

Melbourne Port Container Origin and Destination Process Mapping



REPORT

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1. Introduction and Background

This report is a follow on study from the Container Origin Destination Study completed in 2002. This initial study was largely focussed on collecting data and information on land based container movements patterns. One of the key findings of this research was that each of the many players involved in land container movements are each motivated to optimise their own operations but not system efficiencies overall. As a result there are a number of inefficiencies in the system that could be streamlined to reduce total costs of the overall supply chain. Some inefficiencies highlighted include:

- a high portion of container truck empty running
- a high number of interim moves linking importers and exporters to the port compared to the ideal scenario of direct links between importers / exporters and the port
- a low portion of rail moves, particularly for metropolitan freight



2. Objectives

Understand commercial drivers

The objectives of this report are to further investigate the inefficiencies identified during the container origin destination survey. This will be achieved by further investigating the commercial motivations of each player and specific cost structures that encourage the inefficiencies observed. This also incorporates a review of decision makers and key players in control of particular freight movements versus the final customer that pays for particular activities. This is used to identify where there are particular mismatches that may be contributing to inefficient practices.

This study aims to compare the current supply chain with the ideal supply chain structure and quantify the commercial drivers behind current inefficiencies and understand why they are occurring. This will serve to highlight opportunities for industry and government to work together to improve the overall competitive position.

Establish Key Performance Indicators (KPIs)

Following this initial investigation the objective is to then identify suitable KPIs to measure the efficiency of the supply chain associated with import and export boxes and to quantify current performance against these KPIs.

3. Approach

This project was undertaken in two stages:

STAGE 1 Process mapping of container supply chain

STAGE 2 Identify suitable KPIs and current performance

3.1 Stage 1 - Process mapping of container supply chain

The container movement patterns selected for process mapping were:

- Import boxes
 - from stevedore by road direct to importer in metro Melbourne
 - from stevedore to importer via transport depot in metro Melbourne
 - from stevedore to importer via road and rail depots to country Victoria
 - from stevedore direct to importer via rail from the on-dock facility
 - from stevedore to metro importer via on-dock and outer metro rail hub
- Export boxes
 - from exporter in metro Melbourne direct by road to stevedore
 - from exporter in metro Melbourne to stevedore via transport depot
 - from exporter in country Victoria direct by road to stevedore
 - from exporter in country Victoria to stevedore via rail depot
 - from exporter in country Victoria via rail to on-dock facility at stevedore
- Empty boxes
 - transported from one rail terminal to another (metro to country Victoria)
 - from importer direct to exporter
 - from importer to exporter via container park

These movement patterns were selected as they were considered to be:

- representative of typical moves
- suitable examples to facilitate comparison of theoretically most efficient patterns with current typical practice (eg direct to importer versus via a transport depot)
- Provide information on likely future scenarios such as the use of metropolitan intermodal facilities.



3.1.1 Costing approach adopted

The costing approach adopted was designed to provide a comparison of the *typical* costs for each of the above movement patterns. Broad assumptions associated with these costs include:

- Twenty foot containers
- Transport by road singly on skel semi-trailers
- Metro importer / exporter located in the middle Melbourne suburbs
- Country importers / exporters located 150 km from Melbourne within proximity of rail.

The costs have been developed to provide an insight into the different costs and efficiencies associated with different supply chains. **They are not intended to be used to benchmark individual companies' supply chains.** Each business will have its own unique operational and commercial factors that will influence the cost structure.

For each of the movement patterns assessed a list of the itemised activities required to complete the overall task was prepared. Typical activities can be broken up into three broad areas:

Transport related	Eg road and rail transport between two points. This also includes vehicle waiting time.
Handling related	These are the costs associated with handling containers at specific locations. These typically involve container forklifts moving containers from road to rail or from on-dock rail on to the Stevedore. This also includes containers being offloaded at transport depots where containers travel via a depot.
Container specific	These are specific costs associated with containers and include container repairs; AQIS and Customs compliance and shipping lines demurrage charges.

Specific activities and associated costs for these are shown in Figure 3-1, Figure 3-2 and Figure 3-3. Other key assumptions for each activity have been listed in these tables.

For each of the selected movement patterns listed in Section 3.1 the associated activities and associated costs have been listed to provide an indication of typical overall costs for each movement type. These activities and costs are detailed in Section 4.1, including specific comments relevant to each movement type.



Costing Variations

These are **typical** cost estimates. It is acknowledged that there will be significant variation between the rates paid by specific operators depending on a range of commercial issues including:

- The size and associated buying power of a particular end user
- Age of equipment being used by operators
- Operator overhead costs and margin expectations
- Management effort devoted to negotiating a better deal
- Specialist staff with detailed knowledge of these logistics activities and an ability to streamline activities and reduce overall costs.

The costs developed here are to enable comparison of the efficiency of different approaches and to better understand the commercial motivations that may be driving current inefficiencies identified in earlier work. These prices are presented as typical costs and need to be considered in the context of there being a wide range of pricing points available in the market place.

■ Figure 3-1 Transport related costs

	Typical cost 20'	Assumptions
Road transport		
stevedore to/from rail/road depot	\$10.00	10 minutes at \$60/hr for a semi carrying one 20' at 14t
stevedore to/from container park	\$20.00	20 minutes at \$60/hr for a semi carrying one 20' at 14t
container park to/from rail/road depot	\$20.00	20 minutes at \$60/hr for a semi carrying one 20' at 14t
road depot to/from rail depot	\$10.00	10 minutes at \$60/hr for a semi carrying one 20' at 14t
rail depot to/from customer	\$20.00	20 minutes at \$60/hr for a semi carrying one 20' at 14t
metro customer	\$45.00	45 minutes at \$60/hr for a semi carrying one 20' at 14t
empty metro repositioning	\$35.00	Discussions with operators
country customer	\$178.50	150km at 8.5c/ntk for a 20' at 14t
overnight stay in Melbourne	\$0.00	Typically costed into trip
Rail transport		
metro (inland port)	\$47.00	70% of round trip cost of \$67
empty metro repositioning	\$20.00	30% of round trip cost of \$67
country	\$117.60	70% of round trip rate of \$173.40 (150km at 5.6c/ntk for a 14t 20' container)
empty country repositioning	\$55.80	30% of round trip cost of \$173.40
Waiting time		
detention	\$65.00	Per hour
at stevedore	\$60.00	60 minutes at \$60/hr for a semi carrying one 20' at 14t
at container park	\$30.00	30 minutes at \$60/hr for a semi carrying one 20' at 14t
at road depot	\$30.00	30 minutes at \$60/hr for a semi carrying one 20' at 14t
at rail depot	\$30.00	30 minutes at \$60/hr for a semi carrying one 20' at 14t
at exporter - pack container	\$60.00	60 minutes at \$60/hr for a semi carrying one 20' at 14t
at importer - unpack container	\$60.00	60 minutes at \$60/hr for a semi carrying one 20' at 14t



■ **Figure 3-2 Handling related costs**

	Typical cost (\$/TEU)	Assumptions
Stevedore		
lift container onto / off semi	\$0.00	Included in shipping rate
lift container onto / off rail	\$25.00	Patrick's rate which includes rail access charge
Road depot		
load container onto / off semi	\$0.00	Typically no charge, cost approximately \$10 off / \$10 on
lift container onto / off rail	\$0.00	Typically no charge, cost approximately \$10 off / \$10 on
detention (\$/hr)	\$65.00	Typical charge per 20' container
overnight storage	\$0.00	Typically 3 days free storage
Rail depot		
receive container from semi	\$15.00	Typical charge per 20' container
despatch container to semi	\$15.00	Typical charge per 20' container
storage	\$0.00	Typically 3 free days before charges apply
Container park		
lift in	\$12.00	Typical charge per 20' container
lift out	\$12.00	Typical charge per 20' container
storage (p/day)	\$1.00	Charge tends to range from 25c to \$5.00 depending on relationship with customer and the number of containers being stored
End user		
pack / unpack container	\$0.00	Typically provides labour and equipment to pack / unpack containers

■ **Figure 3-3 Container specific costs**

	Cost	Assumptions
AQIS steam clean		
20'	\$195	Patrick's rate
40'	\$220	Patrick's rate
Container park		
clean and repair	\$75 - \$85	Typical cost per 20' container
Shipping line		
demurrage <10 days	\$0.00	P&O published rates per day for a standard 20' container
demurrage 10 - 20 days	\$20.00	P&O published rates per day for a standard 20' container
demurrage 20< days	\$40.00	P&O published rates per day for a standard 20' container

3.1.2 Qualitative discussions

To complement this costing information a number of discussions were held with a range of industry players to better understand the business processes and commercial drivers behind particular actions. Organisations consulted are listed in Figure 3-4.

■ **Figure 3-4 Organisations consulted**

Contact(s)	Organisation	Role
David Munro & Colin Jenkins	ANL	Trade Manager, Logistics Manager
Bill Green & Fabien Maffei	Austrak	General Manager, Projects Manager
Murray Allen	Blue Sea Containers	Director
Kevin Chong	CC Containers / Westgate Logistics	Managing Director
Paul Blake	Chalmers	Business Development Manager
Phillip Edgley	COSCO Group (5 Star Shipping)	Manager Southern States
Rob Connelly	Extra Transport Group	Manager
Peter Taylor	Freight Australia	Business Manager - Intermodal
Chris Margin	K&S Freighters P/L	Supervisor
Vince Crisante & Chris Ryan	P&O Nedlloyd Limited	Logistics Manager, Operations and Administration Manager
Adam Holland	P&O Trans Rail	Manager
David Carulla	Pacific National Rail	Intermodal Service Analyst
Gary Camp	Pacific National Rail	Intermodal Manager
Geoff Sundstrum	Patricks – Portlink	General Manager
Jackie Millership	Australian Industry Group	National Manager Trade Policy
Rodney Clarke	Wimmera Container Line	Managing Director

The issues covered in these discussions include topics such as:

- Typical costs for specific activities
- Key decision makers for specific activities that contribute to total container journey
- Business priorities for management attention
- Business constraints that may drive specific decisions, such as shortage of storage capacity
- Financial motivations
- Priorities with regards to container management issues
- Industry trends that have been observed
- Significant changes planned for specific businesses / industries

The outcomes from these discussions are reflected in the findings of this report.

