

Why do a container survey?

The Port of Brisbane Corporation identified the need to understand the movement of import and export containers through the supply chain linking the Port and locations within Brisbane and beyond. The aim of the study was to “gain a better understanding of the transport, storage and distribution of import/export containers between both the port and importers/exporters, and the point of first pick up and final delivery, in order to assist with the planning of road and rail infrastructure.”

Objectives

The study had four primary objectives, to determine:

- the ultimate origins and destinations of import and export containers, including empties,
- the routes and transport modes used to move containers,
- the location and significance of depots used as interim or ‘staging’ locations in conjunction with after hours stevedore slots (i.e., the proportion delivered direct versus via interim depots), and
- the break up of ‘business’ hours and after hours stevedore slots.

Who will use the results?

The information gleaned from the study is of interest and benefit to a range of agencies that have responsibility for infrastructure planning within Brisbane and the study was thus funded by the following stakeholder agencies:

- Port of Brisbane Corporation
- Queensland Transport
- Department of Main Roads
- Coordinator-General and
- Queensland Rail.

How was the survey carried out?

Consulting firm Strategic design + Development was appointed to manage the study. The survey was conducted over a two week period in March 2007. Sixteen trucking companies and two rail operators provided data from their computerised records on each container that they moved during the survey period. This was supplemented by overview counts of containers entering and leaving wharves by truck as well as at several major transport depots and container parks.

Additional information used in the study included traffic counts of trucks entering and leaving Fisherman Islands, and extracts from GPS devices fitted to the trucks of two of the participating firms.

All the participating firms provided their data free of charge and on a confidential basis. Without their generous help the survey would not have been possible.

Overview – Port map



Overview of the container task

During the survey period a total of 18,430 containers moved through the stevedores' terminal gates. Of these, 65% were moved by the transport companies that participated in the survey.

It is estimated that just over 50,000 land-based container movements occurred during the two week period. A movement is any single repositioning of a container and

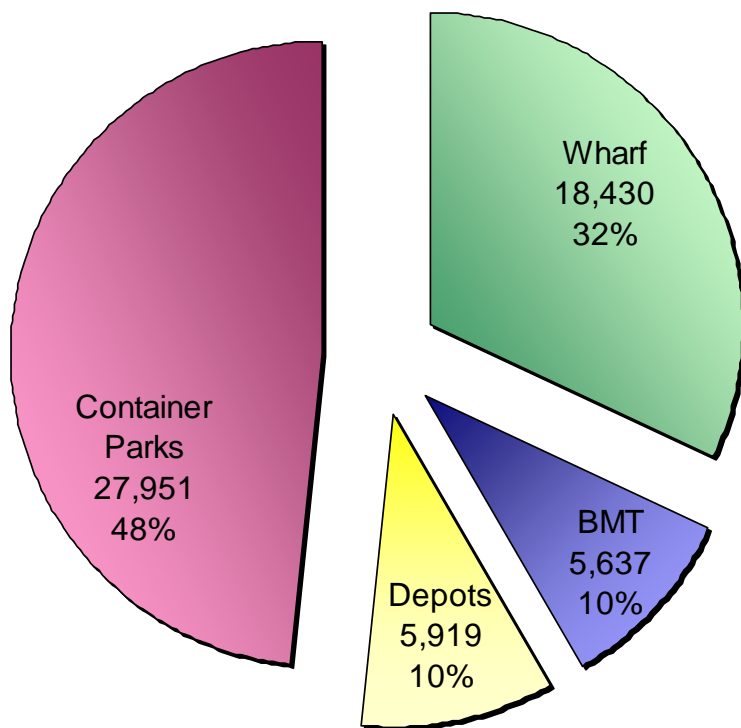
could be part of a multi-leg journey. Just over 5% of the containers were moved by rail. During the survey period, imports exceed exports by a factor of nearly two. A surprisingly large proportion of container movements involved the repositioning of empty containers between container parks, transport depots and customers' facilities.

