intensity at the end of 1996, figure 7 shows changes in intensity at the ports between then and the end of 1999. Overall, crane intensities have risen at all Australian container ports.

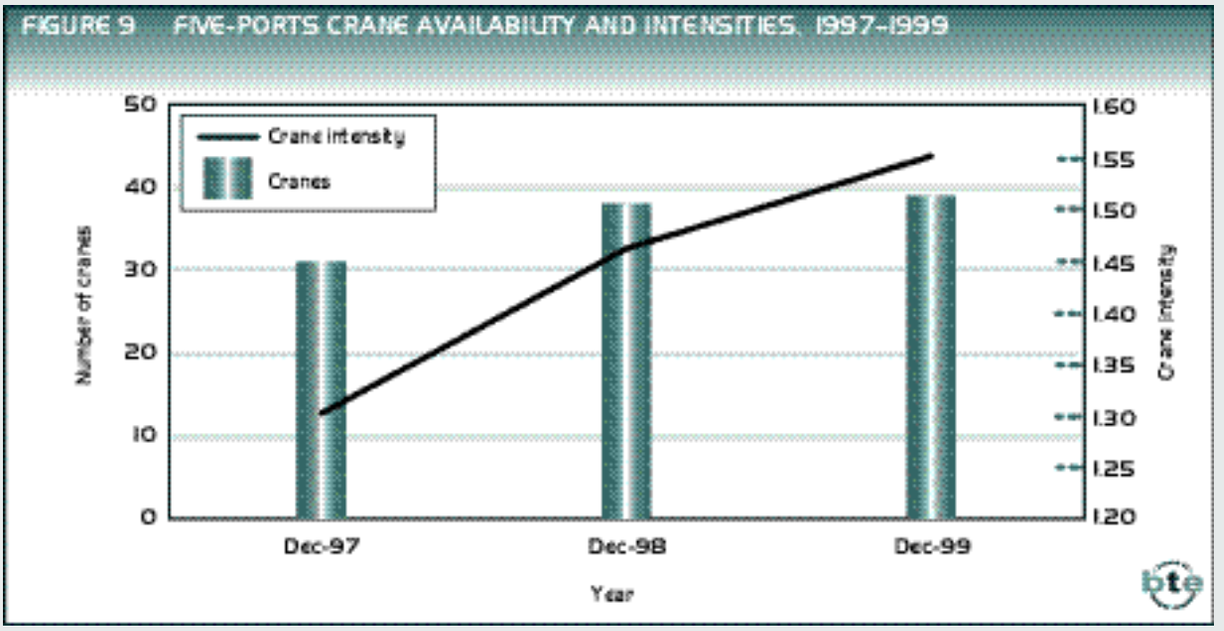
Figures 8 and 9 plot the five-port crane intensity against container throughput and crane availability respectively. Both charts show rises in throughput and total number of cranes accompanying the rise in crane intensity.

FIGURE 8 FIVE-PORTS CONTAINER THROUGHPUT AND CRANE INTENSITY, 1996-1999



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

FIGURE 9 FIVE-PORTS CRANE AVAILABILITY AND INTENSITIES, 1997–1999



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

Crane intensity is an important issue when measuring stevedoring productivity. The speed at which a ship is worked (ie the elapsed labour rate and net ship rate) can be improved by employing more cranes to the task of working the ship. However, there is a trade-off. Employing more cranes can lead to a fall in the productivity of each crane (ie the crane rate). In the end, how the stevedore balances the trade-off between higher ship rates and lower crane rates will depend on the needs of the stevedore's client (the ship operator), as defined by the commercial contract between the two parties.

Teus per hour

Table 10 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.

WATERFRONT RELIABILITY

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

Berth availability, pilotage, towage

Table 2 presents information on berth availability, pilotage and towage for a sample of ship calls in the March quarter 2000. It indicates the extent to which selected port services were available at the scheduled or confirmed time.

The sample for the March quarter 2000 covers 283 ship calls, equivalent to 32 per cent of total ship calls at the major container terminals during the period. The proportion of ship calls covered at individual ports ranges from 20 per cent at Brisbane to 52 per cent at Adelaide. The sample includes calls by container ships operating to and from Europe, the Mediterranean, the Middle East, North America, Asia and New Zealand.

Berth availability for the sample of ship calls was 94 per cent

The *berth availability* indicator measures the proportion of ship arrivals where a berth is available within four hours of the scheduled berthing time. Berth availability for the sample of ship calls was 94 per cent in the March quarter 2000. This was up from the figure of 88 per cent that was recorded in the December quarter 1999. 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.

Figure 10 provides information on berth availability since the March quarter 1997. The figure of 94 per cent recorded in the March quarter 2000 was the highest level for the berth availability indicator since the series commenced.

