

FREMANTLE PORTS

TRUCK PRODUCTIVITY STUDY



JULY 2014



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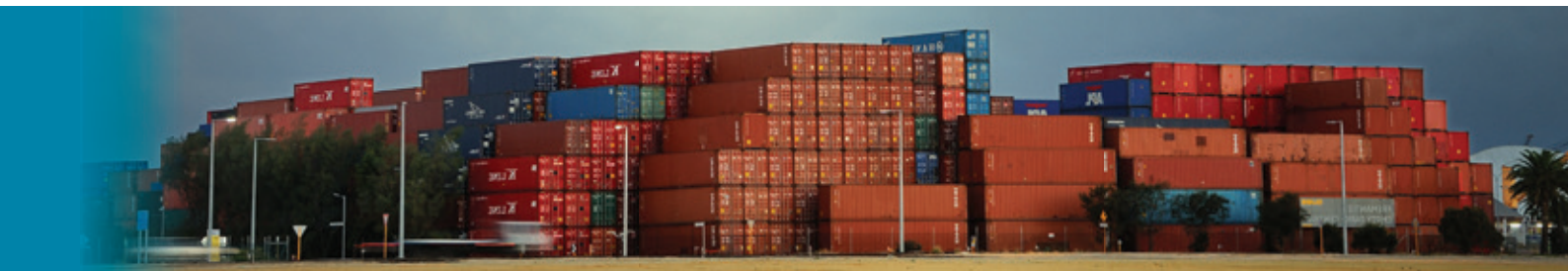
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Glossary

Term	Definition
Bulk run	Movement of a pre-determined minimum number of containers to or from a Container Terminal or an Empty Container Park which has also been pre-planned and separately notified
Chain of Responsibility (CoR)	New laws to recognise the responsibilities that others have in the transportation of goods by road, beyond that of just the driver and operator, to improve
Container	Standard sealed International Standards Organisation (ISO) metal box used for carrying cargo
ContainerChain (CC)	System operated by Empty Container Parks to allow transport operators to notify a time period in which to pick up or deliver a container to/from an ECP
Container Terminal	Location in the port where container ships are loaded/discharged, and which provides the landside interface from the wharf
Dehire	Process of returning an empty container to an Empty Container Park and to the care of the shipping line
Department of Agriculture (DAFF)	Federal department that undertakes biosecurity intervention and inspection of goods and containers entering Australia.
DO	Delivery Order
DPW	DPWorld Container Terminal
Empty Container Park (ECP)	Location for storing and maintaining dehiired empty containers
FCL	Full container load
FEU	Forty foot equivalent unit (ISO container)
Hire	Process of hiring (collecting) an empty container from an ECP for the purpose of export
High productivity vehicle (HPV)	Truck capable of transporting 4 x loaded TEU

Term	Definition
ICS	Integrated Cargo System
Intermodal terminal	Location where container transfers between road and rail transport
NQRT	North Quay Rail Terminal
I-Stop	Operator of the Vehicle Booking System at the Container Terminals
Port Community System (PCS)	An electronic platform that connects multiple systems operated by a variety of organisations that make up a seaport or an airport community. A PCS provides a 'single window' for port-related dealings of all port stakeholders. These include document exchange, financial transactions and visibility/tracking information.
Quarantine Approved Premises (QAP)	Location where shipments can be inspected and, if necessary, fumigated or chemically treated by the Department of Agriculture
QUBE	Container Park operator
R&D	Receival and delivery of containers at port facilities
Reposition	Landside repositioning of empty container surplus to local demand
Staging	Process whereby a full or empty container is temporarily held for delivery at a later stage
TEU	Twenty foot equivalent unit (ISO container) normally 6.1m in length
Time slot	Specific time booked at Container Terminal for container receival or delivery by road
TPS	Truck Productivity Study
Truck utilisation	Containers carried per truck movement
Truck turn time (TTT)	The time that a truck takes to be serviced within a facility
Vehicle Booking System (VBS)	The system operated by Container Terminals to grant specific time slots for road transport operators to pick up or deliver a container to/from a Container Terminal



Executive Summary

Fremantle Ports undertakes a survey of heavy vehicles each year which identifies the number of container trucks on the roads leading into and out of the port, the level of empty running and the average number of containers per truck movement (truck utilisation). From 2006, this annual survey indicated that truck utilisation rates were stagnating, and in the past three years has indicated a declining trend. There is a direct correlation between truck productivity and the number of trucks on the road, which has a negative impact on the community and industry.

Through intensive data analysis, industry workshops, case study interviews and an online transport operator survey, the Truck Productivity Study sought to identify and understand the current industry structure of container road transporters, and identify the key issues impacting on trucking productivity and strategies to improve this in the future.

It is important that industry focuses on the future and how growing trade volumes will be dealt with in an efficient manner. While the Truck Productivity Study identified many current issues, the strategies identified will enable industry to prepare for the future and achieve productivity and efficiency benefits for industry and the community.

Key industry structure findings include:

- Fremantle has a relatively high number of container transport carriers in respect of the total trade volumes compared to other much larger Eastern States ports, with 31 carriers handling about 75% of total port container volume compared with, for example, Brisbane with 18 carriers.
- Fremantle contends with an unbalanced level of import and export volumes, with a ratio of 1.89 import TEU to every export TEU making two-way loading at the Container Terminals difficult for most transport operators.
- The hours that carriers mainly access the Container Terminals is between 06:00 and 18:00 Monday to Friday. This puts pressure on the peak day periods and creates competition for these peak time slots.
- There is a mismatch in the operating hours of stakeholders across the whole supply chain with Container Terminals and some large transport operators capable of operating 24/7 when required but many importers having more restrictive hours. Empty Container Parks (ECPs) within the port precinct have until recently been open only 12 hours per day but QUBE Central has recently begun operating until 22:00 Monday to Friday.
- Restrictive operating hours along the supply chain have resulted in extensive use of container staging activities, where containers are collected from Container Terminals and taken to a transport depot before final delivery.
- Industry is structured around the Vehicle Booking System (VBS) requirements at the Container Terminals, and in recent times by the ContainerChain (CC) notification system at Empty Container Parks. These two systems influence the way in which transport operators manage their businesses, including fleet scheduling, use of staging and mitigation measures for delays.
- The volume of 40' containers coming through the port is increasing at a greater rate than 20' containers, which may have an influence on truck-loading capability. Container weights are also increasing, again influencing transport operators' ability to load trucks to full capacity.



- Two-way loading in and out of the port precinct has increased from 2012 to 2013, with about 43% of trucks being loaded in both directions. The level of empty running to and from the port precinct has dropped marginally from 30% to 29% in 2013. Two-way loading in and out of Container Terminals is much lower, with only about 11% of trucks loaded in both directions.

The key issues impacting on trucking productivity and efficiency identified in the study included:

- mismatch of operating hours along the chain making it difficult to coordinate two-way movements
- alignment and coordination of booking systems with trucking efficiency requirements
- 'mad minute' and the large number of carriers
- limited access to slots (VBS and CC) due to bulk runs, hoarding and not enough released by Container Terminals
- variability in service times at Empty Container Parks and Container Terminals making it difficult to coordinate round trips to drop off and pick up boxes.
- importer issues (access to site, site constraints and empty availability after unpack, etc.)
- futile trips due to poor communication.

Recommended initiatives, which have been identified as having the potential to improve productivity and trucking efficiency, were categorised into the areas of: Container Terminal operations and the Vehicle Booking System; Empty Container Park operations and ContainerChain; supply chain coordination; and transport operations. These initiatives included:

Container Terminal operations and the Vehicle Booking System (VBS)

a) Modify VBS to:

- eliminate 'mad minute'
- reward efficient carrier operations
- facilitate two-way loading
- promote off peak
- promote forward planning by carriers and forwarders
- promote more bulk runs.

b) Reduce competition for day slots to improve consolidated loading by:

- developing on-port logistics operations to facilitate consolidated loading
- promoting off-peak operations
- promoting use of third party staging.

c) Investigate stronger commercial relationships between Container Terminals and transport operators.



Empty Container Park (ECP) operations and ContainerChain

- a) Extend operating hours to match Container Terminals.
- b) Improve service time reliability through:
 - promoting adherence of carriers to booked slots at ECPs
 - introducing KPIs through leases
 - moving bulk run activities to off-peak periods.
- c) Address port dominance of ECP capacity by promoting further use of existing off-port ECPs and development of further off-port capacity.
- d) Modify ContainerChain system to reduce futile trips.

Supply chain coordination

- a) Improve alignment of importer (shipper) operations with other supply chain participants.
- b) Coordinate bookings across Container Terminals and ECPs.
- c) Promote cooperative staging arrangements.

Transport operations

- a) Expand training to improve understanding of VBS and ContainerChain functionality.
- b) Consider role of high productivity vehicles (HPVs) for future chain development.
- c) Examine vehicle standards to allow more night operations while managing community impacts.

In addition to the strategies identified in the Truck Productivity Study, the Federal and State governments have recently announced the Perth Freight Link development. The development should have a significant impact on trucking efficiency once the new infrastructure is completed. Faster and, equally important, reliable transit times will improve fleet efficiency. The possibility of high productivity vehicles (capable of carrying four TEU as opposed to the current maximum of three TEU) being permitted on this route will also confer benefits, such as the promotion of greater use of hubs with high productivity vehicles providing efficient line haul operations to distribution centres. It could, however, adversely affect port rail services and will need careful consideration to ensure the best overall outcome is achieved. An assessment of the productivity benefits and industry and community impacts was outside the scope of the Truck Productivity Study.

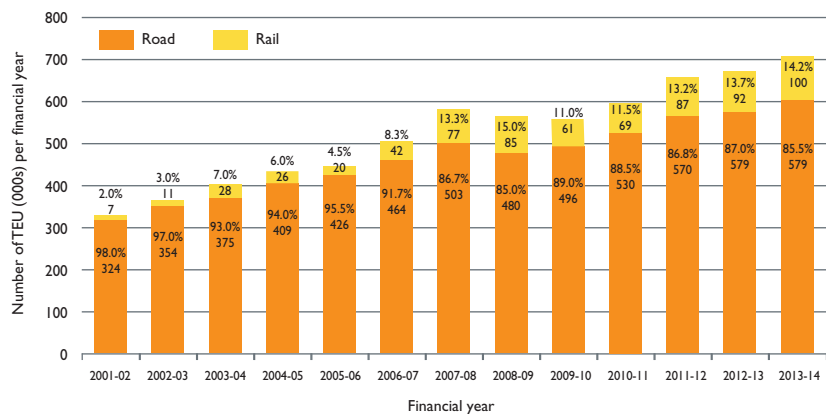
Detailed summaries of the key industry findings, issues impacting productivity and initiatives to improve industry efficiency are incorporated into the full Truck Productivity Study report and appendices, and can be accessed through the Fremantle Ports website at www.fremantleports.com.au

Introduction

Increasing truck productivity through the Inner Harbour has strategic value. It will result in improved efficiency of the container supply chain, reducing the impacts of heavy vehicles on the community and increasing the capacity of the Inner Harbour. Results of the annual Inner Harbour Truck Survey in 2012 indicated, however, that trucking productivity had stagnated since 2006, with the 2012 results showing that trucking productivity had declined, and 2013 results only marginally improved. In response to these findings, Fremantle Ports, with support from the Freight and Logistics Council of WVA, embarked on a study of trucking productivity in Fremantle in 2013 to gain a better understanding of the current industry structure, issues impacting on efficiency and productivity, and possible changes and strategies that could be pursued to ensure improved outcomes for industry into the future.

Road transport is used for about 85% of total port container volumes and is a critical component of the container supply chain (see Figure 1). Industry is becoming increasingly aware of the need to develop in a way that not only creates efficiency today but also creates an industry that can cope effectively with future growth. Historically, Fremantle has been a port that relies largely on the peak weekday operating periods, but this will not be sustainable as volumes grow. This study has been undertaken largely to provide strategies to enable industry to gear up to handle future challenges associated with growth, rather than waiting until congestion forces industry to change the way it operates.

Figure 1: North Quay rail and road service volumes (TEU)



Trucking productivity has a number of definitions in the industry. The Inner Harbour Truck Survey definition of trucking productivity relates to the number of containers per truck movement in and out of the port, but productivity also involves the speed with which a truck is serviced throughout the supply chain. Speed of servicing increases the number of trips per day a truck can make. The project steering committee recognises that for transport operators, trucking productivity will include overall fleet utilisation and the level of dead running, the total time spent moving their container volumes and the speed of service through various nodes of the supply chain. Truck productivity also relates to the ability of transport operators to undertake dual loads, where containers are loaded onto the truck for movements both in and out of the facility/port precinct. These factors are inherently linked to cost and subsequently to the transport rates offered to customers. Improving productivity is a win-win as it reduces costs for carriers and their clients, and also reduces the number of trucks required to manage the freight task, which addresses community concerns.

Anecdotally, a combination of the introduction of the Vehicle Booking System (VBS) at the Container Terminals, recent introduction of an Empty Container Park (ECP) notification system (ContainerChain), restricted opening hours of customers' premises and ECPs, and the imbalance of the import and export business of carriers may have an impact on productivity.

The primary purposes of the study were to:

- better understand the current industry profile in relation to transport carriers' operations and factors influencing trucking productivity
- understand the impacts of the VBS and potentially ContainerChain on trucking productivity
- engage industry, in particular transport operators, in defining issues in the supply chain and identifying possible solutions, and
- undertake an assessment of proposed future changes and initiatives and the ability of these to address productivity issues in the container supply chain.

The study process that has been adopted is represented in the following figure:

Data Collection	Issues	Solutions	Solution Criteria	Action Plan
<ul style="list-style-type: none"> ■ Data analysis ■ Transport Operator Survey ■ Industry workshops ■ Transport Company Case Studies 	<ul style="list-style-type: none"> ■ Identify ■ Refine ■ Categorise 	<ul style="list-style-type: none"> ■ Identify ■ Refine ■ Categorise 	<ul style="list-style-type: none"> ■ Truck utilisation improvement ■ Commercial viability ■ Practicality ■ Priority ■ Unintended consequences 	<ul style="list-style-type: none"> ■ Priority solutions ■ Information gathering ■ Viability ■ Industry consultation and verification ■ Implementation partners ■ Implementation plan ■ Review

This report outlines the findings and recommendations of the study, including key initiatives that were identified and that are expected to achieve greater efficiency and productivity outcomes for industry.





Findings and Recommendations

Industry Structure

The container transport industry is complex and involves a large number of participants, information and data exchanges, and operational requirements that can hinder efficiency.

(i) Carrier numbers

Fremantle has a relatively large number of carriers handling the container volume through the port, with 7% of carriers handling 50% of the total container volume (670,000 twenty-foot equivalent units [TEU] in financial year 2012-13). This percentage is on par with Sydney which handles 3.17 times the volume (2.13 million TEU) and 3% more than both Melbourne and Brisbane which handle 2.51 and 1.07 million TEU respectively. The impact of this high number of carriers on productivity is difficult to quantify, however, greater efficiency can be achieved at the Container Terminal interface where large carriers organise bulk movement of containers off the wharf, or with carriers able to handle both an export delivery and import pick-up in one truck movement.

Figure 2: Port comparison of road transport carrier numbers

Port	Fremantle	Melbourne	Sydney	Brisbane
Number of active carriers (2013)	142	250 (estimate)	263	136
Number of carriers handling 50% of port volume	10	10	18	6
Percentage of total carriers handling 50%	7%	4%	7%	4%
Number of carriers (70-75% of port volume)	31 (75%)	20 (70%)	47 (70%)	18 (75%)
Port TEU volume 2012-13	670,000	2,513,000	2,126,000	1,070,000
TEU/carrier (top 50%)	33,500	125,650	59,000	89,200
TEU/carrier (remaining 50%)	2,538	5,235	2,658	4,115
TEU/carrier (75%)	16,210	87,955	31,664	44,583
TEU/carrier (remaining 25%)	1,509	2,732	1,719	2,267
Total port TEU/active carrier	4,718	10,052	8,084	7,868



(ii) Import/export balance

Fremantle also contends with an unbalanced level of import and export volumes. Overall, seaborne trade through the Inner Harbour is split roughly 50/50 between imports and exports, as it is in all major Australian ports. When reviewing the loaded container component, however, there are almost twice as many imports as exports (ratio of 1.9:1, financial year 2012-13). By comparison, Sydney has almost two and a half times and Brisbane almost one and a half times the volume of loaded imports to exports. Adelaide has the closest balance with a ratio of 0.9:1.

Figure 3: Loaded container volume split by major Australian ports

Percentage of total loaded TEU volume	Imports	Exports	Ratio IM:EX
Melbourne	57%	43%	1.31
Sydney	71%	29%	2.40
Brisbane	59%	41%	1.43
Fremantle	65%	35%	1.89
Adelaide	47%	53%	0.90

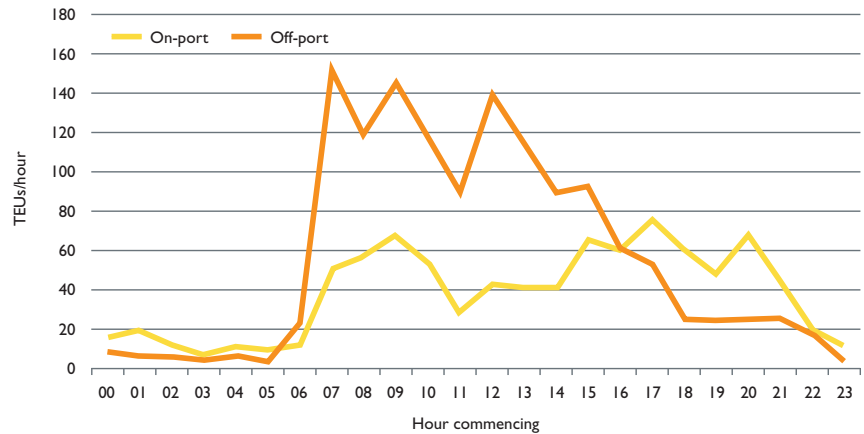
As a result, very few Fremantle carriers are able to achieve a balanced mix of imports and exports within their own operations. The landside destinations and origins of imports and exports can also be quite varied, with the South East Metropolitan area of Perth being an area of high import concentration, while exports are more widely spread out.

(iii) Operating hours

Another key consideration is the time of day that carriers access the port precinct, including the Container Terminals, Empty Container Parks and other on-port facilities. This is mainly during daylight hours Monday to Friday.

There is an apparent concentration of off-port carriers using the morning hours to access facilities, with the greatest volume of TEU handled per hour between 06:00 and 16:00. This is due to a variety of issues, with the opening hours of ECP and importer premises central to the cause.

Figure 4: TEU per hour handled at Container Terminals by location of carrier, 2013



ECPs in the port precinct were until recently only open 12 hours per day 06:00 to 18:00 Monday to Friday with a Saturday day shift, compared to Container Terminal operations which can extend to 24/7 based on demand.

These restricted ECP operating hours result in transport operators who want to coordinate a two-way movement to and from the port precinct, incorporating an empty container dehire to an ECP and a loaded import collection from a Container Terminal (and the reciprocal arrangement for exports), having to do so during daylight hours. Evening movements to and from the Container Terminals often involve an unladen truck movement in one direction as the opportunity to dehire/hire a container is not available. It should be noted that QUBE has recently announced that QUBE Central will extend operating hours to 22:00 in the evening Monday to Friday, the first substantial move to bring hours into line.

The varied operating hours of facilities along the supply chain have also led to an increase in the prevalence of container staging, where containers are collected from one point (e.g. the Container Terminal), held at a transport depot and delivered to the final destination (e.g. the import unpack location) at a later stage. This allows carriers to overcome issues such as opening hours of clients or ECPs, but adds some time and cost to the transport task.

Figure 5: Standard hours of operating by stakeholder group

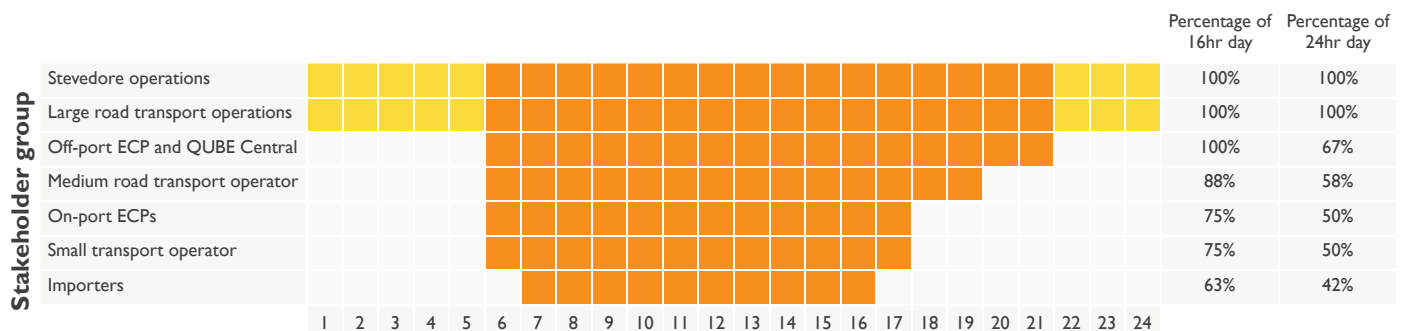
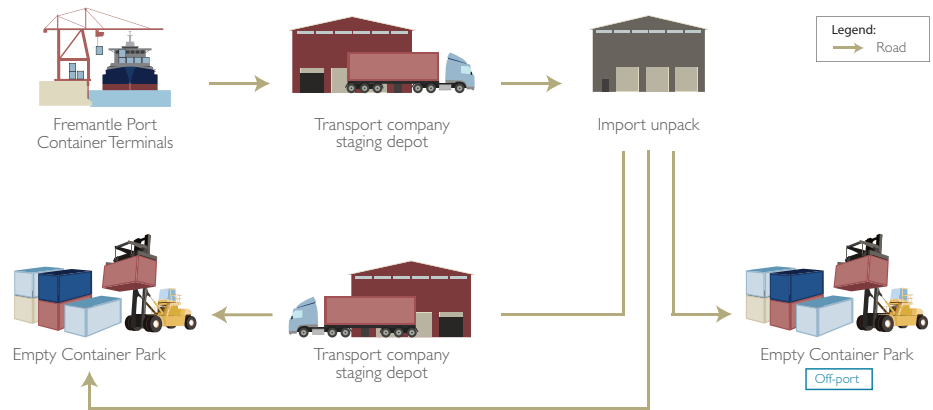


Figure 6: Import container supply chain - container staging



Staging enables transport operators to run trucks to and from a Container Terminal collecting multiple containers loaded in one direction only in a bulk run arrangement. This can create greater efficiency for the transport operator in relation to Container Terminal operations.

(iv) ECP location

ECPs in Fremantle are highly concentrated within the port precinct, accounting for over 80% of total ECP capacity. The only off-port ECPs are Intermodal Container Services (ICS) at Forrestfield adjacent to the rail terminal and Integrated Container Logistics (ICL) at Bibra Lake. This results in a large concentration of vehicles accessing the Fremantle Inner Harbour port precinct for empty container hire/dehire and highlights a growing concern related to the impact of congestion on the ability of transport carriers to effectively coordinate movements between ECPs and Container Terminals.

(v) Slot systems

The Container Terminals have for some time now operated the landside interface with the I-Stop Vehicle Booking System (VBS). This allows transport carriers to book a 'slot' for a particular hour-long time zone whereby they can deliver an export or collect an import container. The system has a wide range of functionality and also incorporates extensive business rules guiding the way in which bookings can be made. One of the long-standing issues with the VBS has been the 'slot drop' process which releases slots for carriers to select on a first-come-first-served basis each morning. This has created significant competition and stress for carriers as often these slots are taken up within a few moments, preventing a coordinated approach to fleet scheduling and managing container movements.

In recent years, the majority of Empty Container Park facilities in WA have also introduced a slot system (ContainerChain) to manage truck arrivals and the dehire and collection of empty containers. This system (more accurately a notification system) has enabled more flexibility for carriers, but has also resulted in complications related to coordinating between two systems with differing business rules and policies.



The two systems are central to the landside operations of the port. One of the clear messages identified through interviews and workshops, however, is the difficulty faced in managing and coordinating activities in a supply chain where constraints are emerging relating to the access arrangements at Container Terminals and Empty Container Parks. Many transport operators are having difficulty in efficiently scheduling fleets where slots are not available at suitable time intervals between the two facilities to enable two-way movements in and out of the precinct. Concern also exists where delays at one facility may result in penalties related to no-shows or missed slots at a subsequent facility. From Fremantle Ports' perspective, the question has also been raised as to what carriers should do when waiting in the port precinct for subsequent bookings. Fremantle Ports has developed a casual parking area within the Truck Facility. Through the Congestion Management System this can operate as a Truck Marshalling Area when needed, but it has not been designed to operate as a pre-gate for regular operations of major facilities.

The introduction of the VBS at the Container Terminals a number of years ago and the more recent introduction of ContainerChain at the Empty Container Parks is placing pressure on transport operators to more accurately plan truck arrivals at these facilities and the associated flow of containers through the whole supply chain. Difficulties arise where delays are experienced at, for example, an Empty Container Park, resulting in a potential delayed arrival at the Container Terminal or when picking up empty containers from importers for dehire. Increased discipline in how fleets are managed and scheduled is required by transport operators. Operators also need to be flexible to minimise the financial impost to end customers.

(vi) Container sizes

One consideration starting to become more prominent is the impact of the shift in container size from 20' to 40' containers on truck utilisation (containers per truck movement). It is thought that combined with increasing weights of containers the ability of carriers to load trucks to their maximum capacity may be limited.

Figure 7: Ratio of container size, 40:20

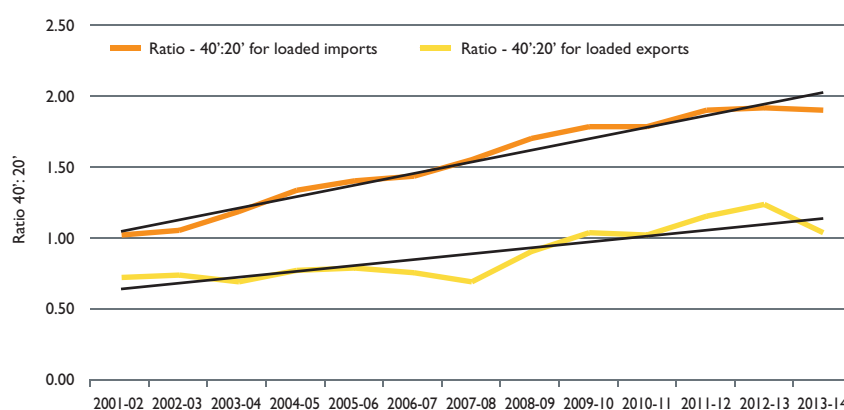
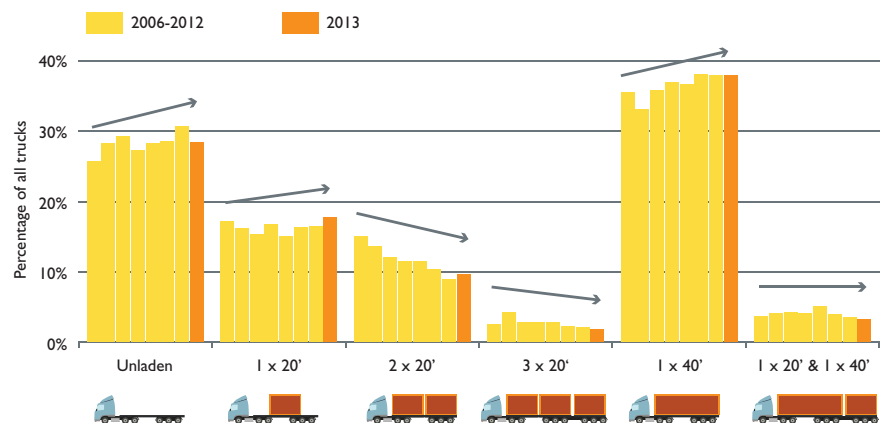


Figure 8 below identifies the truck load configurations observed during the annual Truck Survey. An increase in both unladen movements and trucks carrying 1 x 40' container is identified. A decrease in trucks carrying 2 x 20' containers and 3 x 20' containers is also evident. This may also be influenced by increased container weights making it more difficult to carry multiple containers in a single truck movement without breaching axle load limits.