Survey status	No of firms	All facility moves in main survey	Wharf moves in main survey
Total containers moved		57,940	18,430
		% of all container movements	
Potential participants	26	69%	73%
Firms which provided data	18	63%	65%
Firms which agreed to participate but did not provide data	7	4%	6%
Refused to participate	1	2%	3%

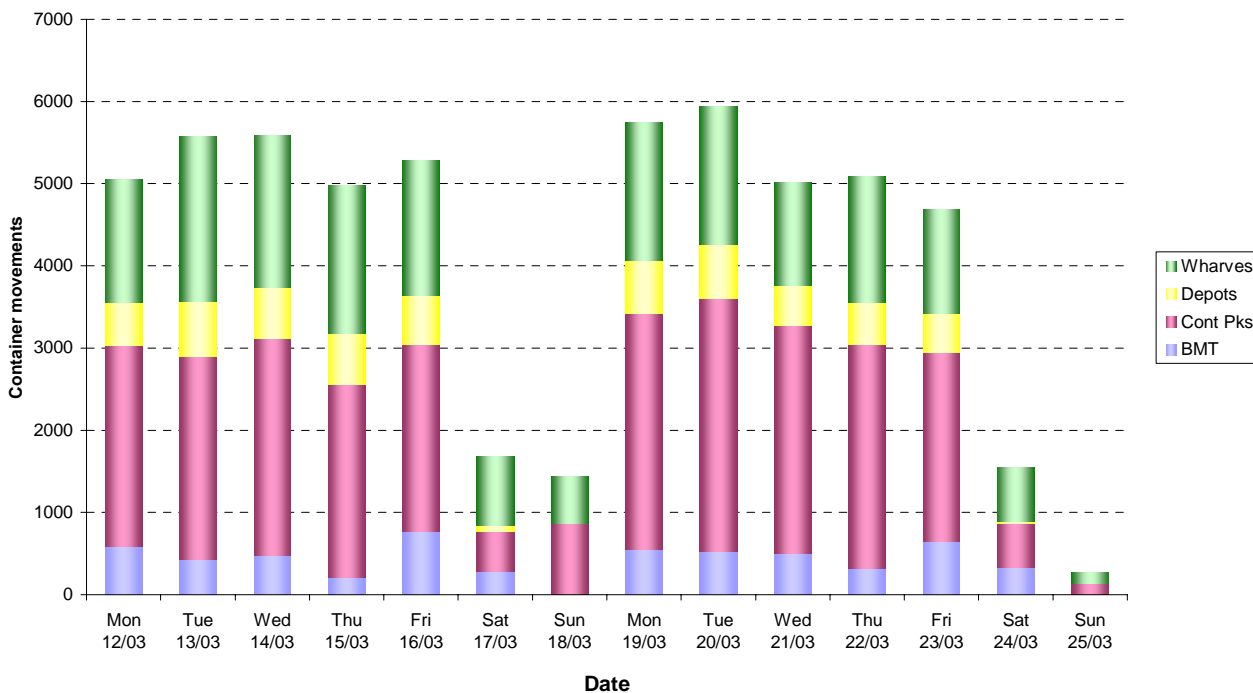
Land transport moves for containers

Type of move	Road	Rail	Total	%
Import-related	20,450	1,250	21,700	42%
Export related	10,200	1,100	11,300	22%
Interim-interim (includes empty container (MT) repositioning)	18,950	50	19,000	37%
Total	49,600	2,400	52,000	
%	95%	5%	100%	