3.1.3 Findings and Opportunities

The results of the costing research and qualitative discussions have been collated in the Findings section of this report. This then leads to the identification of key opportunities to pursue to improve overall efficiencies associated with container handling.

3.2 Stage 2 - Identify KPIs and current performance

Following completion of Stage 1 the report then identifies specific KPIs that can be used to measure performance against the specific opportunity areas identified.

Current performance against the selected KPIs has been recorded to provide a benchmark for future comparisons.

4. Findings

4.1 Typical container journeys

In order to assess the significance of each movement pattern the results of the container OD study were used to identify the relative occurrence of each journey pattern to importers and from exporters, shown in Figure 4-1. Moves to Customs facilities or via AQIS were relatively insignificant in number overall and were not considered as separate moves in this assessment. For example, if a container moved from a Stevedore to AQIS then onto the importer it is considered as a direct move from Stevedore to importer in this table. However, it is recognised that although the portion of these moves is relatively small that they add significant costs and extra management effort and contribute to inefficiencies in the chain.

■ **Figure 4-1 Container journeys to and from importers and exporters**

Container journey	% of container journeys
Import boxes	
From stevedore by road direct to importer in metro Melbourne	17%
From stevedore to importer via transport depot in metro Melbourne	7%
From stevedore to importer via road and rail depots to country Victoria	1%
From stevedore direct to importer via rail from the on-dock facility	3%
From stevedore to metro importer from on-dock rail to outer metro rail hub	<1%
Export boxes	
From exporter in metro Melbourne direct by road to stevedore	17%
From exporter in metro Melbourne to stevedore via transport depot	7%
From exporter in country Victoria direct by road to stevedore	5%
From exporter in country Victoria to stevedore via rail depot	10%
From exporter in country Victoria via rail to on-dock facility at stevedore	2%
Sub total	69%
Other journeys (including interstate moves)	31%
Total	100%

This shows that the movement patterns considered represent 69% of total container journeys to importers and from exporters. The remaining 31% of journeys to importers and exporters include a significant portion of boxes to and from interstate. Other movement types not captured include a variety of movement patterns such as road moves to country importers that are not common.

The most common movement patterns are:

- Direct to importer
- Direct from exporter
- Export from country Victoria by rail
- Import and export via transport depots

This table reinforces findings from the Origin Destination Study that movements to/ from country Victoria are far more significant for export boxes, 17%, compared with only 4% for imports.

■ **Figure 4-2 Movement patterns for empty containers**

Container journey	% of container journeys
Empty boxes	
From one rail terminal to another	24%
From importer direct to exporter	<1%
From importer to exporter via container park	99%

A similar analysis was undertaken for relocation of empty boxes, Figure 4-2. This highlights that almost 100% of empty boxes transit via a container park, in accordance with current industry practice and custom. Of the total container journeys from exporters and to importers for the week 24% of these moves were on rail.

4.2 Packaging versus itemised costing

The initial costing approach used an activity based costing method whereby the individual costs of each particular activity were estimated and then combined to reflect a total cost for each container movement pattern identified. In reality most of these activities are provided in some form of packaged arrangement. In some instances one operator may provide the total range of services linking stevedores to importers / exporters and container parks. In other instances the responsibility for service delivery will be broken down into a number of parts. For example, where a rail leg is involved the rail operators may provide the rail line haul whereas road operator may provide transport services at either end independent of the activity performed by the rail operator.

As a crosscheck to the activity based costing approach used, a range of operators were asked to provide indicative costs for a total door to door packaged service. In most instances this total package was less than the activity based costing approach applied. The main reasons for these

differences are that the fully itemised costs for each specific activity are not fully passed on when a provider is delivering a range of services, for example:

- in country locations costs associated with vehicle waiting time would not typically be passed on to end users.
- often vehicle waiting time in metropolitan areas would also not be fully passed on to end users.
- where containers are diverted via a transport depot, costs associated with the vehicle waiting time, lifting containers on and off the vehicle and container storage overnight may or may not be charged for depending on the particular relationship with each customer and standard practice of that transport operator.

With regards to vehicle waiting time if the industry standard is to charge vehicles out for metropolitan duties at a rate of \$60 per hour, it will not necessarily be costing the operator \$60 per hour to have the vehicle sitting in a queue. As such, when negotiating a fee for a particular range of services there is some room for operators to reduce overall pricing in order to offer the customer a more cost competitive deal.

Typically larger importers or exporters with staff dedicated to management logistics activities will be more likely to negotiate reduced rates and obtain a better contract price overall. In contrast, smaller operators with less ability to devote management resources to these activities are more likely to use ad hoc arrangements with operators charging book rates for specific activities.

4.3 Import boxes – typical journeys and costs

This section investigates typical movement patterns for import boxes.

4.3.1 From stevedore by road direct to importer in metro Melbourne

This movement pattern direct from stevedore by road to the importer in metropolitan Melbourne, Table 4-1, represents the most efficient journey scenario for an import box destined for an importer in metropolitan Melbourne. This shows that the total itemised cost will typically represent \$272. Typically the transport operator is the key decision maker directing freight to go directly to the importer or via their depot. Customs and AQIS controls will influence whether container cleaning or inspection activities need to occur first.

■ **Table 4-1 From stevedore by road direct to importer in metro Melbourne**

Activity	Typical cost	Comments
1 Travel from depot to wharf	\$10.00	
2 Load onto road vehicle at stevedore	\$60.00	Vehicle waiting time, no charge for loading
3 Transport to importer	\$45.00	
4 Offload at importer	\$60.00	Vehicle waiting time, no charge for loading
5 Transport empty to container park	\$35.00	
6 Dehire empty at container park	\$42.00	Handling and vehicle waiting
7 Travel to depot	\$20.00	
Total	\$272.00	
Package cost	\$250.00	8% less

The package cost of \$250 represents the likely comparable costs that would be charged under a contract arrangement that provides all these activities as a package.

Vehicle waiting time represents a significant component of these costs with vehicle waiting time typically charged at \$60 per hour. Typical waiting time components include:

- one hour at stevedore. While this varies by time of day and by terminal, vehicle waiting time remains a factor that will influence the cost of this scenario.
- one hour at the importer while the container is unloaded
- half an hour at the container park

This represents \$150 or 55% of the total journey costs. While the industry has been successful in achieving significant reductions in waiting time over the last few years, this analysis highlights that any further reductions in waiting time should lead to significant further efficiencies within the industry. This is provided reductions in waiting time do not lead to corresponding inefficiencies elsewhere in the supply chain.

The ability of transport companies to direct vehicles directly to importers is influenced by a number of factors such as the ability to obtain timeslots at a time that matches with the timeslot of the importer’s warehouse.

4.3.2 From stevedore to importer via transport depot in metro Melbourne

This container movement pattern from the stevedore to an importer via a transport depot, Table 4-2, is a common movement type that is being encouraged by transport operators and is generally

supported by importers. Transport operators generally favour having the flexibility to tranship containers via their depot. This gives transport operators greater flexibility to:

- use B-double vehicles to collect containers from stevedores and transfer via their depot for later transport to an end user on a semi-trailer.
- facilitate increased operating hours by enabling containers to be collected from the wharf outside of normal import operating hours.
- generally provides greater flexibility for transport operators to manage their fleet utilisation.

■ **Table 4-2 From stevedore to importer via transport depot in metro Melbourne**

	Activity	Typical cost	Comments
1	Travel from depot to wharf	\$10.00	
2	Load onto road vehicle at stevedore	\$60.00	Vehicle waiting time, no charge for loading
3	Transport to road depot	\$10.00	
4	Offload at road depot	\$30.00	Vehicle waiting time, no charge for loading
5	Storage at road depot	\$0.00	
6	Load onto road vehicle at road depot	\$30.00	Vehicle waiting time, no charge for loading
7	Transport to importer in metro	\$45.00	
8	Offload at importer in metro	\$60.00	Vehicle waiting time, no charge for loading
9	Transport empty to container park	\$35.00	
10	Dehire empty at container park	\$42.00	Handling and vehicle waiting
11	Travel to depot	\$20.00	
Total		\$342.00	
Package cost		\$335.00	2% less

Some operators indicated that they had recently commenced presenting price options to clients that encouraged transshipment via transport depots. This pricing structure gave importers the following options:

- a **low price** for product delivered direct from the stevedore to the importers premises.
- a **premium price** where the container needed to be diverted via the transport depot for reasons such as the importers premises not being opened.
- a **mid range price** to operators whereby there was a flat fee for delivery of the container to the importer regardless of whether the container was transported via the depot or direct.

Typically importers would currently be paying a mixture of the low and the premium price depending on what the transport operator was able to achieve for any individual box. When

offered a standard mid range price importers generally favoured this option as it gives them a fixed price. Transport operators also favour this option as it gives them greater flexibility. Again transport operators typically have the greatest influence over the activities occurring on this container path.

Typically the operators do not charge for storage at the depot overnight or even up to a week and they typically do not charge fees where containers are lifted on and off vehicles or transferred onto smaller vehicles. Vehicle waiting time at the depot however is generally passed onto the customer with waiting time typically representing half an hour to drop the container off and half an hour to pick the container up again.

The relatively high use of this container handling approach, approximately 7% of total import / export journeys, highlights the extent to which transport operator depots are being used as a buffer in the system. This buffer helps to cater for different operating hours within the industry but also to facilitate the use of the most appropriate vehicle for each aspect of the job, for example using B-doubles to collect containers from the stevedore and smaller vehicles to deliver individual boxes to smaller importers.