Figure 8: Load configuration of container vehicles, 2006-2013



(vii) Truck utilisation

Fremantle Ports has been monitoring truck productivity and truck volumes annually since 2002. The results of the 2013 survey indicated empty running had dropped slightly from 30% the previous year to 29% of truck movements to and from the port. When investigating the inbound and outbound movements, 43% of truck movements were loaded in both directions, a 4% improvement on the prior year.

Figure 9: Port precinct two-way loading, 2012 Figure 10: Port precinct two-way loading, 2013

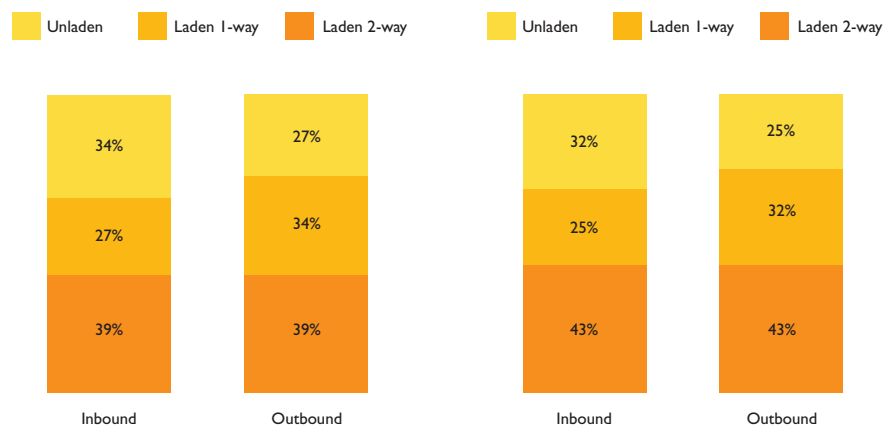
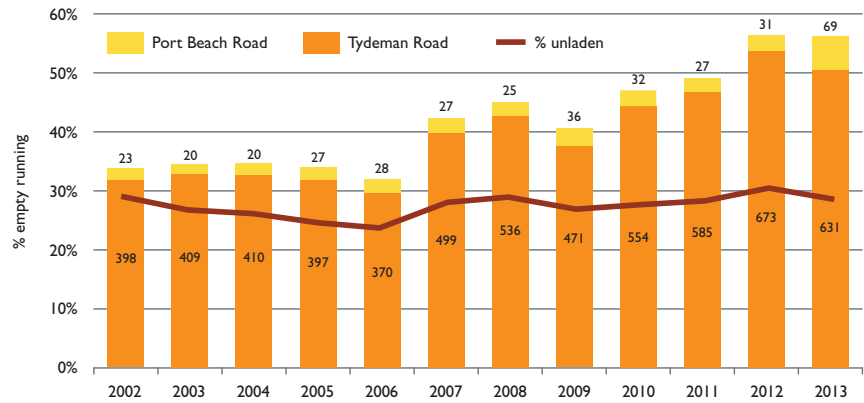
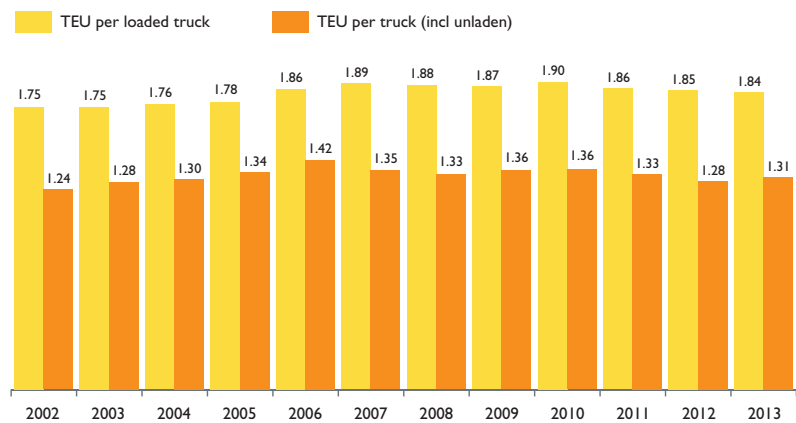


Figure 11: Percentage of empty truck movements, Annual Truck Survey



The truck utilisation rate has been stagnating in recent years but achieved a slightly improved result in 2013 at 1.31 TEU per truck movement (including unladen movements). However, TEU per loaded movements has fallen for the third year in a row: 1.84 TEU per loaded truck movement. This measure is a good indication of the volume of trucks required to manage the total container volumes through the port. Where truck productivity decreases, the likelihood is that more trucks will be required to handle the growth in containers into the future. If improvements to productivity can be achieved, the rate at which truck volumes would grow in relation to container trade growth can be constrained.

Figure 12: Truck utilisation results, 2002 to 2013



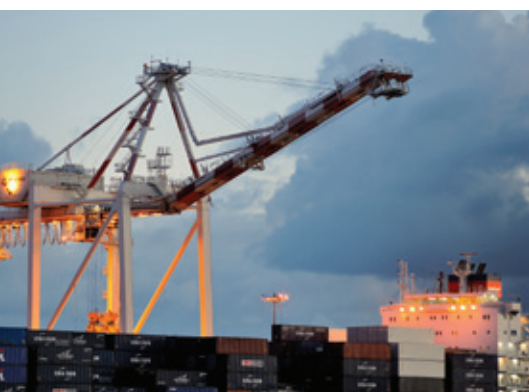
(viii) Key features of successful operators

Responses from the six case study interviews identified some of the characteristics that successful companies were adopting to improve customer service, operations, efficiency, flexibility and responsiveness. These are interesting findings for other operators to consider and provide examples of specific actions that can be taken in a range of circumstances.

Transport operators, for example, are achieving success with import clients and extended operating hours by arranging with importers to have after-hours access to importer premises using keys and access codes. Although this is subject to the specific set-up of importer sites and may not be suitable for all importers, it demonstrates an effective way to ensure transport operators can continue delivery operations into off-peak times. This extended access may increase transport operators' ability to undertake two-way loaded movements to and from depots or the port precinct.

One operator said that '... evening operations are a more cost-efficient way to operate as they avoid a lot of the inefficiencies seen during the day due to the various parties in the supply chain not working in a unified manner.' The operator found that double the volume could be handled compared to daylight operations.





Key Issues Impacting on Trucking Productivity

The following section summarises some of the key issues identified in the Truck Productivity Study, the implications of each issue and some of the proposed changes that will improve productivity and efficiency. An extensive matrix of all issues identified in the survey and proposed initiatives is in Appendices D and E.

■ Mismatch of operating hours along the chain making it difficult to coordinate two-way movements

As has been discussed earlier, the Empty Container Parks (ECPs) located within the port precinct currently operate between 06:00 and 18:00 Monday to Friday, with a Saturday day shift. In contrast, the Container Terminals have the ability to undertake 24/7 operations. These differing opening hours make it impossible for carriers to undertake two-way loaded movements to and from the port precinct in the evening, night and some weekend periods. This has resulted in increased use of staging to allow transport carriers to access the Container Terminals in the evening and may impact on the ability of some importers to have containers dehiored within the free days allowed by shipping lines.

To enable the port to cope with future volume growth and reduce the risk of delays and congestion in peak day periods, it will be necessary to move towards 24/7 operations for all major facilities along the entire supply chain, with changes that include:

- QUBE Central has recently announced the intention to operate its facility until 22:00. This additional four hours in the evening to undertake two-way movements to and from the port precinct will be a welcome relief for many operators.
- Future lease obligations will require operators of major Empty Container Park and logistics facilities in the port precinct to operate extended hours on a permanent basis, further enhancing industry's capability to operate in the evening.
- Education of other parties in the container supply chain, particularly importers, will be important to ensure these extended hours are fully used.

■ Concentration of activity during peak times

Transport operations at the port remain concentrated in daylight hours, Monday to Friday. This creates pressure on services and facilities during these periods, and will not be sustainable as port volumes grow in the future. This concentration of activity is primarily a result of the operating hours of Empty Container Parks within the port precinct and demands from importers for cargo to be delivered direct from Container Terminals during daylight hours. To accommodate these impediments, many carriers undertake some level of staging to ensure containers can be retrieved from the Container Terminals at any time, for example, during the evening or night, and delivered to customers the next day.

As port volumes increase it will be necessary to transition to longer periods of operation, up to 24/7, by:

- extending Empty Container Park operating hours
- enabling better access to bulk runs at the Container Terminals into the evening and night periods
- promoting use of third-party staging to enable greater use of off-peak activity with Container Terminals.



■ Alignment and coordination of the two slot systems with trucking efficiency requirements

Coordinating slots between two independent systems at the Container Terminals and ECPs can be a challenge for many carriers. Bookings at both types of facilities are on a first-come-first-served basis, with the period between 06:00 and 16:00 being in highest demand. Carriers report that there are regular instances where slots at an ECP are not available until later in the afternoon, creating periods of waiting time if trucks are required to service a movement with the Empty Container Park and the Container Terminal in one visit to the port. Alternatively, trucks have to be redirected to other work elsewhere and in many instances this may result in unladen truck movements.

To avoid this, some carriers will take slots at whatever time they are available but arrive at Container Parks as required, often being early or late.

To overcome some of the difficulties experienced in coordinating Container Terminals and ECPs, changes need to be explored, such as:

- improving adherence of carriers to booked slots at ECPs (e.g. turning away excessively late/early arriving vehicles, provide incentives to carriers who arrive on time, etc.)
- exploring coordination between the two slot systems (e.g. a 'port slots' approach whereby bookings can be made across both Container Terminals, or a Container Terminal and an ECP)
- progressing the Port Community System concept to more effectively link the I-Stop and ContainerChain systems.

■ Mad minute and the large number of carriers

A high proportion (around 65% at one Container Terminal) of Container Terminal pick-ups and drop-offs are determined by the slots that carriers can secure through the slot drop process. As previously stated, this process is not ideal and taken together with the large number of carriers at Fremantle, results in intense competition for slots in the most highly sought after time zones.

Changes to the VBS to enable better planning of operations across the day will promote better truck utilisation. Changes under consideration are:

- VBS modifications to give carriers that meet certain performance criteria (e.g. percentage of movements at off-peak times, volume per day/week, on-time arrival rates, etc.) a selection of slots across the day to enable efficient fleet scheduling
- Advanced Bookings to be made available to those who can organise themselves several days ahead thus avoiding the mad minute
- changes to VBS functionality at the Container Terminals to facilitate better access to coordinated bookings that will allow transport operators to achieve good fleet utilisation over extended periods of operation.

■ Limited access to slots (VBS and CC) due to bulk runs, hoarding and not enough released by Container Terminals

Since the introduction of ContainerChain in 2012, some operators allegedly have been hoarding notifications at Empty Container Parks to mitigate the risks associated with not having access at the required times. The aim may be to enable better fleet scheduling and to reduce exposure to no-show penalties at Container Terminals. This type of booking behaviour impacts negatively on other carriers who are unable to secure notifications to undertake their movements due to lack of availability. The Container Parks' ability to plan may also be impacted due to notifications not representing the reality of the volume of containers and trucks trying to access the site in certain time zones.



For many years, industry has raised the issue of the impact of bulk run activities on truck servicing at the ECPs and the Container Terminals. It is believed that Container Park equipment and resources are redirected from receivals and delivery (R&D) to bulk runs when required, which results in delayed servicing of vehicles, congestion and on-road truck queuing. Carriers are booking notifications in the ContainerChain system on the assumption that the capacity represented is accurate but as bulk runs are not reflected in the system the true capacity is not shown.

Improvements are needed in the behaviour of some carriers in the way that notifications are made in the ContainerChain system. Also, ECPs and shipping lines need to be reflecting true capacity, including any bulk run activities, to ensure carriers are equipped with the correct information.

Changes to the ContainerChain system and management that will improve carriers' compliance with notification arrival times, increase flexibility and reduce delays and servicing issues associated with bulk run activities include:

- ability to edit container ID in the notification; ContainerChain is progressing this change in 2014 to achieve greater flexibility for carriers
- monitor the on-time arrival data and follow up carriers that are significantly early/late for notifications or that hoard slots
- ensure bulk run containers are entered as notifications into the ContainerChain system to ensure accurate reporting on servicing capability and capacity
- introduction of KPIs and lease obligations to undertake bulk run activities in off-peak periods and ensure a minimum number of notifications/VBS slots are released per time zone to ensure adequate access to the facility.

■ **Variability in service times at ECPs and Container Terminals makes it difficult to coordinate round trips to drop off and pick up boxes.**

Delays at ECPs can mean that a slot at a Container Terminal is missed, incurring fines for late arrival and potentially being refused access. This, in turn, may require a new slot to be booked and a separate trip back to the port.

To avoid this problem, carriers may have to build additional buffer time into their truck schedules. This reduces truck utilisation and increases costs. Some have had to invest in additional trucks to overcome these problems.

Measures which can not only reduce truck turn time (TTT) but also the variability of TTT will improve carriers' capability to secure two-way loads to the port and improve truck utilisation across the day. Proposals include:

- introduction of KPIs and lease obligations to maintain minimum service levels (e.g. TTT, access to slots and extended operating hours) at key on-port facilities (i.e. ECPs and Container Terminals)
- improving carrier compliance with desirable booking and arrival behaviour (e.g. reducing hoarding of slots at ECPs and improving on-time arrival rates at ECPs and Container Terminals)
- ECPs to proactively manage slot releases (e.g. make cancelled slots available for re-use, monitor capacity and release additional slots when suitable) and carrier compliance with slots (e.g. turnaround vehicles that arrive excessively early during periods of congestion and introduce slot restrictions for those that do not display appropriate behaviours)
- ECPs to manage bulk run movements outside peak operating hours to reduce site congestion and improve receipt and delivery (R&D) truck turn times
- appropriate level of equipment to meet the operational demands particularly at peak periods of the day.



■ Importer issues such as access to site, site constraints, empty availability after unpack

Importers are a critical component of the container supply chain in respect to coordinating movements and enabling efficient transport operations. The WA market has an extensive number of small importers, often with site constraints such as inadequate space and access issues. Many importers are disengaged with the rest of the supply chain processes and not aware of the implications for the chain when delays occur or information is not available.

Carriers identify one such issue is importers indicating that a particular container is empty and ready for dehire, but when the carrier arrives it is not yet unpacked or another empty container is blocking the first. ContainerChain currently restricts the carrier from editing the container ID for a notification. This has resulted in a slot needing to be cancelled or the carrier not showing up for a slot and incurring the associated fee, and possibly not being able to make another notification for a similar time if they have access to a different container ID. ContainerChain has acknowledged the difficulty experienced by some carriers due to this restriction and is investigating system changes to allow carriers to edit this field.

Education of importers is important to facilitate better planning and container management that will enable transport carriers to achieve better efficiency. Some changes that will support this include:

- education of importers on the benefits of alternative transport arrangements, such as use of rail, after-hours receipt of containers and extended operating hours
- ability to edit container ID in ContainerChain to respond to changing requirements
- better planning of industrial precincts to ensure adequate site planning is achieved for importer premises
- improvements to information and data exchange, including accuracy of data, which may be facilitated through the development of a Port Community System or similar initiative.

■ Futile trips due to poor communication

Significant costs are incurred by transport carriers where 'futile trips' occur, and often these costs are unable to be passed on to the end customer. Some carriers cited instances where notifications are made via ContainerChain to collect an empty container for export from an Empty Container Park, but on arrival the container is not available, out of stock or there is a delay while the container is prepared. In some instances, this may result in a futile trip for the carrier and the requirement to rebook a ContainerChain notification and return to the ECP at a later stage.

Although historically it has been understood that stock level information cannot be released to the carrier, improvements must be made to communication to ensure futile trips are minimised.

Other circumstances include container redirections from one ECP to another. On arrival, carriers are required to provide physical documentation for the container. This can result in a futile trip to the ECP, or the need to make a detour to the transport depot to collect paperwork. In an era of sophisticated information exchange processes, it is unreasonable for industry to have to rely on paperwork to collect or dehire containers.



Changes to address such circumstances are being investigated by ContainerChain, including:

- redirection functionality to provide notice to transport operators if they are required to go to a different facility (already in place for most ECPs but requires better take-up by operators)
- ability for carriers to enter information directly into ContainerChain where there is no Electronic Data Interchange, avoiding the need for physical paperwork
- communication protocols to notify carriers when a container type is out of stock at the ECP (or is likely to be unavailable). This will allow carriers to take control of whether they retain the notification and risk going to the ECP when the container may not be available.

‘We are doing more containers now than two years ago and we couldn’t manage then. Major improvements have been made to achieve this result. In the past we have been reactive and we are now being proactive based upon what we are seeing as the challenges for the future.’

Industry workshop participant, September 2013

Conclusion

The Truck Productivity Study Action Plan is focused on a number of improvement initiatives aimed at enhanced truck utilisation, productivity and operating efficiency. The Productivity Improvement Strategy following identifies the key initiatives that will be progressed as priorities, noting that some of these may be long term.

Consultation with industry stakeholders in case study interviews, the transport operator survey and industry workshops identified a significant number of other issues and suggested changes (see Appendices D and E). Although many of them have been identified as low or medium priority, there are a significant number worth pursuing. With ongoing developments of facilities, operating requirements, systems and infrastructure they will need to be continually reviewed. The WA Port Operations Task Force and the WARTA Port Carriers Working Group will be forums to progress many of these issues and possible changes, in consultation with relevant stakeholders and implementation partners. A full work program will be developed with these parties following their review of this report.

Initiatives identified in the following Truck Productivity Improvement Strategy have been prioritised based on the outcome of industry consultation and workshops and intensive review with the project steering committee. A number of industry changes have occurred since the project began and the steering committee has taken them into account in the evaluation of priorities and specific actions to be progressed. Those selected have been identified as priorities for addressing current inefficiencies in the supply chain impacting on productivity as well as strategic long-term initiatives. The aim is to set up industry for a future with greater volumes through the port while minimising community impacts. The steering committee felt it necessary to concentrate on a manageable number of initiatives while capturing all those raised throughout the course of the study.

Industry has made significant steps towards a more efficient supply chain in recent years and the efforts of all parties are to be commended. It is only through industry participants working together that changes will be successful in the long term.

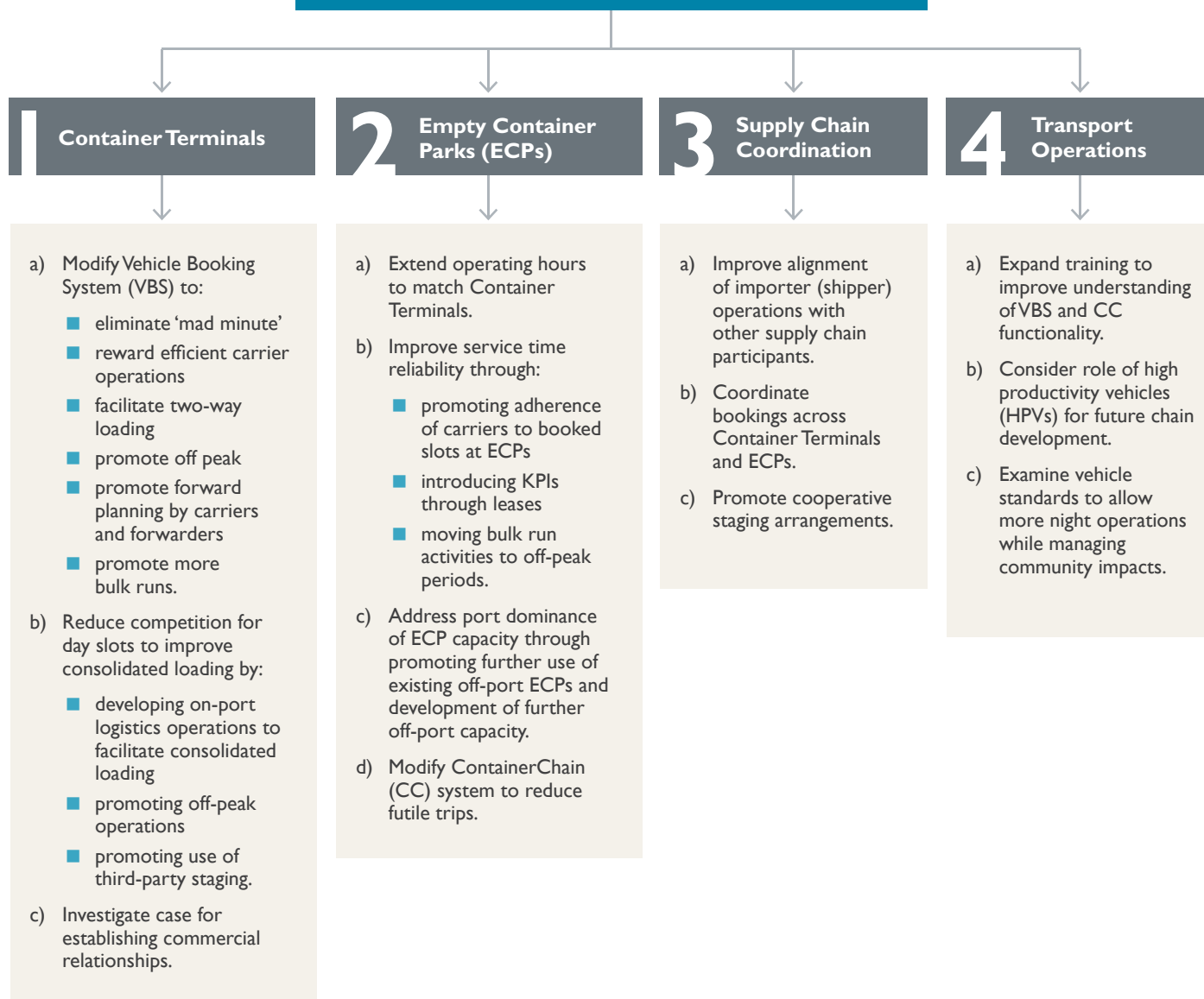


Truck Productivity Improvement Strategy

Key Issues Impacting on Trucking Productivity

- Mismatch of operating hours along the chain
- Concentration of activity during peak times
- Alignment and coordination of slot systems with trucking efficiency requirements
- 'Mad minute' and the large number of carriers
- Limited access to slots (Vehicle Booking System and ContainerChain) due to bulk runs, hoarding or not enough released
- Variability of service times at key points in the chain
- Importer issues such as site constraints, empty availability after unpack
- Futile trips due to poor communication

Strategy to Improve Trucking Productivity



Truck Productivity Action Program

Issue	Initiative	Specific actions	Timing	By whom	Comments
I. Container Terminal operations and Vehicle Booking System (VBS)					
a) Reduce the reliance on the 'mad minute' and the associated impact on efficient truck scheduling.	Modify the VBS to: <ul style="list-style-type: none"> enable more efficient truck scheduling eliminate 'mad minute' reward efficient carrier operations facilitate two-way loading promote off-peak operations promote forward planning by carriers and forwarders promote more bulk/tagged runs 	i. Identify suitable incentives for carriers that are able to plan in advance, use off-peak periods, and achieve greater utilisation/two-way loading. ii. Extend the use of tagged runs. iii. Monitor implementation of Advanced Bookings in Brisbane and Melbourne and determine with DP World likely timing of introduction to Fremantle.	Second half of 2014 Ongoing July 2014	Container Terminals, I-Stop Patrick Container Terminal Fremantle Ports, WA Port Operations Task Force, DP World.	Patrick has implemented a number of VBS changes in June 2014 including: <ul style="list-style-type: none"> reduction of time zone leeway before zone (now 15 minutes) and after zone (now 15 minutes plus 15-minute extension with late fee) early opening of slots when possible.
b) Competition for day slots making consolidated loading difficult	<ul style="list-style-type: none"> develop on-port logistics operations to facilitate consolidated loading promote off-peak operations promote use of more third party staging. 	i. Develop new on-port logistics operations. ii. Incorporate KPIs related to handling greater volume of containers outside peak in new logistics site leases.	Rous Head Cargo Services (RHCS) - in operation; Toll - 2015	RHCS, Fremantle Ports	On-port logistics operators close to Container Terminals and ECPs may be able to achieve greater operating efficiencies such as increased truck utilisation and greater ability to consolidate loads to/from port precinct. These new sites may also encourage cooperative staging arrangements to develop.
c) Unbalanced commercial relationship between carriers and Container Terminals	Investigate case for establishing commercial relationships.	i. Consult with industry on acceptable commercial arrangements.	Ongoing	WA Port Operations Task Force, Port Carriers Working Group	A Port Botany Landside Improvement Strategy (PBLIS) model for two-way commercial penalties is not desired in the Fremantle market, however, equity and service issues exist that must be addressed.