Relative use of facility type



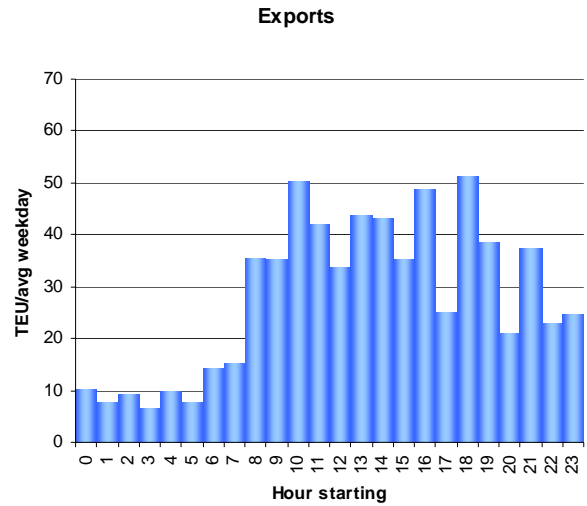
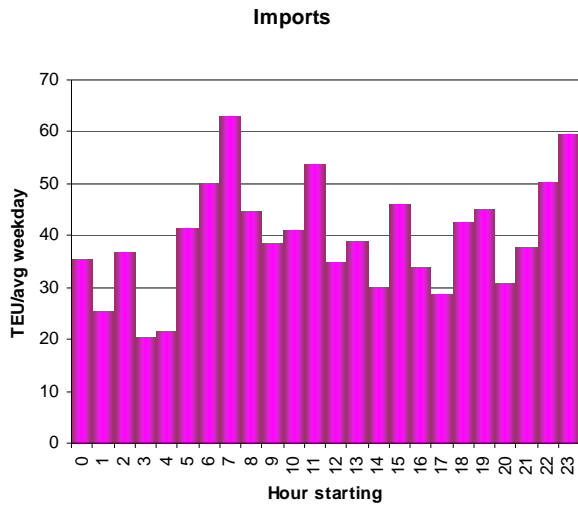
Timing of container movements in and out of facilities



The majority of container movements occurred on weekdays. Over 1,600 containers were handled by the stevedores on an average weekday during the survey period. Container parks handled over 2,600 containers per day on average.

The only significant weekend activity was the movement of empty containers between container parks and the stevedores for re-export.

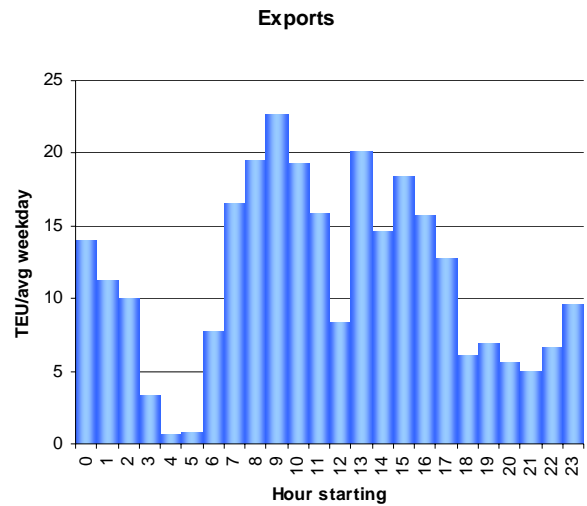
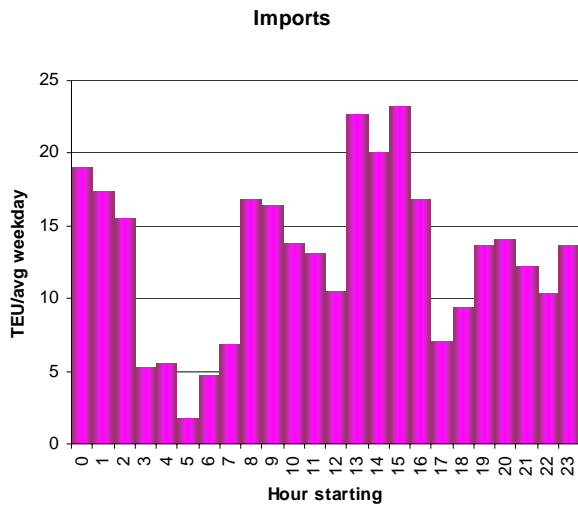
Wharf movements



On an average weekday, there was a clear difference in the pattern of activity at the stevedores. Whereas export movements (that is delivery to the wharf) tend to be focussed on business hours and extend into the evening, import activity (that is collection from the wharf) has a similar intensity of

movement during business and evening hours, but additionally shows a high level of activity throughout the night. Analysis showed that much of night-time pickup activity also involved the staging of the container at a depot awaiting delivery the following day to the customer.