4.3.3 From stevedore to importer via road and rail depots to country Victoria

Given that importers tend to be located in metropolitan Melbourne rather than regional areas, this movement pattern tends not to occur so frequently, representing only 1% of total import / export journeys. Where the importer is located in a regional area they will generally be the decision maker as to whether the freight travels by road or by rail. This decision will be typically influenced by costs that will most likely be affected by the proximity of the importer to rail and the length of the rail haul.

The costs associated with the transfer of the box via the road depot amounts to approximately \$70, Table 4-3. Whether or not the box is transhipped via a transport depot is largely at the discretion of the road transport operator, with this decision being influenced by factors such as the timing of timeslots at the stevedore and the scheduled departure date for the train.

Freight Australia and Pacific National typically allow three days free. Given the extended hours of the rail terminals, 24 hours from 6.30am Monday morning until 6.30 Saturday morning, and the provision of this three days free storage there is generally not the need for transport operators to tranship boxes via their transport depot unless the train is not due for departure within the next three days. After the first three days free storage transport depots charge storage rates at \$60 for the first extra day and up to \$150 per day for after two days with the result that rail terminals are not used for this type of storage other than in exceptional circumstances.



Rail operators indicate that if they were engaged to provide the total package of services from pick-up at the stevedore through to delivery to end user and return the empty the total cost would be approximately \$500, 27% less than the itemised cost.

■ **Table 4-3 From stevedore to importer via road and rail depots to country Victoria**

	Activity	Typical cost	Comments
1	Travel from depot to wharf	\$10.00	
2	Load onto road vehicle at stevedore	\$60.00	Vehicle waiting time, no charge for loading
3	Transport to road depot	\$10.00	
4	Offload at road depot	\$30.00	Vehicle waiting time, no charge for loading
5	Storage at road depot	\$0.00	
6	Load onto road vehicle at road depot	\$30.00	Vehicle waiting time, no charge for loading
7	Transport to metro rail depot	\$10.00	
8	Load onto rail	\$45.00	Handling and vehicle waiting time
9	Rail to country rail depot	\$117.60	
10	Unload from rail depot to road	\$45.00	Handling and vehicle waiting time
11	Transport to importer in country	\$20.00	
12	Offload at importer in country	\$60.00	Vehicle waiting time, no charge for loading
13	Transport empty to country rail depot	\$20.00	
14	Unload to rail	\$45.00	Handling and vehicle waiting time
15	Rail empty to metro rail depot	\$55.80	
16	Unload to road	\$30.00	Vehicle waiting time, no charge for loading
17	Transport empty to container park	\$35.00	
18	Dehire empty at container park	\$42.00	Handling and vehicle waiting included in charge
19	Travel to depot	\$20.00	
Total		\$685.40	
Package cost		\$500.00	27% less

The significant difference in these two costs is most likely in relation to charges for vehicle waiting time. When a total price is being prepared vehicle waiting time is unlikely to be fully accounted for, if at all, particularly in country locations. This reflects the limited opportunities in remote locations for the vehicle to be performing other work.

4.3.4 From stevedore direct to importer via rail from the on-dock facility

Again the concentration of importers in the metropolitan areas means that this type of move is not as typical as the reverse of this move would be for exports. The package price of \$415, Table 4-4,

is again significantly less than the itemised cost which is most likely to reflect the exclusion of costs associated with vehicle waiting time not fully passed onto end users.

■ **Table 4-4 From stevedore direct to importer via rail from the on-dock facility**

	Activity	Typical cost	Comments
1	Onload to rail at stevedore	\$25.00	Handling and rail access charge
2	Rail to country rail depot	\$117.60	
3	Unload from rail depot to road	\$45.00	Handling and vehicle waiting time
4	Transport to importer in country	\$20.00	
5	Offload at importer in country	\$60.00	Vehicle waiting time, no charge for loading
6	Transport empty to country rail depot	\$20.00	
7	Unload to rail	\$45.00	Handling and vehicle waiting time
8	Rail empty to metro rail depot	\$55.80	
9	Unload to road	\$30.00	Vehicle waiting time, no charge for loading
10	Transport empty to container park	\$35.00	
11	Dehire empty at container park	\$42.00	Handling and vehicle waiting time
12	Travel to depot	\$20.00	
Total		\$515.40	
Package cost		\$415.00	19% less

4.4 Export boxes – typical journeys and costs

This section assesses the costs and activities associated with the typical movements patterns for export boxes.

4.4.1 From exporter in metro Melbourne direct by road to stevedore

This is a common movement pattern that represents 17% of total container journeys to importers and from exporters.



■ **Table 4-5 From exporter in metro Melbourne direct by road to stevedore**

Activity	Typical cost	Comments
1 Travel from depot to container park	\$20.00	
2 Load empty	\$42.00	Handling and vehicle waiting time
3 Transport to metro exporter	\$35.00	
4 Load container at metro exporter	\$60.00	Vehicle waiting time, no charge for loading
5 Transport to stevedore	\$45.00	
6 Offload at stevedore	\$60.00	Vehicle waiting time, no charge for loading
7 Travel back to depot	\$10.00	
Total	\$272.00	
Package cost	\$250.00	8% less

Issues associated with transporting export boxes by road are very similar to those for import boxes in metropolitan Melbourne. Exporters on average are larger than importers with large exporters tending to have resources dedicated to managing transport and logistics activities and tending to be focused on ensuring the most efficient process is used for the export of their product.

4.4.2 From exporter in metro Melbourne to stevedore via transport depot

■ **Table 4-6 From exporter in metro Melbourne to stevedore via transport depot**

Activity	Typical cost	Comments
1 Travel from depot to container park	\$20.00	
2 Load empty	\$42.00	Handling and vehicle waiting time
3 Transport to metro exporter	\$35.00	
4 Load onto road vehicle at metro exporter	\$60.00	
5 Transport to road depot	\$45.00	
6 Offload at road depot	\$30.00	Vehicle waiting time, no charge for loading
7 Storage at road depot	\$0.00	
8 onload to road vehicle at road depot	\$30.00	Vehicle waiting time, no charge for loading
9 Transport to stevedore	\$10.00	
10 Offload at stevedore	\$60.00	Vehicle waiting time, no charge for loading
11 Travel from stevedore to depot	\$10.00	
Total	\$342.00	
Package cost	\$335.00	2% less

As for import boxes, export boxes from metropolitan Melbourne via a transport depot represent 7% of journeys to and from importers and exporters. There are similar issues associated with this road move in metropolitan Melbourne via a transport depot for exports as there were for imports, such as the use of transport depots to provide increase flexibility and the preference of transport operators to use this option at their discretion.

Typically exporters have limited control over the movements of containers direct or via transport operator depots, unless they are a large exporter and are in control of these activities themselves.

The equal frequency of this movement pattern compared with that for exports suggests that exporters in metropolitan Melbourne are no more successful at managing this process than importers.

4.4.3 From exporter in country Victoria direct by road to stevedore

■ **Table 4-7 From exporter in country Victoria direct by road to stevedore**

Activity	Typical cost	Comments
1 Travel from depot to container park	\$20.00	
2 Load empty	\$42.00	Handling and vehicle waiting time
3 Transport empty to regional exporter	\$178.50	
4 Load empty at regional exporter	\$60.00	Vehicle waiting time, no charge for loading
5 Transport to stevedore	\$178.50	
6 Overnight stop in Melbourne	\$0.00	
7 Offload at stevedore	\$60.00	
Total	\$539.00	
Package cost	\$490.00	9% less

This movement pattern, Table 4-7, tends to be more common for export products given that a large portion of Victoria’s exports are commodities produced in regional Victoria compared to imports. The selection of road or rail transport is generally decided by the exporter based on the most cost efficient scenario in keeping with their overall processes. This will consider factors such as proximity to suitable rail infrastructure and services in the country as well as the logistical structure of the company such as whether product is prepared for export in the country or transferred to Melbourne for consolidation and preparation for export.

4.4.4 From exporter in country Victoria to stevedore via rail depot

■ **Table 4-8 From exporter in country Victoria to stevedore via rail depot**

Activity	Typical cost	Comments
1 Travel from depot to container park	\$20.00	
2 Onload empty	\$42.00	Handling and vehicle waiting time
3 Transport empty to rail depot	\$20.00	
4 Offload empty onto rail	\$45.00	Handling and vehicle waiting time
5 Rail to country rail depot	\$55.80	
6 Offload from rail depot to road	\$45.00	Handling and vehicle waiting time
7 Transport to Exporter in country	\$20.00	
8 Load at Exporter in country	\$60.00	Vehicle waiting time, no charge for loading
9 Transport full to country rail depot	\$20.00	
10 Offload to rail	\$45.00	Handling and vehicle waiting time
11 Rail full to metro rail depot	\$117.60	
12 Offload container to road	\$45.00	
13 Transport to stevedore	\$10.00	
14 Offload at stevedore	\$60.00	Vehicle waiting time, no charge for loading
Total	\$605.40	
Package cost	\$450.00	26% less

Table 4-8, represents the most common move for export product from regional Victoria, 10% of total container journeys. Typically freight will be transferred from the country to meet scheduled ship sailing's. As such there is not often the need for this export product to be transferred via a road depot in metropolitan Melbourne. Rather it will be transferred directly from the rail depot to the stevedore.

For rail transport the itemised costs will rarely be applied with most exporters using rail likely to be large users with negotiated contract prices. Costs associated with vehicle waiting time, particularly in country regions, is unlikely to be fully charged. The high costs associated with the activity based costing approach highlight the additional handling requirements for rail compared with road. For this journey pattern to be cost effective it is essential that these additional handling requirements are streamlined to minimise the costs of these activities as per the packaged cost.

4.4.5 From exporter in country Victoria via rail to on-dock facility at stevedore

This represented approximately 2% of total container journeys to and from importers and exporters and will have increased marginally following the opening of P&O's on-dock rail facility.