Issue	Initiative	Specific actions	Timing	By whom	Comments	
2. Empty Container Park operations and ContainerChain						
a) Difficulty arranging two-way movements in/out of port precinct in off-peak periods	Extend operating hours to match Container Terminals; frees up notifications during peak day shift.	i. Extend QUBE Central operating hours to 22:00 Monday to Friday.	Implemented (May 2014)	QUBE	QUBE Central recently announced the facility would operate to 22:00 Monday to Friday. New ECP sites will begin operations progressively from mid-2015. New logistics sites KPIs introduced to encourage greater volume of off-peak movements with ECPs and Container Terminals.	
		ii. Introduce lease conditions for new ECP sites to operate extended hours.	2015	Fremantle Ports		
		iii. Introduce lease conditions for new logistics sites to use ECPs and Container Terminals outside peak periods.	2014/2015	Fremantle Ports		
		iv. Promote use of extended ECP hours with industry/ carriers/ importers.	Ongoing	WA Port Operations Task Force, Importer Working Group		
b) Variability in service times through ECPs	Improve service time reliability through: <ul style="list-style-type: none">■ promoting greater adherence to ECP slots■ introducing maximum service times through leases■ moving bulk runs to off-peak periods.	i. Monitor truck turn time KPI through new lease arrangements.	2015	Fremantle Ports	Work has begun with ECPs to identify and follow up carriers that demonstrate undesirable booking or on-time arrival patterns. Further work is required to determine the appropriate balance between strict business rules and flexibility within the system. It should be noted that there may be wider consequences along the chain of further restricting the allowable window for carriers to enter ECPs without penalty.	
		ii. Monitor carriers' compliance with on-time arrivals.	June 2014	ECPs, ContainerChain, Fremantle Ports		
		iii. Monitor carrier behaviour such as slot hoarding and late cancellations.				
		iv. Address issues preventing further use of off-peak periods for bulk run movements.	Second half of 2014	WA Port Operations Task Force, ECPs, Container Terminals, shipping lines		
		v. Monitor bulk run movements through new lease arrangements.	Mid-2015, ongoing	Fremantle Ports		

Issue	Initiative	Specific actions	Timing	By whom	Comments
c) Port dominance of ECP capacity	Promote further use of off-port ECPs. Create greater off-port capacity.	i. Monitor use and capacity of existing off-port ECPs.	Ongoing	Fremantle Ports	On-port ECPs comprise greater than 80% of total ECP capacity.
		ii. Promote use of redirection functionality and triangulation to extend use of off-port ECPs.	Second half of 2014	I-Stop, ContainerChain, ECPs	Developing further off-port facilities and promoting their use will provide significant capacity improvements and reduce congestion in the Inner Harbour in the long term.
		iii. Work with Government to identify suitable off-port locations for future ECP development.	Long term	Fremantle Ports, WA Port Operations Task Force	
d) Difficulty managing variability in the supply chain; prevalence of futile trips related to ECP operations	Modify ContainerChain system to reduce futile trips and improve efficiency.	i. Reduce period of time that a notification can be made from two hours to 15 minutes prior to start of zone.	Completed	ContainerChain, ECPs	ContainerChain has begun working on these initiatives, with the ability to edit container ID the first priority. Timing of availability is unknown at this stage. Functionality to return cancelled slots already exists; need to ensure that this is happening. Investigations continue nationally as to ability to incorporate bulk containers into the system. Currently, up to 30% of total containers through ECPs (being bulk) are not visible.
		ii. Allow container ID to be edited in ContainerChain notifications.	Mid-2014		
		iii. Ensure cancelled slots returned for re-use.	Ongoing		
		iv. Introduce ability to enter container details by transport carrier if Electronic Data Interchange (EDI) does not exist, to avoid paper Delivery Order (DO) requirement.	TBC		
		v. Provide warning to carrier when export container not available for collection.	TBC		
		vi. Ensure bulk containers are incorporated into the ContainerChain system for visibility of true ECP capacity and workload.	TBC		

Issue	Initiative	Specific actions	Timing	By whom	Comments
3. Supply chain coordination					
a) Misalignment of shipper practices with other supply chain participants	Align shipper (particularly importer) practices with other supply chain participants to improve: <ul style="list-style-type: none"> ■ alignment of importer and port operating hours ■ importer site access (physical) and capability to handle containers ■ understanding of implications of priority container requirements. 	i. Promote extended hours solution with industry, e.g. after-hours access to importer sites, extended hours during peak.	Commenced/ongoing	Importer Working Group/ WA Port Operations Task Force	An Importer Working Group was established in 2013 to implement initiatives to engage with and educate importers on the supply chain, processes, stakeholders and opportunities such as extended hours and after-hours deliveries. Presentations to importers, including the development of information packs, have been developed and are being progressively delivered to industry.
		ii. Continue work of the WA Port Operations Task Force Peak Season Working Group to focus on extended and flexible working hours during peak periods (i.e. Christmas, Easter).	Ongoing	Peak Season Working Group	
		iii. Communicate the efficiency implications of demanding direct delivery, specified containers, etc.	Second half of 2014	Importer Working Group	
b) Difficulty arranging two-way movements in/out of port precinct in off-peak periods	Coordinate bookings across terminals and ECPs to improve transport ability to coordinate two-way loading opportunities.	i. Establish capability of Port Slots initiative to achieve cross-terminal bookings.	Second half of 2014	Container Terminals/I-Stop	Recent changes to I-Stop system may allow this to be achieved where previously thought not possible. This may be aligned with the development of a Port Community System (PCS) concept.
		ii. Investigate ability to use Port Slots across terminal and ECP booking systems.	TBC (medium/long term)	I-Stop/ ContainerChain	
c) Large number of carriers accessing Container Terminals during peak day periods	Promote cooperative staging arrangements.	i. Investigate operating and commercial models of third-party staging operations in Eastern States.	July 2014	Fremantle Ports	Third-party staging facilities have been adopted during peak periods and are present in other states, with some examples in Fremantle. Further work is required to investigate the commercial and operational arrangements that are successful in other states, and the particular models that would be suitable in Fremantle.
		ii. Encourage development and use of local third-party staging operations.	Ongoing	WA Port Operations Task Force, Port Carriers Working Group	

Issue	Initiative	Specific actions	Timing	By whom	Comments
4. Transport operations					
a) Large number of carriers accessing Container Terminals during peak day periods	<ul style="list-style-type: none"> Develop on-port logistics operations to facilitate consolidated loading. Promote off-peak operations. Promote use of more third-party staging. 	i. Develop new on-port logistics operations.	Rous Head Cargo Services (RHCS) - in operation; Toll - 2015	RHCS, Fremantle Ports	On-port logistics operators in close proximity to terminals and ECPs may be able to achieve greater operating efficiencies such as increased truck utilisation and greater ability to consolidate loads to/from port precinct. These new sites may also encourage cooperative staging arrangements to develop.
		ii. Incorporate KPIs to handle greater volume of containers outside peak in new logistics site leases.	Ongoing	Fremantle Ports	
b) Transport carriers not fully using all available system functionality to achieve efficiency and higher productivity movements	Expand training to improve understanding of VBS and ContainerChain functionality.	i. Promote two-way loading and higher truck utilisation at terminals.	Ongoing	Container Terminals	I-Stop has agreed to investigate more frequent education and training sessions with a focus on state and facility relevant to market.
		ii. Educate transport operators on existing system functionality relevant to state/facility.	July 2014/ ongoing	I-Stop/ Container Terminals	
		iii. Develop new functionality to increase efficiency and truck utilisation.	Ongoing	I-Stop/ Container Terminals	
c) Limitations on use of high productivity vehicles (HPVs) outside port precinct in WA	Consider role of HPVs for future chain development.	i. Monitor HPV use in Eastern States.	Ongoing	Fremantle Ports, WA Port Operations Task Force, Main Roads WA	Use of HPVs is being extended gradually in the Eastern States. Costs, benefits and other implications regarding the introduction need to be assessed for application in WA, particularly with the identified growing portion of 40' containers. Introduction of HPVs could impact port rail services and would need careful consideration. Need to determine wider benefits to industry.
		ii. Identify costs and benefits for application in WA.			
		iii. Identify risks to rail and associated community concerns.			

Issue	Initiative	Specific actions	Timing	By whom	Comments
d) Noise and community impacts of increasing truck volumes on road network	Examine vehicle standards to allow more night operations while managing community impacts.	i. Investigate vehicle and driver operating standards to manage night operation impacts on the community.	Ongoing	WA Road Transport Association, WA Port Operations Task Force, Main Roads WA	





Further Information

To download the full Truck Productivity Study report, visit www.fremantleports.com.au

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APPENDICES



Appendix A: Analysis of Industry and Practices

Introduction

The first stage of the Truck Productivity Study concentrated on gaining a better understanding of current industry structure and practices. This involved analysis of existing data and a survey of transport operators.

Over recent years, a large body of detailed information has been collected about Fremantle Container Terminals, transport operators, Empty Container Parks (ECPs) and truck movements. Through the analysis of this data, a broader picture of how the road transport industry serves the container trade through the Port of Fremantle has emerged. To complement this data, a survey of transport operators was undertaken to further understand the structure of the current road transport industry and the factors impacting on efficiency and productivity in the container supply chain. The approach specifically sought to understand:

- number and size (annual TEU handled) of active carriers accessing Fremantle Port's Container Terminals (Patrick and DPWorld)
- location of carrier depot operations and whether they are located within or outside the port precinct
- proximity of carriers to importer/exporter pack and unpack locations
- extent of use of staging/hubbing activities and who is undertaking staging activities, cross referenced against size and location of carrier
- time of day (by shift) for receivals and delivery activities at ECPs and Container Terminals, cross referenced against size and location of carrier
- extent of two-way loading activities to/from the Container Terminals and ECPs (delivery/drop-off of one container and collection/pick-up of another in a single truck movement), cross referenced against the size and location of carrier
- extent of two-way loading activities to/from the port precinct
- transport operator split between import and export volume – two-way loading capability.

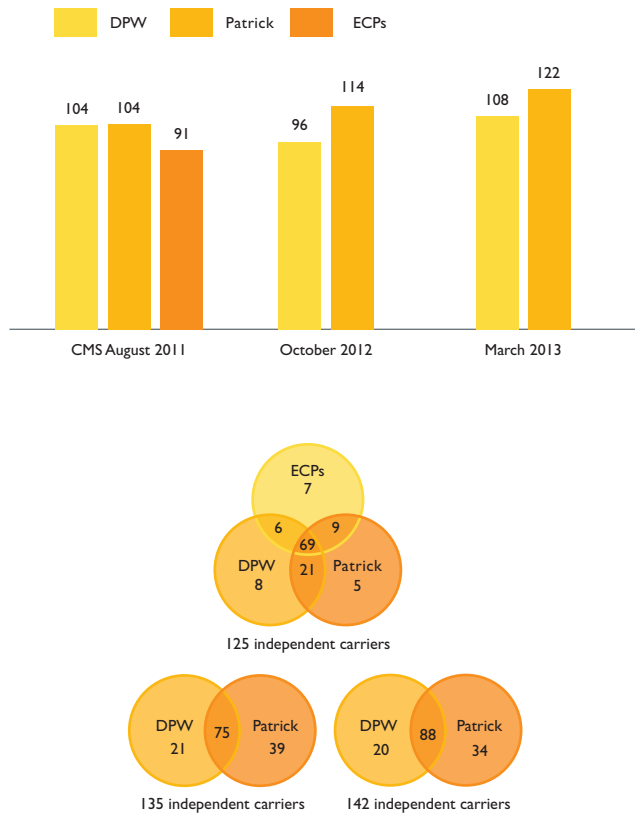
The survey also examined operational arrangements, commercial influences and decisions and impacts on trucking efficiency and productivity experienced by the container transport industry.

Data sources

The data for this analysis came principally from five sources:

- Container Movement Study (CMS), August 2011:
 - Two weeks of data relating to movements to and from the Container Terminals and ECPs, and data from transport operators on trucking movements during the survey period
- Patrick Container Terminal:
 - Records of truck movements to and from the Container Terminal for two weeks in October 2012 and four weeks in March 2013
- DPWorld Container Terminal:
 - Records of truck movements to and from the Container Terminal for two weeks in October 2012 and four weeks in March 2013
- Annual Fremantle Truck Survey:
 - Truck type and utilisation data for a two-week period in August/September from 2002-13
- Transport Operator Survey:
 - Quantitative and qualitative data obtained from 65 transport operators of varying size and location via an online survey conducted over several weeks between 19 June - 26 July 2013. The online survey comprised about 40 questions.

Figure 1: Number of active carriers observed at Container Terminals and ECPs



Findings

1. Number of transport operators

The number of transport operators observed servicing the container trade has been increasing since 2011, from 125 independent carriers in 2011 to 142 carriers in 2013. In 2013, 62% of the carriers observed accessed both the Patrick and DPW Container Terminals, while the remaining 38% accessed one Container Terminal only. A greater number of carriers accessed the Patrick Terminal than the DPW Terminal in 2013 (about 11% more). The number of carriers accessing only Patrick Terminal increased quite rapidly between 2011-13. This may be related to Patrick's market share, which increased from 55% to 65% in that period.

Representing a broad range of operators by size and location, 65 transport operators responded to the online survey. For the purpose of the data analysis and survey, transport operators are categorised into six groups, based on container volumes, as shown in the table below.

As depicted in the above table, groups A to D together handle 75% of the full TEU task and comprise 31 carriers, of which 61% were involved in the survey. The remainder of the survey participants comprised 35% of the total number of category E-F transport operators who, combined, handle 25% of total port container volume. On average, survey respondents handled 100 TEU/week.

It is estimated that the survey captured responses from about 45% of active transport operators who handle 80% of total container trade through the port.

Figure 2: Categorisation of transport operators and survey coverage

	% of total port trade managed per carrier (average)	Total port carriers	Survey respondents	Survey coverage of total	Percentage of survey respondents
A ¹	>10%	1	1	100%	2%
B	5 - 10%	4	4	100%	7%
C	2 - 5%	8	5	63%	8%
D	1 - 2%	18	9	50%	15%
E	0.5 - 1%	23	10	43%	16%
F	<0.5%	97	32	33%	52%
Total		151	61	40%	
A to D		31	19	61%	
E and F		120	42	35%	

¹ Please note – Group A has been removed from all graphs due to confidentiality considerations.

2. Size of carriers

The increasing number of transport operators may imply that the number of containers carried by each transport operator has decreased over time, but this has not been the case. An examination of how many loaded TEU each operator is carrying to and from the Container Terminals over time reveals that a large proportion of the overall task is consistently achieved by a relatively small number of operators as shown in the table below.

Figure 3: Number of carriers by volume of total trade at Container Terminals (Source: Container Terminal data)

Date	50% of the task	90% of the task	100% of the task
August 2011	7 carriers	43 carriers	118 carriers
October 2012	8 carriers	55 carriers	139 carriers
March 2013	9 carriers	55 carriers	142 carriers

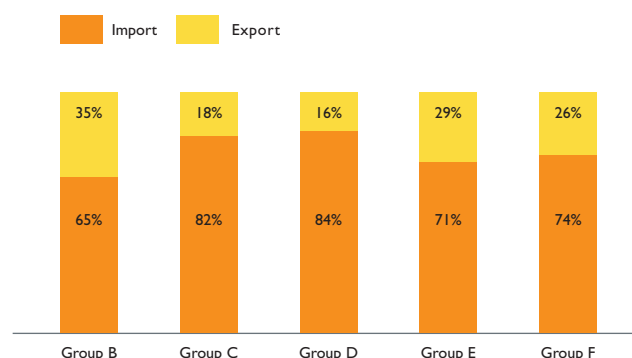
Half of the task was carried out by the top nine transport operators in 2013 and 90% of the loaded TEU was carried by only 55 of the observed total of 142 transport operators. Interestingly, of the top nine transport operators, six are based in North Fremantle (within the port precinct).

More than one-third of the transport operators observed in 2013 carried fewer than 10 loaded TEU a week. This finding is significant in that the behaviour and practices of only a small number of large operators have the potential to considerably impact overall truck productivity. Historically, it had been perceived that the large number of operators servicing the port may be adversely impacting productivity, but this finding makes that less likely. Some facilities note, however, that increased capacity may be gained where consolidation of smaller operators is achieved; for example, extending the use of common-user staging facilities among the smaller carriers. Transport operators note that the large number of carriers competing for Vehicle Booking System (VBS) slots may have an impact on their ability to access the desired number and time of slots. This may impact on efficient truck scheduling, although changes to the VBS structure and associated processes may reduce this impact.

3. Import/export balance

The potential for transport operators to travel to and from the Container Terminals with loaded containers depends primarily on how balanced their volumes are in terms of imports and exports. Very few transport operators have good balance in this respect, either focusing principally on imports (the majority of transport operators) or exports. Many of the operators carrying exclusively export containers are regional carriers with specific agricultural or mineral export products. This may contribute to Fremantle's slightly larger number of carriers when compared with other states. Only around a third of the top 30 carriers (comprising classifications A-D) have a reasonable balance of imports and exports. The remaining two-thirds have a ratio of imports to exports greater than 75%, meaning that even some of the largest carriers find difficulty in balancing import and export volumes.

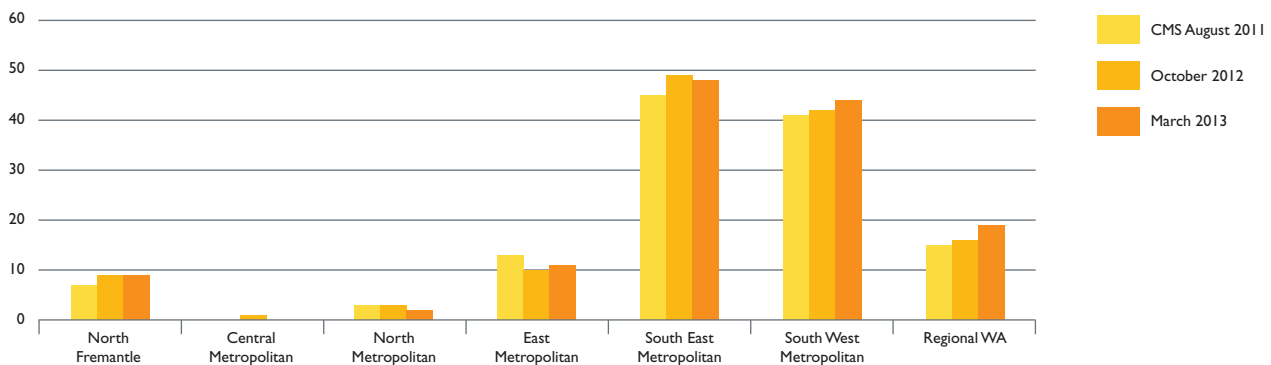
Figure 4: Average percentage split of import/export volume per carrier by carrier classification



4. Location of carriers and depot characteristics

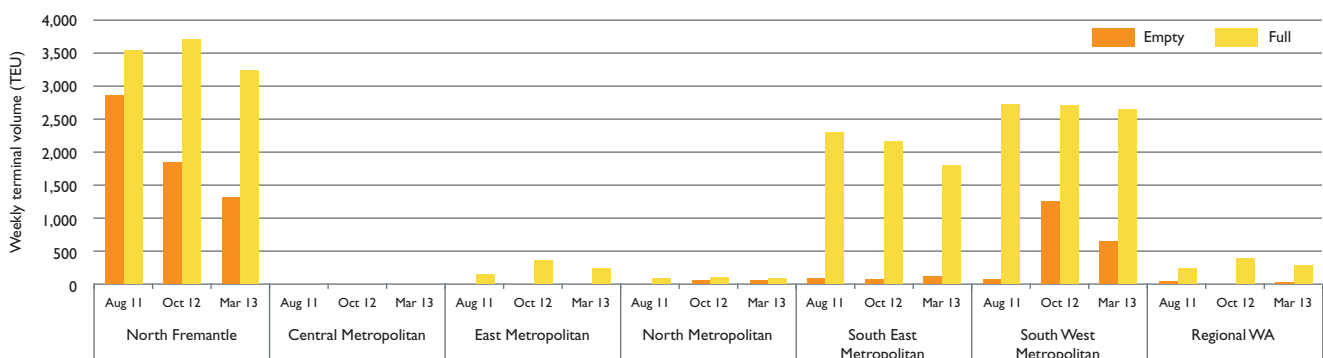
The geographical spread of transport operator bases has remained fairly constant over the observed time periods, with South East Metropolitan (including Kewdale and Welshpool) and South West Metropolitan (including Kwinana, Cockburn and Fremantle) areas the most common locations. The number of regional transport operators has increased over time but remains relatively small.

Figure 5: Number of carriers by location



When the location of the transport operators is correlated with the volume of loaded containers carried, the relatively large volume carried by each of the transport operators in North Fremantle is significant. In 2013, more than 87% of loaded TEU were carried by transport operators based in just six suburbs: North Fremantle (39%); Canning, including Welshpool, (15%); Cockburn (13%); Kwinana (9%); Fremantle (7%); and Belmont, including Kewdale, (5%). On-port operators handle on average 400 TEU/week compared with off-port operators who handle 40 TEU/week on average (from March 2013 data).

Figure 6: Weekly Container Terminal volume (TEU) by location



The above diagram shows the number of TEU carried to and from the Container Terminals by operators per week based in the various locations. It shows that empty container movements to/from Terminals are carried out mainly by operators based in the port precinct. Although there appears to be a decline in the weekly TEU in March 2013 for North Fremantle and South East Metropolitan, this does not account for seasonal trends. March is traditionally a month with lower volumes than August and October and so does not represent a decline in weekly volume.

The majority of operators have one transport depot, but both large and small operators were among those with multiple facilities.

Figure 7: Percentage of carriers by number of transport depots

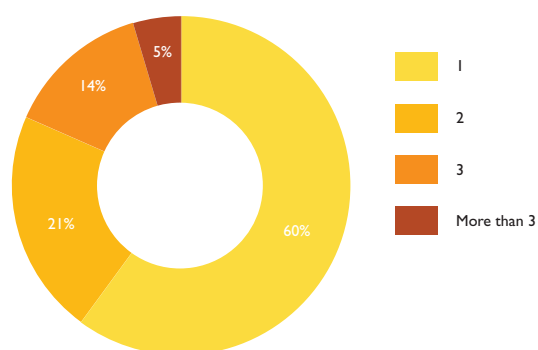


Figure 8: Average number of depots per carrier by carrier classification

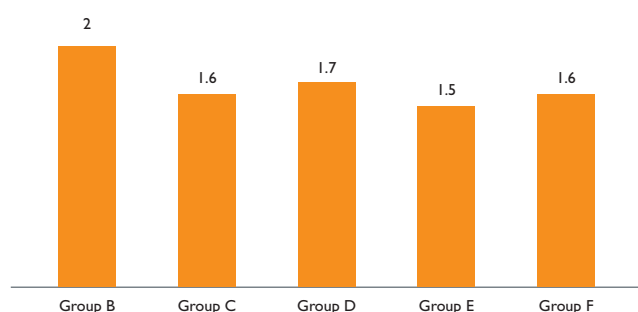
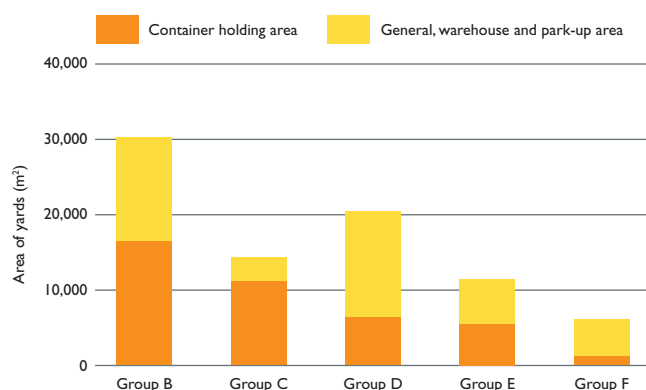


Figure 9: Average depot size by carrier classification



The average size of a single transport depot is just over 8,300m² with an average total depot area of almost 13,500m² per operator when multiple facilities are taken into account.

As expected, on average the size of yards per operator was larger for carriers handling greater volumes.

Transport operators who have their own container-handling equipment at depots are able to undertake activities such as staging of containers more readily. The survey identified the type and number of pieces of container-handling equipment owned by the respondents.

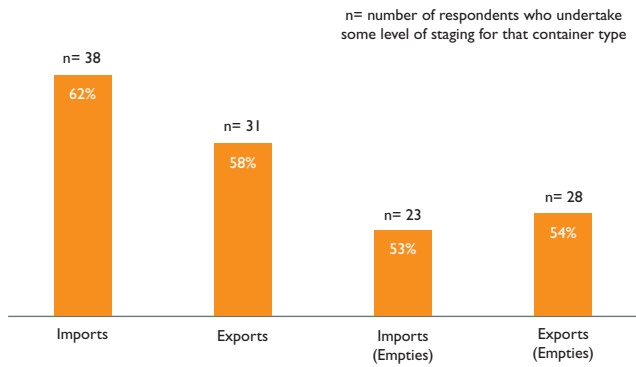
Of the carriers who have container-handling equipment, 70% use forklifts, with an average of 1.3 per carrier; 25% operate reach stackers with an average of two per carrier and 62% use side loaders for handling container transfers within their yards, with an average of 2.2 per carrier. For 23% of carriers, side loaders are the only type of container-handling equipment used within their sites.

5. Staging

Container staging involves an interim stop or transfer between collecting/delivering a container from/to a Container Terminal and the end customer (importer or exporter). For example, containers are often collected from a Container Terminal, staged overnight at a transport depot and delivered the next day to the customer.

The survey found that 77% of respondents staged at least some of their containers. This was not restricted to the large carriers but was observed across a broad cross-section of carriers in terms of both size and the location of their depots. Several carriers associated with the rail service at North Fremantle staged all of their container movements, since by definition both ends of the rail journey constitute a staging location.

Figure 10: Average percentage of containers staged per carrier by container type



On average, staging was more prevalent for transport operators located on-port, which may be related to these carriers undertaking bulk runs to and from the Container Terminals. The major reasons cited by carriers for staging containers included the customers' receipt/despatch times (54%), better utilisation of equipment (44%) and lack of available timeslots at Terminals (34%).

Figure 11: Average percentage of containers staged by carrier classification and container type

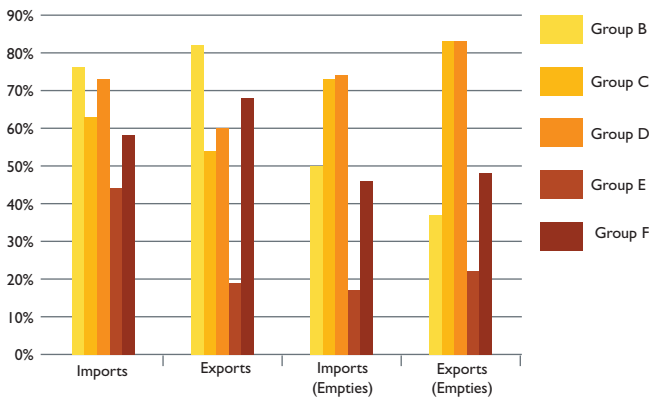


Figure 13: Average transport carrier operating hours

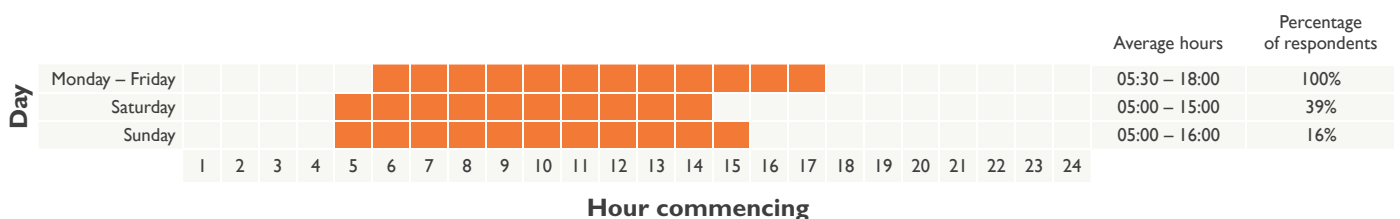
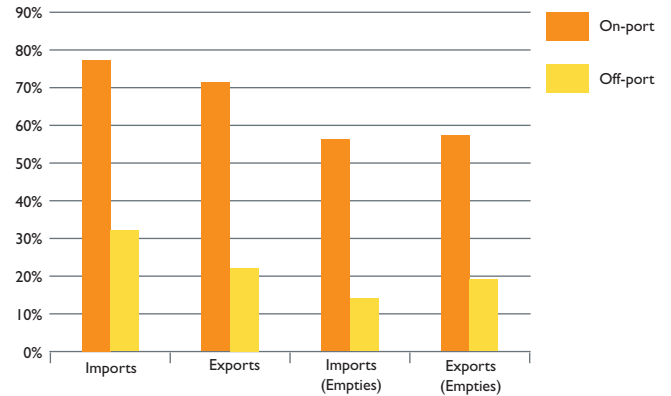


Figure 12: Average percentage of containers staged by location of carrier and container type

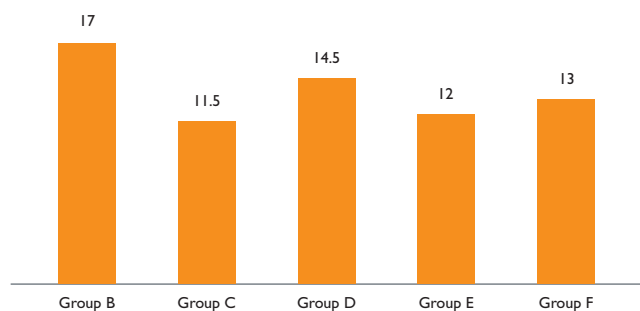


6. Reveal and delivery times

6.1 All carriers

When asked about their standard operating hours, the majority indicated they were within daylight hours Monday to Friday. Larger carriers (A and B) had longer operating hours, with small differences between the remaining carrier classes. Interestingly, C class carriers who carry 2-5% of total port volumes on average per carrier are currently operating fewer hours than D, E and F classes. It has been noted that during the current operating environment, carriers are able to handle their volumes during daylight hours, therefore the additional cost of operating after hours may not be justified.

Figure 14: Average weekday opening hours by carrier classification



The transport industry operates predominantly Monday to Friday during daylight hours. It is encouraging to see, however, that almost half of operators undertake some pick-ups/drop-offs during evening hours (18:00-00:00) on weekdays, although on average this accounts for only 27% of those carriers' movements. Figure 16 indicates the average percentage of total truck movements to/from the Container Terminals and/or ECPs occurring at the various times by transport operators who are working within those periods. It also indicates the percentage of survey respondents who undertake some level of activity during these times.