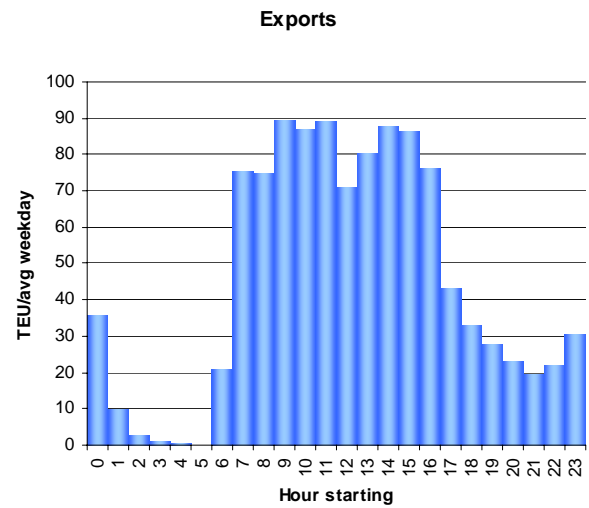
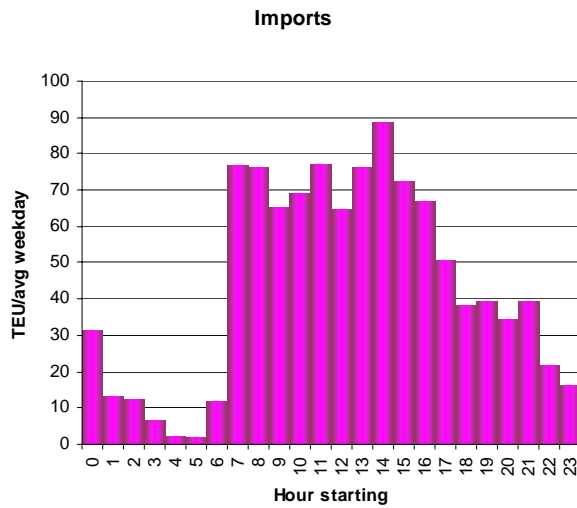
Depot movements



The survey showed that transport company depots on Fisherman Islands operated for extended hours, receiving and dispatching containers. The dispatching activity was somewhat more pronounced during normal business hours and showed a

distinct peak during the period between start of business and lunch-time. Receivals, on the other hand, were more prominent after lunch with a second period of relatively high activity after hours, extending until the early morning hours.

Container Parks

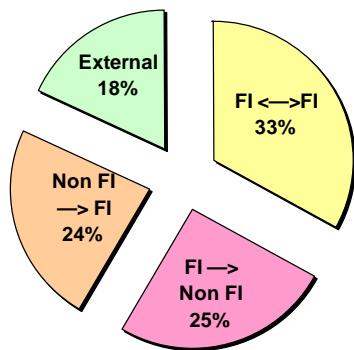


Container parks represent the single largest level of container movement activity, with around 28,000 movements during the survey period. This is about 50% more movements than occurred at the wharves. The survey showed that, contrary to commonly held views that container parks operate only during normal business hours, container parks operated for extended hours during the week with significant bulk runs returning to the wharves occurring at weekends. While activity was very low in the early hours of the morning, receipts occurred throughout the day and night. Dispatches exceeded receipts by a factor of three during the survey period, reflecting significant movements of empty containers to the wharves, both at weekends and during the week.

The high level of activity at container parks, exceeding any other type of facility, reinforces their key role in the container movement chain. Apart from their traditional role of cleaning and repairing containers, they act as a significant buffer between import and export container movements. They not only store empty containers for re-packing for export, but provide a convenient holding area for excess empty containers awaiting re-export.

Container Trip Origins/Destinations

The major focus of activity occurs close to the Port. Over a quarter of all container movements occur within Fisherman Islands, because several transport depots and container parks are located there.