■ **Table 4-9 From exporter in country Victoria via rail to on-dock facility at stevedore**

Activity	Typical cost	Comments
1 Travel from depot to container park	\$20.00	
2 Onload empty	\$42.00	Handling and vehicle waiting time
3 Transport empty to rail depot	\$20.00	
4 Offload empty onto rail	\$45.00	Handling and vehicle waiting time
5 Rail to country rail depot	\$55.80	
6 Offload empty from rail depot to road	\$45.00	Handling and vehicle waiting time
7 Transport to Exporter in country	\$20.00	
8 Load at Exporter in country	\$60.00	Vehicle waiting time, no charge for loading
9 Transport full to country rail depot	\$20.00	
10 Offload to rail	\$45.00	Handling and vehicle waiting time
11 Rail full to stevedore	\$117.60	
12 Offload at stevedore	\$25.00	Rail access and handling charges
Total	\$515.40	
Package cost	\$415.00	19% less

The costs presented in Table 4-9 are based on use of Patrick on-dock rail facility given that P&O are currently charging \$80 – 90 per box for the use of their facility. These rates are currently deterring use of the P&O facility other than the rice train and the train from Adelaide for which P&O had existing contracts and it is unlikely that these handling rates will apply.

It is more cost effective for industry to use Pacific National or Freight Australia’s facilities and transport boxes by road to the Stevedores at \$60 per box than pay P&O’s handling fee.

The use of Patrick’s on-dock rail facility remains steady with CRT continuing to offer a port shuttle service and expansion of services to include services to Griffith and expansion of the Adelaide service to connect with services from Bowman in South Australia. Use of P&O’s facility is being used currently for the rice train and the land bridge service to / from Adelaide. It is not expected to increase until Coode Road is closed and P&O can improve their efficiency and they are able to reduce prices to a market competitive position.

4.5 Empty boxes – typical journeys and costs

Costs associated with the handling of empty boxes are easily overlooked, particularly as importers and exporters typically have limited control over these costs. Generally where a shipper has a contract arrangement with a transport operator this will include costs associated with handling empties. A corresponding packaged cost is generally not applicable to empty boxes alone.

4.5.1 From one rail terminal to another

Twenty four percent of all empty container moves from importers and to exporters are estimated to occur on rail from data collected on the Container OD study.

Table 4-10 highlights that there is a significant cost associated with the transport of empty containers to regional Victoria. Typically there is no charge for storage of containers at country depots with shippers typically responsible for paying the freight for empty box relocation to / from the country, depending on the size of the transport task and the specific contracts. Given these significant costs it is understandable that shipping lines and shippers are generally not willing to incur these costs and transfer containers to country areas on spec waiting for them to be used. Shipping lines and shippers would rather transfer containers to country areas as they are required.

■ **Table 4-10 From one rail terminal to another (eg. rates Melbourne to country Victoria)**

Activity	Typical cost	Comments
1 Lift out at Container park	\$42.00	Handling and vehicle waiting time
2 Transfer to rail by road	\$10.00	
3 Load onto rail depot	\$30.00	Handling and 15 min vehicle waiting time
4 Transport to rail depot	\$55.80	
5 Offload at rail depot	\$30.00	Handling and 15 min vehicle waiting time
6 Store at country rail depot	\$0.00	
Total	\$167.80	
Package cost	n/a	

4.5.2 From importer to exporter via container park

Almost 100% of empty containers are transhipped via a container park before being released to an exporter.



■ **Table 4-11 From importer to exporter via container park**

	Activity	Typical cost	Comments
1	Load empty onto road vehicle at importer	\$30.00	Only 30 minutes required to load because container is empty
2	Transport to container park	\$35.00	
3	Offload at container park	\$42.00	Handling and vehicle waiting included in charge
4	Storage at container park	\$1.00	
5	Load onto road vehicle at container park	\$42.00	Handling and vehicle waiting included in charge
6	Transport to exporter	\$35.00	
7	Offload at exporter	\$30.00	Only 30 minutes required to unload because container is empty
Total		\$215.00	
Package cost		n/a	

Table 4-11 highlights that there are significant costs associated with this industry standard practice of transferring containers via a container park between each use. Any actions to reduce this cost by streamlining activities will have a significant impact on total costs for each container journey.

4.5.3 From importer direct to exporter

This movement pattern rarely occurs.

- **Table 4-12 From importer direct to exporter**

Activity	Typical cost	Comments
1 Load empty onto road vehicle at importer	\$30.00	Only 30 minutes required to load because container is empty
2 Transport to exporter	\$35.00	
3 Offload at exporter	\$30.00	Only 30 minutes required to unload because container is empty
Total	\$95.00	
Package cost	n/a	

The \$95, shown in Table 4-12, to transfer a container directly from an importer to an exporter compared to the \$215 to undertake this transfer via a container park again highlights the significant additional cost associated with transfer to and from container parks. While the container park provides a useful function in some instances there are likely to be opportunities to streamline this activity in many instances. Activities that are undertaken at container parks include:

- Inspection by container park operator to identify container repair activities required and provide a quote to the shipping line. The shipping operator will have provided a specification of the standard of repairs required for the container. This standard will vary depending on specific shipping operator standards and what the container is to be used for on the next journey, for example there are special food quality standards.
- Review of quote, including inspection of container, by an independent auditor.
- Undertake the repairs
- Container is stored until required again
- When the container enters and exits the container park the container park's systems automatically assign the container number to the shipping. Typically shipping lines provide specification on the type of container that is required with the container park selecting the most appropriate container based on requirements and ease of access.

4.6 Integrated metro rail terminal

4.6.1 From stevedore to metro importer from on-dock rail to metro intermodal terminal

This example, Table 4-13, has been included as a theoretical example of what could be achieved in an ideal scenario with use of on-dock rail and an integrated metro intermodal terminal, with container park on site. In theory this is what is proposed by Austrak but this facility is not yet fully operational in terms of rail services and container park operations. While CRT has been providing a direct rail service for some time there is no container park operating on this site.

Developments at Austrak’s facility and planned developments for a Dandenong intermodal facility mean that this type of movement is likely to become more common.

■ **Table 4-13 From stevedore to metro importer from on-dock rail to metro intermodal terminal**

Activity	Typical cost	Comments
1 Onload to rail at stevedore	\$25.00	Handling and rail access charge
2 Rail to metro rail hub	\$47.00	
3 Unload from rail depot to road	\$45.00	Handling and vehicle waiting time
4 Transport to importer	\$20.00	
5 Offload at importer	\$60.00	Vehicle waiting time, no charge for loading
6 Transport empty to metro rail hub	\$20.00	
7 Dehire empty at container park	\$42.00	Handling and vehicle waiting time
Total	\$259.00	
Package cost	\$230 - 250	4 - 10% less

Note: It is assumed that the container park is located at the rail hub

These costs highlight that rail has a potential to compete effectively with road operations from a cost perspective for customers who are conveniently located to metro intermodal terminals. While there are some additional costs associated with rail there are also significant savings, including:

- no vehicle waiting time at the stevedore
- reduced cost to transport the empty back to the container depot given that the container would go back to the container park at the metro rail depot rather than back to western Melbourne.

Typically the importer or their freight forwarder will decide whether rail or road transport is used. This will typically be influenced by factors such as the proximity of the importer to a conveniently located intermodal facility. Also, if the freight is required urgently it is more likely to be transported directly by road rather than rail.

The costs provided here are somewhat theoretical given that no one is providing this exact service at this stage. It is included to provide a comparison of likely costs compared with road costs to metropolitan customers. The final packaged cost will be determined by market forces and will likely be established against the benchmark of road costs with maybe some further reduction to compensate for reduced flexibility.

It needs to be highlighted that this scenario will only be suitable for some end users, such as those located close to a metro intermodal facility and those where use of rail and associated changes to the service scenario suits their own operations. The service package offered by rail is likely to be an advantage or a disadvantage depending on individual requirements.

4.7 Regulatory compliance costs

Importers and exporters bear significant costs to meet regulatory requirements associated with Customs and AQIS.

4.7.1 Customs

With regards to compliance with Customs regulations, physical container moves and checks occur before the Stevedore releases the container, with Customs aiming to be in the background of the importing process. Customs typically check 10% of import containers. The process occurs as follows:

- The stevedores are paid by Customs to lift the containers and place in a stack for the Customs transport company to collect and take to the Customs facility
- Customs usually spend about 45 minutes checking the box unless it has to be taken off the truck, then it would take about an hour.
- The box is then returned to the stevedore
- Total turn around time for the process, including administration, typically aims to not exceed 48 hours.

The costs associated with these activities are met by Customs with the Import Processing Charge of \$44 per entry going towards these costs.

Customs endeavour to have all necessary boxes checked within the 3-4 days free storage time provided by Stevedores for import boxes, with this typically being achieved for 95% of boxes.

The system should be straight forward but sometimes futile trips are made by transport companies to collect boxes that are not yet cleared by Customs. This costs the importer a transport charge.

According to Customs, importers could avoid these futile trips by ensuring that they check the Sea Cargo Automation System through their broker which will state whether the box is ready for pick up or not. The occurrence of these futile trips appears to be decreasing although no specific data is available.

Difficulties can also occur with the late reporting of cargo. Customs require that all import boxes be reported 24 hours before the ship berths. Sometimes the shipping lines do not report the containers within this time frame with the result that it is longer before the boxes will be released. In this case the importer pays significant penalties to cover storage fees after the stevedore's free storage period is over. Customs estimate 2-3% of all boxes checked have this problem.

4.7.2 AQIS inspections

AQIS activities most commonly referred to are container inspections resulting in the need for containers to be washed. Currently the only suitable facilities are those operated by Patrick's, with P&O aiming to have drive through washing facilities available by the end of June 2003. Current fees for container washing exclusive of GST are \$195 for a 20' box and \$220 for a 40' box plus transport costs to the facility of up to \$200 per box being charged by some major operators.

In order to try and avoid these costs some importers are now instructing their overseas agents to ensure that boxes are washed prior to export to Australia.

During discussions it was suggested that regardless of the state of the container, AQIS inspectors would always direct a container to be washed if it was presented on a flat top trailer, given that the bottom of the container could not be adequately inspected. While skel trailers are most common, there is a significant advantage to importers if the use of flat top trailers can be avoided.