Average waiting time for ships unable to obtain a berth within four hours of the scheduled berthing time was 16 hours in the March quarter 2000. This was down from the figure of 21 hours that was recorded in the previous quarter.

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

TABLE 2 AVAILABILITY OF BERTH, PILOTAGE AND TOWAGE SERVICES AT THE SCHEDULED/CONFIRMED TIME, MARCH QUARTER 2000

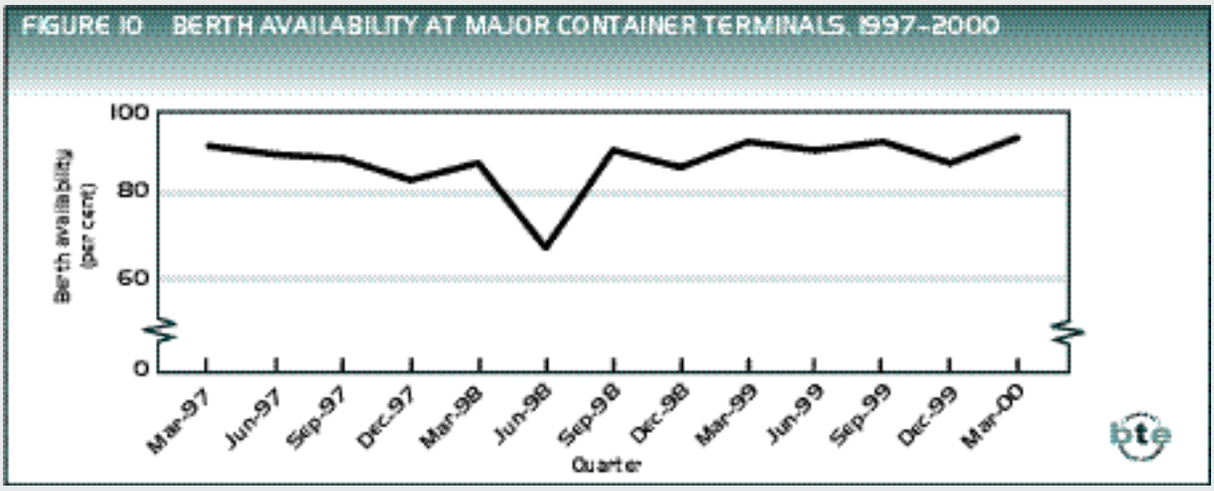
(Number of ship calls)

Port/operation	Delay (hrs) 0	1	2	3	4	5–10	11–20	>20	Total no. of ship calls
Brisbane									
Berth availability	**40**	**0**	**1**	**1**	**0**	1	0	0	43
Pilotage	**43**	**0**	0	0	0	0	0	0	43
Towage	**43**	**0**	0	0	0	0	0	0	43
Sydney									
Berth availability	**65**	**1**	**0**	**0**	**0**	1	1	2	70
Pilotage	**70**	**0**	0	0	0	0	0	0	70
Towage	**70**	**0**	0	0	0	0	0	0	70
Melbourne									
Berth availability	**84**	**1**	**1**	**2**	**0**	2	6	3	99
Pilotage	**99**	**0**	0	0	0	0	0	0	99
Towage	**99**	**0**	0	0	0	0	0	0	99
Adelaide									
Berth availability	**27**	**0**	**0**	**1**	**0**	1	0	0	29
Pilotage	**29**	**0**	0	0	0	0	0	0	29
Towage	**29**	**0**	0	0	0	0	0	0	29
Fremantle									
Berth availability	**39**	**0**	**1**	**2**	**0**	0	0	0	42
Pilotage	**42**	**0**	0	0	0	0	0	0	42
Towage	**42**	**0**	0	0	0	0	0	0	42
Five ports									
Berth availability	**255**	**2**	**3**	**6**	**0**	5	7	5	283
Pilotage	**283**	**0**	0	0	0	0	0	0	283
Towage	**283**	**0**	0	0	0	0	0	0	283

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.*

FIGURE 10 BERTH AVAILABILITY AT MAJOR CONTAINER TERMINALS, 1997–2000



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

Other waiting time

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

Table 3 summarises the data on other waiting time incidents in the March quarter 2000. The shipping lines identified a total of 199 incidents (affecting 145 ship calls) for the sample of ship calls over this period. These incidents involved both ship-related and waterfront factors.