Figure 15: Percentage of carriers operating on weekends by carrier classification

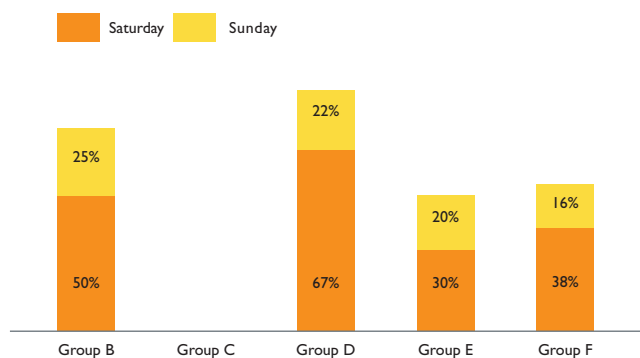


Figure 16: Percentage of Container Terminal and ECP truck movements by period

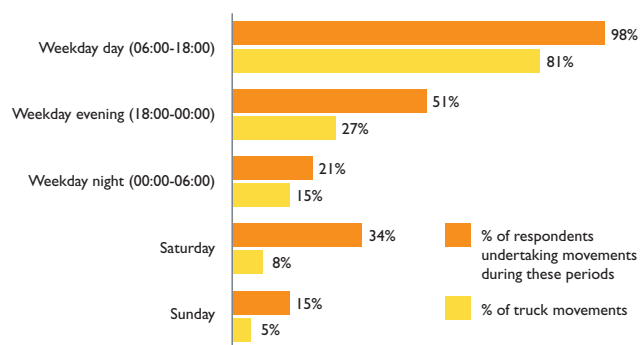


Figure 17: Percentage of Container Terminal and ECP truck movements by period and carrier classification

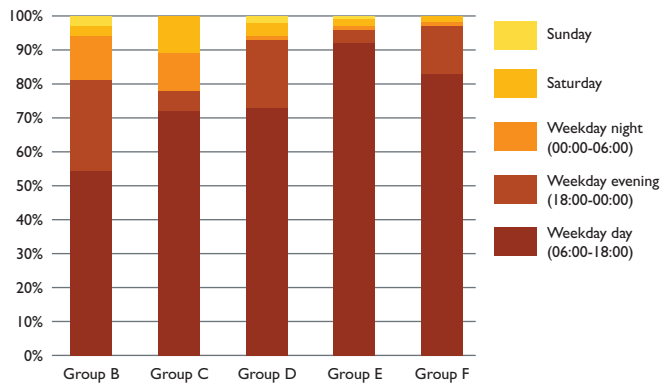


Figure 18: Percentage of Container Terminal and ECP truck movements by period and location of carrier

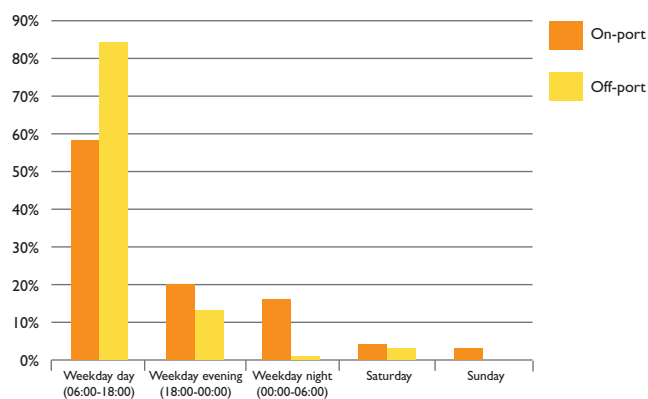
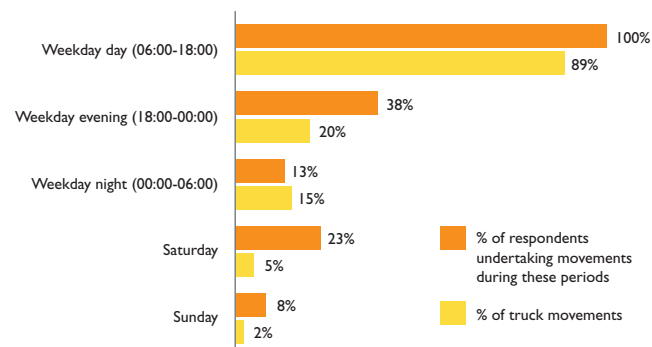


Figure 19: Percentage of truck movements from/to customers by period

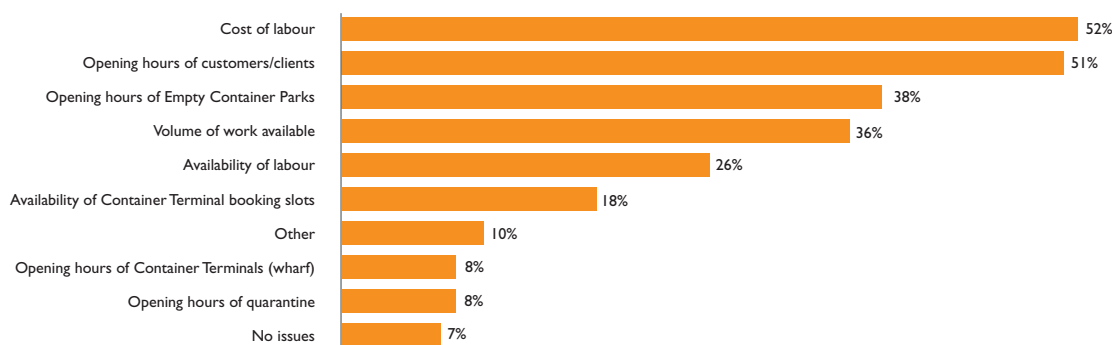


Despite the majority of carriers indicating that their standard operating hours were within daylight hours Monday to Friday, many responded that they also undertook some movements outside their standard operating hours. Larger carriers and those located on-port are more likely to spread movements to and from the Container Terminals and ECPs across the 24/7 period, compared with smaller operators and off-port operators who undertake the majority of movements during weekday daylight hours. Interestingly, classes D and F are achieving, on average, 15-20% of their total movements during the weekday evening period.

Unlike interactions with the Container Terminals which are spread across the 24-hour period for larger transport operators, movements to and from customers are generally limited to daylight hours from Monday to Friday, with the spread across the day not as significant for any size carrier. Figure 19 shows the average percentage of total truck movements to/from customers during the various periods by transport operators who are working within those times. It also indicates the percentage of survey respondents who undertake some level of activity during these times.

The reason for the majority of deliveries and pick-ups to/from customers occurring during peak times during the week may be attributed to customer opening hours which were cited as one of the main barriers to after-hours or weekend operations. Other major barriers included the cost of labour, opening hours of ECPs and the current volume of work.

Figure 20: Issues that restrict evening, night or weekend operations



6.2 R&D by location of carrier

In addition to the survey, the time of receipt and dispatch of containers by size and location of transport operator was analysed separately for both Patrick and DPW Terminals using data from each of the three consecutive years.

When looking at both Terminals together, there was a small level of activity during the night, with the majority of movements relating to on-port transport operators. On-port operators access the Terminal more in the evening than other operators. Transport operators located off-port have a similar arrival pattern regardless of their base location, although the regional carriers show a tendency to arrive earlier in the day, with their arrivals tailing off faster than other carriers.

The following graphs depict the time of day of R&D activities for the two Terminals combined, identifying transport operators located within on-port compared to those located off-port in 2013. On-port operators, with the benefit of close proximity to the Container Terminals and staging points, have a longer spread of activity over the full 24-hour period. Off-port operators, however, have a distinct peak in the morning between 06:00-09:00 (Terminals open for R&D from 06:00 generally), likely to be related to a preference of customers for daytime deliveries and a marked drop-off from 6pm in the evening. The latter is likely to be linked to the operating hours of ECPs, and hence the inability of carriers to undertake two-way movements to the port precinct to dehire empty containers and collect loaded import containers, and the operating hours of customers.

Figure 21: TEU picked up/delivered per hour at Container Terminals, 2013

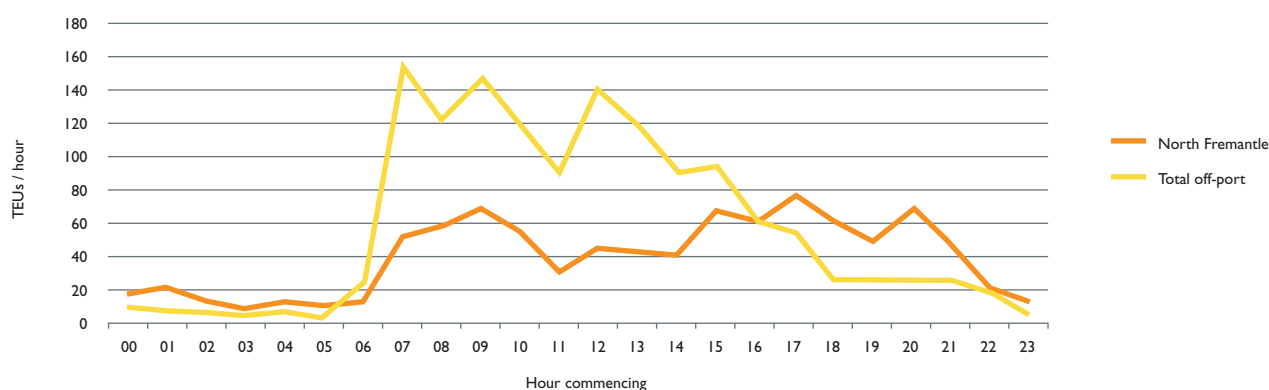


Figure 22: Two-way loading at Container Terminals, 2013

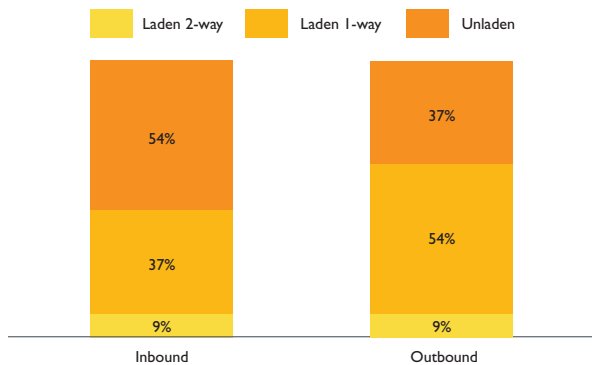
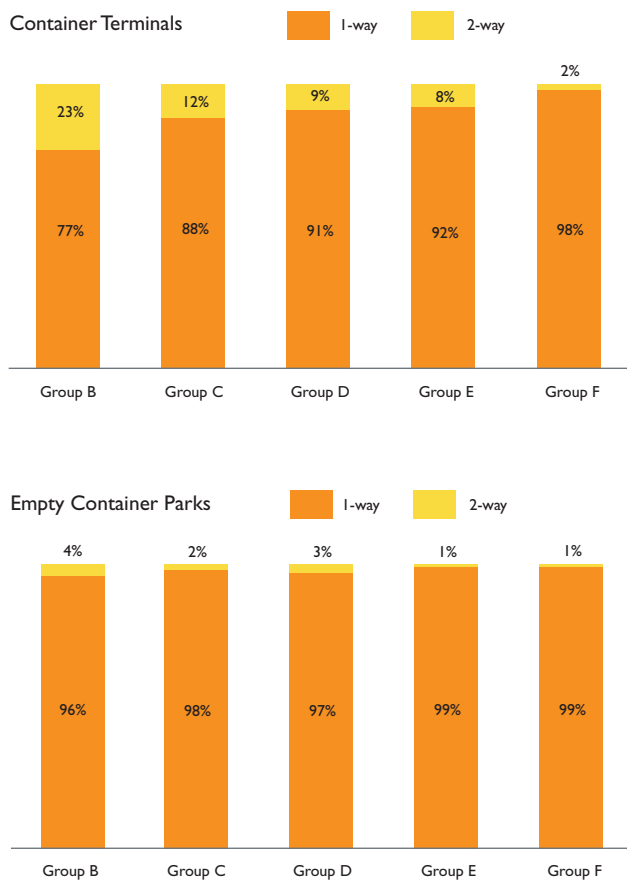


Figure 23: Two-way loading at Container Terminals and ECPs by carrier classification, 2011



6.3 R&D by size of carrier

Larger transport operators are observed to be accessing both of the Terminals overnight and in the evening. These are, of course, the ones who have been found to be based on-port and so the observed pattern is quite similar for North Fremantle and large operators. The smaller operators all have very similar arrival patterns to one another, with little or no use of the Terminals in the evenings or overnight.

7. Extent of two-way loading

The extensive data from the Container Terminals provided a good indication of how many trucks are managing to take export cargo into the Terminal and leave with an import load. The potential for transport operators to travel to and from the Container Terminals with loaded containers is dependent on how balanced their volumes are in terms of imports and exports. At the Container Terminals, about 9% of the trucks arriving at the Terminal manage to carry a container in both directions.

Two-way loading occurs for a greater number of truck trips to/from the Container Terminals than ECPs. Interestingly, all carrier size groups achieve some level of two-way loading at both types of facilities, although generally larger carriers achieve this more frequently.

Two-way loading to and from the port precinct is more achievable for many operators compared to a single facility, e.g. a Container Terminal. With most ECPs located within the port precinct, in the majority of cases for each loaded container movement there can be a corresponding movement of an empty container. The 2013 truck survey data shows that this is indeed the case, with 43% of trucks achieving two-way loading to and from the port precinct (which may be to/from a combination of Container Terminals, ECPs or any other container-handling facility within the port precinct) compared to 9% at the Container Terminals alone. This has improved since 2012, when 39% of trucks were achieving two-way port precinct movements.

Figure 24: Port precinct two-way loading, 2012 and 2013

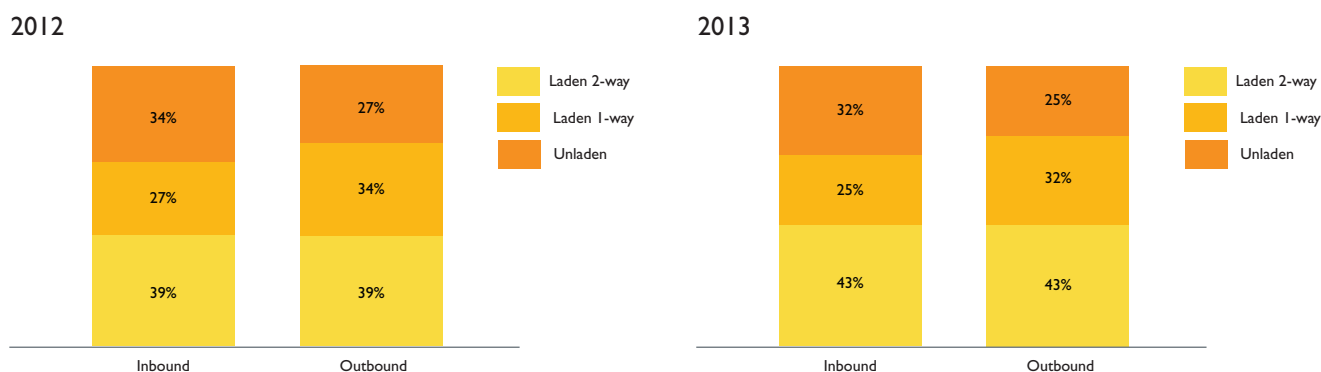


Figure 25: Estimated average percentage of unladen movements per carrier to/from port precinct by carrier classification

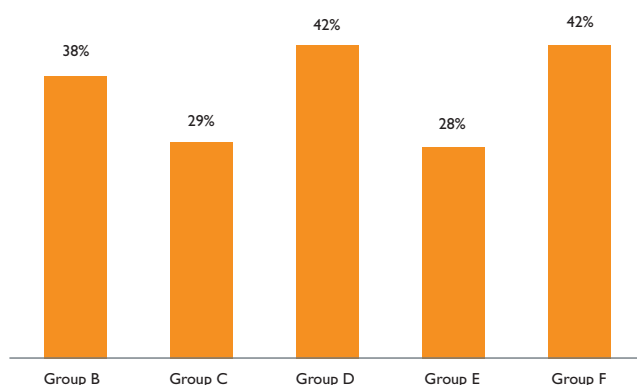
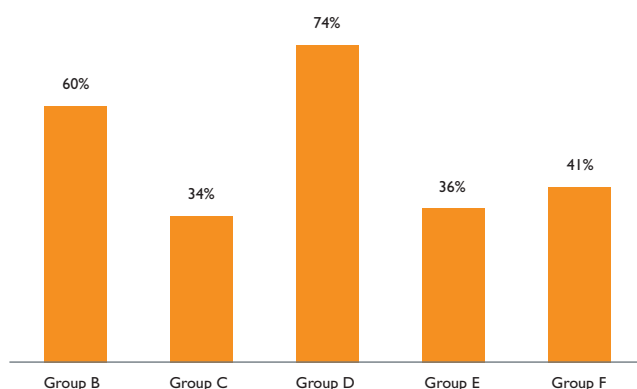


Figure 26: Estimated percentage of unladen movements per carrier within the port precinct by carrier classification

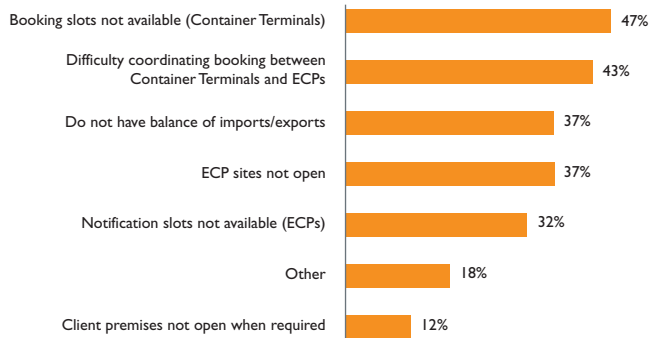


The online survey of transport operators indicated that the level of empty running within the port precinct (between facilities located within the port precinct) was higher for on-port operators with an average of 57% of movements involving an empty leg, compared to 45% for off-port operators. This may be associated with large on-port operators undertaking bulk movements from the Container Terminals to their staging facilities, where containers are loaded in one direction only, compared to off-port operators undertaking direct deliveries to customers. Empty running to and from the port precinct was relatively similar for on-port compared to off-port operators. The case study interviews also confirm that a significant commercial consideration for effective transport operations is the ability to undertake two-way loaded movements to/from customers.

Figure 26 indicates empty running between facilities within the port precinct, for example, between a Container Terminal and an on-port staging depot.

The major reason for empty running reported in the survey related to booking slots at Container Terminals being unavailable (47%). This may be due to empty containers needing to be dehipped and hence a trip to the port is undertaken when a slot is not available at the Container Terminals to pick up or drop off a container. This relates to the second major reason in the graph following, whereby some transport operators have difficulty in coordinating bookings between Container Terminals and ECPs.

Figure 27: Key issues identified that result in empty running



When asked about bulk runs, respondents indicated that the major constraints in undertaking bulk runs were insufficient volumes, allocated times for bulk runs were not suitable, the occurrence of empty running associated with bulk runs, and insufficient storage to manage volumes. As would be expected, large operators and those located on-port undertake, on average, a greater number of bulk runs per week in comparison to smaller operators and those located off-port.

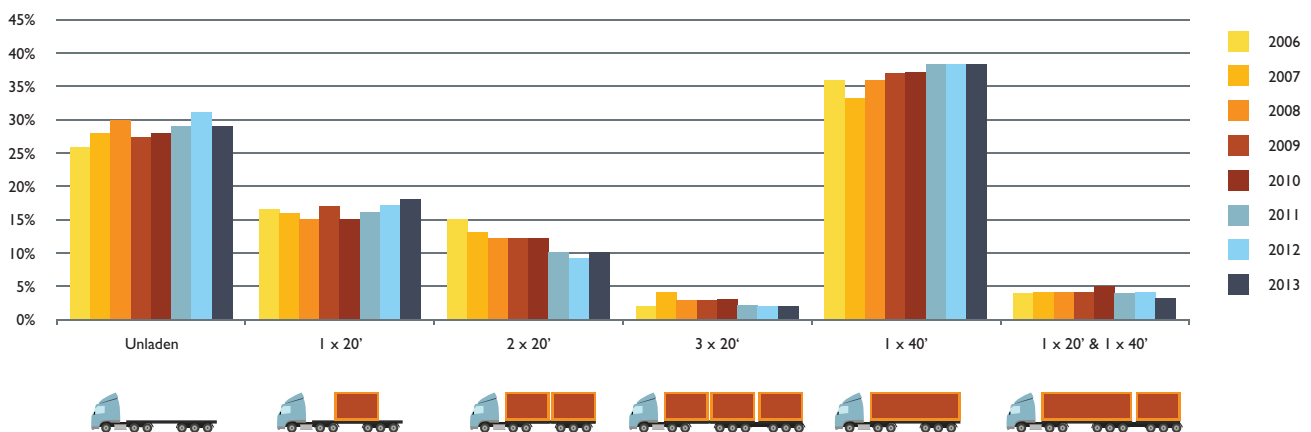
8. Container mix

In recent years, the proportion of the TEU container task made up of 40' containers has increased. In 2006, 40' containers made up 57% of all TEU observed on trucks servicing the port. By 2013, this figure had risen to 65%. Trucks servicing the port have a maximum "theoretical" capacity of three TEU per truck based purely on the length and axle configuration of the truck. In reality, the weight of containers is often a limiting factor which inhibits achieving this "theoretical" capacity.

However, it appears that this increase in the incidence of 40' containers may be having an inhibiting effect on truck utilisation since it is harder for operators to source sufficient 20' containers to fill the spare slots on their trucks. Data from the annual truck survey going back to 2006 shows there is a clear decline in the percentage of trucks carrying 2 x 20' containers.

Offsetting this decline is a slightly smaller corresponding increase in the proportion of trucks carrying 1 x 40' container and an increase in the proportion of trucks travelling unladen. The change in container size mix may be having a negative effect on overall truck loading, but consideration must also be given to other factors that affect truck loading, such as container weight, to determine the ultimate influencing factor.

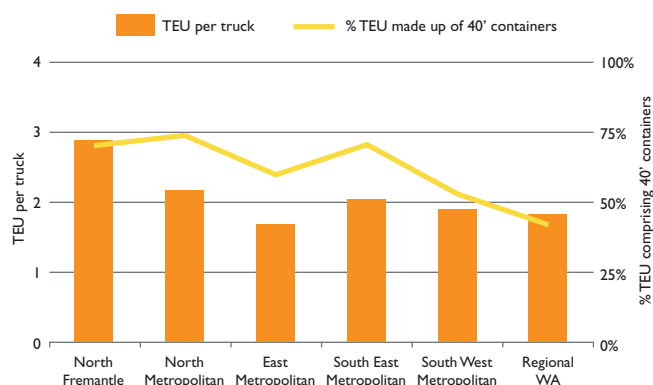
Figure 28: Load configuration of container vehicles (Truck Survey 2013)



9. Truck loading

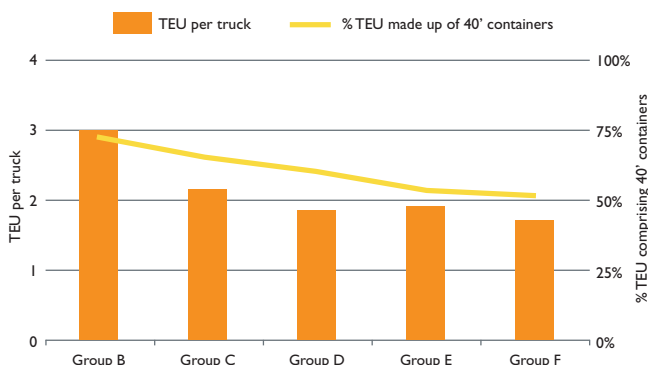
The number of TEU per truck at the Container Terminals varies according to the size and location of the transport operator. Operators based on-port were consistently observed carrying more TEU per truck trip than those based elsewhere. Those based in the East Metropolitan area recorded the lowest TEU per truck. In terms of the proportion of 40' containers carried, operators based in the North Metropolitan area carried the highest proportion of 40' containers. Regional carriers carried the lowest proportion of 40' containers.

Figure 29: Truck load factor vs percentage TEU comprising 40' containers by carrier location, March 2013



In terms of the size of transport operators, the results show that the largest operators seem able to load their trucks with more TEU compared to smaller operators. The proportion of TEU made up of 40' containers also declines in line with the size of the transport operator, with small operators carrying proportionately fewer 40' containers than the largest operator.

Figure 30: Truck load factor vs percentage TEU comprising 40' containers by carrier size, March 2013



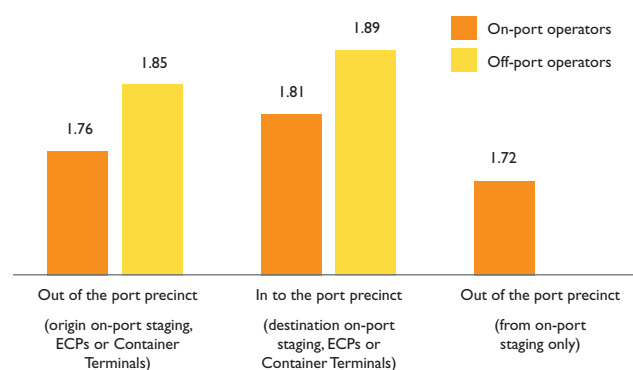
In all this analysis it should be noted that 75% of all loaded TEU through the Container Terminals is carried by about 30 transport operators. This means the task is fairly concentrated in the hands of relatively few operators and the effect of the smaller operators who have been shown to have poorer truck utilisation is perhaps not as significant as previously thought.

On-port productivity analysis

With the current development of additional on-port logistics operations, an understanding of the impact of these facilities on truck productivity is being sought. It is expected on-port operators would achieve higher truck productivity in and out of the port precinct due to their proximity to Container Terminals and ECPs. On-port operators confirm that the vast majority of their import volume is collected in bulk movements (e.g. tagged runs) and staged at their depots for distribution to clients at a later stage. As a result of extensive use of staging, on-port operators may have more control over the consolidation and coordination of loads to/from customers than those located outside the port precinct and whose ability to consolidate on-port is limited by the slots they are able to secure through the VBS.

When analysing the differences in productivity levels (from 2011 CMS data), there was a notable difference in the truck utilisation of on-port and off-port operators to/from the Container Terminals, with on-port operators averaging 2.4 TEU per truck movements compared to 2.0 TEU for off-port operators. The high result for on-port operators reflects the large volume of containers moved from Container Terminals to on-port staging depots in bulk run arrangements. Figure 31 shows, however, that there was only a marginal difference in truck utilisation in and out of the port precinct between on-port and off-port operators, and, interestingly, off-port operators achieved the higher result.

Figure 31: Truck utilisation to/from the port precinct by location of carrier



One reason on-port transport operators cited for lower productivity was the required use of side-loaders to deliver to customers. Side-loaders have smaller carrying capacity than other vehicles. The size of importer premises and the inability to handle a high number of containers at once also limits higher productivity and consolidation. This suggests the client mix will have a large bearing on the ability of on-port operators to achieve higher loadings than off-port operators. If a substantial proportion of on-port operators' clients require side-loaders or single container deliveries then the consolidation advantages of being on-port will be diminished. Larger volume clients would lend themselves to greater on-port consolidation. This is a potential benefit for increasing average truck loads that needs pursuing further with the growing number and volumes of on-port operations.

10. VBS and ContainerChain

Anecdotally, a combination of the introduction of the Vehicle Booking System (VBS) at the Container Terminals, recent introduction of ECP notification system ContainerChain and an increase in the use of staging containers prior to final delivery may have had an impact on trucking productivity.

The survey asked respondents how the VBS and ContainerChain systems impacted on their truck utilisation and efficiency. The major impacts of the VBS included the inability to get suitable distribution of slots throughout the day, the slot drop process and the lack of flexibility to make changes within the system. When looking at impacts by carrier classification, the distribution of slots was a common issue for all sized carriers, although it was more prominent for small-sized carriers. This impact on small-sized carriers may relate to these carriers undertaking more direct deliveries, therefore, requiring specific slots to match their customer receival times and enabling them to achieve two-way loading to and from the port precinct.