4.8 Overview of costing findings

A summary of the costs for different supply chains detailed in the previous sections is shown in Table 4-14. These options have been costed to facilitate comparison of the relative efficiency of different supply chains. The detailed assumptions used to develop these costs are shown in the tables in Section 3.1.1. with the key assumptions being:

- Twenty foot containers
- Transport by road singly on skel semi-trailers (\$60 per hour)
- Metro importer / exporter located in the middle Melbourne suburbs
- Country importers / exporters located 150 km from Melbourne within proximity of rail.

Given the unique operational and commercial aspects of specific businesses these costs are not considered suitable to use to benchmark performance of a specific company.

■ **Table 4-14 Summary of container movements patterns and costs**

Container journey	No. of times container is handled	Itemised cost approach	Package cost approach	% discount
Import boxes				
From stevedore by road direct to importer in metro Melbourne	7	\$272.00	\$250.00	8%
From stevedore to importer via transport depot in metro Melbourne	11	\$342.00	\$335.00	2%
From stevedore to importer via road and rail depots to country Victoria	19	\$685.40	\$500.00	27%
From stevedore direct to importer via rail from the on-dock facility	12	\$515.40	\$415.00	19%
From stevedore to metro importer from on-dock rail to outer metro rail hub	7	\$259.00	\$230 - 250	4 - 10%
Export boxes				
From exporter in metro Melbourne direct by road to stevedore	7	\$272.00	\$250.00	8%
From exporter in metro Melbourne to stevedore via transport depot	11	\$342.00	\$335.00	2%
From exporter in country Victoria direct by road to stevedore	7	\$539.00	\$490.00	9%
From exporter in country Victoria to stevedore via rail depot	14	\$605.40	\$450.00	26%
From exporter in country Victoria via rail to on-dock facility at stevedore	12	\$515.40	\$415.00	19%
Empty boxes				
From one rail terminal to another (eg. rates Melbourne to country Victoria)	6	\$167.80	n/a	n/a
From importer direct to exporter	3	\$95.00	n/a	n/a
From importer to exporter via container park	7	\$215.00	n/a	n/a

Comparison of some of the different movement pattern options in Table 4-14 shows:

- Metropolitan movements direct is typically 20 – 25% cheaper than via a transport operators depot
- Use of rail for metropolitan container movements has potential to be more cost effective than road moves, provided there is sufficient volume and integrated facilities such as a container park at the rail terminal. The cost effectiveness of using metropolitan intermodal facilities will be influenced by the proximity of importers and exporters to the intermodal facility and the ability to incorporate a range of other container management services such as storage of empties and container repairs to reduce the total number of trips.
- Overall the use of on-dock rail is more cost effective than the use of off-dock rail using road transport from Pacific National’s or Freight Australia’s terminals.
- The use of rail to a country location is more cost effective than road provided that activities can be streamlined to minimise the impacts of additional handling requirements compared to road and there are sufficient volumes to justify the high fixed costs of operating rail.

4.9 Other factors influencing costs and system efficiency

4.9.1 Influence of shipping lines

Shipping lines have significant influence over movement patterns of containers, particularly in relation to movements of empty containers. Typically, shipping lines own containers or hire them, and make them available to shippers as part of a package to ship freight. There are some instances of importers and exporters owning their own containers however this is not generally industry practice as it creates problems with having to return containers.

At any one time 65% of a shipping lines container fleet is typically unused and will be in a container park incurring storage fees. Container repair and upgrade costs are also a significant cost of container management for shipping lines. To minimise these costs shipping lines typically engage logistics staff to closely manage these activities and reduce these costs wherever possible.

Shipping lines typically have contracts with one to three container parks in metropolitan Melbourne and they will require all empty containers to be returned to the container park that they nominate. Importers pay for the container to be transported back to the container park and received by the container park. With regards to exports the exporter will be notified as to which container park to collect the box from. They will then pay to collect the box and transport it to their premises. Given the potential transport savings that would be available to industry if shipping lines were to spread their business across a number of dispersed container parks there is an opportunity for industry to work together to establish a solution. *It is likely that once other container park locations become available, it will become a norm within the industry for shipping lines to use a variety of different locations, given the competitive nature of the shipping industry and the need for competitive advantage.*

Container parks provide a number of services to shipping lines including:

- storage of empty containers
- repairs of damaged containers
- upgrade to food quality or other specific standards as required for the exporter
- tracking of container movements and allocation and transfer to and from the shippers
- provision of a quality assurance function to verify that the container is in a suitable condition both from a safety perspective and also to ensure the integrity of the shipped goods to their destination.

The typical cost for the transfer of a container from an importer back to a container park and onto an exporter has been estimated at \$215. This is a significant cost which is borne by the importers and exporters. In contrast it is estimated that a container could be shipped directly from an importer to an exporter for \$95 per trip, a saving of \$120 per trip.

While some examples were given of containers moving directly from importer to exporters this is very limited and primarily occurs where:

- a transport operator has a contract for both an importer and an exporter located nearby and they identify that there is a potential synergy and facilitate the direct transfer of the box
- the one company is importing and exporting product, Pilkington was sighted as an example where this occurs with them importing product from New Zealand and also exporting product to New Zealand. In this instance the container is checked for structural stability and repair requirements at a container park in New Zealand.
- a transport operator may also offer an unpacking and packing facility and thus may be able to reuse the same container. For example, P&O perform this activity at their own facility adjacent to Swanson Dock. In this instance P&O are able to take responsibility that the container is in good order. They outlined that they would be reluctant at a third party premises.

Shipping lines administration systems are not well suited to direct shipment of containers from importers to exporters. Container details are automatically recorded when a container is processed through a container yard but where a container is transferred directly a manual intervention is required and as such it is not generally encouraged. Persuading the shipping lines to alter their systems and procedures to be more flexible to cater for direct transfers is likely to generate significant benefits to the industry sector as a whole.

Some shipping lines indicated that where direct transfer of containers does occur they require the exporter to sign a waiver to void the shipping line of responsibility should there be a problem with the freight that could potentially have been contributed to from a container being in poor order. Given the potential savings available to industry through increasing this practice there is an opportunity for an industry working group to be formed to establish an acceptable solution to this issue with appropriate allocation of risk and responsibilities.

The current situation where shipping lines do not typically pay for transport to or from container parks means there is no real incentive for shipping lines to move away from the status quo. Conversely, this also means that it is not a significant barrier given that the shipping lines costs are generally not influenced by site location.

Shipping lines tend to prefer to concentrate storage of their empty containers in a few container parks as this provides them with negotiating power to obtain the best price for storage of empties. Having fewer locations also simplifies the management of their container fleet. However given sophistication of IT systems and that containers would still be available within the metropolitan Melbourne area, this appears to be an issues that could be worked around.

Although this cost of transferring a container to and from a container yard may be a significant cost to an importer or an exporter, this is not generally a significant part of the decision when selecting a shipping line. Decisions regarding which shipping line to use will often be made by a freight forwarder on behalf of the actual shipper and will focus on factors such as shipping rates and sailing schedules, not location of depot in Melbourne. For example, there may be advantages to an importer if the shipping line has container parks located near the importers premises but this is not currently considered. This may be contributed to by the current concentration of container parks in the western suburbs and the lack of other alternatives. There is an opportunity to educate importers and exporters regarding these costs and to work with container park operators to establish facilities in a variety of locations suited to industry, such as north and south east of Melbourne.

4.9.2 Container park impacts

As discussed previously container parks are critical links in the managing of empty containers. Container parks typically operate on very low margins with the most profitable business coming from repair of containers and upgrading of containers. The storage price paid for container storage tends to range from 25¢ to \$5 per day, depending on the customer being serviced and the number of containers being stored. Given relatively low margins overall, container parks are motivated to optimise their operations by only opening for limited hours, typically from 7:00am to 4:00pm.

Container parks are typically located in the immediate vicinity of dock areas or inner western suburbs. This does not reflect the spread of importers and exporters throughout metropolitan Melbourne with significant numbers of importers / exporters located in the outer south eastern suburbs, northern suburbs and western suburbs of Melbourne.

The establishment of container parks in these outer south eastern suburbs and northern suburbs to service industries located there would significantly reduce costs associated with transfer of empties to and from container parks in the western suburbs.

Container parks' primary customers are shipping lines with shipping lines directing importers and exporters which container parks to take containers to and from. Establishment of container parks in new regions would require co-operation from shipping lines to agree to use these facilities. Critical mass is critical to the commercial viability of container parks.

Given that importers and exporters are the prime beneficiaries of reduced transport costs to and from container parks it may be appropriate for industry groups representing these customers to present and promote this option to shipping lines and container park operators.

4.9.3 On-dock rail

Current costs associated with transferring boxes from the rail head to stevedore are as follows:

- Patrick's - \$25 per TEU
- P&O - \$80 per TEU
- Freight Australia or Pacific National - approximately \$60 per TEU for road transport to the terminal

At Patrick's facility a container transported in by rail must be taken off rail using a container fork and stacked temporarily beside the rail terminal then later transferred to a stack in the stevedores yard. The \$25 charge represents the cost associated with this activity compared to a road vehicle drop off where the straddle crane picks the container directly off the vehicle and loads it directly to the main container stack. There is no charge for road drop offs.

At P&O's facility containers received by rail must currently be transferred from P&O's rail terminal via a road vehicle to the stevedore. The \$80 per TEU charged for this activity is more expensive than the typical charge to transfer a container from Pacific National or Freight Australia at \$60 per TEU. As such P&O do not currently have any additional rail customers other than the rice train and the Adelaide train which were existing contracts prior to the on-dock rail.

With regards to management of empty containers through on-dock rail Patrick are planning to provide rail access to their container park adjacent to their stevedore and rail terminal to enable empty containers to be loaded directly on and off rail.

Empty containers required at the P&O facility must currently be transferred by road in and out of the depot.