TABLE 3 OTHER SHIP WAITING TIME INCIDENTS AT THE FIVE MAINLAND CAPITAL CITY PORTS, MARCH QUARTER 2000

(Number of incidents)

	Ship waiting time (hrs)							Total no. of
Incident type	1	2	3	4	5–10	11–20	>20	incidents
Awaiting labour	8	8	7	8	16	3	1	51
Stevedoring finished early	13	15	4	0	2	0	0	34
Pilot/tug booking not at preferred time	11	7	3	2	2	1	0	26
Early ship arrival	3	6	6	7	2	0	0	24
Crane breakdown	3	5	3	2	4	1	0	18
Ship repairs or maintenance	0	0	2	2	3	1	1	9
Weather or tides	1	1	2	0	1	1	0	6
Stevedoring finished late	2	0	0	0	1	0	0	3
Late ship arrival	0	1	0	0	1	0	0	2
Industrial action	0	0	0	1	0	0	0	1
Other	5	5	4	1	2	2	6	25
Total incidents	**46**	**48**	**31**	**23**	**34**	**9**	**8**	**199[a]**

a. *These incidents affected 145 of the 283 ship calls covered in table 2.*

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

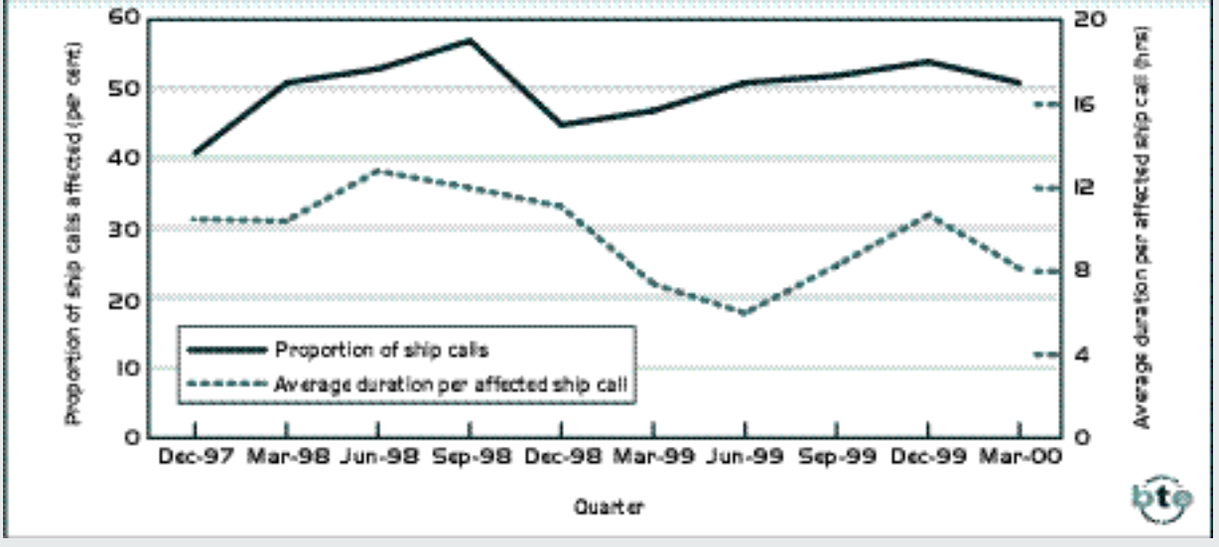
The total waiting time attributable to particular incident types reflects the number of incidents and the waiting time associated with individual incidents. The data provided by shipping lines indicate that six incident types accounted for around one-half of the total hours attributed to other ship waiting time in the March quarter 2000:

- awaiting stevedoring labour (21 per cent);
- ship repairs or maintenance (6 per cent);
- early ship arrival (6 per cent);
- completion of stevedoring earlier than forecast (6 per cent);
- crane breakdowns (6 per cent); and
- unable to book tugs or pilots at preferred time (6 per cent).

In the March quarter 2000, 51 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 corresponding proportion in the December quarter 1999 was 54 per cent. The average duration of other waiting time was 8 hours per affected ship call in the March quarter 2000, down from 11 hours per affected ship call in the previous quarter.

Figure 11 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. The series on average duration has been revised in this issue of *Waterline*, with figures prior to the March quarter 1999 being amended to ensure that they are prepared on the same basis as later figures.

FIGURE 11 OTHER SHIP WAITING TIME INCIDENTS AT MAJOR CONTAINER TERMINALS, 1997–2000



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

Stevedoring

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

Stevedoring rate provides a partial indicator of the variability of stevedoring productivity at each port. It is defined as the proportion of ship visits where the average crane rate for the ship is within two containers per hour (plus or minus) of the quarterly average crane rate for the terminal. Compared with the previous quarter, the stevedoring rate indicator increased at Melbourne and Fremantle in the March quarter 2000. There was a slight decline at Sydney.

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. Compared with the previous quarter, the cargo receival indicator did not change significantly at the ports for which data are available in the March quarter 2000.

Ship arrival

Table 4 includes data for two indicators of ship arrival advice.

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*.