Figure 32: VBS impacts on truck productivity and utilisation

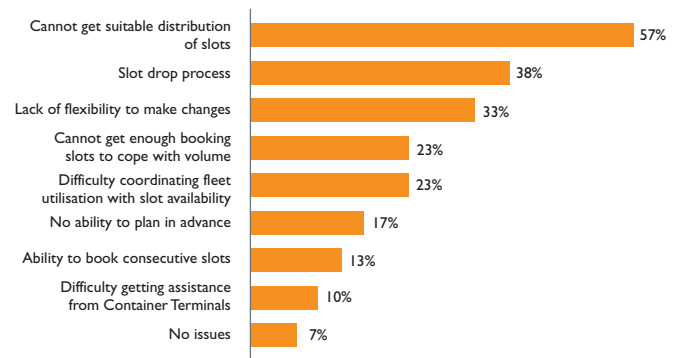
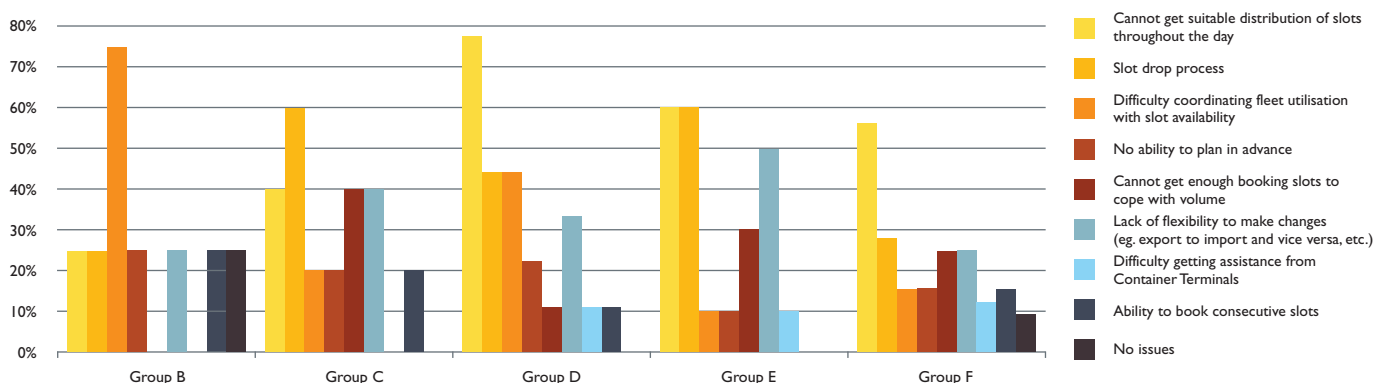


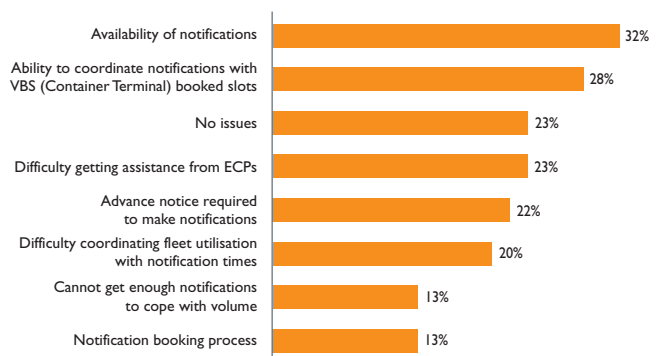
Figure 33: VBS impacts on truck productivity and utilisation by carrier classification



In relation to ContainerChain, the availability of notifications and ability to coordinate notifications with the VBS was cited as one of the major impacts of the system on truck utilisation and efficiency. About 20% of respondents have difficulty getting assistance from ECPs, have issues with the advance notice required to obtain a slot (which has subsequently been reduced for de-hires) and experience difficulty coordinating fleet utilisation with notification times. Despite these issues, more than 20% of respondents stated that ContainerChain had no impact on their truck utilisation and productivity.

When comparing the impacts of ContainerChain across transport operator sizes, the availability of notifications was a common issue, but was more prominent for B, C and E class operators. The notification process was considered an issue for smaller carriers (E and F), but not for larger operators.

Figure 34: ContainerChain impacts on truck productivity and utilisation



11. Charging

On-charging customers for additional processes and services along the supply chain, such as staging and truck detention, were raised during discussions with transport operators. Survey respondents were asked how often customers were on-charged for these activities and delays (see Figure 35 and 37). The case study interviews raised the issue that due to the competitive nature of the container transport industry in Fremantle, customers cannot always be on-charged as they will seek the services of lower cost operators. The commerciality of these different transport arrangements, such as staging, is called into question if customers are not on-charged for the additional costs that are incurred, and may prohibit some operators from considering these arrangements. Staging is an important consideration in the ability of carriers to undertake movements out of peak daylight hours, so whether additional costs are on-charged is important.

Figure 35: Percentage of truck detention costs on-charged to customer

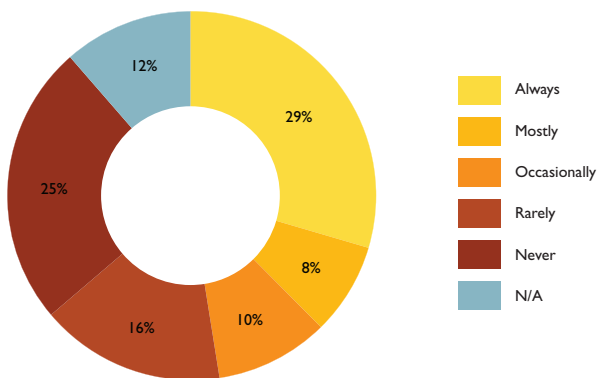


Figure 36: Percentage of truck detention costs on-charged to customer by carrier classification

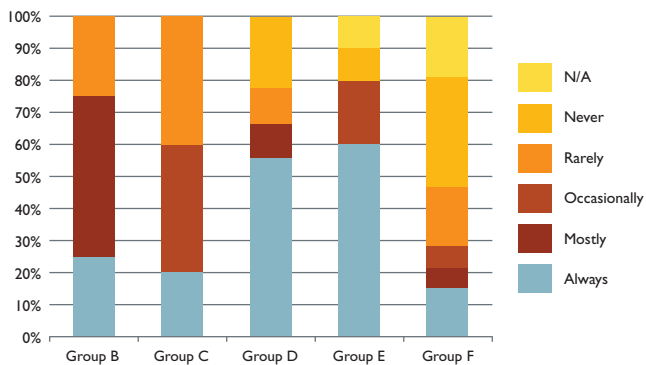


Figure 37: Percentage of staging costs on-charged to customer

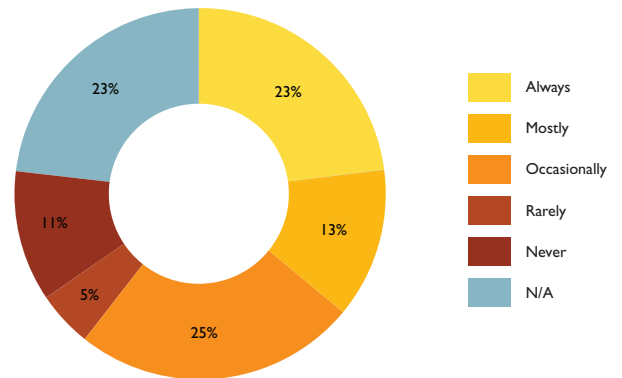
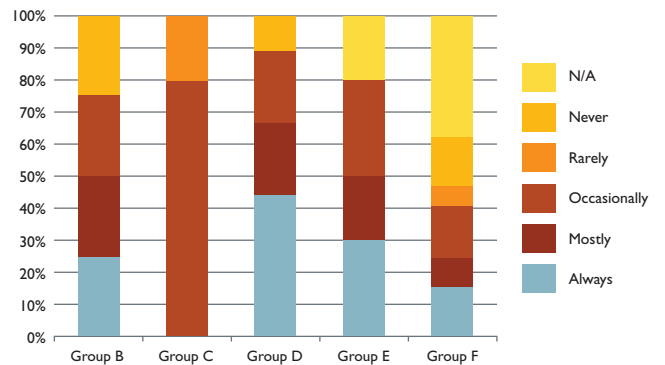


Figure 38: Percentage of staging costs on-charged to customer by carrier classification



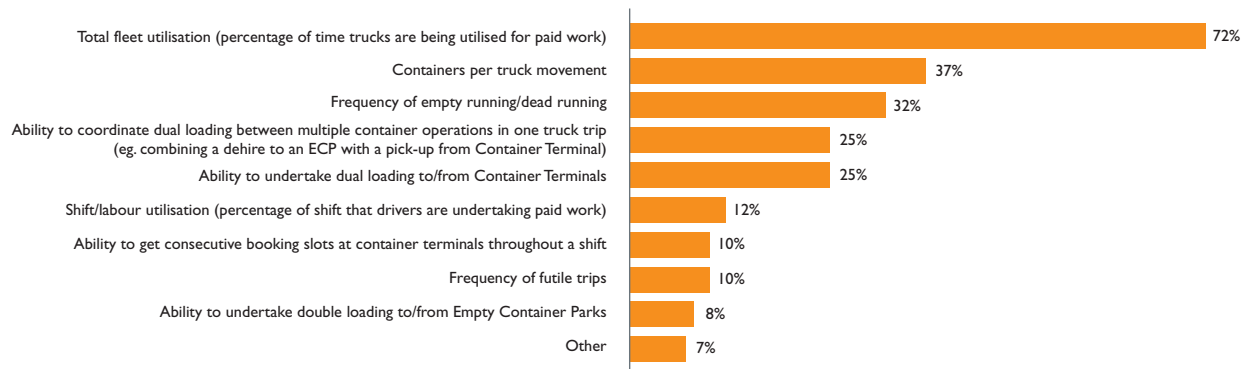
12. Measuring trucking efficiency and productivity

The main measure for monitoring trucking efficiency and productivity for transport operators is total fleet utilisation, i.e. the percentage of time trucks are being used for paid work (72% of respondents). This is consistent with the findings of discussions with major operators in the Eastern States, and those interviewed locally.

The ability to get consecutive booking slots at Container Terminals throughout a shift is a more common measure of productivity for smaller operators, as is the ability to coordinate dual loading between Container Terminals and ECPs, and the frequency of futile trips.

Understanding the key measures of trucking efficiency and productivity is important to evaluate the effectiveness and feasibility of strategies to improve productivity.

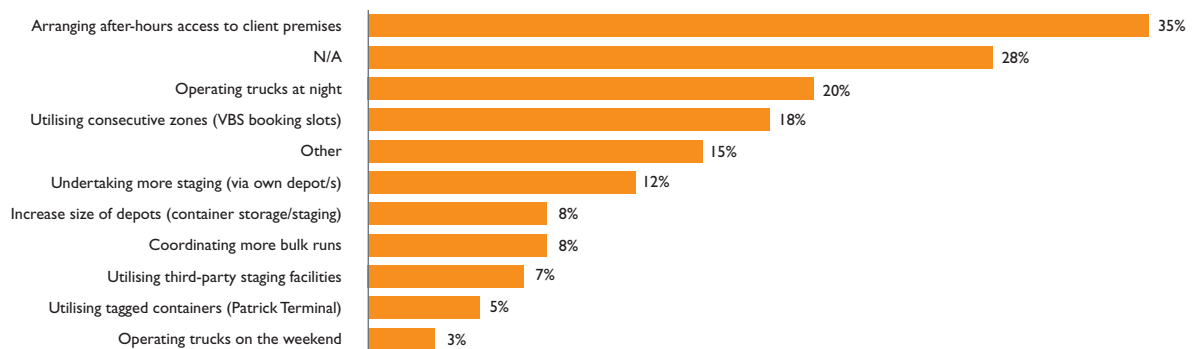
Figure 39: Measures of trucking productivity/efficiency



13. Strategies - individual businesses

Respondents were asked what strategies could be implemented in their own businesses to improve efficiency or trucking productivity. It was extremely positive to observe that the key initiatives to improving operating efficiency were related to the time of day that trucks were operated, arranging after-hours access to client premises (35%) and operating trucks at night (20%). This aligns with Fremantle Ports' objective to encourage industry to move towards operating 24/7 in the future, alleviating pressure on the peak day periods. Using consecutive zones through the VBS (18%) was also positive to see, as it is believed that many existing functionalities of the system are underused by many in the industry, which may indicate a requirement to educate and train industry on VBS functionality.

Figure 40: Strategies to improve productivity and efficiency that carriers could adopt

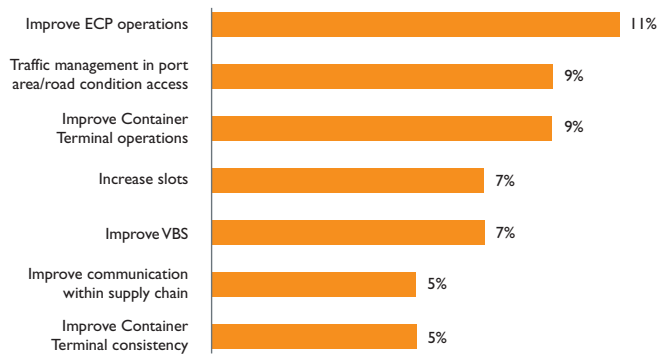


The survey found that 28% of respondents did not believe there was anything they could do to improve their operating efficiency. Interestingly, almost all of those who responded in this manner (94%) were very small carriers, classed as either in the E or F category. This may indicate an unwillingness to adjust small operations or an inability to do so for reasons such as access to funding to make improvements, or capability to do so.

14. Strategies - industry

Respondents were asked what strategies or changes could be implemented to improve the productivity and efficiency of the transport industry as a whole. Improving ECP operations is the major priority for respondents, followed by improved Container Terminal operations and traffic management and access to the port precinct.

Figure 41: Industry strategies to improve productivity and efficiency



Appendix B: Transport Company Case Studies

In August 2013, six transport companies that service the port participated in case study interviews. The purpose was to engage in detailed conversations with transport operators to get a better understanding of the operational practices of transport businesses, commercial considerations and views on the issues they experience in the supply chain. Companies interviewed ranged from a large on-port operator to medium and small operators located off-port in the East and South West metropolitan areas. Weekly TEU volumes handled by these carriers ranged from about 30 to 400.

Most of the transport operators interviewed mainly handle import containers, with one company handling rural exports and one acquiring other businesses and focusing on project cargo to achieve more of a balance between imports and exports.

For all companies, two-way loading is a crucial productivity measure and a key commercial consideration. Staging was used by some of the companies, although a few noted that the additional costs of staging were not justified in all cases in the current commercial environment, where volumes have stabilised and access to port facilities is reasonably efficient.

The transport companies involved in the case study interviews were all successful businesses applying different methodologies to aspects of their operations. The interviews identified a number of activities and management practices that the businesses saw as providing competitive advantage and contributing to their success. Some of these insights help build a picture of best-practice operations and may be useful for other carriers. Consideration may be given to whether these points could be considered more broadly in the industry.



The following pages provide an overview of some of the individual case study interviews. Identifying information has been removed for confidentiality purposes.

Case Study A

Company details

Transport Company A is a large carrier located within the port precinct, with a secondary site in the Perth metropolitan area. Of its total port-related container volume, around 75% is related to imports and 25% to exports. All loaded containers are staged via the company's transport depot in North Fremantle. The company generally operates from 06:00 to 18:00, and prefers not to operate on weekends in the current environment. During peak times and high volumes, however, Company A extends operating hours and encourages customers to take deliveries of containers after hours.

During peak times and high volumes, Company A extends operating hours and encourages customers to take deliveries of containers after hours.

How does the flow of information impact on your business?

The main issues associated with information flows for Company A relate to ContainerChain for the hire of containers and the communication process, which can have an impact on the ability to plan. Opportunities for improvement are in the communication of bulk runs from Empty Container Parks. Notification is often not sent until several hours after the bulk run has begun.

What workarounds are used to help your business cope with inefficiencies in the supply chain?

Company A says that it has to improvise in its operations as not all parties in the supply chain are doing their part. For example, the company overcapitalises on equipment to overcome Container Terminal and Empty Container Park inefficiencies. When there are significant delays at these facilities, carriers have to overcompensate by having extra assets (vehicles) to cope with and maintain operational levels.

Does your customer base and product type restrict your ability to improve your efficiency and productivity?

The main impediment to productivity related to the customer base is to do with opening hours of clients. For the majority of clients, however, Company A encourages after-hours access by providing keys, access codes, or dummy-locked gates which improves the ability to complete deliveries over an extended period. Security can be an issue in this regard, so encouragement is provided to clients to install surveillance at their site.

Commercial considerations

In the current container supply chain there is always some driver downtime where they are not undertaking billable work, although Company A tries to ensure consistency of work throughout the shift by working with the Container Terminals to access containers. Flexibility on the part of the Container Terminals has improved to achieve what Company A needs, which means trucks are working constantly throughout the day.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

During times of congestion and high volumes, Company A bears more costs to accommodate more resources and longer operating hours. During these times, the company encourages clients to open longer to receive deliveries into the evening.

What are the commercial drivers behind the way you operate?

Retaining back-loading ability is a key strategy to ensure the ongoing commerciality of Company A's business. This reduces the level of dead running experienced in the customer delivery leg. There are times, however, when export cut-offs are approaching or delays have occurred in the supply chain, and the company may have to run empty to meet client obligations or booking slots.

About 90% of containers require side-lifter delivery to customers, hence the very high percentage of containers staged via the transport company yard after pick-up from the Container Terminals in bulk movements using high-capacity vehicles. This is also undertaken to achieve better use of equipment, meet specified customer delivery windows, and avoid charges at Container Terminals (such as late or no-show fees).

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

One of the primary difficulties experienced by transport carriers, including Company A, is the availability of slots to undertake the required volume of work. Tagged runs work exceptionally well for this company, and it is open to suggestions for any improvements to encourage further use of bulk movements. The company notes, however, that the two Container Terminals do not both offer the same service in this regard.

How do the Empty Container Park operations and ContainerChain affect your business?

Some of the frustrations experienced by the company include the occasional requirement for hard copy delivery orders, flexibility not shown by the Empty Container Park when a booking needs to be cancelled, and empty bulk runs impacting on receipt and delivery operations. Consistency in servicing is also causing frustration.

Bulk runs are having a big impact on efficiency at Empty Container Parks according to the company. There is a significant opportunity to move these bulk run activities after hours, which would create efficiency in the R&D activities.

Company A also experiences significant issues in trying to coordinate bookings between the Container Terminals' VBS system and the Empty Container Parks' ContainerChain system. Both have requirements to arrive at the facility within a specified time, although delays in other parts of the supply chain, or within a Container Terminal or ECP can impact the ability to arrive on time for subsequent bookings.

How does the way your customers behave affect your business?

The level of knowledge of importers on how things operate in a transport company is lacking in the opinion of Company A. Customers who don't know how the system works do not realise how difficult it can be to make even minor changes to the management of containers, although it can affect the operation quite a lot.

Customer sites have an impact on the efficient delivery and receipt of containers for the company. For example, the small or ad hoc customers may not have sufficient site access or space to accommodate side-lifters or tilt-trays. The size of client premises also has a big impact on trucking productivity as importers may require that an empty container is removed before another loaded container is delivered. This limits two-way loading capability.

Case Study B

Company details

Transport Company B is a small to medium sized carrier located in the South West Metropolitan area. Of its total port-related container volume managed, about 95% is related to imports, with a small percentage of loaded containers staged via the company's transport depot.

Normal operating hours for Company B are 04:30 to 17:30, Monday to Friday. Tagged runs are used to save time accessing containers within the Container Terminals, and avoiding 'dead' running is an important productivity measure for its business.

How does the flow of information impact on your business?

The flow of information has a major impact on Company B, where the receipt of late information in the early stages of the supply chain has significant flow-on effects to the rest of the chain.

...the receipt of late information in the early stages of the supply chain has significant flow-on effects to the rest of the chain.

Does your customer base and product type restrict your ability to improve your efficiency and productivity?

The customer base of Company B does not restrict its ability to improve efficiency. The variability of container size can create difficulties but is worked around, as the split between 20 and 40 foot containers regularly changes.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

During peak season, Company B experiences an increase in charges it has to pay, for example, delays at Empty Container Parks, but this is generally passed on to customers. This company noted that it tries to ascertain which customers will give more after-hours access. Many customers now allow this. Subcontracted drivers are used within busy periods, but this adds the need for more vehicles. Company B handles the same number of containers during peak season, but incurs additional delays and charges. This company does more pre-loads, with containers left on trucks overnight for next-day delivery.

What are the commercial drivers behind the way you operate?

The main consideration for Company B is to have two-way loading whenever possible, particularly when delivering containers a long distance from its depot and/or the port.

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

There are no incentives for Container Terminals to service transport operators quickly. The company is only able to get limited bookings per hour due to size, which restricts its ability to fully use fleets and planning capability. Company B experiences major issues with the VBS, and feels that customer service from the Container Terminals is lacking in terms of getting assistance to get a booking or facilitating changes at short notice. It is Company B's view that the VBS contains too much information and is more complicated than it needs to be, particularly with manifesting.

How do the Empty Container Park operations and ContainerChain affect your business?

Information not being entered into ContainerChain by shipping lines is a common problem for Company B. It is resulting in trucks being turned away from Empty Container Parks. Company B highlighted the need for consistent service at Empty Container Parks, particularly in the acceptance of (dehired) containers.

Company B suggested that ContainerChain should alert a company if the necessary information has not been entered when making a booking. This would save the company from sending drivers to the Empty Container Park only to be turned away, resulting in a futile trip. It was also suggested that the container number should be able to be edited. At times, bookings have to be cancelled as it is not known which container will be available

from the importer before the booking is made. Company B believes cancelled slots are not being returned into the system. This means there is no true indication of how many trucks are accessing the Empty Container Parks, which also makes it difficult to get a booking.

Hoarding of ContainerChain notifications by other carriers was impacting on Company B, which suggested that a no-show fee should be implemented as a disincentive to booking more than required.

When asked if it would use extended hours of Empty Container Parks, Company B indicated that it would use both extended weekday hours and Saturday day shifts, but at present it was not operating at night or on weekends due to lower volumes.

How does the way your customers behave affect your business?

Company B noted that many customers lacked knowledge of the supply chain and the processes involved. The company is actively trying to educate its customers. To enable planning from both sides, Company B has tried to structure its business in a way that enables customers to be notified of when containers will be received.

Case Study C

Company details

Transport Company C is a small to medium sized transport operator located in the South West Metropolitan area with a second depot in the Perth area. Of the total port-related container volume managed, about 95% is related to import containers, with limited staging now being undertaken. Company C now undertakes more direct deliveries and this has reduced the need for storage space. It focuses on a small customer base which enables efficiencies to be created by offering a personalised process.

Financial investments

Company C invests a significant amount on staff training and software and information systems. The main aims of the investment in software are to reduce likelihood of mistakes which adversely impact customers and to streamline processes. The software also allows the company to manage the flow of information more effectively and increases the ability to monitor expenses and revenue daily.

How does the flow of information impact on your business?

The fact that there are numerous parties involved in the exchange of information impacts on the business. Although this company has a small customer base, the amount of information being received from third parties is significant.

What workarounds are used to help your business cope with inefficiencies in the supply chain?

To manage delays, Company C always has someone 'floating' to pick up work or support other drivers. Company C has a process in place to ensure operations are started the same way every day which assists in adapting to inefficiencies or changes in the supply chain.

Does your customer base and product type restrict your ability to improve your efficiency and productivity?

Company C targets clients who enable efficiencies to be achieved. The handling of exports becomes a problem as the delivery time constantly changes. Imports are simpler to manage because they are not reliant on waiting for the customer to be ready. Company C targets clients located through the eastern corridor and undertakes as many direct deliveries as possible. The company seeks to increase efficiency by encouraging customers to be open at specific times.

The company seeks to increase efficiency by encouraging customers to be open at specific times.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

Company C targets companies with steady volumes to avoid periods of low volumes. During peak season, Company C modifies operations to cope with congestion, and avoids accessing the port precinct during this time. Company C regularly undertakes evening operations, although finds it difficult to get employees to accept working longer hours. During peaks, Company C aims to access the Container Terminals out of hours to avoid the congestion associated with peak season.

What are the commercial drivers behind the way you operate?

Company C highlighted that evening operations are a more cost-efficient way for it to operate as they avoid many of the daytime inefficiencies that are due to the various parties in the supply chain not working in a coordinated way. Company C stated that evening or out-of-hours operations enable double the volume to be handled, compared to daylight operations. Company C undertakes most of its movements between 05:00 to 09:00, and 16:00 to 23:00.

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

In Company C's view, one area of improvement at the Container Terminals would be to have more information on where containers are in a stack and how many other containers need to be moved to give access. Knowing how long truck turn times are going to be would help the company in its planning.

How do the Empty Container Park operations and ContainerChain affect your business?

Company C considers the main benefit of ContainerChain to be the paperless process and being able to determine when an Empty Container Park has heavy volumes of trucks accessing it. It notes, however, that the dehire ECPs do not appear to have progressed as much as the Container Terminals in terms of truck turnaround times.

The variability of Empty Container Park servicing times has a major impact on Company C. The lack of adherence by other carriers to their notification windows creates delays for companies which do arrive on time. Company C sees the need for a system which checks if trucks are arriving in their timeslots, achieving greater compliance in the notification system.

The main reasons that Company C may experience no-shows in its operations are unpredictable dehire times and delays at Empty Container Park operations, rather than delays at the Container Terminals or other traffic problems. This makes it hard to predict suitable booking times for both the VBS and ContainerChain which in turn creates wrong zones or no-shows.

How does the way your customers behave affect your business?

Company C focuses on providing a personalised service which assists with its interaction with customers. The company constantly tries to educate customers about the supply chain and specifically targets customers who are open for extended hours. Company C only passes on to clients the exact fee incurred, and highlighted the importance of being open and transparent with customers.

Case Study D

Company details

Transport Company D represents a small transport operator located in the North Metropolitan area with a depot in the South East Metropolitan area. Of total port-related container volume, the split between import and export is relatively even, however, the company is heavily involved with exports in the South West of Western Australia as well as with line haul operations.

Financial investments

Company D invests heavily in equipment and is currently increasing its land area by acquiring another site.

How does the flow of information impact on your business?

The flow of information has a significant impact on the daily operations of Company D. Managing communication and updating plans based on information is a large part of the company's daily tasks.

Does your planning process allow you to incorporate all business needs into your daily activities?

Company D generally deals with ongoing contracts and does not do much work on a once-off basis, so they are able to plan well in advance. The ability to get VBS bookings and notifications (ContainerChain) and achieving suitable truck turn times at port-related facilities has a significant impact on planning activities.

What effects are government regulations and compliance demands having on your business?

Fatigue management has a large impact on Company D, particularly in relation to line haul operations. Monitoring and managing fatigue, combined with constant auditing, impacts on the company's administration resources.

What workarounds are used to help your business cope with inefficiencies in the supply chain?

Getting to know when Container Terminals are busy or when certain vessels arrive at the port enables Company D to plan around delays and congested periods. The inefficiencies of the supply chain have a major impact on the cost efficiency of the business.

What people-related issues does your company experience?

The main people-related issue experienced by Company D is obtaining quality drivers who are willing to work long hours. Company D ensures excellent working conditions to retain quality drivers.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

During peak periods, Company D engages additional temporary drivers to ensure customer timeframes and service levels continue to be met. The normal mode of operation remains the same.

What are the commercial drivers behind the way you operate?

Company D's focus is on two-way loading, particularly where there are long travel times to customers. If two-way loading is not possible, customers are generally charged more to compensate for the empty return trip.

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

The VBS and Container Terminal operations have a significant impact on Company D. The cost and lack of flexibility is seen as a major issue, with too great a focus on labour rather than the industry. Company D cited issues which have occurred with labour at the Container Terminals, such as stopping a load half-way through the job for employees to go on a break,

and Container Terminals not being forgiving when transport operators can't make bookings due to broken down vehicles. The VBS is also problematic for the company, which stated that the I-Stop helpline is not effective and that slots are sometimes dropped late which causes issues.

How do the Empty Container Park operations and ContainerChain affect your business?

Empty Container Parks and ContainerChain also have significant impacts on Company D, resulting in delays and additional costs. One common issue is ContainerChain allowing a hire container to be booked but when the driver arrives the container is not available or ready. Company D stated that Empty Container Parks are an integral part of the industry but operate independently.

How does the way your customers behave affect your business?