Turnaround time for a train is typically three hours, depending on the size of the train. This provides a maximum of seven rail timeslots per day for each on-dock rail facility. However additional infrastructure could be applied to increase capacity and reduce turn around time should this become an issue. Other infrastructure constraints such as the Footscray Road crossing also contribute to capacity constraints of on-dock rail.

P&O's use of on-dock rail is unlikely to expand until plans to close Coode Road are implemented over the next 18 months and improved efficiencies can be achieved handling containers from P&O's rail terminal to their stevedoring facility.

4.9.4 Issues associated with importers and exporters

Discussions with Australia Industry Group highlighted that to date there has generally been a significantly higher focus on exporters rather than importers, reflecting the high contribution from exporters to Australia's GDP compared to importers. With regards to exporters approximately 5%

of exporters represent 80% of the export traffic. While comparative statistics are not available for import traffic it is expected that importers will be more dispersed. While these is expected to be a few large importers of retail goods there is then likely to be a dispersed range of importers representing manufacturers and smaller retail outlets.

Large importers and exporters are able to employ dedicated resources to manage the logistics of import and export operations and focus on improving processes and reducing overall costs. However smaller operators tend to have less management resources to devote to their issues.

For the many SME's involved in importing and exporting there is typically a low level of interest associated with improving import or export arrangements with most operators choosing to outsource this responsibility to their freight forwarders. A typical response from these organisations is that it is not their concern as their freight forwarder takes responsibility for importing and exporting issues. However, in many instances the freight forwarder would not be motivated to improve overall efficiencies and while they may seek the lowest price for a particular activity it is not typically part of their role to improve overall processes and efficiencies.

This issue of lack of management attention and focus is likely to be a greater issue with regards to importers where there is expected to be a larger number of small players. Additional research may be required to confirm these perceptions and the specific issues facings importers.

4.9.5 Facility operating hours

An observation from the previous origin destination study highlighted issues associated with a mismatch of opening hours at warehouses and container parks compared to operating hours of stevedores. This has become a greater issue with stevedores now operating 24 hours, seven days per week. When calculating demurrage shipping lines now include Saturday such that demurrage is calculated and based on a six day week rather than the previous five day week which now often results in further charges to importers and exporters who are not operating over the weekend.

Differences in wage agreements at Stevedores compared with transport companies and warehouse operators are also contributing to the different operating hours within the industry. Stevedoring labour agreement tend to pay a flat rate regardless of the shift worked compared with other parts of the industry where penalties are paid for weekend work.

While there may be opportunities for importers and exporters to reduce their container handling costs by opening warehouses longer hours this would need to be considered against the associated costs, eg labour, overheads etc. There are likely to be different findings for different companies depending on their cost structures and unique issues relevant to each business.

Overall importers and exporters tend to bear most of the costs associated with the current inefficiencies in the system, however in many instances they either have limited control or choose to have limited control over most of these activities.

4.9.6 Transport operator influences

Larger integrated transport companies tend to have a much greater ability to capture systematic container handling efficiencies. These large operators are able to gain these efficiencies through opportunities such as:

- access to a larger client base with much greater opportunities between different clients
- greater control of different parts of the supply chain and as such they are more motivated to identify and capture system efficiencies
- larger clients providing a more even workload and larger pieces of work that are more easily managed
- larger clients who are more likely to have longer operating hours and better systems to facilitate transport planning and efficiencies
- Better systems themselves for managing fleet utilisation.

4.9.7 LCL Containers

LCL containers are typically unpacked at Customs licensed depots. These are interim locations. Customs data suggested that LCL containers, those classified as Freight All Kinds (FAK), represent approximately 5% of imports. Other industry sources suggest that this is more likely to be 20 – 30% of containers.

LCLs have not been a specific focus of this study. There is an opportunity for future studies to consider potential inefficiencies associated with the unpacking point of the container compared to the final destination of the container contents.

4.9.8 Containers to country areas

The in industry consultation undertaken during the Container OD Study a number of regional operators raised the issue of timely access to shipping containers. It is always likely that there will be a shortage of specific box types due to an imbalance in trade. For instance Australia is a net importer of 40 foot boxes with empty 40 foot boxes being returned empty to Asia and at times there is a shortage of 20 foot boxes for export of commodities.

Increased hardship felt in country areas is likely to be due to:

- shipping lines possibly allocating containers in short supply to metro companies where there will be quick turnaround but this is difficult to verify.



- the a transport delay of several days from the time of booking the slot to getting the container, eg container park - rail terminal – rail to country. This is noticeable to country operators than metro operators who generally get the box the next day.
- country operators are likely to have a greater demand for containers in short supply, such as food grade 20 foot boxes typically used for the export of grain and rice from country areas.

These difficulties could in part explain trends for major exporters to establish packing facilities in Melbourne rather than in country areas.

Overall the key issue is the time taken to get boxes up to country operators. From a strategic perspective the ideal supply chain is to pack containers in the country then transfer the goods directly to the port on rail. Shipping lines stated that they released containers as soon as the slot on the ship was booked.

One suggestions to reduce the turnaround time to the country is to have containers waiting at rail depots such at Austrak, available to be despatched on rail to country operators as soon as the slot was booked with the shipping line. This would save the day taken to move the box from the container park to the rail terminal.

Beyond this it appears that the responsibility lies with exporters to plan ahead and ensure timely booking of slots and co-ordination with country terminal operators to minimise hold ups in the supply chain.

5. Key opportunity areas & strategies

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
Encourage development of outer metropolitan intermodal terminals	<ul style="list-style-type: none"> ▪ Increased port traffic on rail ▪ Likely to drive increased utilisation of on-dock rail ▪ Reduced road transport moves in metro Melbourne 	<ul style="list-style-type: none"> ▪ rail operators ▪ local councils ▪ facility operators
<p>Potential strategies:</p> <ul style="list-style-type: none"> ▪ Feasibility study to investigate the potential issues and viability of an intermodal terminal at Dandenong 		
Encourage development of outer metropolitan container park facilities and associated services	<ul style="list-style-type: none"> ▪ Eliminate transfer of empty to and from container parks in inner metro and western suburbs ▪ Reduce import and export costs through reduced transport moves. ▪ Reduced traffic congestion ▪ Potential for these sites to also improve issues associated with container availability in regional Victoria. 	<ul style="list-style-type: none"> ▪ container park operators (potentially the same operators as for the intermodal terminals) ▪ shipping lines ▪ importers / exporter promoting the benefits of these facilities to shipping lines and operators
<p>Potential strategies:</p> <ul style="list-style-type: none"> ▪ Liaise with shipping lines to investigate options for overcoming commercial issues of utilising a larger number of parks ▪ Work with industry groups such as the Australian Industry Group to raise awareness amongst importers and exporters and apply pressure to shipping lines to provide these services. 		

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
<p>Encourage integrated facilities that facilitate multiple activities on one site, such as intermodal operations, warehousing, distribution facilities and container park facilities</p>	<ul style="list-style-type: none"> ▪ Reduced number of interim moves due to multiple activities occurring on one site ▪ Reduced importing / exporting costs ▪ Reduced road congestion <p><i>For example, outer metropolitan rail hubs could incorporate container parks and full container storage facilities</i></p>	<ul style="list-style-type: none"> ▪ state government, regarding funding allocations ▪ facility operators ▪ importers / exporters liaising with industry to provide facilities that match their needs
<p>Potential strategies:</p> <ul style="list-style-type: none"> ▪ Consider the establishment of an integrated container servicing facility as an option in the feasibility study for the Dandenong Intermodal Terminal 		
<p>Increased utilisation of on-dock rail</p>	<ul style="list-style-type: none"> ▪ P&O is currently pricing itself out of the market. It is cheaper to transfer a container from Dynon to P&O than from their own on-dock facility ▪ Closure of Coode Road should help reduce this cost ▪ CRT are aiming to commence a daily service to Patricks providing the first regular metropolitan shuttle ▪ Reduced cost ▪ Reduced traffic congestion 	<ul style="list-style-type: none"> ▪ P&O ▪ Patricks ▪ other rail operators ▪ state government, to facilitate transition at P&O with regards Coode Road facilities

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
<p>Potential strategies:</p> <ul style="list-style-type: none"> Work with P&O to reduce their cost structure such that it is competitive with road transport from Dynon. Encourage the use of rail for metropolitan rail shuttles through the establishment of integrated intermodal facilities. 		
<p>Educate importers regarding strategies to minimise import costs, using industry bodies to assist</p>	<ul style="list-style-type: none"> Increases the ability of importers to manage their import costs Smaller importers have scarce management resources and assistance from industry bodies may assist to ensure importers achieve cost efficiencies This will help put smaller importers in a more powerful negotiating position compared with the shipping lines. Could include funding assistance for studies to review import and export supply chain processes 	<ul style="list-style-type: none"> state government Australian Industry Group Vecci VTA other industry groups
<p>Potential strategies:</p> <ul style="list-style-type: none"> Utilise industry groups such as the Australian Industry Group to provide training and increase awareness of importers and exporters regarding opportunities to reduce the costs of their supply chain. 		

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
<p>Investigate mismatches in facility opening hours and opportunity to extend warehouse hour. Potentially undertake case studies of different businesses to assess:</p> <ul style="list-style-type: none"> ■ costs of increased hours ■ savings from reduced transport costs 	<ul style="list-style-type: none"> ■ By reducing the mismatch in warehouse opening hours there will be transfer of containers via transport depots and more direct transfers, leading to significant transport and handling savings. 	<ul style="list-style-type: none"> ■ warehouse operators ■ unions - in relation to shift allowances for warehouse and transport staff but not at the wharf. ■ Freight and logistics working group
<p>Potential strategies:</p> <ul style="list-style-type: none"> ■ Intermodal efficiency group study to investigate mismatches of container opening hours. ■ Undertake case studies to investigate the financial impacts of reduced transport costs versus costs of increased opening hours for different types of businesses. ■ Use of intermodal freight terminals as temporary holding points that can be accessed during normal warehouse hours. 		