TABLE 4 STEVEDORING AND SHIP ARRIVAL RELIABILITY INDICATORS, DECEMBER QUARTER 1999 AND MARCH QUARTER 2000

(per cent)

	Brisbane		Sydney		Melbourne		Adelaide		Fremantle	
Indicator	Oct–Dec	Jan–Mar	Oct–Dec	Jan–Mar	Oct–Dec	Jan–Mar	Oct–Dec	Jan–Mar	Oct–Dec	Jan–Mar
Stevedoring										
Stevedoring rate	50	na	62	59	46	50	na	na	38	43
Cargo receival	91	na	82	80	94	94	na	na	97	99
Ship arrival										
Advice at 24 hrs	52	na	46	50	na	na	57	51	54	56
Advice inside 24 hrs	93	na	94	98	na	na	90	93	88	88

na not available

Sources AAPMA, Patrick and P&O Ports.

Compared with the previous quarter, this indicator increased at Sydney and Fremantle, and declined at Adelaide, in the March quarter 2000.

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*. Compared with the previous quarter, this indicator increased at Sydney and Adelaide, and was unchanged at Fremantle, in the March quarter 2000.

REGIONAL IMPACT OF PORTS

In April this year, the BTE released the results of a study of the regional impact of ports. BTE Report 101 presents a general framework for undertaking port impact studies in Australia, and a case study of the Port of Fremantle. It was undertaken with the cooperation of the Association of Australian Ports and Marine Authorities (AAPMA), the Fremantle Port Authority, and members of the Fremantle port community.

A port impact study measures the output, value added, income and employment that are generated by the operation of a port in a recent year. Total impact is the sum of the direct effects and the subsequent flow-on effects to other sectors of the regional economy.

General framework

The general framework developed by the BTE identifies six major steps in the preparation of a port impact study:

- selecting an appropriate methodology;
- deciding on key parameters (eg definition of the port industry);
- collecting the data;
- processing and adjusting the data;
- preparing the estimates of port impact; and
- reporting the results in an appropriate format.

The standard approach in the general framework incorporates a detailed survey of the organisations involved in port-related activities. Input-output tables are used to estimate the flow-on effects to other sectors of the regional economy. A successful port impact study requires strong support from the port community.

BTE Report 101 provides definitions of key terms such as economic impact and the port industry. It distinguishes regional economic impact from other concepts such as net economic benefits, effects on the broader (eg national) economy, technical efficiency, competitiveness and trade facilitation effects.

The definition of the port industry in the general framework incorporates all activities that are required for the movement of commercial trading vessels, cargoes and passengers through the port. Therefore, a port impact study based on the general framework will not include the economic benefits of exports and imports, or the impact of activities in the port area that are not involved in the transport of cargo.

Port of Fremantle

The BTE undertook a study of the Port of Fremantle in order to illustrate the practical issues involved in a port impact study. The case study also provided information for the development of the general framework.

The study of the Port of Fremantle was undertaken between June and December 1999, using the standard approach specified in the general framework. A survey of 198 organisations involved in port-related activities provided extensive information on the direct effects of the port and on linkages to the rest of the State economy. Flow-on effects were estimated using Western Australian input-output tables, which were modified to provide port-specific multipliers.

The overall results of the case study are summarised in table 5. Value added attributable to the operation of the port (direct and flow-on effects) in 1998–99 was equivalent to around 0.9 per cent of Western Australia's Gross State Product. The 5792 jobs (full-time equivalent) represented around 0.8 per cent of total employment in Western Australia.

The results of the case study indicate that, on average, each ship call at the Port of Fremantle involved the following impact on Western Australia in 1998–99:

- $411 000 of output;
- $248 000 of value added;
- $126 000 of household income;
- 3.3 jobs (full-time equivalent).

Table 6 provides detailed measures of the total impact of the port. It indicates that there was significant variation in the contribution of individual port functions and cargo types. The variation for individual cargo types was reflected in the relative contributions of the Inner Harbour (non-bulk cargoes) and the Outer Harbour (bulk cargoes).

TABLE 5 ECONOMIC IMPACT (DIRECT AND FLOW-ON EFFECTS) OF THE PORT OF FREMANTLE, 1998–99

Impact measure	Direct effects	Flow-on effects	Total impact
Output ($m)	341	387	728
Value added ($m)	215	225	440
Household income ($m)	124	99	223
Employment (no.)[a]	2 294	3 499	5 792

a. Number of full-time equivalent jobs.

Note Components may not sum to totals due to rounding.

Source BTE Report 101, 'Regional Impact of Ports', p. xvii.

The BTE also undertook some work on the impact of expenditure by crews from visiting US naval vessels at the Port of Fremantle (not included in tables 5 and 6). Total impact (including flow-on effects) was conservatively estimated at around $22 million in terms of output and 193 jobs (full-time equivalent) in 1998–99.