Company D has knowledgeable customers and this improves the efficiency of the business. The ability to live load enables two-way loading and has minimal impacts on delivery windows.

Company D has knowledgeable customers and this improves the efficiency of the business.

Case Study E

Company details

Transport Company E is a large operator located in the South-West Metropolitan area of Perth, close to the port precinct, and operates seven days a week. Transport Company E recently acquired another transport company to create a more even balance of imports and exports. Regardless of where they are based, customers related to projects are targeted because this provides a greater volume of exports.

Financial investments

Company E focuses heavily on investment in equipment such as container-handling equipment and lighting for night operations. Company E recently acquired another transport business which is run separately and had previously acquired another transport company mainly as an investment in equipment. The additional customer base was considered a bonus.

How does the flow of information impact on your business?

The adequacy of information from the Empty Container Parks has a major impact on Company E in receiving notice of availability of stock. The importance of timely receipt of information was highlighted, with education of importers crucial to achieving it.

The importance of timely receipt of information was highlighted, with education of importers crucial to achieving it.

Does your planning process allow you to incorporate all business needs into your daily activities?

Company E focuses heavily on customer service and providing customers with accurate delivery windows. Planning is crucial. Throughout previous peak times in the industry, the company found it difficult to meet specified delivery windows despite significant planning. In the current environment, however, Company E has chosen to return to nominated times. This has created more of a boutique and personalised service which it uses as a competitive advantage.

What effects are government regulations and compliance demands having on your business?

The new COR legislation to be introduced in 2014 will have an impact on Company E, where systems have required upgrades to ensure compliance. The company stated that although the legislation would not enable it to deliver containers more efficiently, it would create a safer working environment and assist in maintaining a satisfied workforce.

What workarounds are used to help your business cope with inefficiencies in the supply chain?

Company E has recently invested in technology to assist with managing the supply chain processes. The company undertakes increased staging to cope with inefficiencies. With volumes split between the two Container Terminals, the delays or impacts of one Container Terminal can have major impacts on other operations or plans. Company E questioned the number of slots released to cater for the number of containers being discharged or loaded. The apparent lack of slots creates the requirement for bulk runs and staging. Company E stressed that bulk runs and staging are not the first option for the company as they are not getting paid to stage containers but just to collect and deliver them.

Company E operates seven days a week, but is unable to dehire containers on the weekend due to limited ECP operating hours.

What people-related issues does your company experience?

Although Company E invests in quality vehicles for the benefit of drivers, it finds it difficult to attract quality drivers. For most deliveries the company requires skilled drivers to manoeuvre a side-lifter without damaging customer property. There are benefits to reputation if the company employs quality drivers who behave well on the road and respect customer premises.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

Currently, Company E operates seven days a week and uses nights, but does not always have a night shift. Trucks are staggered to start work earlier or later which allows the company to use the full operating hours of the Container Terminals.

Trucks are staggered to start work earlier or later which allows the company to use the full operating hours of the Container Terminals.

What are the commercial drivers behind the way you operate?

Company E's policy is to not run empty. Empty running occurs only in low-volume situations or in extreme situations. The company stated that if it did not run full, profits would be significantly affected. The inability to dehire extensively on the weekends is an issue for the company as this results in empty running. Company E does not use tagged runs as it does not allow it to select the order in which the containers are picked up, resulting in a requirement for additional staging facilities as well as congestion in the company's yard before delivery to customers.

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

Company E believes that the use of forklifts for R&D provides greater flexibility. The inability to swap imports to exports or vice versa through the VBS creates issues as flexibility is lost.

How do the Empty Container Park operations and ContainerChain affect your business?

Company E expressed frustration at ECPs not recording 'gate in' (recording a container being returned), which often forces the company to re-book notifications to ensure the container dehire is recorded in the system. This increases costs and takes up time which could be used for other activities. The introduction of the ContainerChain system has resulted in the ability to see when ECPs are busy or congested (through a lack of notifications) which ensures that time is not wasted. Company E believes that for the system to be of benefit, industry and shipping lines must be educated and adherence to the rules within the system must be monitored. In the company's view, this is not being done.

How does the way your customers behave affect your business?

Company E has access to a number of customer premises and sufficient demand for after-hours deliveries.

Case Study F

Company details

Company F is a small to medium sized carrier with a site located in the East Metropolitan area. The company targets imports in preference to exports because exports impact dehire capability. Company F prefers customers that accept after-hours deliveries, but does not push explicitly for this.

Financial investments

Company F has been focused primarily on investments in equipment. It does not have an official transport depot, but has a site where vehicles are stored and maintenance is carried out. For staging of containers, Company F uses a yard which is owned by an importer and is considering investing in land for further depot operations.

How does the flow of information impact on your business?

At times the flow of information impacts Company F. Late or inaccurate information affects about 5% of containers.

Does your planning process allow you to incorporate all business needs into your daily activities?

Company F focuses heavily on planning, with modifications and adaptations being made throughout the day. Particularly during busy times when trucks can be delayed, changes have to be made and other trucks redirected. Company F stressed that all planned work for a day must be completed to ensure profitability.

Does your customer base and product type restrict your ability to improve your efficiency and productivity?

Generally, the company's customer base does not restrict efficiency. Although the mix of container size varies constantly, the company does not perceive this to be a restriction or an issue. Company F stated that not specifying to brokers a preference for any particular product or area (such as imports, exports, location, etc.) assists in maintaining flexibility. Having a spread of customer locations gives the company the flexibility to match de hires rather than running empty. Company F stressed that running back to the port precinct without an empty container for dehire has a major impact on profitability.

...running back to the port precinct without an empty container for dehire has a major impact on profitability.

How do you change your operations when the industry is experiencing high volumes and congestion issues compared to periods where the supply chain is working well?

Company F noted that it can be difficult to alter operations in response to industry changes. As bookings are made in advance, delays and congestion at the Container Terminals have a significant impact. During peak season, the company does not officially extend operating hours, but drivers work until all planned jobs are completed. Due to “K” Line now working out of the Patrick Container Terminal, Company F is now required to work weekends at times and clients need to be encouraged to open up and accept deliveries and the extra charge for weekends.

What are the commercial drivers behind the way you operate?

Company F prefers to avoid operating on the weekends as most clients are not willing to pay weekend rates. As described above, however, due to volumes at Patrick the company is now required to work more weekends. The company incurs double the costs on weekends for driver wages, which results in a 30% surcharge being passed on to customers. For this reason, many customers do not accept weekend deliveries. A minority of the company's customers request weekend deliveries, but the company still tries to avoid weekend operations.

How do the Container Terminal operations and Vehicle Booking System (VBS) affect your business?

The Container Terminal operations impact on the company, particularly when the wharf is congested during busy periods, with delays and double handling of containers. At times, the company uses third-party staging facilities to temporarily store containers to ensure that booked VBS slots are made on time. Delays at the Container Terminals impact the profitability of the company as additional costs for double handling and redirecting trucks cannot be passed on to the customer. Delays also affect the company's image and customer service.

At times, the company uses third-party staging facilities to temporarily store containers to ensure that booked VBS slots are made on time.

Company F still accesses DP World with side-loaders as all deliveries are direct, and the side-loader fee is passed on to the customer. The company undertakes direct deliveries because it has limited staging facilities but is looking to acquire a container fork and possibly some land in the future. This will enable the company to undertake more staging and limit side-loader movements into the Container Terminals.

How do the Empty Container Park operations and ContainerChain affect your business?

The major issue that Company F has with Empty Container Parks is the delay caused by bulk runs being undertaken during peak periods during the day. The company sees ContainerChain as a good system but the length of the notification window creates issues as there are too many variances in the supply chain that can affect the ability to arrive on time.

How does the way your customers behave affect your business?

Company F has issues with customer premises in terms of lack of space for the storage of containers. The company does have after-hours access to some customers (access keys), but generally only uses this during busy periods which require greater flexibility. Company F prefers not to undertake after-hours operations due to issues with driver fatigue.

Appendix C: Truck Productivity Industry Workshops Summary

Four industry workshops were held as part of the consultation phase of the Truck Productivity Study. The workshops provided an opportunity for industry stakeholders to openly discuss key issues relating to trucking productivity and efficiency, some of the possible solutions that may help overcome these issues and to encourage a whole-of-supply-chain approach.

Two initial workshops were held in September 2013 and involved a wide range of industry stakeholders, summarised below:

Industry stakeholder	SESSION 1:	SESSION 2:
	Tuesday 10 September	Wednesday 11 September
Transport operators	12	8
Container Terminals	3	4
Empty Container Parks	1	2
Department of Agriculture	0	1
Rail	1	1
Freight forwarders	0	2
Industry	6	4
Total	23	22

The focus of these workshops was to assess the key issues impacting trucking efficiency and possible solutions to address the identified issues. Issues and solutions were discussed in small groups focusing on Container Terminals and the Vehicle Booking System (VBS), Empty Container Parks (ECPs), ContainerChain, transport operations, and supply chain coordination. A common range of issues and solutions was identified across the two workshops, which have been included in Appendices D and E.

A number of options was developed by the project steering committee in response to the issues and solutions raised during the preliminary workshops and the transport operator survey. Two additional workshops were then held in November 2013 to assess these options in greater detail. Attendees included representatives from the Container Terminals, transport operators, rail operators, government agencies, importers, freight forwarders and various industry groups. These workshops were professionally facilitated by Estill and Associates.

The options presented at the November workshops included changes to VBS and ContainerChain (Advanced Bookings and allocating slots based on operating hours of carriers), incentives and disincentives to improve behaviour (such as compliance with ContainerChain notifications and increased two-way loading), promoting extended operating hours with industry, and common-user staging areas.

The outcomes from the two final workshops form the basis of the following improvement initiatives summary.

SUMMARY OF IMPROVEMENT INITIATIVES DISCUSSED AT FINAL WORKSHOPS

I: Advanced Bookings

Modify the VBS to reduce the impact of the 'mad minute' by allowing slots to be booked when container information is available.

Description of option

This option (developed by DP World and I-Stop, currently in place at the DPW Brisbane Terminal, shortly to be rolled out in Melbourne and termed Advanced Bookings) proposes that when information about a container becomes available, transport operators can notify the Terminal of container requirements, then confirm booking slots for those containers when certain criteria are met.

Benefits

- Reduces and potentially eliminates the need for a slot-drop process, which may allow better coordination of equipment and resources, scheduling of truck fleets
- May reduce or eliminate behaviour such as hoarding of slots and the need for multiple logon details, and provide greater equity and fairness to the industry in how slots are booked/allocated
- Rewards those carriers that are better organised; however, there needs to be a guarantee that early lodging has benefits to those that are organised
- Transport operators are encouraged to plan movements and obtain information earlier, which could promote improved communication along the supply chain.

Issues

- Need to understand how delays or changes are to be dealt with, e.g. if there are delays at sea or quarantine requirements
- Transport carriers may book containers just in case they are needed and then change details, creating a lot of unnecessary work. There is room for manipulation and we need clear, enforceable rules.
- Those able to do so can take advantage and free up slots for daytime users but this may be seen as not rewarding those that make the effort to get it right.
- How would containers becoming available before first day of availability be dealt with? This currently provides a good advantage to those that can access containers early.

- Importers/brokers will be penalised for not being organised and will have to improve or lose competitive advantage.
- This seems to take a degree of power away from the transport operator as they become even more dependent on other entities (importers and brokers) controlling their success (providing timely information in the right order for pick-up/delivery).
- Might actually detract from efficient routing and two-way loading (e.g. Container 1 information received one week ahead of time and prime slot organised but Container 2 information, although delivery is next door, is received only a day before. So the only slot available is at a non-prime time and the opportunity for more efficient running is lost). May actually lead to an increase in the number of vehicles as operators prefer to pick up one container at a time to guarantee what they see as the best and most continuous use of their vehicles. Dependent on business rules established.

Evaluation requirements

- Analyse the effects in Brisbane and Melbourne.
- Discuss with brokers their ability and willingness to provide earlier container information.
- Discuss with some carriers what benefits they would see to their operations.
- Determine if quantification of benefits to industry is possible.
- Determine Container Terminal operators' position.
- Identify potential benefits for carriers (will vary according to characteristics), Container Terminal operators, shippers (any effect on costs) and freight forwarders, and estimate overall benefits to industry.
- Determine what would need to be done to implement the initiative if it was concluded it was worthwhile (e.g. system development appears to have been done but may need refinement; any potential Australian Competition and Consumer Commission [ACCC] issues).
- Determine proposed business rules and assess how well they deliver the above benefits and address the issues. Seek to modify business rules as necessary.

'The solutions are appropriate and the underlying issues are all driven by improving port efficiency. We need to keep an open mind when considering solutions or risk driving the wrong behaviours. Some changes elsewhere have been driven by necessity and we need to reflect the likely operating context of the future when volumes increase again. We need to set the scene to drive efficient truck transport operations.'

Workshop attendee

2: VBS scheduling and carrier classification

Modify VBS structure to enable more efficient truck scheduling, for example, allocate a percentage of carriers' slot requirements based on carrier classification of carrier volume and operating hours (e.g. 24-hour carriers, 16-hour carriers, etc.)

Description of option

This option proposes that carriers are classified based on criteria which may include, for example, the volume of containers moved and/or the operating hours when the carrier is able to handle containers (e.g. 24-hour carriers, 16-hour carriers, 12-hour carriers). A percentage of the standard slots that they require would then be scheduled by the Container Terminal for the carrier and spread over the time when they can conduct business. A 24-hour carrier may, for example, have 70% of its slot requirements scheduled over that period, and a 16-hour carrier may have 50% of its slot requirements scheduled over those 16 hours. The remainder of the slots required may then be picked up through the normal (or a modified) slot-drop process.

Benefits

- Provides a level of guaranteed access to the Container Terminals for a portion of carrier slots
- Facilitates improved fleet/equipment utilisation for carriers
- Provides a benefit to those operating 24/7 and investing in facilities and resources to do so: early access to slots, guaranteed slots, access to some prime day slots
- Encourages smaller carriers to move towards operating longer and introducing hubbing arrangements
- Rewards operating efficiency and investment in infrastructure
- Reduces competition during slot-drop times; may reduce multiple logons

Issues

- Possible negative impact on smaller carriers which may affect their ability to grow
- May influence volume being moved in bulk/stack run arrangements at night (giving those who want to operate 24-hour slots during the peak periods may mean they do not have enough containers to warrant the Container Terminals giving them bulk runs or tagged runs after hours)
- Potential increase in costs due to less opportunity for direct delivery
- Possible ACCC issues if benefiting larger carriers to the detriment of others
- The period of operation to qualify as a 24-hour or 16-hour carrier needs to be clearly defined.

- The benefits have to be lucrative enough to promote 24-hour operations (not to be so marginal that carriers may decide to continue to operate as 16-hour or 12-hour carriers).
- There has to be balance to ensure the allocated slot benefits are not so great as to force too much of the 24-hour carrier's operations into peak slot times which, under other circumstances, they would have done in the off-peak slot periods.

Evaluation requirements

- Determine proposed business rules; assess how well they deliver the above benefits and address the issues.
- Discuss with some carriers what benefits they would see to their operations.
- Determine if quantification of benefits to industry is possible.
- Determine Container Terminal position.
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine what would need to be done to implement the initiative if it was concluded that it was worthwhile (e.g. system development could be extensive, any potential ACCC issues).

3: Promote two-way loading and higher truck utilisation at Container Terminals

This could be progressed through VBS changes and incentives to carriers, such as encouraging greater use of consecutive zones or providing benefits/incentives to carriers that carry more containers per truck movement. Other initiatives could be explored, such as the ability to book exports further in advance, release of import and export slots at different times or opening zones early when capacity exists, etc.

Description of option

Two-way loading and increased truck utilisation (containers per truck movement) are key measures of trucking productivity and result in fewer trucks on the road to handle containers.

This option proposes investigating methods to encourage more two-way loading to/from the port precinct or a greater number of containers per truck movement. Examples could include providing a financial or other incentive to carriers that can achieve this, adjusting the VBS to give preference to those carriers, or simplifying the process. Other system options could be explored, such as providing the opportunity for exporters to book containers further in advance (currently allowed for country carriers only); releasing import and export slots through the VBS at different times to allow better coordination of resources and potentially improving the ability to coordinate a two-way load; and opening VBS time zones early when there is capacity to do so (which Patrick Terminal currently does).

Encouraging greater use of VBS functionality through education may also assist.

The types of benefits or incentives should be considered as part of assessing this option.

Benefits

- Encourages development and use of hubs where priority is given to those capable of doing two-way loading
- May allow some carriers an improved ability to match import/export bookings, and achieve two-way loading and higher truck utilisation
- Rewards carriers that can achieve productivity improvements
- Smaller operators could focus on the hubs rather than the port, reducing the need for so many individual carriers accessing Terminals.
- Flexibility to book ahead more than one day would be beneficial if reliable information is available.
- Where Terminals can continually monitor capacity, there may be opportunities to release additional slots to industry.

Issue

- May need to restrict direct-to-client wharf bookings to extend use of two-way movements at Container Terminals
- Although system capabilities already exist to some extent, many carriers do not have the correct mix of imports/exports or suitable location of boxes to undertake two-way at Container Terminals. Weight and size mix as well as truck and trailer types and availability of this equipment are variables that affect the ability to undertake two-way loads.
- Would be even more beneficial (and possibly more likely to happen) if it were across both Container Terminals, but there is a I-Stop development cost and a possible concern on the part of the Container Terminals
- Potential issue for Container Terminals when imports are heavy and they wish to clear the Container Terminal before accepting exports
- Some carriers believe separate import and export booking days would complicate two-way loading capability.
- Not all carriers want to do two-way running, with some doing few exports.
- Considerable variation in the reliability of different commodities
- Ad-hoc flexibility (such as opening some time zones early) may create confusion where strict business rules have historically been applied.

Evaluation requirements

- Benefits and issues will depend on specific measures being considered, e.g. early export slots versus early opening of slots when capacity exists. Identify possible VBS adjustments to promote flexibility that benefits the industry.

- Discuss with some carriers the extent to which they could use existing/enhanced functionalities and what benefits they would see to their operations.
- Determine extent to which system functionality already exists versus requirement for adjustments.
- Determine how incentives to carriers could be applied when using existing/enhanced functionality.
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Determine Container Terminal operators' position (willingness to facilitate greater use of functionality, etc.).
- Develop greater understanding of the two-way, stack-run initiative to be developed by Container Terminal operators.
- Investigate which types of carriers are doing two-way loading (on-port versus off-port, those with depots, large carriers, those servicing certain areas, etc.).

4: Improve carrier compliance with ContainerChain

Improve carrier compliance with ContainerChain notification arrivals and encourage or reward carriers that do the right thing.

Description of option

The ContainerChain notification system provides more flexibility than traditional booking systems in relation to actual time of arrival versus the designated notification time. This provides transport carriers with some flexibility if they arrive early or late. However, some transport operators are arriving excessively early compared with their notification time, which affects reporting of true Container Park capacity and may have an effect on servicing times if the park was not anticipating arrival. Container Parks have been flexible in allowing these operators to be serviced where capacity exists but this not always possible if the Empty Container Park is busy. This also creates uncertainty for carriers about whether they will be serviced if they arrive outside the notification time.

This option proposes monitoring carrier compliance with notification arrivals and rewarding those that do the right thing. Conversely, those that do not do the right thing need to improve their compliance to ensure equity in the industry and to retain access to Container Park facilities. Methods of encouraging greater compliance, including rewards/incentives, are to be considered as part of this option.

Benefits

- Rewards those doing the right thing to encourage greater discipline
- Creates greater capacity to manage volumes into the future; variability increases float time required in the transport task
- Greater predictability in service times

Issues

- It is difficult for carriers to plan if they are going to arrive early where there are unknowns in the supply chain, such as delays, client issues, etc. What can be done other than increasing buffer time to accommodate?
- How to recognise when genuine flexibility is required compared with carriers that are not adhering to requirements

Evaluation requirements

- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Need some data on current on-time performance
- Determine the required balance between flexibility and adherence to business rules at Container Parks, and behaviours desired in the future.
- Evaluate the various incentives/benefits that could be offered to those doing the right thing; what would work in this environment?
- Who would do the work of monitoring compliance and how would it be communicated to carriers?
- Determine if system reporting/adjustments can automate process of reviewing compliance.
- Consider if there are other mechanisms to drive behaviour, e.g. through Fremantle Ports' truck policies, driver code of conduct and leases/operating agreements?

5: ContainerChain modifications to increase efficiency

Adjust ContainerChain business rules to enhance flexibility, such as increasing the length of time zones, allowing the container ID to be edited after a notification has been made, and Container Parks returning cancelled slots so that they can be re-booked.

Description of option

ContainerChain is the system transport carriers use to notify Container Parks of their intended arrival time to the Empty Container Park and the activity that they are undertaking (dehire/hire, container ID, etc.). At present, notifications are for half-hour periods, although there is some flexibility in arrival time before and after the period. Once a notification has been made and the container ID is entered, carriers are unable to change the container ID. Some carriers report that this creates difficulty where an importer advises that a certain container is ready for dehire but on collection the container ID is different. The notification then is forfeited or cancelled, and another notification is made for the correct container ID, if one is available at the required time.

Some carriers also report that when notifications are cancelled for whatever reason, they do not see them reappear for booking. This may mean that true capacity of the Empty Container Park is not reflected in the system, preventing other carriers from accessing notifications at required times.

Previously, ContainerChain notifications had to be booked at least two hours or more in advance of the time zone. In response to requests from industry, QUBE has recently adjusted the business rules to allow import dehire notifications to be booked up to 15 minutes before the time zone. This is a valuable change for industry.

Benefits

- Ability to change container ID for de hires would allow carriers to respond to urgent requests or changing circumstances when industry requests greater flexibility.
- Returning cancelled slots to the pool allows carriers to use latent capacity.

Issues

- Balance between flexibility and adherence to business rules is important for transport-carrier planning and ECP efficiency, but capability to deal with increasing volumes may require less flexibility.
- ContainerChain has previously noted that locking in the container ID when making a notification is fundamental to the system operating effectively. There is a need to understand system requirements.
- If greater flexibility means less reliable truck turn times at ECPs, this could affect overall efficiency (carriers have to take into account ECP variability in making VBS bookings).

Evaluation requirements

- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Determine Container Park position (may require shipping lines involvement).
- Extent to which system adjustments are required versus adjustment to existing parameters. ContainerChain can return slots to the pool but it is an Empty Container Park specific parameter and may need to be 'turned on'.
- Identify how to manage carrier compliance/abuse if flexibility is offered.

'The issues present a good summary and we need an incremental approach with small steps. The current rate of change is probably as fast as any time in the past and reflects the industry view as a positive.'

Workshop attendee

6: Extend use of cooperative staging arrangements

Third-party use of staging facilities to encourage bulk movement of containers: large carriers conduct bulk runs and other carriers collect/deliver containers to/from large carrier depots/staging facilities, independent agreements between selected carriers to undertake movements on others' behalf, independently-operated staging facility service.

Description of option

Many smaller transport operators report that obtaining the container volumes required to arrange a bulk run to/from the Container Terminals, and organising the required resources and extended operating hours, make it difficult to achieve bulk runs.

This option proposes that carriers look to alternative arrangements to achieve bulk runs.

Small to medium size carriers, for example, could collaborate with larger operators that can undertake bulk runs and collect containers from the staging depot, reducing the need to access the Container Terminals directly.

Carriers that have depot capacity but lack the volumes required for a bulk run, could offer their depot as a staging facility for other carriers, allowing them to collect containers at a later stage. Movements to/from the wharf and the staging depot could be undertaken by either party.

Alternatively, several carriers could collaborate to generate the required volumes to achieve a bulk run at the Container Terminals.

Benefits

- Bulk movement of containers to or from Container Terminals means that large volumes of containers can efficiently be moved at night, normally with dedicated resources assigned at the Container Terminals to facilitate it. This reduces the volume of containers required to be handled during the day and frees up VBS slots for other operators.
- Saves many operators from having to book VBS slots, undertaking movements to/from Container Terminals, and may reduce the risks associated with delays at the port and related costs
- Reduces competition for Container Terminal access and volume of trucks accessing the port precinct, particularly at peak times
- Encourages efficient operators to conduct larger bulk run movements
- Potential to spread more volume over longer period with fewer direct deliveries to/from Terminals
- Facilitates move away from daylight hours
- Staging is good from the customer viewpoint: timely delivery in the morning with a small window of availability to accept the container and certainty of time of delivery

- Efficiency and capacity gains for Container Terminals due to more bulk runs
- Encourages the development of hubbing and staging facilities, and reduces competition between staging and direct deliveries currently in play
- Supports the development of rail as an efficient mode of transport

Issues

- Reluctance of carriers to enter into arrangements with competition
- Security of customer data and risk of poaching business
- Potential increase in costs seen by those previously undertaking direct deliveries
- Commercial arrangements required
- Volumes may not support move to this type of arrangement in the short term; may require some other incentive to progress in the short term
- Freight companies protect their competitive advantage and would be reluctant to lose work or competitive advantage.
- Potential to move congestion to hubbing points out of the port precinct; possible relocation of existing issues
- Priorities at the staging yard may see the driver wait for an extended time, with limited ability to influence.
- Loss of control and cost uncertainty are the big issues especially if a new facility is involved; who owns/operates the plant and equipment, how are costs apportioned, etc.
- High productivity vehicles (HPVs) may make staging more financially viable for those located out of the port precinct, but this conflicts with current position on use of HPVs where competing against rail paths.

Evaluation required

- Discuss willingness of larger operators to make their facilities available and on what basis.
- Identify operating arrangements at Container Terminals to allow this to happen: system changes, independent arrangements, time of day, etc.; how to support multiple companies on a tag run/bulk run.
- Evaluate methods to encourage take-up.
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Discuss with some carriers what benefits they would see to their operations and what conditions would need to apply.
- Determine suitable commercial arrangements required to encourage take-up.
- Explore models in Melbourne and Brisbane that operate solely as third-party staging facilities. How have they made this commercially viable? What are the costs and benefits to users?
- Others?

PARKED INITIATIVES

Single portal for managing VBS and ContainerChain bookings/notifications

Introduce a system to allow bookings to be made for VBS (Container Terminals) and ContainerChain (Container Parks) through one portal.

Description of option

Major Container Parks have introduced ContainerChain, a notification system to manage the arrivals of transport operators accessing the site. This means that two key facilities in the supply chain, Container Terminals and Empty Container Parks, now require bookings/notifications to be made.

Due to the booking processes for each of the systems, it is not always possible for operators to coordinate suitable times for their bookings across the two different facilities. For example, there may be several hours' gap between bookings across the two facilities. Similarly, where booking times are close, such as for a 10:00 booking at a Container Park and an 11:00 booking at a Container Terminal, a delay at the first facility may result in the truck being late or missing the booking at the Container Terminal, with a no-show fee being incurred.

This option proposes a system to allow bookings and notifications for these different facilities to be made via one online portal which could improve coordination between facilities or include some sort of service agreement to manage delays and subsequent impacts between different facilities.

Benefits

- Potential to increase two-way loading to/from the port precinct and coordinate ContainerChain and VBS bookings with allowances for delays at either end
- Greater flexibility at the Container Park end
- Improved information exchange and visibility
- A single set of business rules that can be built on to drive the desired outcomes
- Likely to be a bigger issue for small carriers

Issues

- Discrepancy between business rules at each facility and across different systems may make integration difficult.
- What incentives are there for Container Terminals and ECPs to facilitate a single-portal approach?
- Ownership and development of this option may be challenging (I-Stop and ContainerChain both vying for a dominant market position and both have compelling market influence to compete to be the single portal).
- Potentially an extremely complex and costly integration process; would costs to make system changes and the business rules be prohibitive compared with the overall benefit?

- Difficulty of establishing cross-Terminal port slots some years ago due to complexity of operational arrangements may deter similar projects.

Evaluation required

- Discuss with Container Parks and Container Terminals the level of support for this option.
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Discuss with some carriers what benefits they would see for their operations.
- Assess whether this should be progressed as part of a potential Port Community System (PCS) rather than an independent initiative.
- Examine other integration methods, e.g. integration with carriers' operating systems with Electronic Data Interchange (EDI) feeds.