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
<p>Investigate opportunities to increase direct moves of containers from importers to exporters, including:</p> <ul style="list-style-type: none"> ▪ Changes to shipping lines systems to better facilitate direct moves from importers to exporters ▪ Approaches to handling risk and responsibilities relating to container condition ▪ Educating importers and exporters regarding the benefits of this ▪ Establishment of a system to match boxes between importers and exporters 	<ul style="list-style-type: none"> ▪ Shipping lines are not generally in favour of this as: <ul style="list-style-type: none"> - It increases their risk with no direct benefit to them - Container parks provide a centralised point of quality control - Their administration systems are not well suited to handling direct moves ▪ This currently occurs to a small extent and should be extended where possible. ▪ May have difficulties getting a suitable match (shipping line / box type / right time / right location) ▪ Potential for an external agency to provide this matching service ▪ Interested parties could register, an independent inspector could verify the quality of boxes, where no suitable match was identified boxes would be returned to container parks ▪ Would need the co-operation of shipping lines 	<ul style="list-style-type: none"> ▪ state government to facilitate discussions ▪ shipping lines ▪ VTA ▪ importers and exporters promoting the benefits of this to their industry ▪ Freight and logistics working group

OPPORTUNITY	BENEFIT AND ISSUES	KEY PLAYERS INVOLVED
<p>Potential strategies:</p> <ul style="list-style-type: none">■ Work with shipping lines to develop tactics to overcome current barriers to this occurring more frequently.■ Feasibility study to explore the concept of an independent agency to identify and manage suitable direct moves import / export box matches, including scoping of the range of services that would need to be provided and commercial viability.		

6. Key Performance Indicators

It is a broad management principle that before you are able to manage something you need to be able to measure it. In order to be able to monitor the success of the strategies recommended to address the opportunity areas identified in this report a number of key performance indicators, KPI's, have been developed. The KPIs listed in Table 6-1 have been developed as a way to measure factors that contribute to an efficient logistics network for container movements.

The current performance against these KPIs has been recorded to provide an opportunity to review performance in 2 - 4 years time and assess whether or not the strategies are being successful in achieving their goals and improving the KPIs. The method used to assess the current performance has been outlined in Appendix A to enable a similar approach to be adopted in the future.

KPI	Current performance	Source
Overall efficiency <ul style="list-style-type: none"> ■ Portion of container journeys via transport depots <ul style="list-style-type: none"> – imports – exports 	<ul style="list-style-type: none"> – 38% – 17% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ Portion of containers direct to / from customer <ul style="list-style-type: none"> – imports – exports 	<ul style="list-style-type: none"> – 62% – 83% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ Percentage of import boxes moving direct from importers to an exporter. 	<ul style="list-style-type: none"> ■ Less than 1% 	<ul style="list-style-type: none"> ■ Industry discussions
<ul style="list-style-type: none"> ■ Number and portion of paperless stevedore transactions of total containers received 	<ul style="list-style-type: none"> ■ 3 – 5% 	<ul style="list-style-type: none"> ■ Patricks and P&O
<ul style="list-style-type: none"> ■ Number of transport operators registered with stevedores 	<ul style="list-style-type: none"> ■ 250 operators 	<ul style="list-style-type: none"> ■ Patricks and P&O
<ul style="list-style-type: none"> ■ Average distance between container parks and importers / exporters in metropolitan Melbourne 	<ul style="list-style-type: none"> ■ Metro importer to container park – 21 km ■ Container park to metro exporter – 12 km 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002

KPI	Current performance	Source
Rail utilisation		
<ul style="list-style-type: none"> ■ % of total container journeys on rail 	<ul style="list-style-type: none"> ■ 19.1% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ % of container moves to and from the Port / Dynon precinct on rail 	<ul style="list-style-type: none"> ■ 20.3% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ % of container moves via on-dock rail 	<ul style="list-style-type: none"> ■ 4.2% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ % of country moves by rail 	<ul style="list-style-type: none"> ■ 75% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ Number of containers transhipped via metropolitan intermodal facilities 	<ul style="list-style-type: none"> ■ One train per week 	<ul style="list-style-type: none"> ■ Patricks
<ul style="list-style-type: none"> ■ Number of metro intermodal facilities 	<ul style="list-style-type: none"> ■ 1 fully operational 	<ul style="list-style-type: none"> ■ Industry
<ul style="list-style-type: none"> ■ Number of regional intermodal facilities 	<ul style="list-style-type: none"> ■ 5 fully operational ■ 6 partially / non operational 	<ul style="list-style-type: none"> ■ Industry
Road vehicle utilisation / backloading		
<ul style="list-style-type: none"> ■ Portion of empty container vehicles 	<ul style="list-style-type: none"> ■ 36% 	<ul style="list-style-type: none"> ■ SKM OD Study, 2002
<ul style="list-style-type: none"> ■ Portion of empty TEU slots 	<ul style="list-style-type: none"> ■ 48% 	

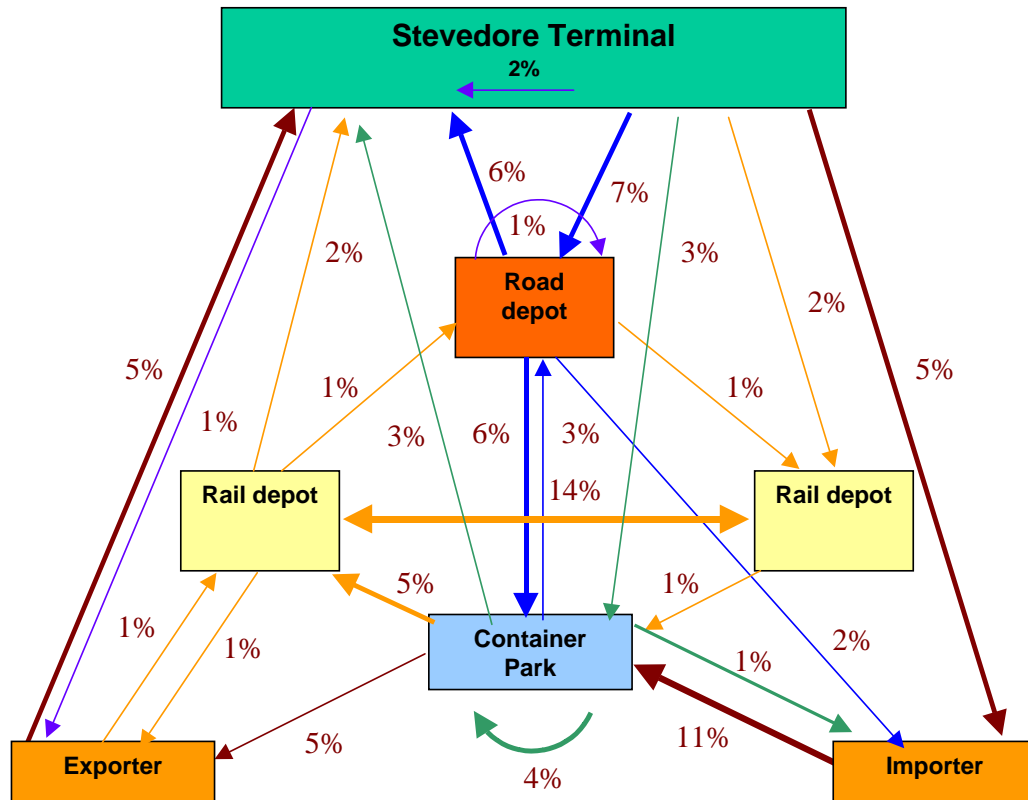


Appendix A KPI explanations

A.1 Overall efficiency

KPIs assessing the overall efficiency of moves were developed to highlight the overall success of strategies in improving container supply chain efficiencies. Figure 7 shows all the moves captured during the SKM OD Study.

- **Figure 7 All container moves**

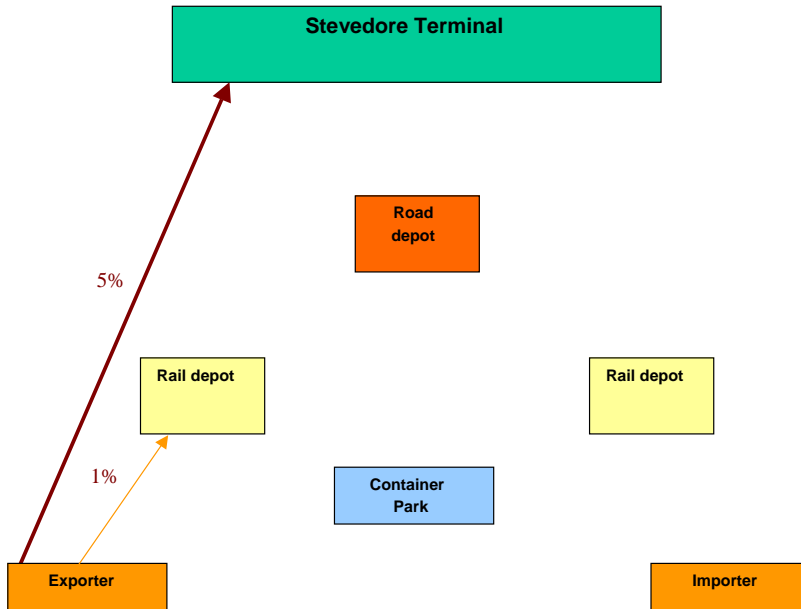


Source: SKM OD Study, 2002

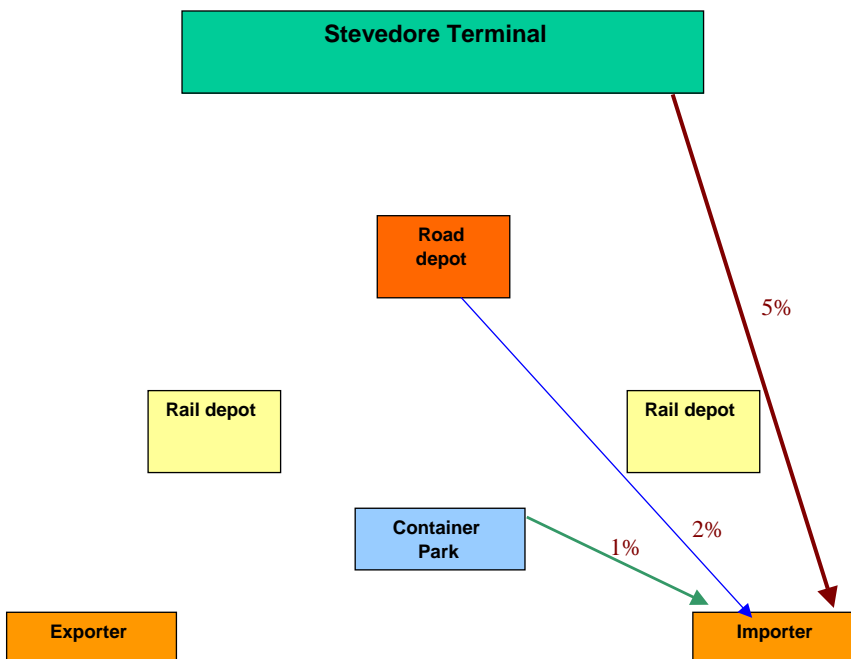
A.1.1 Portion of container moves via transport depots