TABLE 6 DETAILED MEASURES OF THE ECONOMIC IMPACT (DIRECT AND FLOW-ON EFFECTS) OF THE PORT OF FREMANTLE, 1998–99

Component	Output ($m)	Value added ($m)	Household income ($m)	Employment (no.)[a]
Function				
Ship loading/unloading	218	135	72	1 694
Ship operations	162	101	54	1 401
Land transport & storage	141	82	37	1 033
Cargo services	99	61	31	897
Port authority operations	87	48	22	555
Government agencies	21	13	8	213
Total	*728*	*440*	*223*	*5 792*
Cargo type				
Containers	382	240	125	3 195
Dry bulk	181	100	50	1 339
Other general cargo	96	59	31	800
Liquid bulk	67	38	17	441
Other	2	1	1	19
Total	*728*	*440*	*223*	*5 792*
Port area				
Inner Harbour	470	293	152	3 896
Outer Harbour	258	146	71	1 896
Total	*728*	*440*	*223*	*5 792*

a. Number of full-time equivalent jobs.

Note Components may not sum to totals due to rounding.

Source BTE Report 101, 'Regional Impact of Ports', p. xix.

Further information

BTE Report 101 *Regional Impact of Ports* (ISBN 0 642 43292 9) is available from Government InfoShops (AusInfo) telephone toll-free 132 447. To obtain more information about the BTE's work on port impact studies, contact the project leader Kym Starr on (02) 6274 6857 or kym.starr@dotrs.gov.au.

COASTAL SHIPPING PERMITS

During 1999, the overall tonnage of cargo moved under a combination of single voyage permits (SVPs) and continuing voyage permits (CVPs) increased by 25 per cent compared with the previous year, and by 129 per cent compared with 1995.

TABLE 7 SINGLE VOYAGE PERMITS ISSUED

	March quarter		June quarter		September quarter		December quarter		TOTAL	
Year	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes	Permits	Tonnes
1991	44	262 431	26	189 565	34	422 161	61	414 191	165	1 288 348
1992	49	243 049	59	241 373	62	238 017	69	147 514	239	869 953
1993	83	211 430	93	298 769	108	202 252	125	292 664	409	1 005 115
1994	119	412 029	118	498 571	110	899 222	112	970 068	459	2 779 890
1995	116	832 308	90	665 499	91	1 077 022	100	653 940	397	3 228 769
1996	107	575 662	123	930 077	142	1 026 438	146	1 110 332	518	3 642 509
1997	135	661 784	149	1 056 709	197	1 307 362	214	1 009 151	695	4 035 006
1998	184	1 266 030	184	1 301 204	186	1 584 240	187	1 580 034	741	5 731 508
1999	144	1 336 882	187	2 381 904	168	1 799 908	149	1 526 375	648	7 045 069
2000	143	1 677 346								

na not available

Note From mid-1997, the data have been collected as SVPs issued; prior data were collected as SVPs used. As most SVPs issued are also used, the differences in the data are likely to be insignificant.

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

Single voyage permits

Table 7 updates the information published in *Waterline* 21. It presents data on the number of SVPs issued, and tonnes of cargo carried, over the period from the September quarter 1990 to the March quarter 2000. The number of SVPs issued in the March quarter 2000 declined by 4 per cent compared with the December quarter 1999, while the associated tonnes of cargo carried increased by 10 per cent.

Total SVPs issued in the 1999 calendar year declined by about 13 per cent compared with the number issued in 1998, but was 63 per cent higher than the number issued in 1995. Tonnes of cargo carried using SVPs increased by 23 per cent compared with 1998, and by 118 per cent compared with 1995. The indicators for the past year show that, although the total number of SVPs issued has declined, the associated total tonnage carried has increased. The decline in SVPs issued may be a reflection of the marked increase in CVPs issued over the past year.

TABLE 8 SUMMARY OF SINGLE VOYAGE PERMITS ISSUED, 1 OCTOBER 1999 TO 31 MARCH 2000

Cargo category	Permits issued	Tonnes carried
Bulk cargo		
Petroleum products	48	893 034
Crude oil & feedstocks	12	572 400
Liquefied gas	16	54 340
Other bulk liquids	7	48 000
Dry bulk	59	1 272 002
General cargo		
Containerised	129	348 077
Break bulk	21	15 868
Total	**292**	**3 203 721**

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

Table 8 shows a breakdown of SVPs by cargo types for the half year from 1 October 1999 to 31 March 2000. Containerised cargo permits continue to be the major component of the total number of permits issued. On the other hand, bulk cargo continues to account for around 90 per cent of total tonnage moved under permit.