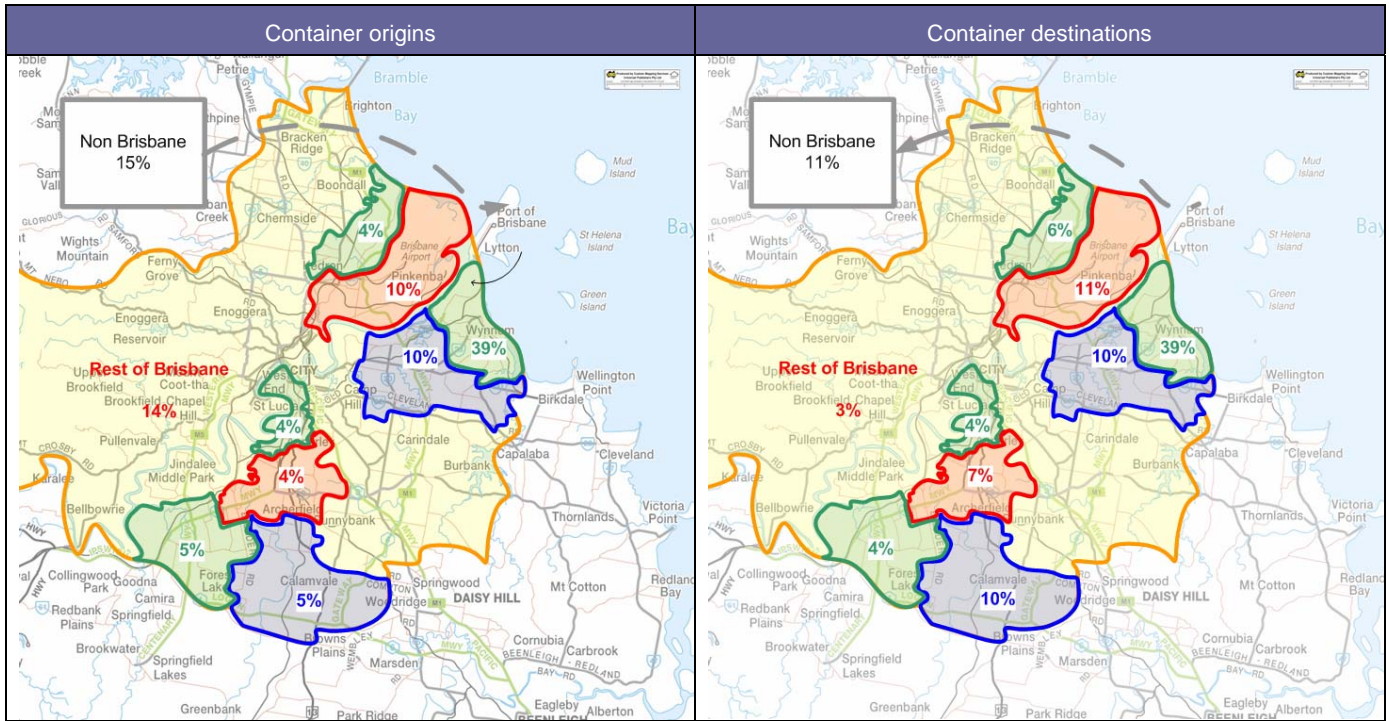


Over 16,000 container movements were undertaken entirely within Fisherman Islands whereas around 24,000 container movements occurred across Captain Bishop Bridge between the port and locations within and beyond Brisbane. Only about 18% of all container movements surveyed did not have at least one end of the trip on Fisherman Islands.

Origin	Destination		
	Port	Non Port	Total
Port	16,373	12,515	28,888
Non port	11,695	8,964	20,659
Total	28,068	21,479	49,547

Of the container trips made to or from Fisherman Islands, between 55 and 60% start or finish in relatively close proximity to the port within the Australian Trade Coast precinct, broadly comprising Hemmant/Lytton, Murarrie/Morningside and Hamilton/Eagle Farm/Pinkenba. The south-western industrial precinct encompassing Rocklea, Archerfield, Darra-Sumner, Wacol and Acacia Ridge accounts for between 15 and 25% of container trips. About 15% of container trips originate outside the Brisbane City area, and about 11% are destined for outside Brisbane.