Item parked

This initiative is naturally aligned to the development of a potential PCS rather than an independent initiative.

Extend Empty Container Park operating hours

To align with Container Terminal operating hours

Description of option

This option proposes that in the near future, ECPs move to extended operating hours to align with those of the Container Terminals, to encourage transport operators to extend their hours and undertake more movements in the evening/night, and to enhance the ability of operators to undertake two-way loading.

Benefits

- Increased capacity in total supply chain to undertake receipt and delivery (R&D) over a longer period of time
- Increased capability to dehire within the free time allowed
- Increased ability to undertake two-way loading to/from the port precinct
- Encourages other parties in the chain to extend operating hours (e.g. importers)

'We are doing more containers now than two years ago and we couldn't manage then. Major improvements have been made to achieve this result. In the past we have been reactive and we are now being proactive based on what we are seeing as the challenges for the future.'

Workshop attendee

- As the port moves towards 24/7 operations in the future it will be necessary for key parties in the supply chain to extend their operating hours to deal with volume increases.

Issues

- Ideally all parks need to align hours to ensure all carriers can benefit (e.g. all shipping lines to accept de hires/hires) but this may not be economic for all.
- Take-up by carriers is essential to make this operation viable
- Alignment of operating hours at client premises and staging depots is necessary to encourage carriers to use facilities at these times, e.g. if unable to access dehire containers from client premises, carriers will not be able to fully utilise ECP facilities.
- Smaller Empty Container Parks lack economies of scale and are unlikely to open after hours.
- Costly for Empty Container Parks to operate at night without sufficient volumes to support
- Shipping line reluctance to absorb additional costs
- Currently, there are lighting issues for some Empty Container Parks which affect the ability to extend immediately into night operations.

Evaluation required

- Evaluate methods to provide incentives or encourage take-up.
- Determine to what extent success is related to extension of importer hours.
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Discuss with some carriers what benefits they would see to their operations.
- Others?

Item parked

This initiative is naturally being progressed through lease negotiations; new sites commencing operations in 2014 will have extended hours.

Promote extended-hours solution with industry.

Description of option

Importers, freight forwarders, brokers, exporters and some transport operators operate primarily Monday to Friday during daylight hours. This creates issues as facility operating hours are not aligned, restricting the types of interactions that occur after hours.

To successfully extend the hours of these facilities, it is important also to extend the operating hours of importers and others along

the chain to ensure availability of empty containers for de hires, or extend the use of depots to allow two-way movements to occur after hours to/from the port precinct.

Promoting extended hours with industry is important to achieving the desired behavioural change but the methods that will be most successful need to be explored.

Benefits

- Improved two-way loading capacity after hours
- Reduced empty running and futile trips to importers where facility is not open
- Reduced cost of running one-way in the evening to/from Terminals
- Increased capacity of the container supply chain
- Improved operating efficiencies if direct deliveries can occur after hours

Issues

- A number of large chains will not open after hours due to the nature of their business. With import-only businesses, part of the bigger operation involves national contracts and service agreements making it difficult to change. Benefits need to be understood.
- Benefits and costs for importers and business owners not clearly understood
- Many drivers still only want to work Monday to Friday.
- Accessing importers to educate is difficult.
- Current volumes do not require 24/7 operations, therefore changing behaviour without the volume imperative may be difficult.
- Likely resistance from 'mum and dad' business operators

Evaluation required

- Investigate applying other initiatives, such as pricing mechanisms to influence time of day (peak period pricing, port access fee, license fees).
- Identify potential winners and losers and estimate overall benefits to industry.
- Determine if quantification of benefits to industry is possible.
- Is it possible to evaluate the number of importers able to extend hours compared with small, family-run companies that may not? What portion of market do they represent?
- Importer Working Group progressing a number of initiatives

Item parked

This initiative is being progressed through the Importer Working Group. Strategies to educate and engage importers and freight forwarders in the container supply chain are being progressed; extending operating times to accommodate after-hours deliveries or pursuing staging/hubbing arrangements are part of this.

Appendix D: Issues Matrix

The following matrix summarises the issues impacting trucking productivity and efficiency identified through the course of industry workshops, case study interviews and the online transport operator survey. The priority assigned has been based on discussion at these forums and steering committee meetings. Appendix E summarises the proposed improvement initiatives that relate to these issues, including priority and feasibility ratings, current status and parties involved.

To ensure that the Truck Productivity Improvement Strategy was manageable and focused, not all of the 'Medium' and 'High' priority issues identified below are in the strategy. It is the intention that these be tabled at relevant forums, such as the Western Australian Port Operations Task Force (WAPOTF) and the recently formed WA Road Transport Association's Port Carriers Working Group for further investigation and action on an ongoing basis.

Issue		Effects	Priority	Comments
1. Container Terminal operations and VBS				
1.1	Slot drop process – 'mad minute'	Limits ability to schedule efficient fleet operations and places an administration burden on carriers. Ability to get adequate distribution of slots throughout the day is limited.	High	Vehicle Booking System (VBS) developments are under investigation by both Container Terminal operators. Developments aimed at minimising the daily rush to secure slots and facilitating more efficient truck scheduling.
1.2	Difficulty organising bulk runs, e.g. number of containers required for bulk run and time of day (night not suitable for all carriers)	Greater requirement for carriers to book slots to handle large quantities of containers and more competition to access booking slots.	High	Potential for carriers to combine resources or collect containers from a third party rather than accessing the wharf should be investigated. Container Terminals developing improved bulk run functionality to be rolled out during 2014.
1.3	Carriers with multiple logins creates an unfair advantage	Inequity for small and large carriers, and slots may be booked that are not required. Increasing competition in an already highly competitive process (slot drop).	High	Both Container Terminals have criteria for obtaining a registration, however, where multiple ABNs exist, multiple registrations can be made. Requires a process for monitoring, however, high number of carriers makes this difficult.
1.4	No direct access between DP World Container Terminal and the North Quay Rail Terminal (NQRT)	Does not support the efficient movement of containers to the NQRT required to reach the target for rail volumes	High	Access to both Container Terminals will be improved following the completion of the NQRT extension.
1.5	Use of side loaders at Container Terminals	Takes Container Terminal resources away from other work to monitor side-loader servicing (at DPW), and may involve an added cost to end customer.	High (Container Terminals) Low (transport operators)	Some decline in the number of side loaders accessing DP World was seen at first after a fee was introduced, however, there has been no real decrease in numbers over the long term. This may be due to the prevalence of direct deliveries in the current operating climate.
1.6	Container Terminal break times can interfere with receipt and delivery (R&D)	Carriers' trucks stranded in Container Terminal part-way through being serviced, creating frustration and possible delays.	Medium/High	Complex industrial relations issue; cannot be easily solved.

	Issue	Effects	Priority	Comments
1.7	Unbalanced relationship between Container Terminal operators and transport carriers	Service expectations are not agreed between parties and limited access to compensation for carriers where Container Terminals fail to turn around trucks quickly.	Medium	Not currently viewed as an issue by some carriers. Introduction of performance indicators for Container Terminals via new lease arrangements may improve this issue. There is currently no desire to pursue a legislative solution, e.g. Port Botany Landside Improvement Strategy (PBLIS).
1.8	Ability to book consecutive zones to achieve two-way loading	More one-way loaded movements are required and overall there are more trucks accessing the Container Terminals to move the same number of containers.	Medium	Only a small number of carriers has import/export balance which contributes to two-way loading capability. Consecutive zone feature may be under used. Container Terminals currently investigating VBS arrangements to facilitate more bulk run movements.
1.9	No automation of checking container availability when unloaded from vessel	Added administration required by transport carriers to monitor individual container availability.	Low	A I-Stop notification module for container updates is available on a subscription basis. Opportunity for I-Stop to undertake information sessions to enhance knowledge of these features.
1.10	Variability of service levels; truck turn time (TTT) can vary dramatically from one day to the next	Inconsistency of servicing creates difficulty planning fleet utilisation and movements (e.g. excess time incorporated into planning to allow for delays). Delays may result in added cost of truck detention to end customer.	Low	Significant improvements to average truck turn times has been seen across both Container Terminals in recent years. Introduction of performance indicators in Container Terminal leases in the future will support continued success in this area.

2. Empty Container Parks and ContainerChain

2.1	Difficult to change Empty Container Dehire Park with shipping line	Additional travel time and empty running if required to be dehiere at unsuitable dehire location.	High	I-Stop has introduced a new redirection feature under the Container Control module that may assist in alleviating this issue. Dehire location remains at the discretion of the shipping lines.
2.2	Cannot change container ID to adapt to changing requirements	Notification and associated fee is forfeited if a container is not available or a different container is collected from customer site. This restricts flexibility to adapt to ad hoc requirements.	High	Further investigation with ContainerChain and ECPs is required, however, ContainerChain has advised that this change is being investigated and is likely to occur.
2.3	Carriers' use of notification system (e.g. booking notifications that are not required or arriving excessively early/late)	Capacity indicated in system is not accurate which impacts service levels and creates resourcing issues for ECPs. Carriers are not able to access required slots at appropriate times due to 'hoarding' by other carriers.	High	QUBE has indicated at WAPOTF that carrier compliance will be further investigated. Requires collaboration between ECPs and transport operators to change behaviour.

	Issue	Effects	Priority	Comments
2.4	ECPs' level of flexibility versus discipline in the notification process	Flexibility at some times creates complacency and an expectation of further flexibility. ECPs' ability to plan effectively is reduced if too much flexibility provided to industry.	High	Further investigation required into how greater discipline in the notification process can be achieved while ensuring enough flexibility remains in the system. Data is required to monitor arrivals versus bookings.
2.5	Requirement for hard copy Delivery Orders (DOs) for some shipping lines	Creates delays in servicing and may require trucks to redirect to truck depots to collect paperwork. Increases risk of missed slots/zones and an administration burden on carriers. There is variability and inconsistency when hard copy DOs are required.	High	Has become less of an issue in recent months as the majority of shipping lines are using ContainerChain, however, it still occurs including when there is a re-direction. Work with shipping lines and ECPs to minimise this and ensure that all shipping lines are using ContainerChain.
2.6	Variability of service levels (truck turn times through ECPs)	Inconsistency of servicing creates difficulty planning fleet utilisation and movements and may add cost of truck detention to end customer. Variability requires increased buffers to compensate for risk of slow service (e.g. spacing between bookings).	High	Performance indicators will be built into new leases which will encourage greater consistency. Requires carrier compliance with arrivals.
2.7	Mismatch of operating hours between ECPs and Container Terminals	Restricts two-way loading opportunities to/from the port precinct. There is increased empty running after ECPs close and greater requirement to stage empty containers.	High	QUBE has extended operations to incorporate a Saturday shift, and recently QUBE Central extended opening hours to 22:00 Monday to Friday. New Container Park sites and some existing sites will extend hours to incorporate an evening shift when new sites are operational. There are lease requirements to open extended hours.
2.8	Requirement to make notifications two hours or more in advance of the notification time	Creates stress for carriers if there are uncontrollable delays in the supply chain, and difficulty planning in advance. Increased risk of no-shows or cancellations if required container is not available from customer site. Encourages carriers to book notifications that might not be required to compensate for not being able to anticipate requirements.	High	QUBE has reduced the advanced notice required to make a notification for import dehire containers from two hours to 15 minutes, which has been positively received by industry.
2.9	Carriers not using extended ECP operating hours when available (namely Saturdays)	Impacts on commerciality of operations at ECPs and reduces confidence of ECPs to extend hours further. Lost opportunity for two-way loading to/from the port precinct.	High	May be less demand in current operating environment, with some transport operators stating that they had moved back towards daylight operations. Extended hours will become standard when new ECP sites become operational.

	Issue	Effects	Priority	Comments
2.10	Empty bulk runs conducted during peak day periods	Preferential treatment of bulk run trucks and R&D delays and increased truck servicing times. Impacts capacity of ECP to service R&D.	High	New lease provisions and KPIs for new ECP sites relating to the hours that bulk runs should take place will be introduced. WAPOTF to investigate and facilitate discussions with parties involved in the short term (ECPs, shipping lines, Terminals).
2.11	Unbalanced relationship between ECPs and carriers	Service expectations are not agreed between parties and no compensation available to carriers for failing to meet expected service levels.	Medium	Performance indicators will be built into new leases which will encourage greater consistency in servicing. Requires carrier compliance with arrivals.
2.12	Off-port park locations	Location of off-port ECPs may not be suitable for carriers depending on depot locations, and use of sites may add empty running and additional transit time for some carriers.	Medium	I-Stop functionality via Container Control has been introduced to facilitate requests for carriers to use alternative Container Parks. Developing further off-port intermodal Terminals and Container Parks may improve access to these facilities by some carriers.
2.13	Stock availability at ECPs is not known to the transport operator when making a notification for an export hire, though notifications can still be successfully made even when stock levels are not sufficient.	Increased risk of futile trips when containers not available or ready, and additional costs to transport carriers and end customers. May add to congestion at ECPs where trucks are waiting for containers to become available.	Low	ContainerChain system already has notification capability, however, this requires consultation with shipping lines and ECPs. ContainerChain has advised that further work is being undertaken to rectify this issue.

3. Transport operations and supply chain coordination

3.1	Increasing volume of 40' containers	May impact on ability of carriers to load trucks to full capacity.	High	This is a big issue, but solutions are unclear at this stage. Greater consolidation of containers through staging may assist. Further analysis on the impacts of 40' container growth is required.
3.2	Influence and control of shipping lines	Difficult for small to medium companies to negotiate reasonable terms with shipping lines as primary commercial relationship remains between shipping lines and Container Terminals/Container Parks.	High	Inclusion of shipping lines in more industry discussions, e.g. WAPOTF, Peak Season Working Group, etc. is required. Education of importers needed on the different transport options available to facilitate negotiations.

	Issue	Effects	Priority	Comments
3.3	Mismatch of hours between key players in the container supply chain, e.g. importer operating hours, staging depots, transport operators, Container Parks	Limits evening and night two-way loading opportunities to and from the port precinct, increasing empty running. Increases requirement to stage containers which may add cost to the transport task for end customers. Creates tight delivery windows to be met by transport at customer facilities.	High	Promotion of extended hours with industry is required. Work being progressed to inform importers of the benefits of after-hours deliveries through the Importer Working Group. Although it has been noted that extended hours are not critical in the current operating climate, they will be required as the port expands and volumes increase.
3.4	Communication and coordination along the supply chain – information exchange between freight forwarders, importers, transport, documentation requirements, etc.	Delayed communication can result in futile trips and transport delays, adding cost to the end customer. Increased administration by all parties if information not received in a timely and accurate manner.	High	Promotion of the importance of communication required, particularly for end users who may believe that they cannot impact on delays/issues within the chain. Investigation into a Port Community System to facilitate information exchange is currently underway.
3.5	Under-use of rail	Greater volume of trucks on the road when rail not used to full potential creating capacity constraints in the Inner Harbour. Economies of scale and subsequent competitiveness of rail not fully realised.	High	Need to increase rail volume to ensure ongoing viability and ensure Inner Harbour capacity is maximised. Education of importers/exporters on the benefits and costs of using rail is necessary.
3.6	Equity between large and small carriers	Large carriers incurring extra cost to operate after hours and on weekends, making it more competitive for small carriers during daylight hours. Encourages larger carriers to manipulate supply of booking slots by moving volume to day shift thereby making it more difficult for small carriers.	High	Container Terminals progressing development of improved stack run functionality which may provide large carriers with increased benefits of operating at night.
3.7	Ability to coordinate bookings and notifications between VBS and ContainerChain	Risk of missed slots/no-show penalties due to delays at other facilities. Difficulty scheduling fleets and securing appropriate mix of slots between facilities.	High	A Port Community System is currently being investigated which may facilitate better coordination of bookings between facilities.
3.8	Difficulty matching export receivals windows with import container availability	Limits capability to undertake two-way load to/from Container Terminals.	Medium/ High	Only affects a small number of carriers who have import/export balance. Container Terminals note that it is imperative to move import volumes out of Container Terminals to manage capacity, which may restrict ability to receive exports too far in advance.

Issue	Effects	Priority	Comments
3.9	Cost of operating at night, on weekends and using staging	Medium	Many transport operators have stated that in the current environment night operations and staging are difficult to justify. Investigation into the costs of these operations is currently being undertaken by Fremantle Ports (Supply Chain Cost Modelling Project).
3.10	Increasing container weights	Medium	It has been noted that the trend of heavier containers may be impacting on truck utilisation (truck may not appear to be loaded to full capacity but due to weight restrictions may only be able to handle one container). Incentives for improved truck utilisation will be further considered, although new Chain of Responsibility and container weight declaration requirements may further impact productivity levels. More accurate information on box weight may help carriers assign the right vehicle.
3.11	Balance of import/export business (both overall and the tendency of carriers to specialise in either imports or exports)	Medium	Need to facilitate two-way running to/from the port precinct. Extending ECP operating hours will assist, and incentives for two-way loading are to be investigated. Incentives may assist in promoting some industry restructuring to achieve better balance.
3.12	Effects of expanding and contracting operating hours during peaks/troughs – lack of consistency	Medium	Extension of Container Park operating hours when new sites operational may encourage extension of hours of other parties in the supply chain. Education of importers underway relating to benefits and costs of extended hours.
3.13	Number of carriers – industry discussion about whether the large number of small carriers is creating inefficiencies in the supply chain	Medium	Some facilities note that increased capacity may be gained where consolidation of smaller operators is achieved, e.g. extending the use of common-user staging facilities among the smaller carriers. Container Terminals currently investigating improved Stack Run-Out functionality.

Appendix E: Possible Improvement Initiatives Matrix

The following matrix summarises the possible improvement initiatives that may influence improved trucking productivity in the future, and which were identified through the course of industry workshops, case study interviews and the online transport operator survey. The priority and feasibility has been assigned based on evaluation with the project steering committee and feedback from industry workshops. This matrix should be considered in line with the Issues Matrix summarised in Appendix D.

To ensure that the Truck Productivity Improvement Strategy was manageable and focused, not all initiatives can be progressed immediately. It is intended that some initiatives be tabled at relevant forums, such as the Western Australian Port Operations Task Force (WAPOTF) and the recently formed WA Road Transport Association's Port Carriers Working Group, for further investigation and action on an ongoing basis.

Initiative	Priority	Feasibility	Comments	Responsible party	
I. Container Terminal operations and VBS					
I.1	Allow carriers to book slots and containers as soon as the container information is available. Reduces slot drop process, and encourages early access to information and planning.	High	High	Advanced Bookings is a new Vehicle Booking System (VBS) initiative being rolled out at DP World in Brisbane to facilitate the new auto-stacking crane operations, and will shortly be introduced in Melbourne. Progress will be monitored, and discussions will be pursued with I-Stop and DPW to determine business rules and possible application in Fremantle.	Container Terminals
I.2	Modify VBS structure to enable more efficient truck scheduling (allocation of slots based on carrier volumes, time of day and other criteria)	High	High	Container Terminals are currently pursuing improved functionality for stack runs incorporating scheduling based on time of day and volume being moved. Further investigation of practical application in Fremantle as well as carrier and industry consultation is required.	Container Terminals, WAPOTF
I.3	Create VBS function to match import and export slots within a time zone or consecutive time zones.	High	High	May only benefit the few carriers that have import/export balance. Patrick has released Dual Slot functionality recently which matches a single import and export booking within the same time zone. Greater education on the current functionality existing in the VBS is required to ensure carriers optimise available capability.	Container Terminals/ I-Stop, transport operators

	Initiative	Priority	Feasibility	Comments	Responsible party
1.4	Incentives for two-way loading	High	High	Most transport carriers do not have suitable mix of imports/exports, but recent developments at Patrick have resulted in Dual Slot functionality becoming available. Further functionality already exists to assist carriers to facilitate two-way running. This includes type-less slots, slot swapping and import tagging, used in varying degrees in the Container Terminals. Need to investigate if these functions are used in Fremantle and whether carrier education is required.	Container Terminals, WAPOTF
1.5	Additional VBS functionality for the system to offer a slot nearest the desired time slot for a carrier booking, e.g. if a carrier seeks to book a slot for 18:00 and none is available, the system will automatically seek and offer a slot nearest that time.	High	Medium	This may be addressed as part of system enhancements currently under investigation/development. Some functionality may allow for carriers to indicate preferred time periods to access the Terminals.	Container Terminals
1.6	Terminals to advise road carriers of container stack positions (in general terms) for import and export vessels within the yard.	High	Medium	This was a common suggestion by transport operators and was cited as one of the reasons that stack runs are not undertaken. This functionality already exists in the VBS but is a configurable rule set by the Container Terminal. Effectiveness will also be impacted by the equipment used in the Container Terminal. Further investigation is required.	Container Terminals
1.7	Open Container Terminal time zones early and release more booking slots when capacity exists	Medium	High	Opening zones early is undertaken in many Eastern States Container Terminals, including Patrick, which does this when possible in Fremantle. Further discussion with DPW is required to determine any restrictions on implementing this. I-Stop has also released a smartphone application that shows which time zones are open to allow carriers the opportunity to monitor. Container Terminals have stated that more slots get released when capacity exists, and are able to release Terminal Slots for specific carrier requirements. Further understanding of the circumstances under which this occurs would be beneficial.	Container Terminals, WAPOTF

	Initiative	Priority	Feasibility	Comments	Responsible party
I.8	Early availability of import boxes before first day of availability and automated advice of container availability to enable quick collection of containers	Medium	High	The Container Terminals facilitate collection of import containers prior to the first day of availability in most cases, and the VBS can provide notification of container availability by way of a subscription (requires a fee to be paid). Education of transport operators may need to be pursued.	Container Terminals, WA Road Transport Association (WARTA)
I.9	Appropriately assess the availability of time slots against the level of demand in all time zones. This is the stevedore's responsibility but a mechanism for carriers to have input to this assessment (at an industry level) would be valuable.	Medium	Medium	As only a finite number of time slots is available in each zone, demand may be difficult to cater for, particularly during peak periods. Container Terminals already alter the number of slots based on demand, resource availability, vessel schedules and cargo mix. Better pre-planning by carriers and the introduction of a more efficient vehicle/scheduling process will allow for demand to be more reflected in the number of slots released. Better statistics on slot availability and usage will inform industry better and allow discussion in industry forums.	Container Terminals
I.10	Peak period pricing to encourage more R&D activity during evening, night and weekend periods, e.g. incentives in cost or service levels at Container Terminals to encourage evening and night deliveries.	Medium	Medium	Peak period pricing options are being investigated and require further discussions with stakeholders. Need to determine how such a regime would be implemented (who the fee is paid to and how) and at what level pricing is set to have an impact on behaviour. Need to balance to ensure congestion does not shift to night.	Fremantle Ports
I.11	Release import and export VBS slots at different times	Medium	Medium	Container Terminals note that this will only benefit a small number of carriers who have import/export balance. VBS will need to be modified to enable this, but it may become redundant if major changes to the VBS are implemented in Fremantle (e.g. Advanced Bookings, slot scheduling arrangements, etc.).	Container Terminals

	Initiative	Priority	Feasibility	Comments	Responsible party
I.12	Additional VBS functionality to enable carriers, when booking import or export slots, to automatically be offered a reverse load. Carriers can then indicate whether they wish to take up the offer and a container would be allocated for loading. This function would be suitable for larger scale carriers, with reasonably balanced import and export tasks.	Medium	Medium	Some functionality already exists in the VBS to facilitate two-way loading. Larger carriers may not use this due to undertaking one-way bulk runs, and timing considerations of import availability versus export receipts may not be conducive to two-way movements.	Container Terminals
I.13	Ability to swap an import for an export	Medium	Low	While giving carriers the ability and flexibility to swap imports to exports and vice versa, it may create operational issues for Container Terminals and therefore needs to be discussed with individual stevedores. The functionality exists within the VBS, but is not currently enabled for Fremantle Container Terminals.	Container Terminals
I.14	Importers/exporters/freight forwarders using all available time, e.g. exports all coming in on last day	Medium	Low	Continue to work with importers and exporters on how they can assist in improving the overall supply chain and benefit their own businesses.	Importer Working Group, WAPOTF
I.15	I-Stop and VBS rules, terms and conditions to be clear, unequivocal and removed from arbitrary 'management'	Medium	Low	Coordinated consultation and education of users of the VBS to be undertaken on a regular basis and to ensure that rules and conditions are clear.	Container Terminals
I.16	Remove duplicate VBS logins from carriers	Medium	Low	Discussions with Container Terminals, WARTA and transport operators on how to best achieve this is required. This may become less of an issue where VBS functionality is enhanced to better facilitate bulk movement of containers with larger operators. Fewer operators would be competing in the traditional slot drop process.	WARTA, Container Terminals, transport operators

	Initiative	Priority	Feasibility	Comments	Responsible party
I.17	Increased resource allocation for evening and night shift loading/unloading of trucks	Medium	Low	During the current operating conditions, many carriers and the Container Terminals believe the present service levels are sufficient. If demand warrants increased resources, this will be progressed further; however, it is at the discretion of the Container Terminals and their relative demand.	Container Terminals
I.18	Formal notification from the Container Terminal operator of Terminal delays to enable truck detention costs to be remitted as no fault of the carrier; electronic monitoring data available to both parties on current service levels, so that disputes over truck detention can be easily and more speedily resolved	Medium	Low	Information would need to be matched to slots. Further discussion with the Container Terminals, WARTA and transport operators required to determine the extent of this issue and next steps.	WARTA, Container Terminals, transport operators
I.19	Provide rural containers an extended booking slot window, e.g. four hours	Medium	Low	Will only benefit a small number of carriers and may impact upon other slots. Needs to be further discussed with the Container Terminals, however, may encourage third party staging if rural carriers continue to experience delays or late arrivals. Terminals note that country carriers are supported to the extent possible, so this may not be required.	Container Terminals
I.20	Weigh in motion (WIM) on exit from Container Terminals. Don't have to go anywhere else, and won't get picked up by inspectors.	Medium	Low	Chain of Responsibility legislation to be introduced during 2014 will incorporate container weight declarations and associated obligations. Some Container Terminals in the Eastern States already have WIM facilities within the bounds of the Terminal to adhere to CoR requirements. Currently, a public weigh facility is being developed within the Truck Facility at Rous Head.	Fremantle Ports, WAPOTF, Main Roads WA
I.21	Investigate structure of DPW breaks to allow for consistent R&D through shifts	Low	Low	This is a difficult issue to overcome due to complex industrial relations issues.	Container Terminals

	Initiative	Priority	Feasibility	Comments	Responsible party
1.22	Auctioning VBS slots	Low	Low	This option may not be equitable for smaller carriers who are unable to pay high costs for slots, and industry does not have a strong desire to pursue it.	
2. Empty Container Parks and ContainerChain					
2.1	Extend Empty Container Park (ECP) operating hours	High	High	Previously, QUBE has considered extended hours if supported by industry with a possible additional charge, however, QUBE Central has recently extended opening hours until 22:00 Monday to Friday with no charge. Leases for new Container Parks will incorporate the requirement for extended hours when sites become operational from 2015. Sufficient industry support to use extended hours is required and further consultation to ensure capability to use extended hours is recommended.	Container Parks, Fremantle Ports, WARTA, WAPOTF
2.2	Move bulk runs to evening and night shifts	High	High	This option requires Container Terminals, ECPs and shipping lines to work together to ensure that bulk runs are coordinated after peak day hours. Currently, difficulty exists in identifying the parties impeding after-hours bulk runs. Leases for new Container Park sites developed at Rous Head require extended operating hours, and bulk runs to occur outside peak day periods.	Container Parks, shipping lines, Container Terminals, WAPOTF
2.3	Improve carrier compliance with notification arrivals at ECPs and promote carriers that do the right thing	High	High	Work with ECPs to monitor ContainerChain arrival statistics and follow up carriers that are consistently out of slot. Further investigate the implementation of benefits or penalty system. Minimum standards in carrier agreements may be considered. Data easily accessible from the ContainerChain system.	Container Parks, WAPOTF, transport operators
2.4	Ability to change container ID in ContainerChain	High	High	ContainerChain is currently investigating changes to the system to allow container ID to be edited. Further discussions with ECPs and shipping lines may be required.	Container Parks, ContainerChain, shipping lines, WAPOTF