Continuing voyage permits

While CVPs have been available for some time, they were rarely requested or issued prior to 1998. However, during the 1999 calendar year, 59 CVPs were issued. Each CVP covers a six-month period which usually translates into six voyages that may otherwise have been undertaken under SVP. During 1999, approximately 350 000 tonnes of coastal trade were committed to be moved using CVPs, that is, about one-twentieth the tonnage moved by SVPs.

TABLE 9 CONTINUING VOYAGE PERMITS ISSUED

Year	March quarter Permits	March quarter Tonnes[a]	June quarter Permits	June quarter Tonnes[a]	September quarter Permits	September quarter Tonnes[a]	December quarter Permits	December quarter Tonnes[a]
1999	4	53 400	22	171 753	14	127 011	19	483 104
2000	14	212 080						

a. Tonnes committed to be carried under continuing voyage permits.

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

General information

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

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

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

ABBREVIATIONS

AAPMA	Association of Australian Ports and Marine Authorities
BTE	Bureau of Transport Economics
DoTRS	Department of Transport and Regional Services
CVP	Continuing Voyage Permit
eg	for example
GDP	Gross Domestic Product
ie	that is
MUA	Maritime Union of Australia
SVP	Single Voyage Permit
teu	twenty-foot equivalent unit
TLWG	Transport Logistics Working Group
US	United States of America

DEFINITIONS

Elapsed labour time—the total time over which the ship is worked, measured from labour aboard to labour ashore.

Elapsed labour rate—the number of containers or teus moved per elapsed hour.

Net ship time—the elapsed time minus the time unable to work the ship due to award shift breaks, ship's fault, weather, awaiting cargo, industrial disputes, closed holidays, or shifts not worked at the ship operator's request.

Net ship rate—the number of containers or teus moved per net hour.

Crane rate—the number of containers or teus moved per net crane hour.

TABLE 10 CONTAINER TERMINAL PERFORMANCE INDICATORS, SELECTED AUSTRALIAN PORTS— PRODUCTIVITY IN TEUS PER HOUR

	Mar-96	Jun-96	Sep-96	Dec-96	Mar-97	Jun-97	Sep-97	Dec-97	Mar-98	Jun-98	Sep-98	Dec-98	Mar-99	Jun-99	Sep-99	Dec-99	Mar-00
Five ports																	
Ships handled	748	827	871	907	865	891	907	963	909	845	1020	942	942	958	979	933[r]	875
Total teus	411538	440098	497140	519206	441697	483372	549247	585474	527881	514409	633107	612019	573444	602501	660593	726590[r]	678046
Crane rate	20.3	21.3	22.3	21.2	22.8	22.8	23.2	23.3	23.5	23.6	24.4	24.2	25.5	25.9	25.4	24.8[r]	26.6
Elapsed rate	23.2	22.6	23.6	na	23.1	23.8	26.0	25.8	na	na	na	na	na	na	30.1	30.8[r]	33.3
Net rate	27.1	28.5	29.1	27.2	29.0	29.5	31.0	30.8	29.6	31.3	31.3	34.7	36.2	37.3	37.7	37.8[r]	41.7
Brisbane																	
Ships handled	124	133	140	141	156	164	162	177	170	168	192	180	176	193	224	232[r]	219
Total teus	39037	51008	66115	62904	47471	65572	73184	71043	58857	74023	87373	84200	75444	88311	98944	106096[r]	97431
Crane rate	20.0	19.9	20.6	20.6	20.0	20.5	20.2	20.5	21.6	21.6	22.5	20.9	22.6	23.4	23.3	24.6[r]	26.4
Elapsed rate	21.5	20.5	20.9	21.1	20.3	20.6	21.2	20.8	19.9	21.5	23.6	24.7	26.3	26.7	24.7	27.0[r]	29.8
Net rate	24.4	24.3	25.1	24.9	22.7	23.3	24.0	24.2	23.0	25.4	27.5	28.7	30.6	32.2	31.2	33.1[r]	36.1
Sydney																	
Ships handled	206	216	228	249	251	249	243	266	238	219	267	230	221	243	259	244	221
Total teus	146038	148290	156344	174982	158323	167705	183978	201535	176496	168234	209619	203042	187287	203536	226784	260927	229014
Crane rate	19.5	19.9	20.3	19.6	22.3	20.5	23.5	23.5	22.5	21.8	21.6	20.4	23.2	24.0	23.7	22.1	24.8
Elapsed rate	23.8	22.1	23.1	na	22.7	23.6	28.0	28.2	25.6	26.1	25.4	24.8	29.6	29.3	30.6	30.1	34.0
Net rate	28.0	27.9	29.5	28.9	22.7	23.3	36.1	35.5	33.1	33.9	32.0	32.3	38.8	38.0	38.9	36.8	43.0
Melbourne																	
Ships handled	228	262	274	282	230	249	268	281	276	234	309	274	271	282	278	266	247
Total teus	162911	170884	203371	202376	162156	177070	208200	223465	207346	185803	242456	219549	206727	215379	241775	257147	243277
Crane rate	20.5	22.3	24.5	22.4	23.6	23.5	23.6	23.6	24.3	24.3	26.1	27.7	27.5	28.1	27.4	26.5	27.9
Elapsed rate	24.4	25.0	26.5	22.1	24.3	25.1	26.0	25.2	25.3	26.8	28.4	31.7	30.2	33.1	32.4	33.4	33.8
Net rate	28.3	31.7	32.2	27.2	28.7	29.7	29.9	28.7	28.6	30.7	31.9	39.7	36.9	39.7	39.9	40.4	43.0
Adelaide																	
Ships handled	47	63	70	74	69	65	68	66	60	66	63	74	73	66	62	62	56
Total teus	15955	18803	20519	23351	21963	20933	25982	25188	22260	27975	25493	32556	31326	29569	28271	30597	27736
Crane rate	21.5	21.5	22.7	24.0	24.6	26.0	26.1	26.0	27.5	27.7	27.6	28.7	30.0	27.9	27.2	27.2	29.4
Elapsed rate	26.6	26.1	26.2	27.7	30.2	35.1	35.2	35.4	36.3	36.5	34.5	36.2	36.8	36.3	34.7	35.9	36.8
Net rate	27.2	26.7	26.8	28.3	30.9	36.0	36.2	36.5	37.6	37.8	36.0	37.6	39.7	37.6	37.2	38.8	39.7
Fremantle																	
Ships handled	143	153	159	161	159	164	166	173	165	158	189	184	201	174	156	129	132
Total teus	47597	51113	50791	55593	51784	52092	57903	64243	62922	58374	68166	72672	72660	65706	64819	71823	80588
Crane rate	21.2	23.4	20.8	21.5	23.3	22.9	23.1	23.6	24.5	26.7	27.9	25.7	26.6	27.3	26.1	27.2	27.4
Elapsed rate	18.3	17.6	16.0	18.6	19.7	19.5	21.0	22.2	na	na	na	na	na	na	25.8	27.9	33.0
Net rate	22.2	23.5	22.6	24.2	25.0	24.0	25.5	28.8	26.4	29.8	30.2	31.7	32.0	33.4	35.3	38.8	41.6