Maps and tables on the following page show container origins and destinations.



Distribution of trips to/from Fisherman Islands

Brisbane City Council District	Brisbane City Council Ward	Origin	Destination	
Eastern	Chandler	-	1%	
	Doboy	9%	9%	
	East Brisbane	-	-	
	Morningside	-	-	
	Wynnum Manly	34%	29%	
Northern	Enoggera	-	-	
	Grange	-	-	
	Hamilton	8%	10%	
	Marchant	-	1%	
	Northgate	4%	5%	
	Southern	Acacia Ridge	4%	8%
		Dutton Park	4%	3%
Jamboree		-	-	
Moorooka		4%	6%	
Richlands		4%	4%	
Western	Wishart	-	-	
	Pullenvale	1%	1%	
Non-Brisbane		13%	9%	
Unknown		13%	13%	
Total		12,706	9,643	

"-" represents <0.5%

Non-Brisbane

Location	Origin	Destination
Outer Brisbane	22%	28%
Darling Downs	11%	6%
Far North	-	-
Fitzroy	18%	24%
Mackay	3%	5%
Moreton	11%	15%
North West	-	-
Northern	7%	14%
Wide Bay-Burnett	11%	5%
NSW	15%	2%
Victoria	-	-
Western Australia	1%	-

Container staging

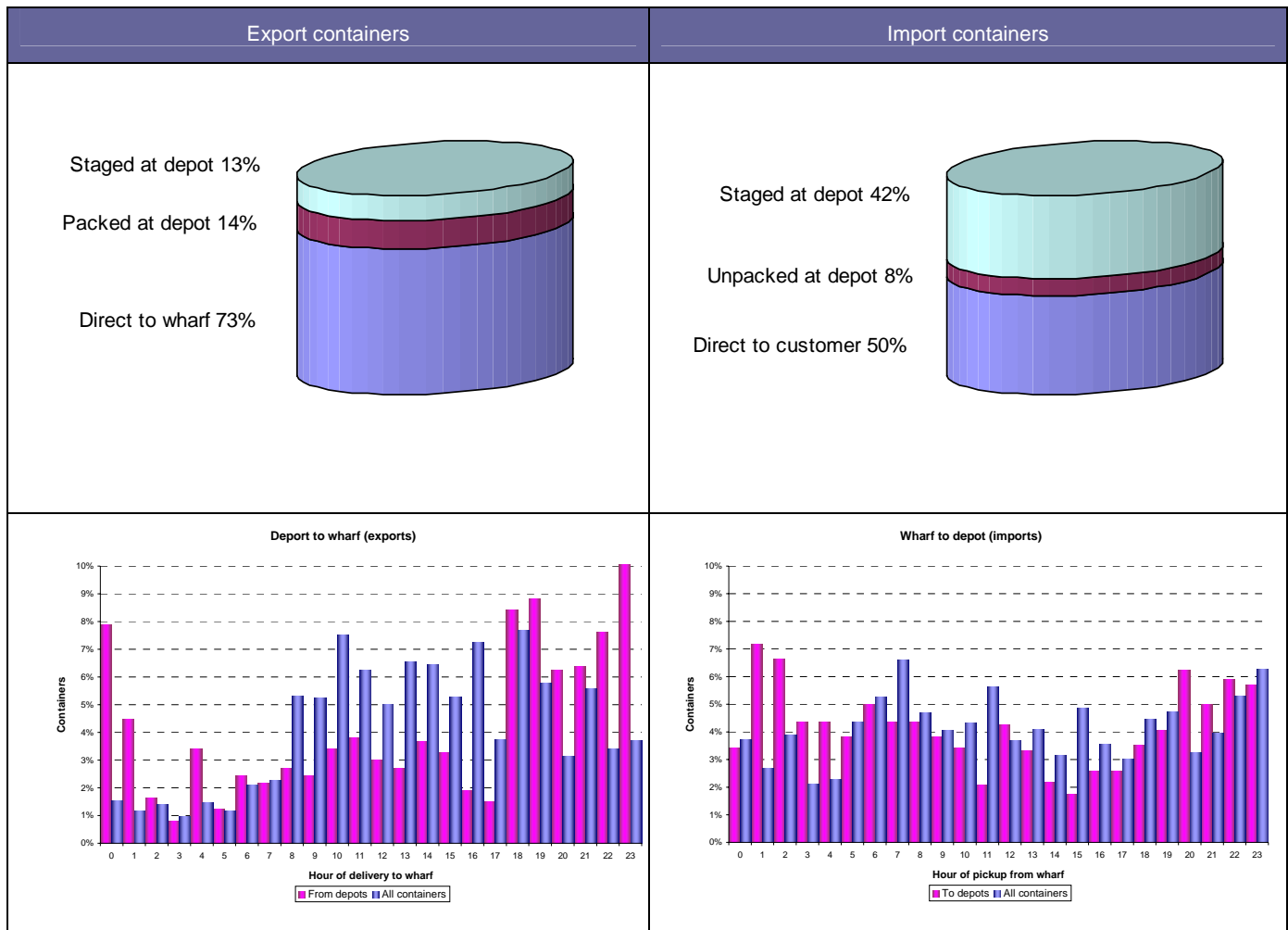
The survey was able to identify containers that were staged at a depot, for imports prior to delivery to a customer or, for exports, en route to the wharf. Overall, about 80% of pack and unpack activities occur at customers' premises rather than dedicated transport company/port services depots. However, there is a clear difference in the staging arrangements between import and export movements. 73% of export containers were delivered to the wharf directly from the customer's or exporter's pack location, whereas only 50% of imports were delivered directly. The role of depots was critical for the import movement, with over 40% of containers being staged through a depot.