	Initiative	Priority	Feasibility	Comments	Responsible party
2.5	Put cancelled notifications back into pool	High	Medium	ContainerChain has confirmed that this already occurs and further investigation is required with Container Parks to confirm that this is the case. Performance indicators are being introduced for new Container Park sites to ensure that a minimum number of notifications is released to industry per operating hour, which takes into account cancelled notifications and whether they are made available to industry.	Container Parks, Fremantle Ports, WAPOTF
2.6	Dynamic slot release – continual review of capacity by ECP	High	Medium	ECPs can currently amend the number of notifications released per zone, however, more work with ECPs is required on whether optimum capacity is being released to industry.	Container Parks, WAPOTF
2.7	Require bulk run containers to be notified in the ContainerChain system	High	Medium	The current system has the capability for bulk runs to be notified. Requires further discussions with ECPs, shipping lines and the WAPOTF.	Container Parks, shipping lines, WAPOTF
2.8	Fork mounted terminals/ auto gates	High	Medium	New ECP sites will have improved technology for the processing of R&D vehicles. More information is required on the type and use of such technology.	Container Parks, Fremantle Ports.
2.9	Improve ability to change ECP for the dehire of import containers	Medium	Medium	The ECP to be used for containers is at the discretion of the shipping lines, and changes may affect stock levels and planning. I-Stop's Container Control system allows carriers to request a change of ECP for dehirer. If permitted, the system will automatically accept changes and communicate them to relevant parties.	Container Parks, shipping lines, WAPOTF
2.10	Display container stock levels to industry	Medium	Medium	Further investigation into ContainerChain system capabilities required to see if early notification to carriers can be achieved. ContainerChain has acknowledged that this is a priority. Requires consultation with shipping lines and ECPs as to appropriate ways to keep carriers aware of low or no stock to avoid futile trips.	Container Parks, ContainerChain, shipping lines, WAPOTF

	Initiative	Priority	Feasibility	Comments	Responsible party
2.11	Cargolink to use ContainerChain to facilitate elimination of hard copy Delivery Orders (DOs)	Medium	Medium	Work with shipping lines and ECPs to increase use of ContainerChain and the process for carriers when a paper DO is required. Agreements may have already been reached and are believed to be implemented in Fremantle in mid-2014.	Container Parks, shipping lines, ContainerChain, WAPOTF
2.12	Ability to book beyond optimal maximum	Medium	Medium	ECPs can currently amend the number of notifications released per zone, more work with ECPs required on whether optimum capacity is being released to industry. Leases for new ECP sites will incorporate key performance indicators (KPIs) on the minimum number of notifications required per zone.	Container Parks, Fremantle Ports.
2.13	Email/other search function to eliminate paper Delivery Orders (DOs)	Medium	Medium	Paper DOs have been a significant issue in the past, but this issue does not appear to be as prominent currently, with a decrease in the number of paper DOs being required. Ongoing investigation with specific shipping lines continues. ContainerChain is pursuing new functionality to allow carriers to create an Electronic Delivery Order (EDO) directly into the system, eliminating paper DO requirements in most circumstances.	Fremantle Ports, shipping lines, Container Parks, WAPOTF
2.14	Increase equipment/resources to service R&D	Medium	Medium	Work with ECPs to look at delays and to determine whether additional resources will improve service levels. New sites will be required to achieve appropriate service levels and retain specified equipment levels.	Container Parks, Fremantle Ports
2.15	Provide automatically matched dehire/hire notifications	Medium	Low	Further investigation into ContainerChain system capabilities required to see if this functionality can be achieved. May only benefit a small number of carriers with a good import/export balance.	Container Parks, ContainerChain, WAPOTF
2.16	Improved physical layout of Container Parks. One gate in and out creates bottlenecks, and creates scheduling and truck utilisation problems.	Medium	Low	May not be feasible for some sites. New sites and lease negotiations may take this into account.	Container Parks, Fremantle Ports

	Initiative	Priority	Feasibility	Comments	Responsible party
2.17	Increase number of notifications released per zone	Medium	Low	Work with ECPs to look at the use of notifications and whether additional notifications are required. Leases for new ECP sites will incorporate KPIs on the minimum number of notifications required per zone.	Container Parks, Fremantle Ports
2.18	Increase length of zones	Low	Low	May create greater flexibility for transport operators, however, carrier compliance issues and resourcing at the Container Parks must be taken into account.	Container Parks
2.19	Remove advanced notice requirement (e.g. reduce or remove pre-notification for imports)	Low	Low	QUBE recently decreased pre-notification from two hours to 15 minutes for imports. This has been received well by industry.	Container Parks
2.20	Select multiple timeslots at once	Low	Low	System capability of ContainerChain and benefits of change for industry need to be further investigated. Already possible for pick-ups but not de-hires.	Container Parks, ContainerChain

3. Transport operations and supply chain coordination

3.1	Promote extended hours solutions with industry	High	High	Importer Working Group working on increasing awareness of the benefits of after-hours deliveries with importers and how this can be achieved. New Container Park leases will incorporate requirement to extend operating hours, and QUBE Central has recently extended opening hours to 22:00 Monday to Friday.	Importer Working Group, WAPOTF
3.2	Accurate container weights so improved matching of equipment can occur	High	High	CoR legislation to be introduced in 2014 requiring accurate declaration of container weights and for all parties in the supply chain to take responsibility.	WAPOTF, Main Roads WA, WARTA
3.3	Notifying industry in a certain period of time of delays that may impact on R&D (I-Stop notifications, redirections, bulk runs)	High	High	Discussions with Container Terminals, ECPs, I-Stop and ContainerChain required ensuring that notifications to industry are provided in a timely manner. Shipping lines will also need to be involved. Current systems allow for broadcast and messaging capabilities. May require measurement. New leases will incorporate requirement to notify industry of delays in a timely manner.	WAPOTF, Fremantle Ports, Container Parks, Container Terminals

	Initiative	Priority	Feasibility	Comments	Responsible party
3.4	Encourage flexible delivery windows at importer premises	High	High	Importer Working Group currently progressing information materials to promote the benefits of after-hours deliveries.	Importer Working Group
3.5	Better information on what containers are arriving and when. Carriers to be notified at same time as importer that a box is arriving.	High	High	Importer Working Group has been established to improve communication with importers. Aim is to inform importers on the importance of providing timely and accurate information prior to ship arrivals. Container location/estimated time of arrival can be tracked through I-Stop's tracking system ComTrac. A Port Community System concept may assist in achieving this outcome.	Importer Working Group
3.6	Operating Agreements and associated provisions to be included as part of new site developments and existing sites when lease renewals are due (e.g. KPIs, operating hours, equipment levels, servicing and performance minimum standards, etc.)	High	High	Operating Agreements for new Rous Head sites are currently being negotiated.	Fremantle Ports
3.7	Policy developments – Fremantle Ports Heavy Vehicle Service Standards Policy	High	High	Fremantle Ports has introduced two policies: the <i>Vehicle Traffic Management Policy</i> and the <i>Heavy Vehicle Service Standards Policy</i> (both available on Fremantle Ports' website).	Fremantle Ports
3.8	Support for carriers to migrate to hub operations and plan changes to business model	High	Medium	Staging will become more important in future with greater volumes through the port. Greater on-port capacity for staging is being developed as part of the Rous Head Industrial Park. Additional off-port staging developments may have long planning horizons and may not be available in the short term. Third-party staging was a successful strategy implemented during the 2012 peak season. Investigation into how to encourage these operations is required.	WAPOTF

	Initiative	Priority	Feasibility	Comments	Responsible party
3.9	Sites to have adequate on-site queuing/ to use internal truck grid within site	High	Medium	The Truck Marshalling Area (TMA) has become operational for use in high-congestion periods. Fremantle Ports has employed a dedicated Traffic Management Coordinator to monitor traffic conditions and queuing at Rous Head, and to collect information on problematic areas/periods. New sites/leases require minimum levels of queuing within the site boundary.	Fremantle Ports
3.10	Introduction of pre-gates whereby a site has the ability to park trucks elsewhere (truck grid/ offsite), then call in trucks when ready to accept	High	Medium	The Truck Marshalling Area (TMA) has become operational for use in high-congestion periods. This facility is to be used in highly congested periods only and not for day-to-day use. Further investigation may be required in the long term to determine if pre-gating is required and identify suitable areas to accommodate this function.	WAPOTF, Fremantle Ports
3.11	Transport worker apprenticeship scheme to recognise skilled occupation. Attraction strategies for drivers (e.g. mentoring, a skill qualification in transport, trainee scheme to expose young people to career options within the transport sector)	High	Medium	WARTA to discuss the need to progress this with industry and options to be considered.	WARTA, transport operators
3.12	One additional day's notice from exporters to enable an export delivery to be matched to an import pick-up	High	Low	May only benefit a small number of transport operators who have import/export balance. Further discussion with transport operators and freight forwarders is required.	WARTA, Customs Brokers & Forwarders Council of Australia (CBFCA)
3.13	Increase use of rail to reduce requirement for transport operators to access Container Terminals/ECPs	Medium	High	Extension to the North Quay Rail Terminal (NQRT) will provide increased efficiencies and capacity. Importer Working Group undertaking exercise to educate importers on the costs and benefits that may be achieved through the use of rail.	WAPOTF, Importer Working Group, rail operator

	Initiative	Priority	Feasibility	Comments	Responsible party
3.14	Two-way service agreements with carriers and Container Terminals/ Container Parks incorporating service guarantees	Medium	Medium	Development of performance standards for inclusion in new ECP sites and future Container Terminal leases. Industry not receptive to Port Botany Landside Improvement Strategy (PBLIS) type legislation.	WAPOTF, Fremantle Ports, WARTA
3.15	More on-port and off-port staging facilities	Medium	Medium	Staging is likely to become more important in the future with greater volumes moving through the port. Greater on-port capacity for staging is being introduced with the development of new logistics sites at Rous Head. Additional off-port staging developments may have long planning horizons and may not be available in the short term. Third-party staging was a successful strategy implemented during the 2012 peak season. Difficult for hubbing operations to compete in current operating conditions. An investigation into how to encourage these operations is required.	Fremantle Ports, WAPOTF, relevant government agencies
3.16	Introduce off-port queuing facilities, e.g. for rural carriers	Medium	Medium	Continue to work with other Government agencies to examine the use of inland facilities for port-related activities. As this may only benefit a small number of carriers, further investigation and the demand for these facilities is required. A Truck Facility is now operational within the port precinct, and incorporates casual parking for trucks. It can also be used as a Truck Marshalling Area in times of congestion.	WAPOTF, Department of Transport, Department of Planning, Fremantle Ports
3.17	Introduce common-user staging facilities, e.g. large operators offer staging services to small or rural operators, collaborative arrangements with several carriers, etc.	Medium	Medium	These activities are undertaken by some carriers and are offered more readily during peak season. Further investigation into the commercial arrangements of successful common-user staging facilities from the Eastern States is required.	WAPOTF, Fremantle Ports, WARTA

	Initiative	Priority	Feasibility	Comments	Responsible party
3.18	Common-user bulk run/ tagged arrangements with carriers and Container Terminals	Medium	Medium	Further discussions required with Container Terminals to understand if this could be implemented. Would require benefits and costs to be understood to encourage smaller carriers to collaborate to achieve efficiencies. I-Stop is about to release a new functionality that allows dual bulk runs. To be looked at with common-user staging facilities.	WAPOTF, Fremantle Ports, Container Terminals, WARTA
3.19	Introduce port charge per truck, regardless of number of containers	Medium	Medium	How charge is structured and implemented requires further investigation. May be an additional charge on top of existing transport charges.	WAPOTF, Fremantle Ports
3.20	Port slot system (ContainerChain/ I-Stop link)	Medium	Medium	National Port Community System (NPCS) currently being investigated. Chamber of Commerce and Industry WA (CCIWA), Fremantle Ports, and the Freight and Logistics Council of WA (FLCWA) are working in collaboration to demonstrate the significant benefits of a national system. I-Stop is developing functionality that aligns with this concept.	CCIWA, Fremantle Ports, FLCWA, WAPOTF
3.21	Extended Department of Agriculture (DAFF) tailgate inspection hours for country carriers	Medium	Low	Consult with DAFF on the possibility for this to occur, however, this was not raised as a significant issue.	DAFF, WAPOTF
3.22	Nil via-yard fees if customers will receive in evening/nights	Medium	Low	The Importer Working Group is currently looking at the costs of after-hour deliveries, and Fremantle Ports is undertaking a detailed supply chain costing exercise. Currently, the charge for night and after-hours deliveries varies significantly between transport operators. Some charge a surcharge and some provide a discount as an incentive to receive during these times.	Importer Working Group, WAPOTF, WARTA, transport operators

	Initiative	Priority	Feasibility	Comments	Responsible party
3.23	Display waiting times at Container Terminals and ECPs	Medium	Low	Investigation required as to how this could be implemented. Possible inclusion of requirement to publicise wait times as part of new lease arrangements. Currently, high-congestion periods are communicated through the VBS and ContainerChain. ECPs currently do have visibility of truck turn time (TTT) at their facilities through ContainerChain, but it is not published due to the different ways TTT is measured.	WAPOTF, Container Parks, Container Terminals, Fremantle Ports
3.24	Dedicated freight routes	Medium	Low	This solution is considered to be out of the scope of this project, however, Fremantle Ports and the FLCWA will continue to work with other relevant agencies to further investigate the development of dedicated freight routes.	FLCWA, other agencies
3.25	Business-to-business (B2B) information exchange between transport operators and major facilities (e.g. Container Terminals, Container Parks, etc.).	Medium	Low	Work with transport operators to determine what type of vehicles and technology is currently being used to determine if this solution is viable.	WAPOTF, WARTA
3.26	Carriers to invest in operational systems, such as information technology, accounting, fleet management, email management, etc., to create more awareness in smaller operations of the actual cost of doing business, and encourage a driver to improve operations and efficiency.	Medium	Low	Work with transport operators to highlight the benefits of system developments. If implemented, a Port Community System (PCS) will provide greater incentive to invest and use of 'cloud' technology may reduce outlays required.	WARTA
3.27	Enterprise Connect – assistance/business review for transport carrier operations	Medium	Low	Make transport companies aware of the service that is available.	WAPOTF, Enterprise Connect
3.28	Quicker turnaround on Maritime Security Identification Card (MSIC) security checks and card issue	Low	Low	Current service levels seem to be adequate and have not been raised as a significant issue by transport operators. The MSIC function is determined by external agencies to a degree and is highly regulated.	

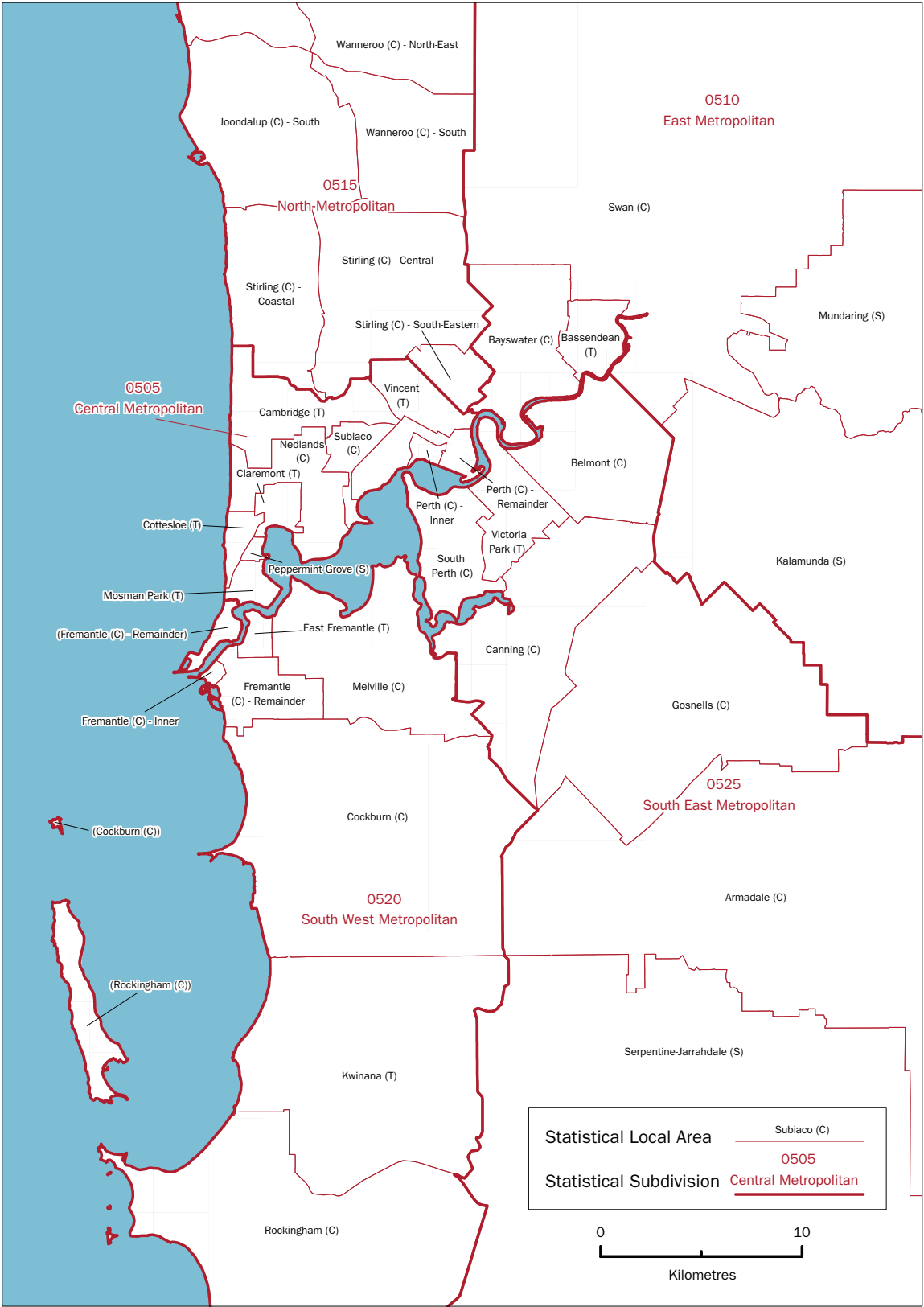
	Initiative	Priority	Feasibility	Comments	Responsible party
3.29	Implement a Port Botany Landside Improvement Strategy (PBLIS) concept, in which certain servicing requirements between the carrier and Container Terminals are legislated and two-way penalties apply.	Low	Low	Implemented in Sydney in 2011, resulting in significant improvements to truck servicing times, however, with some unintended consequences and varying levels of acceptance from industry. Fremantle would prefer not to go down this route and will pursue other solutions as alternatives. Outcomes of PBLIS to be monitored.	WAPOTF



Appendix F: Port Precinct Map



Appendix G: Perth Metropolitan Map



Appendix H: Eastern States Port Tour May 2013

In May 2013, Fremantle Ports Senior Logistics Analyst, Jennifer Hall, undertook a study tour of the three major Eastern States container ports. The purpose was to obtain an update on current port operations and investigate factors impacting on trucking productivity from the perspective of local industry stakeholders. The intention was to identify similarities and major differences between these ports and Fremantle Port in planning for the Truck Productivity Study being undertaken with support from the Freight and Logistics Council of Western Australia. Port authorities, stevedores, container parks, transport operators and some local industry bodies also offered their time to discuss operations, current events and trucking issues.

Inter-port comparisons

The following table provides a comparison of the four major Australian container ports on the number of transport carriers handling the total port container volume. This highlights Melbourne and Brisbane as highly consolidated ports in terms of the number of carriers, with 8% and 13% respectively of total active carriers handling around 70-75% of total container volume. In Sydney, 18% of the active carriers are handling about three-quarters of the container trade and in Fremantle that volume is handled by 22% of the carriers.

	Fremantle	Melbourne	Sydney	Brisbane
Number of active carriers (2013)	142	250 (est.)	263	136
Number of carriers handling 50% of port volume (percentage of total active carriers)	10 (7%)	10 (4%)	18 (7%)	6 (4%)
Number of carriers handling 70-75% of port volume (percentage of total active carriers)	31 (22%)	20 (8%)	47 (18%)	18 (13%)
Port TEU volume 2012-13	670,000	2,513,000	2,126,000	1,070,000
TEU/carrier (top 50%)	33,500	125,650	59,000	89,200
Total port TEU/active carrier	4,718	10,052	8,084	7,868
Rail share	14%	14%	21%	5%

The import/export balance is a critical factor in a carrier's ability to undertake two-way truck loading to and from a container terminal. It also affects how fleets are managed. Two-way capability, truck utilisation and empty running of trucks are key indicators of the productivity levels of the industry. The following table provides a summary of these indicators:

	Fremantle	Melbourne	Sydney	Brisbane
Import-export ratio (financial year 2012-13)	1.89	1.31	2.40	1.43
Two-way loading (container terminals) (2013)	11%	Not available	11.5%	7%
Truck utilisation (containers/truck movement)	1.28 (port)	Not available	1.92 (container terminals)	1.18 (container terminals)

Through discussions with major transport carriers, container terminals and empty container parks locally and in the Eastern States, some key concerns were identified.

The tendency for all states at present is for receipt and delivery (R&D) activity to occur mainly during daylight hours, Monday to Friday. Many of the larger carriers are able to coordinate night bulk runs with the container terminals and achieve some success in negotiating after-hours access arrangements with clients to extend operating hours more evenly throughout the full 24-hour period. Larger carriers also tend to use more of the weekend availability at container terminals.

Empty container park operating hours continue to put a strain on transport's ability to achieve good levels of two-way loading, with many closing around 17:00-18:00 and few opening on the weekends. This means that movements to and from the port precinct are mainly loaded in one direction only, unless the carrier is able to balance loaded export deliveries with loaded import collections.

Staging is prevalent in all states, undertaken mainly by large operators conducting night bulk run activities with the terminals. Many have dedicated fleets for servicing the terminals, separate from those servicing client deliveries.

Operator perspectives

Measures of transport productivity for ports and carriers are similar across the country, and are summarised below:

- truck utilisation (containers per truck movement)
- cycle times
- total fleet utilisation
- ability to undertake two-way running
- revenue per truck hour.

This is consistent with the findings of the recent Fremantle Ports Transport Operator Survey.

Productivity influencers

The issues impacting on productivity are generally common across the major Australian ports and include:

- booking system rigidity – Vehicle Booking System (VBS), some aspects of ContainerChain, and the coordination between the two systems
- variability in service levels received at terminals and container parks
- non-uniform operating hours – facilities extending hours during peak times and contracting during off-peak times
- weights of containers and the ability to load trucks to full capacity
- demands of shippers for specific times of delivery, particularly during morning peak periods, resulting in the need to stage most of the volume from terminals.

Transport operator initiatives

Many of the larger transport operators are active in developing their operations, implementing improvements and working towards greater efficiency. Some examples of this include:

- use of customer pricing to influence delivery windows to increase operations to evening, night and weekends
- selecting customers based on their contribution to a balance of import/export work, 20'/40' balance and ability to receive deliveries at any time
- investment in fleets, high productivity vehicles and extending facilities to cope with growing volumes.

Container terminal operations

Container terminal operators are rapidly adopting new operating technologies, and throughout Australia most terminals have, or are investigating, investment in terminal layouts, operating systems or modal changes.

Some key points relating to terminals are noted below:

- Automated equipment (Autostrads) is being used at the Patrick Terminal in Brisbane and has achieved greater consistency in truck servicing (reduced variability) compared to many other terminals.
- Benefits of the Autostrads have included a reduction in cost related to workers' compensation, hardstand wear and tear, lighting and electricity, and pavement markings, to name a few. Some concern exists for personnel, although the Maritime Union of Australia (MUA) has been generally supportive due to the reduced risk exposure to members.
- Potential obstacles for introducing a similar terminal mode in Fremantle were raised by some large operators and relate to the ability to dual load or undertake bulk runs, and the potential issues associated with changing to a system which requires trucks to reverse to be serviced.
- Terminals are discussing possible changes to the VBS which may result in better efficiency outcomes for industry, such as the classification of carriers by the number of hours worked (e.g. 24 and 16 hour carriers, with benefits received by those that work extended hours). Changes may result in less administration in the booking process and improved fleet utilisation for carriers.
- Many terminals are, or are considering, making containers available when they arrive at the wharf rather than when the vessel is fully discharged. This is giving transport carriers greater access to their containers, and enabling more containers to be moved within the free days.
- Improved operating systems are leading to efficiencies in the landside interface.



Patrick Container Terminal in Brisbane with Autostrads, sensors on light posts and no line markings

Empty container park operations

Empty container park operations continue to be cited by transport operators as a key issue in achieving supply chain efficiency. This relates mainly to the operating hours of the parks and difficulties experienced in the interface with road transport.

- ContainerChain is viewed as having had a positive effect on efficiency, such as achieving more consistent truck turn times and reducing the level of futile trips.
- Common-user empty container park facilities were used during the Sydney Olympics in 2000, and the Australian Trucking Association noted that the arrangement resulted in many benefits, including higher truck productivity (two-way loading capability and extended operating hours), although with higher operating costs.

Performance management of tenants

Many ports around the country are beginning to use performance measurement of tenants in major leases to influence tenant behaviour and improve the efficiency of these nodes of the supply chain. Of particular interest is the recently introduced performance lease at DPWorld in Sydney, key performance indicators (KPIs) in new bulk liquids leases also in Sydney, management agreements at some terminals in Brisbane, and the introduction of Operating Agreements including KPIs for new leases in Fremantle.

Port Botany Landside Improvement Strategy (PBLIS)

This strategy is seen by many as being a successful initiative to encourage changes in operating behaviour and improvements in efficiency in the Sydney transport market. A few interesting points related to PBLIS were noted:

- One of the aims of PBLIS was to get a spread of activity across longer operating hours, however, improved efficiency at terminals allows for more volume to be handled during daylight hours, and there has been a compression of activity back into these peak times. It was noted that it is likely the Sydney market will be able to move much of its volume in these times for at least the next five years.
- This is a similar effect to what has been seen in Fremantle. Reduced or stable trade and more efficient operators have a concertina effect on operating patterns from evening, night and weekend times back to daylight hours. Often commercial factors and competition are influencing this behaviour.
- Access to transparent and accurate data on how transport carriers and terminals are interacting provides many benefits to industry and allows industry to focus on improvement opportunities rather than debating specific events.

Lessons learnt

Some of the key lessons learnt from the study tour are:

- Take a chain perspective. Coordination is required along the entire supply chain to achieve optimal efficiency and productivity of the transport process. Many points along the supply chain (such as importers) are unaware of how the overall chain works, and education in this area would be valuable.
- Look at consequences of improvements and initiatives and actions on the rest of the chain. Identify and anticipate unintended consequences. Many improvement initiatives considered both locally in Fremantle and in other states have the capacity to create some undesirable results in certain areas of the chain. With PBLIS, for example, the introduction of penalties saw a tightening of business rules at the container terminals, limiting the use of consecutive slots and the ability of operators to manage multiple containers. This had a detrimental impact on matters such as truck utilisation, despite seeing improvements in truck turn time through facilities.
- The Sydney market was identified as being inflexible to change unless parties in the chain were actually being fined or incurring additional costs that could not be passed on to customers. If costs or incentives are introduced to influence operating behaviour, consideration should be given to the level at which they are set to achieve the desired outcome.
- The balance between road and rail activity is delicate, and improvements in trucking efficiency have the potential to impact on rail share. In Brisbane, where there is no government target for volume on rail and rail share is around 5%, the road transport industry has been able to invest heavily in innovation and high productivity vehicles to achieve optimal efficiency.
- Rail is seen as most competitive during peak periods, where efficiency at the interface between the container terminals and road transport is more difficult to achieve, and there is a higher level of variability in service levels. In times when road transport is efficient, for example when trade volumes are stable, rail can struggle. Rail operators in Fremantle suggest that rail needs to be viewed more in terms of what benefits it can provide to the road transport industry to facilitate more movements and achieve greater volume efficiencies and consistency of service.



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