na not available

r revised, to include Sea-Land Brisbane data

Notes 1. Data from the Sea-Land terminal at Brisbane are incorporated from the December quarter 1999 onwards.

2. The June quarter 1998 figures do not include data for Patrick covering the 8 April to 7 May 1998 period of the major industrial dispute with the MUA.

3. Elapsed rates and net rates from March quarter 1997 onwards are not directly comparable with earlier figures (except at Adelaide) due to changes in a terminal operator's information systems.

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

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

THE AUSTRALIAN FREIGHT TRANSPORT LOGISTICS INDUSTRY ACTION AGENDA

On 24 May 2000, the Minister for Industry, Science and Resources, Senator Nick Minchin announced that the freight transport logistics industry had been chosen for the development of an industry Action Agenda. The Minister for Transport and Regional Services, Deputy Prime Minister John Anderson, welcomed the decision.

What is an Action Agenda?

Announced in *Investing for Growth* (December 1997), Action Agendas are a key element of the Australian Government's industry strategy. They are designed to build a dynamic partnership between industry and government to achieve sustainable economic growth in a competitive global environment.

Action Agendas identify impediments to growth and develop strategies to remove them, examine and capitalise on opportunities, and generate the momentum for industry to act for itself. For further information on Action Agendas, refer to the Department of Industry, Science and Resources' website at: www.isr.gov.au/agendas

What is freight transport logistics?

Freight transport logistics refers to all actions concerned with the *movement* of goods through the logistics chain—from point of origin, through the point of consumption, to the point of disposal. Consequently, the focus of the Action Agenda is on the role of transport in the logistics chain. However, other logistics issues such as purchasing, distribution, storage and packaging, as well as passenger transport services, will have an influence on the future of the freight transport logistics industry.

How important is freight transport logistics?

The Australian freight transport logistics industry is a major contributor to the wealth of this nation and is an increasingly integral part of core Australian business practice and the economy. The Australian Bureau of Statistics estimated that transport and storage alone contributed 7 per cent to GDP in 1997–98. The contribution of freight transport logistics is likely to be significantly greater, and one of the immediate tasks of the Action Agenda process will be to better determine that contribution.

Why the need for an Australian freight transport logistics Action Agenda?