Further analysis showed that about half of the import containers staged through depots were collected from the wharf after normal business hours for later delivery to customers' premises for unpacking. The graphs below show the timing of movements between wharves and depots, with the timing of all wharf movements for comparison.

The depots at which packing and unpacking occurred were all located either on Fisherman Islands or in the nearby locations of Hemmant, Lytton, Whyte Island and Morningside. No transport company depots used for staging containers were identified in other industrial areas of Brisbane or in regional areas – in these locations all packing and unpacking activities occurred at customers' premises.

There is a significant use of depots to hold export containers for delivery to the wharves between 6pm and 6am for export movements. Relatively few wharf receipts occur at night and the majority of them are staged through depots. Relatively fewer daytime wharf deliveries are staged through depots.

For imports, there is evidence of the limited use of depots to hold containers collected from the wharves at night for next day delivery to customers. However, the use of depots for the overnight staging of imports is less pronounced than it is for export movements, with their use for staging being spread relatively evenly across the 24-hour period.



Major routes used by container trucks

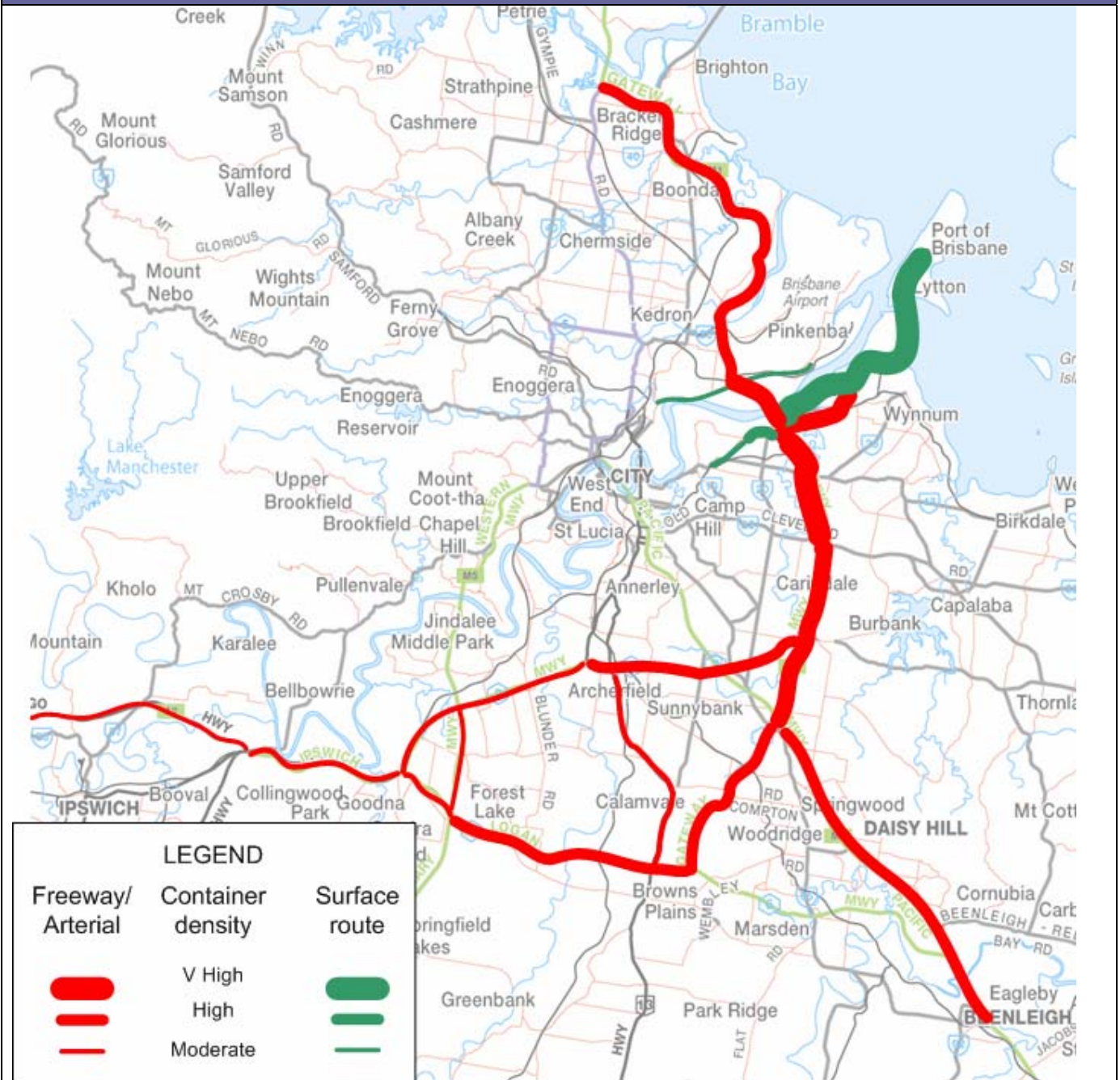
GPS data enabled the evaluation of the major routes used by container trucks. For convenience, roads were classified into four broad types: those in the port precinct, those in the immediately adjacent Hemmant-Lytton area, roads located within or directly feeding industrial areas and linehaul routes which usually cater for longer-distance travel.

While a similar number of trips were made on port roads and on linehaul routes, the linehaul trips are substantially longer, and are made at nearly double the average speed. There was little evidence that trucks were engaged in “rat-running”, that is, using local roads to avoid congestion on major through routes.

The map on the following page indicates the density of truck movements on the major routes chosen. It demonstrates the strong use of roads near the port and the importance of Gateway Motorway in providing access to areas to the north, south and southwest. It also shows that, with the exception of roads near the Port and in the Australian Trade Coast area, container trucks are concentrated on the major freeway and arterial road network, and do not concentrate onto the local road system.

Road Class	% vehicle hours	% of all truck trips	% vehicle kilometres	Average speed
Port precinct	19%	27%	16%	26
Hemmant Lytton	29%	18%	8%	18
Industrial feeders	15%	10%	4%	17
Linehaul	37%	30%	72%	46

Routes used by container trucks



Map base provided by UBD Custom Mapping Services © Universal Publishers Pty Ltd 2007

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