Transshipment via transport depots adds cost and inefficiency to the supply chain. A reduction of the portion of moves via transport depots indicates a more efficient supply chain. These percentages were calculated based on data showing all movements away from the Exporter in Figure 8 and all moves going to the Importer in Figure 9 collected during the Container OD Study.

■ Figure 8 All moves away from the Exporter



■ Figure 9 All moves to the Importer



The portion of container moves via transport depots is represented below:

Journey type	Portion of moves via depots	Portion of all moves to / from Importer / Exporter	% of container moves via transport depots
■ Import via depot	3%	8%	38%
■ Export via depot	1%	6%	17%

A.1.2 Portion of direct container moves to / from customer

An increase in the portion of containers moving direct to / from the customer would improve the efficiency of the supply chain. Calculations were based on data collected during the Container OD Study as follows:

Journey type	Portion of moves direct	Portion of all moves to / from Importer / Exporter	% of container moves direct
■ Import via depot	5%	8%	62%
■ Export via depot	5%	6%	83%

A.1.3 Percentage of import boxes moving direct from importers to exporters

If an empty box were to be transported directly from an importer to an exporter and the cost shared, it would save both the importer the cost of transporting it to a container park and the exporter the cost of collecting an empty box from a container park. Discussions with industry have indicated that this activity rarely occurs at present with no such moves recorded during the Container OD study. An increase in the portion of containers handled in this manner would decrease the number of container moves per journey and thus increase supply chain efficiencies.

A.1.4 Portion of paperless stevedore transactions of total containers received

Paperless stevedore transactions allow both a reduction in waiting time for the transport operator and the stevedores to more easily plan container movements through their yards. At present there are typically 15,000 to 25,000 completely paperless transactions per year through each stevedore. This comprises a very small 3 – 5% of total transactions. An increase of paperless transaction numbers would assist to improve the flow of containers through the stevedores.

Utilisation of paperless processing systems is also an indication of the sophistication of the systems used by transport operators. More sophisticated systems are expected to facilitate better vehicle utilisation and other efficiencies.

A.1.5 Average number of transport operators registered with stevedores

Currently there is an average of 250 operators registered with each stevedore. This large number of players highlights that many of these operators are small and only offer limited services thus creating a more fragmented supply chain.

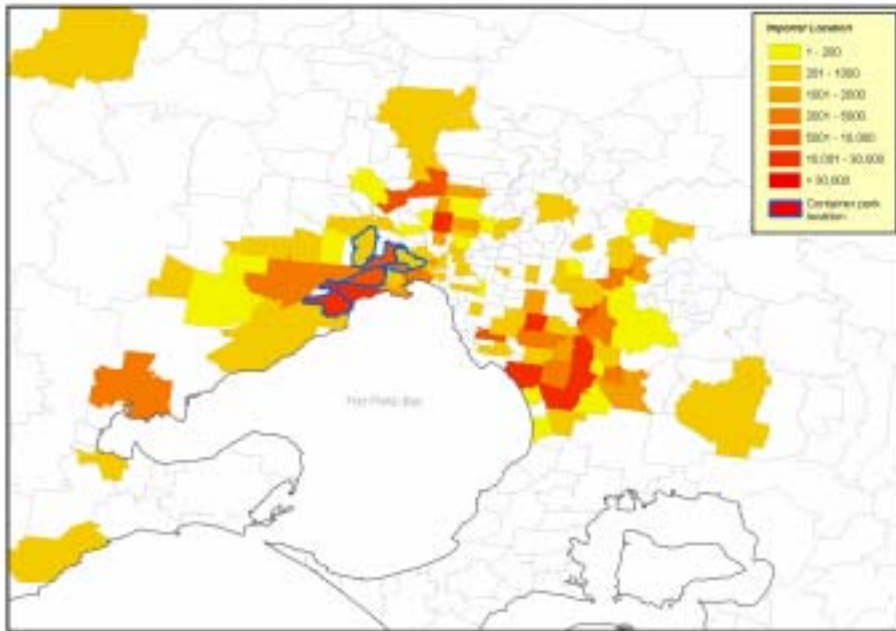
A.1.6 Average distance between container parks and importers / exporters in metropolitan Melbourne

This study highlighted that the current concentration of container parks in inner western Melbourne creates inefficiencies in the transport of empty boxes between container parks and importers and exporters. The establishment of container parks in a wider variety of locations would reduce distances and the cost of transport to and from container parks.

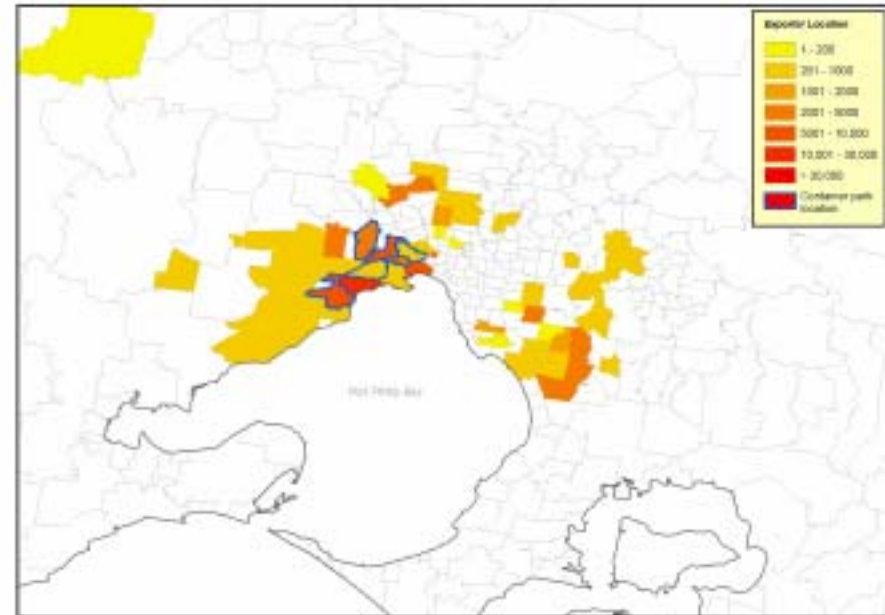
The average distance between container parks and importers and exporters within metropolitan Melbourne was derived using the postcode data from the SKM OD Study. Figure 10 and Figure 11 show annual totals for ultimate origins and destinations and highlight container park locations in the Melbourne metropolitan area (SKM OD Study, 2002).

The smaller average distance for exporters (12km) compared to importers (21km) reflects the concentration of large exporters such as Murray Goulburn close to the port.

■ Figure 10 Container moves to Importers



■ Figure 11 Container moves from Exporters



A.2 Rail utilisation

The state government has stated that by 2010, they would like rail mode share to increase to 30%. During the Container OD study it was identified that different agencies have a range of different approaches to measuring rail modal share. The following measures were agreed as providing an overview of rail share:

- Portion of total container journeys on rail
- Portion of container moves to and from the Port / Dynon precinct on rail
- Portion of container moves via on-dock rail
- Portion of country moves by rail

These rail utilisation calculations are based on the SKM OD Study which used data relating to the number of containers (TEU & FEU) rather than TEU transported on rail.

A.2.1 Number of containers transhipped via metropolitan intermodal facilities

Metropolitan intermodal facilities allow containers to be transported on rail within the metropolitan area at a competitive rate. Recently CRT commenced operations at their intermodal facility in Altona North and are currently running one train per week into the Patricks facility.

Austrak have a proposed facility at Sommerton but are yet to appoint an operator for this facility. DoI are undertaking a study to investigate the feasibility of establishing another intermodal facility in Dandenong.

A.2.2 Number of metro intermodal facilities

CRT operate the only fully functional metropolitan intermodal facility in Altona North. Austrak are in the process of establishing another facility in Somerton.

A.2.3 Number of regional intermodal facilities

The five fully operational intermodal facilities in regional Victoria are in:

- Donald
- Echuca
- Mildura
- Warrnambool
- Wodonga

The six partially / non operational facilities are in:

- Bairnsdale



- Morewell
- Sale
- Shepperton
- Trafalgar
- Wangaratta

A.3 Road vehicle utilisation / backloading

Improving vehicle utilisation and use of backloading has multiple benefits such as:

- Reducing vehicle costs
- Improving utilisation of the road network and reducing traffic congestion
- Improving efficiencies of stevedores where the preference is to unload a vehicle and reload the vehicle in the one move.

The SKM OD Study used on-road observations to record vehicle utilisation for container trucks. Empty running vehicles were recorded as well as empty TEU slots to capture information on vehicle utilisation.

	% Completely empty	% Empty TEU slots
Rigid	40%	40%
Rigid & Trailer	30%	39%
Artic	36%	49%
B double	35%	49%
Super B double	27%	41%
Total / Average	36%	48%