As a significant input to industry, better transport logistics service delivery can represent significant cost reductions to the domestic economy, while simultaneously improving the international competitiveness of Australian export industries.

...freight transport logistics industry is a ***major contributor*** to the wealth of this **nation**

Australia's traditional role of supplying the world with primary products and minerals has not required sophisticated transport logistics services. As Australian exports become more diverse in nature, and with the increasing pressure for Australian exporters to become part of the global network, the need for transport logistics solutions that solve more complex logistics problems has intensified.

In the case of imports, a more efficient and effective national transport system translates into greater opportunities for importers to develop alternative distribution patterns in Australia. This translates into advantages for industry where imports are essential inputs, and helps sustain accessible competitive transport logistics services that can be utilised by our exporters.

In the global context, the growth of telecommunications and information technology services has resulted in transport logistics services becoming an essential component in the formation of global alliances. Without the development of internationally competitive Australian transport logistics services, Australia will lose out on the opportunity to fully integrate our transport logistics services with the global network. As a result, Australian industry as a whole would find it more difficult to establish global partnerships.

Improved logistics services can also make significant contributions to broad social issues such as reducing greenhouse gas emissions and urban road congestion, and improved services to rural and remote communities.

To achieve the benefits of an efficient and effective transport logistics industry in Australia, an action plan that coordinates the resources of those seeking to improve the Australian logistics industry is required.

How will the Action Agenda for Australian freight transport logistics work?

Building on the relationships developed between all levels of government and industry as part of the Prime Minister's Supermarket to Asia Initiative, the Action Agenda will provide the framework for expanding Commonwealth, State and Territory government, and industry cooperation to encompass all aspects of the freight transport logistics industry. The Action Agenda will also incorporate work already developed through the recently announced National Intelligent Transport Systems Strategy.

A whole-of-government approach

There are several Commonwealth departments with an active interest in the issues concerning the freight transport logistics industry, including: Transport and Regional Services; Agriculture, Fisheries and Forestry Australia; Foreign Affairs and Trade; Industry Science and Resources, as well as agencies such as the Australian Trade Commission (Austrade). Similarly, freight transport logistics is also the concern of various State and Territory departments and agencies. A whole-of-government approach will assist in ensuring that the Action Agenda encompasses the interests of these departments and agencies when addressing transport logistics policy issues.

Industry commitment

The success of any Action Agenda depends on the commitment of industry, and the freight transport logistics industry has demonstrated the kind of commitment required to make this Action Agenda a success. For example, during the past two years, the Commonwealth and State governments have jointly funded the establishment of State-based air and sea freight councils. These councils represent over 400 industry organisations, forming an Australia-wide logistics network that reaches into the heartland of regional Australia.

In addition to this 'grass roots' network, high profile companies involved in the transport of perishable exports have demonstrated their commitment through their voluntary involvement in the Supermarket to Asia's Transport Logistics Working Group (TLWG). The Action Agenda will incorporate much of the work initiated by the TLWG through its Australian Transport Logistics Strategy for Perishable Exports.

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Industry and government working together

The Freight Transport Logistics Action Agenda will bring together industry and government to achieve, among other things:

- a seamless logistics system delivering goods on time, in peak condition, at an agreed value;
- the integration of the best available technology to link management systems with the transport infrastructure;
- nationally consistent standards and accepted codes of practice; and
- professional and accredited logistics specialists.

Where to from here?

Action Agendas typically take 12 months to develop. Being responsible for the development of the Australian Freight Transport Logistics Industry Action Agenda, the Department of Transport and Regional Services (DoTRS) has broken the 12 months into 3 four-month-long phases. The first phase will consist of the preparation of a background and issues paper.

The second phase will be initiated by a call for written submissions addressing the issues paper, and will be an intense period of consultation between DoTRS and stakeholders. It is envisaged that during this period, DoTRS officers will visit the States and Territories to conduct workshops based on the outcomes of the written submissions.

The third and final phase will be the preparation and finalisation of the Action Agenda.

For further information, or to express an interest in being part of this process, please contact: Anthony Carlson, tel (02) 6274 6628, tony.carlson@dotrs.gov.au

issue 23

waterline

JUNE 2000

acknowledgments

This issue of *Waterline* was compiled by Gita Curnow. The reliability article was written by Kym Starr. Desktop publishing by Thomas Smith.

The BTE is particularly grateful for the assistance of the Cross-Modal & Maritime Transport Division of the Department of Transport & Regional Services; the Association of Australian Ports and Marine Authorities; shipping lines; and the stevedoring companies Patrick, P&O Ports and Sea-Land.

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The Bureau of Transport Economics operates within the Commonwealth Department of Transport and Regional Services
ISSN 1324-4043

PRINTED BY NATIONAL CAPITAL PRINTING, CANBERRA